MASTER BANKING SERVICES AGREEMENT BETWEEN
THE CITY OF DORAL
AND
WELLS FARGO BANK
FOR

This Master Banking Services Agreement (this "**Agreement**") is entered into as of the 14th day of June, 2021 by and between Wells Fargo Bank, N.A. ("**Bank**"), a national banking association authorized to do business in the State of Florida and City of Doral ("**City**"), a municipal corporation of the State of Florida.

Recitals

WHEREAS, City issued RFP No. 2020-27 for the provision of banking and treasury management services on November 23, 2020 (the "**RFP**") to which the Bank submitted its response dated January 29, 2021 (the "**Bank's Response**");

WHEREAS, on the basis of the Bank's Response, City has determined to engage the Bank to provide certain banking and treasury management services (each, a "**Service**" and collectively, the "**Services**") all as provided in the RFP and the Bank's Response;

WHEREAS, Bank has agreed to provide the Services to City, and City has agreed to accept the Services, upon the terms and conditions set forth in the Bank's Response and set out in this Agreement.

NOW THEREFORE, for good and valuable consideration, the receipt and sufficiency of which, each of Bank and City expressly acknowledge, each of Bank and City hereby agree as follows:

1. Entire Agreement. Bank shall provide, and City shall accept, the Services pursuant to the terms and conditions of the "**Service Documentation**" which includes the following documents which are attached and incorporated herein in their entirety:

    1.1 This Agreement;

    1.2 Bank's Response to City's Request for Proposal dated January 29, 2021 (the "**Bank's Response**") which includes Bank's response to the RFP and all exhibits and addendum which are incorporated by reference herein, including the Service Description for each Service (each, a "**Service Description**"), the commercial account agreement for the deposit accounts that City maintains at Bank (the "**Deposit Agreement**"), and the Pricing attached to the Bank's Response as Tab A (the "**Pricing Schedule**") collectively attached as **Exhibit A;**

    1.3 City's RFP dated November 23, 2020 (the "**RFP**") (attached as **Exhibit B)**

If there is a conflict among the documents that make up this Agreement, the documents will govern in the order set forth above. The Service Descriptions and Deposit Agreement in effect as of the date of this Agreement are attached to the Bank's Response. This Agreement constitutes the entire agreement between Bank and City and supersedes all prior representations, conditions, warranties, understandings, proposals or agreements regarding a Service and the transactions contemplated hereunder. No course of dealing or waiver of any right on one occasion will constitute a modification of the above referenced documents or be a waiver of that right on a subsequent occasion.

2. Services; Additional Services. If City requests and Bank agrees to provide additional services after the date of this Agreement, which are governed by additional service descriptions, pricing or other documents, the terms and conditions thereof shall be deemed to be incorporated herein by reference without the need to either amend this Agreement or to add such service descriptions, pricing or other documents as attachments to this Agreement.

3. Changes to Services or Service Documentation. Except as otherwise set forth herein, Bank may change (or add to) the terms in the Service Documentation at any time. If an enhancement to a Service or other change requires a change to a Service Description, Bank will post an updated Service Description on the CEO portal, which shall be deemed to supersede such applicable Service Documentation attached to the Bank's Response. When required by Applicable Law, Bank will notify City of the change. If City continues to use a Service after the change takes effect, City will be bound by such changes. As used in this Agreement, the term "Applicable Law" means all applicable laws (including common or customary laws), statutes, constitutions, policies, decrees, judgments, treaties, regulations, directives, by-laws, rulings, orders or operating circulars governing our activities and/or any transaction effected under this Agreement, including, but not limited to, the funds transfer system and clearing and settlement house rules.

4. Term, Termination, Liability.

4.1This Agreement shall have an initial term of three (3) years beginning on July 1, 2021, and ending on June 30th, 2024, with the parties having the option to renew for two (2) additional one (1) year terms. Bank and City must mutually agree to any renewal, which shall be on terms and conditions mutually agreed upon by Bank and City in writing.

4.2 Unless terminated sooner in accordance with the Service Documentation, this Agreement and all Services will continue in effect until terminated by either party upon thirty (30) days prior written notice to the other party (unless a Service is terminated sooner in accordance with the Service Documentation). Either party may terminate any Service (a) following notice to the other party of a breach by such other party of any provision of the Service Documentation and such other party's failure to cure the breach within fifteen (15) days of the date of such notice, (b) upon notice to the other party if the other party is subject to a petition under the U. S. Bankruptcy Code, and/or (c) upon Bank's failure to comply with Section 8.6 herein. City is a bona fide governmental entity of the State of Florida, and if City does not appropriate sufficient funds for any of City's fiscal years subsequent to the one in which this Agreement is executed and entered into, then this Agreement will terminate effective upon expiration of the fiscal year in which sufficient funds to continue satisfaction of City's obligation under this Agreement were last appropriated by City and City shall not in this sole event be obligated to make any further purchases beyond said fiscal year. The termination of a Service or this Agreement will not affect City's or Bank's rights with respect to transactions occurring before termination. Neither party will be liable to the other party for any losses or damages such other party may incur as a result of any termination of any Service or this Agreement in accordance with the terms of the Service Documentation.

5. Service Fees.

5.1 City shall pay Bank the fees for the Services as set forth in Tab A of Exhibit A. Except to the extent related to additional services referenced in Section 2 above, fees for the Services will remain fixed for the initial term of the Agreement. Except as otherwise agreed to between City and Bank, Bank may debit City's account(s) with Bank for any fees not covered by earnings credits and any taxes that are due, or it may send an invoice to City for such amounts, which City will promptly pay. Bank shall waive the first four (4) months of analysis fees following the execution of this Master Banking Services Agreement ("MBSA"), as well as waive the implementation fee for Payment Manager® and Wells Fargo Electronic Deposit (WFED) if implemented within the first 12 months of the new MBSA.

5.2 The City shall have the option of using either a non-interest bearing account (NIB) or a Government Advantage Interest Checking account (GAIC), and can switch between them as the interest rate environment changes. The NIB account shall receive an initial managed earnings credit rate (ECR) of 0.25% (25 basis points). The GAIC account shall receive an initial managed ECR of 0.25%, and an initial managed interest rate of 0.17% (17 basis points) on excess balances not used to offset fees. The Bank sets the ECR internally each month after evaluating a combination of factors, including the 91-Day Treasury Bill rate, the Fed Funds rate, sweep rates, and other market indicators.

6. Representations and Warranties.

6.1 Mutual Representations and Warranties. Each of the parties hereto represents and warrants to the other party that: (i) such party is duly organized and in good standing in all appropriate jurisdictions; (ii) each party is fully authorized to execute and perform under this Agreement and the execution of and performance under this Agreement does not violate any law, regulation, contract or organizational document by which such party is bound; and (iii) the individual(s) executing this Agreement on behalf of such party has full corporate and/or organizational authority to do so;

6.2 City warrants it will not use any Service in a manner which violates any federal or state law including without limitation any sanction or control administered by the Office of Foreign Assets Control or Bureau of Export Administration.

6.3 If City employs an agent in connection with its use of any Service, City represents and warrants to Bank that (a) City's governing body has duly authorized the agent and (b) City will exercise appropriate controls to ensure each agent so authorized does not exceed the authority so granted to it. Any communication to Bank regarding City's use of a Service from City's agent will be deemed to be a communication from City, and City authorizes Bank to communicate with City's agent regarding any such communication or Service.

6.4 Neither Bank nor any software vendor makes any express or implied representations or warranties with respect to the Services or any software used in connection with the Services including without limitation any warranty as to the merchantability or fitness for a particular purpose, other than those expressly set forth in the Service Documentation.

7. Liability/Indemnification.

7.1 Bank will perform each Service in accordance with reasonable commercial standards applicable to Bank's business; laws, regulations and operating circulars governing the activities of Bank; funds transfer system(s) and clearinghouse rules applicable to activities of Bank; and the Service Documentation.

7.2 Bank is under no obligation to honor, in whole or in part, any entry, file, batch release, transfer instruction, payment order, transaction or instruction that (a) exceeds the available balance in City's account, unless otherwise provided in the Service Documentation; (b) is not in accordance with the Service Documentation or Bank's applicable policies, procedures or practices as made available to City; c) Bank has reason to believe may not have been duly authorized, should not be honored for its or City's protection, or involves funds subject to a hold, dispute, restriction or legal process; or d) would possibly result in Bank violating any applicable rule or regulation of any federal or state regulatory authority including without limitation any Federal Reserve guidelines such as the limitations on Bank's intra-day net funds position.

7.3 All uses of Services through City's ID codes, passwords, token cards, PINs, or passcodes (each, a "Code") will be deemed to be authorized by and binding on City. City's failure to protect Codes may allow an unauthorized party to (a) use the Services, (b) access City's electronic communications and financial data, and (c) send or receive information and communications to Bank. City assumes the entire risk of unauthorized use of Codes and unencrypted electronic transmissions.

7.4 City will promptly furnish written proof of loss to Bank and notify Bank if it becomes aware of any third party claim related to a Service. City will cooperate fully (and at its own expense) with Bank in recovering a loss. If City is reimbursed by or on behalf of Bank, Bank or its designee will be subrogated to all rights of City.

7.5 Bank will have no liability for failure to perform or delay in performing a Service if the failure or delay is due to circumstances beyond Bank's reasonable control. If Bank determines that any funds transfer or communications network, Internet service provider, or other system(s) it has selected to provide a Service is unavailable, inaccessible or otherwise unsuitable for use by Bank or City, Bank may, upon notice to City, suspend or discontinue the affected Service.

7.6 Bank will only be liable to City for City's direct monetary losses due to Bank's negligence or intentional misconduct resulting from or relating to this Agreement, except to the extent caused by the negligent acts, omissions, or willful misconduct of the City, its officers, employees, agents, or employees. Except as expressly provided otherwise in the Service Documentation, neither party to this Agreement will be liable to the other party for any special, consequential, incidental (including without limitation court costs and attorneys' fees), indirect, or punitive losses or damages, whether any claim is based on contract or tort, or whether the likelihood of such losses or damages was known to the other party and regardless of the form of the claim or action.

7.7 During the term of this Agreement, Bank will indemnify, defend and hold harmless City and its officers, directors, employees, agents and assigns (the "Indemnified Parties") from and against all claims, losses, demands, liability, judgments, awards, interest, attorney's fees and costs (collectively, "Losses") arising out of, or resulting from the performance of the services provided hereunder which are, in each case, directly caused in whole or in part by the negligent or intentional acts or omissions of Bank or any of its officers, directors, employees, agents, or subcontractors, except to the extent such Losses are caused by the negligence or intentional misconduct of any Indemnified Party.

7.8 During the term of this Agreement, Bank will indemnify, defend and hold harmless the Indemnified Parties against any allegation that materials or services provided by the Bank under this Agreement infringe or violate any copyright, trademark, patent, trade secret, or any other intellectual, property or proprietary right of any third party. Notwithstanding the foregoing, Bank shall have no liability for such infringements or violations based on (i) any unauthorized alteration or modification of the materials or services by any party other than Bank, (ii) use of the materials or services in any manner other than as permitted under this Agreement, (iii) use of the materials or services in combination with any equipment or software not authorized by Bank or reasonably intended for use with the materials or services, or (iv) Bank's compliance with specific information or instructions provided to Bank by City.

7.9 If any Indemnified Party determines to seek indemnification from Bank under 7.7 or 7.8 above, the Indemnified Party shall provide written notice of the suit, claim or action to Bank as soon as practicable but in any event not later than ten (10) business days following the Indemnified Party's receipt of notice of such suit, claim or action. Said written notice shall specify in detail: (i) the facts constituting the basis for the allegations and (ii) if known, the aggregate amount of Losses for which a claim is being made, or to the extent that such Losses are not known or have not been incurred at the time such claim is made, an estimate, to be prepared in good faith and accompanied by supporting documentation, of the aggregate potential amount of such Losses.

7.10 In the case of any suit, claim or action for which indemnification is sought by Indemnified Party under 7.7 or 7.8 above, the Indemnified Party shall permit Bank to assume and control the defense or settlement of such suit, claim or action at Bank's expense. The Indemnified Parties and Bank shall reasonably cooperate in the investigation, pre-trial activities, trial, compromise, settlement, discharge and/or defense of any suit, claim or action for which indemnification is sought under 7.7 or 7.8 above, and the records and employees of the Indemnified Parties shall be made reasonably available to Bank with respect to such defense.

8. Miscellaneous.

8.1 The Service Documentation will be governed by substantive federal laws, regulations and rules and, to the extent such laws, regulations and rules are not applicable, those of the State of Florida, without regard to conflicts of laws principles. Any portion of the Service Documentation which is inconsistent with applicable laws, regulations or rules will be deemed modified and applied in a manner consistent therewith, and Bank will incur no liability to City as a result of the inconsistency or modification and application. If any portion of the Service Documentation is deemed unenforceable, it will not affect the enforceability of the remaining Service Documentation. Venue for any action arising out of or relating to this Agreement shall lie in state or federal courts in or for Miami-Dade County, Florida. BY ENTERING INTO THIS AGREEMENT, THE PARTIES HEREBY EXPRESSLY WAIVE ANY RIGHTS EITHER PARTY MAY HAVE TO A TRIAL BY JURY OF ANY CIVIL LITIGATION RELATED TO THIS AGREEMENT.

8.2 Either party may provide notice to the other party by mail, personal delivery, or electronic transmission. Bank will use the most recent address for City in Bank's records, and any notice from Bank will be effective when sent. City will use the address where City's relationship manager or other manager is located and address any notice to the attention of such manager. Any notice from City will be effective when actually received by Bank. Bank will be entitled to rely on any notice from City that it believes in good faith was authorized by an authorized representative of City and, except as expressly stated in the Service Documentation, will have no obligation to verify the signature (including an electronic signature). Each party will have a reasonable time after receipt of any notice to act on it.

8.3 The Services rely upon a robust network of Bank assets, employees and third-party resources located in the United States and around the world to provide service to City. Bank reserves the right to perform services using this model and to subcontract freely and to add and delete service providers at Bank's discretion. Bank will remain fully responsible for performance of all obligations under this Agreement, including those performed by a subcontractor or other service provider engaged by Bank.

8.4 This Agreement may be executed in any number of counterparts, which when taken together shall constitute one complete original of this Agreement. This Agreement may be executed and delivered via facsimile or any electronic means, such as email.

8.5 City and Bank agree that this Agreement and the Service Documentation set forth the entire agreement between the parties, and that there are no promises or understandings other than those stated herein and therein.

8.6 Upon full payment of all monies owed to the Bank, all reports, statements, or records (the "Records") that result from the Bank providing Services to the City under this Agreement shall be the property of the City. For the avoidance of doubt, Wells Fargo will retain all ownership and related rights in its intellectual property (including, but not limited to, systems, software and hardware, regardless of location or date of development), used or developed in connection with the Services provided to the City under this Agreement, now and hereafter. The City agrees, to the fullest extent permitted by law, to indemnify and hold Bank harmless from any claim, liability or cost (including reasonable attorney's fees and defense costs) arising or allegedly arising out of any reuse or modification of the Records by the City or any person or entity that obtains the Records from or through the City. The City Manager or his designee shall, during the term of this Agreement and for a period of seven (7) years from the date Records are created, have access to and the right to examine and audit any Records of the Bank involving transactions related to this Agreement. All audits requiring access to Bank's premises shall be subject to Bank's reasonable security procedures. All such audits will minimize, to the greatest extent possible, any disruption to Bank's on-going business operations. In no event will the foregoing be interpreted or construed to constitute Bank's consent, commitment or agreement to provide the City or any of its regulators or any governmental entity with access or audit rights with respect to (1) Bank's secure facilities, systems, networks or equipment; or (2) any technology documentation, test or scan results, or any other artifact relating to Bank's security practices.

8.7 To the extent that Bank meets the definition of "contractor" under section 119.0701, Florida Statutes, in addition to other contract requirements provided by law, Bank must comply with public records laws, including the following provisions of section 119.0701 (as revised from time to time), requiring Bank to:

A. Keep and maintain public records required by City to perform the service.

B. Upon request from City's custodian of public records, provide City with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes, or as otherwise provided by law.

C. Ensure that confidential information or records that are exempt from public records disclosure are not disclosed except as authorized by law for the duration of this Agreement, renewals, and following completion of the contract if Bank does not transfer the records to City.

D. Upon completion of this Agreement, transfer, at no cost, to City all public records in possession of Bank or keep and maintain public records required by City to perform the service.

1) If Bank transfers all public records to City upon completion of the contract, Bank must destroy any duplicate confidential information or records that are exempt from public records disclosure.
2) If Bank keeps and maintains public records upon completion of this Agreement, Bank must meet all applicable requirements for retaining public records.
3) All records stored electronically must be provided to City, upon request from City's custodian of public records, in a format that is compatible with the information technology systems of City.

8.8 Bank certifies that it has not divulged, discussed or compared his/her/its quote with other individuals and/or entities that provided quotes to the City for the Services and has not colluded with any other individual or entity whatsoever.

8.9 The failure of either party to this Agreement to object to or to take affirmative action with respect to any conduct of the other which is in violation of the terms of this Agreement shall not be construed as a waiver of the violation or breach, or of any future violation, breach or wrongful conduct.

8.10 Any terms or conditions of either this Agreement that require acts beyond the date of the term of the Agreement, shall survive termination of the Agreement, shall remain in full force and effect unless and until the terms or conditions are completed and shall be fully enforceable by either party.

8.11 Bank warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the Provider, to solicit or secure this Agreement, and that it has not paid or agreed to pay any person(s), company, corporation, individual or firm, other than a bona fide employee working solely for the Provider, any fee, commission, percentage, gift, or any other consideration, contingent upon or resulting from the award or making of this Agreement.

8.12 It is understood that performance of any act (other than payment of money) by the City or Bank hereunder may be delayed or suspended at any time while, but only so long as, either party is hindered in or prevented from performance by acts of God, the elements, war, rebellion, strikes, lockouts or any cause beyond the reasonable control of such party, provided however, the City shall have the right to provide substitute service from third parties or City forces as may be necessary to meet City needs, and, in such event, the City shall withhold payment due Contractor for such period of time, if any, to the extent services are performed by parties other than Bank or its agents. If the condition of force majeure exceeds a period of fourteen (14) days, the City may, at its option and discretion, cancel or renegotiate the Agreement.

8.13 Either party may assign this Agreement with the other party's consent, which consent will not be unreasonably withheld or delayed; however, that Bank may assign this Agreement without City's consent in connection with a merger, acquisition, or corporate restructuring involving all or substantially all of the assets of Bank; provided that any assignee shall be in compliance with the terms of this Agreement as of the date of such assignment.

8.14 This Agreement may be executed in several counterparts, each of which shall be deemed an original and such counterpart shall constitute one and the same instrument.

8.15 Severability. In the event any of the provisions of this Agreement are determined by a court of competent jurisdiction to be illegal or unenforceable, then such unenforceable or unlawful provision shall be excised from this Agreement, and the remainder of this Agreement shall continue in full force and effect. Notwithstanding the foregoing, if the result of the deletion of such provision shall materially and adversely affect the rights of a party, such party may elect, at its option, to terminate this Agreement in its entirety.

8.16 No Partnership or Joint Venture. It is understood and agreed that nothing contained in this Agreement shall be deemed or construed as creating a partnership or joint venture between City and Bank or any other party, or cause either party to be responsible in any way for the debts and obligations of the other party.

8.17 No Third-Party Beneficiaries. There are no third-party beneficiaries created or entitled by this Agreement, and only the specific parties hereto shall have any rights or standing to enforce this Agreement or any provision thereof.

Each of the parties hereto agrees to be bound by the terms and conditions of this Agreement, as of the above written date.

[THIS SPACE INTENTIONALLY LEFT BLANK. SIGNATURES TO FOLLOW.]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date first set forth above.

Attest:

CITY OF DORAL

____
Connie Diaz, City Clerk

By: ______________________________
Hernan Organvidez, Interim City Manager

Date: 6/14/21

Approved As To Form and Legal Sufficiency for the Use And Reliance of the City of Doral Only:

____
Luis Figueredo, Esq.
City Attorney

Wells Fargo Bank N.A.

By: ______________________________

Name: Vincent Mattio

Title: Senior Vice President

Date: 6/21/2021

EXHIBIT A

Bank's Response to City's Request for Proposal dated January 29, 2021

EXHIBIT B

City's RFP No. 2020-27 dated November 23, 2020

RESOLUTION No. 21-86

A RESOLUTION OF THE MAYOR AND THE CITY COUNCIL OF THE CITY OF DORAL, FLORIDA, APPROVING THE RANKING OF RESPONDENTS TO REQUEST FOR PROPOSALS #2020-27 "BANKING SERVICES"; AUTHORIZING THE CITY MANAGER TO NEGOTIATE AND ENTER INTO AN AGREEMENT WITH WELLS FARGO BANK AS THE TOP RANKED FIRM, SUBJECT TO APPROVAL AS TO FORM AND LEGAL SUFFICIENCY BY THE CITY ATTORNEY, FOR THE PROVISION OF INVESTMENT MANAGEMENT SERVICES; AUTHORIZING THE CITY MANAGER TO NEGOTIATE AND ENTER INTO AN AGREEMENT WITH THE NEXT HIGHEST RANKED FIRM SUCCESSIVELY IF AN AGREEMENT CAN NOT BE NEGOTIATED; PROVIDING FOR IMPLEMENTATION; AND PROVIDING FOR AN EFFECTIVE DATE

WHEREAS, on November 19, 2020 the City of Doral (the "City") issued a Request for Proposal #2020- 27 for "Banking Services" (the "RFP"), and the City of Doral received four (4) submittals by the January 29, 2021 deadline, with two (2) firms meeting the required criteria; and

WHEREAS, a public meeting was held on March 2, 2021 where the Evaluation Committee upon review of the submittals received, two (2) firms were evaluated, scored, and ranked based on a 300-point system; and

WHEREAS, staff recommends that the City Council accept the ranking of the banks as specified herein and authorize the City Manager to negotiate and enter into an agreement with Wells Fargo Bank the provision of banking services, or, if negotiations fail with the top ranked firm, to negotiate an agreement with the next highest ranked firm successively until an agreement is reached, for a three (3) year contract period, with an option in favor of the City to renew for two (2) additional, one (1) year periods, payable from the General Government's Contractual Services line item; and

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF DORAL, FLORIDA, AS FOLLOWS:

Section 1. Recitals. The above recitals are confirmed, adopted, and incorporated herein and made a part hereof by this reference.

Section 2. Approval of Rankings. The City Council hereby approves the rankings of the two (2) firms as provided by the Evaluation Committee as follows:

(1) Wells Fargo Bank

(2) Synovus Bank

The foregoing rankings do not vest any contractual rights on any of the foregoing parties.

Section 3. Authorization to Procure Services. The City Manager is hereby authorized to negotiate with Wells Fargo Bank, as the top ranked firm, and enter into an agreement, subject to approval by the City Attorney, as to form and legal sufficiency, for the provision of Banking Services, for an initial three (3) year period, with an option in favor of the City to renew for two (2) additional one, (1) year periods, payable from the General Government's contractual services line item. If negotiations fail with Wells Fargo Bank, the City Manager is authorized to negotiate an agreement with Synovus Bank.

Section 4. Implementation. The City Manager and the City Attorney are hereby authorized to take such action as may be necessary to implement the provisions of this Resolution.

Section 5. Effective Date. This resolution shall take effect immediately upon adoption.

The foregoing Resolution was offered by Councilmember Mariaca who moved its adoption. The motion was seconded by Councilmember Puig-Corve and upon being put to a vote, the vote was as follows:

Mayor Juan Carlos Bermudez	Yes
Vice Mayor Pete Cabrera	Yes
Councilwoman Digna Cabral	Yes
Councilman Claudia Mariaca	Yes
Councilwoman Oscar Puig-Corve	Yes

PASSED AND ADOPTED this 14 day of April, 2021.

JUAN CARLOS BERMUDEZ, MAYOR

ATTEST:

CONNIE DIAZ, MMC
CITY CLERK

APPROVED AS TO FORM AND LEGAL SUFFICIENCY
FOR THE USE AND RELIANCE OF THE CITY OF DORAL ONLY:

LUIS FIGUEREDO, ESQ.
CITY ATTORNEY

WELLS FARGO

Wells Fargo & Company
2019 Annual Report

WELLS FARGO

2019 Annual Report

Contents

ELIZABETH A. DUKE

Chair, Board of Directors
Wells Fargo & Company

February 20, 2020

2019 brought a great deal of change to Wells Fargo, including the selection of our new CEO, Charlie Scharf. Through it all, the company's foundational commitment to helping customers succeed financially has remained a constant.

Working together, the company and our board continue to make progress in our ongoing transformation. Although much work remains, I am optimistic about our future as we move forward.

The board decided to conduct an external search for a new CEO after Tim Sloan announced his retirement. I am pleased that our search led to the appointment of Charlie as our CEO and president. Charlie is an experienced CEO who has excelled at strategic leadership and execution.

With more than 24 years in leadership roles in the banking and payments industries, Charlie has demonstrated a strong track record in initiating and leading change, driving results, strengthening operational risk and compliance, and innovating amid a rapidly evolving digital landscape.

Charlie embodies the traits our board's search committee was looking for in Wells Fargo's next leader — namely, financial and business acumen, integrity, passion for diversity and inclusion, and commitment to strong talent management. His proven ability to build strong relationships with stakeholders, including customers, employees, regulators, and investors, will be especially important to rebuilding trust and resolving key regulatory issues. He has led organizations in all our major business lines, and his experience with businesses that operate at the scale and complexity of Wells Fargo has prepared him well for this role.

What we have observed in the first few months of Charlie's tenure only confirms our initial high expectations. He brings to Wells Fargo a willingness and ability to make important changes, an urgency to address our regulatory issues, and a recognition of the importance of actively engaging with our stakeholders. He is actively developing his strategic priorities for the company and evaluating them in light of our risk appetite and the capacity of our risk management framework. He is making key organizational changes and has already demonstrated a commitment to direct and transparent communications.

I wish to thank the members of the board's search committee — Chair Jim Quigley, Wayne Hewett, Maria Morris, and Ron Sargent — for conducting a thorough and successful search that was comprehensive in its diligence and reach. I also would like to thank Allen Parker for his exemplary service as interim CEO and president. His leadership during a time of transition enabled Wells Fargo and our team members to continue moving forward in a focused and transparent way.

NEW BOARD MEMBERS

As the company makes important changes, so does the Board of Directors. We continued our efforts to further enhance board effectiveness by adding more directors with expertise in financial services, regulatory matters, and financial reporting.

In June 2019, we welcomed Chuck Noski to the board. Chuck brings broad experience as a corporate director through service on numerous boards, including Booking Holdings Inc., and until recently Microsoft Corporation. He also has financial industry experience through his prior roles as a director of Morgan Stanley and as CFO of Bank of America. In addition to his extensive experience in public accounting and as CFO of Fortune 500 companies, he is the immediate past chairman of the Board of Trustees of the Financial Accounting Foundation, overseer of the Financial Accounting Standards Board. Chuck serves on our board's Audit Committee.

Dick Payne joined the board in October. Dick is a seasoned banking professional with more than 40 years of experience in corporate and commercial banking as well as capital markets with large financial institutions, serving middle-market and large corporate customers in many of the same geographic markets and businesses served by Wells Fargo. He has a deep understanding of banking and the regulatory environment and brings experience and valuable perspective to the board.

Both new directors are already contributing to our progress as we work to transform Wells Fargo, meet the expectations of our regulators, and rebuild trust with our stakeholders.

I also wish to thank John Baker, a member of the Board of Directors, for his years of service and many contributions to the board. John will retire as a director at the company's 2020 annual meeting of shareholders.

LONG-TERM SHAREHOLDER VALUE

While much of the work underway is necessary to meet our regulatory requirements, it will also make us a stronger, nimbler, and more efficient company. The board's oversight is ultimately focused on ensuring the alignment of strategy with risk management, and our ability to satisfy the financial needs of customers while creating value for shareholders. Several examples of actions taken over the past few years include the following:

> *We changed the organizational structure of Wells Fargo from a decentralized to a centralized model.*
>
> *We reviewed, and continue to review, all business processes for effectiveness and standardization.*
>
> *We continued to make strategic choices about the businesses we are in. Over the past few years, we have divested businesses that did not meet our strategic objectives, such as the institutional retirement business, commercial real estate brokerage, crop insurance, property and casualty insurance, stock transfer agent, and payroll services businesses.*
>
> *In the Consumer Bank, management has continually reviewed and evaluated the branch network, closing some branches and selling others as a result of our customers' steady migration to digital channels.*
>
> *Throughout 2017 and 2018, the Auto business intentionally slowed its originations in order to make needed changes to its business structure, including centralizing back-office functions from over 50 locations into four hubs across the country, re-engineering processes to improve efficiency and the customer experience, and better managing risk. Following this restructuring, the Auto portfolio started to grow again in 2019.*

Charlie and Wells Fargo's management team are taking the strategic business review even further. They are looking inside our businesses, including core franchise businesses, to understand the business fundamentals, competitive position, distribution channels, growth prospects, and required investment to bring each to best-in-class status. At the same time, they are examining the structure, capabilities, and organizational maturity of enterprise functions such as technology, human resources, risk, and finance.

Over the course of 2020, the board and Charlie will work together to design and communicate a strategy that will provide the blueprint for the future of Wells Fargo. In doing so, we remain committed to our diversified business model. And we are mindful of the important role Wells Fargo plays in the economic success of the U.S. and in each customer's financial success. Moving forward, the company has a renewed focus and commitment around our risk management structure and resources to execute against our business strategy and safely and effectively serve our customers.

IN APPRECIATION

On behalf of the Board of Directors, we'd like to thank you, our shareholders, for your continued investment in Wells Fargo. We recognize the commitment you have made to the company and the responsibility that entails. With the sense of urgency Charlie brings to the company, the leadership of our management team, and the hard work of Wells Fargo's 260,000 team members, I'm confident that we can address our current challenges while doing the work necessary to build a strong foundation for the future. While navigating change is difficult, I have faith in the ultimate value of what we are creating together.

Elizabeth A. Duke

ELIZABETH A. DUKE

Chair, Board of Directors
Wells Fargo & Company

February 20, 2020

I write this note just four months after joining Wells Fargo.

It has been a busy time as I've been working to get to know the company and working with the senior team to understand both our opportunities and our challenges. While I've learned a great deal, as I discuss my observations here, please recognize that it is still early days and I do not pretend to have all of the answers yet.

I was honored to be chosen to lead Wells Fargo because I believe this is an extraordinary company that plays an important role in this country.

We came out of the financial crisis as the most valuable and most respected bank in the United States. However, we also had substantial problems that needed fixing. Significant parts of our operating model were flawed, and we broke our customers' trust in the past. We have not yet effectively addressed all of our problems and these circumstances hurt our employees, hurt our customers, and also have led to financial underperformance.

CHARLES W. SCHARF

CEO
Wells Fargo & Company

But we have one of the most enviable financial services franchises in the world and employees who want to do what's necessary to again be one of the most respected and successful banks in the U.S. The opportunity to do so is in our reach. I will discuss the actions we are taking, but first let me cover our 2019 financial and business performance.

FINANCIAL PERFORMANCE

Our financial results in 2019 reflected the ongoing impact of our historical shortcomings. Even after adjusting for these items, our results were not as strong as we aspire them to be. These items primarily relate to litigation, customer remediation related to previously disclosed retail sales practices matters, as well as other regulatory matters. Our results also included business divestitures and loan sales. They are all detailed in our financial disclosures.

Wells Fargo generated $19.5 billion in net income in 2019, or $4.05 per diluted common share. Our revenue declined $1.3 billion, or 2%, from a year ago as 4% growth in noninterest income was more than offset by a 6% decline in net interest income, driven by lower interest rates. Our noninterest expense increased $2.1 billion, or 4%, from a year ago. Expenses included $4.3 billion of operating losses ($1.2 billion higher than 2018), primarily for litigation and remediation, as well as $739 million of deferred compensation expense, which is P&L neutral, as this expense is offset by deferred compensation investment gains.

We continued to serve our customers and grew both loans and deposits in 2019. Loans increased $9.2 billion, or 1%, from a year ago, with growth in both commercial and consumer loans. Deposits grew $36.5 billion, or 3%, from a year ago.

At the same time, credit quality continued to be strong. Our net charge-off rate remained near historic lows at 0.29% of average loans in 2019, and nonaccrual loans as a percentage of total loans declined to 0.56%, the lowest level in over 10 years.

In 2019, we returned a record $30.2 billion to shareholders through common stock dividends and net share repurchases, reducing our common shares outstanding by 10% while maintaining a level of Common Equity Tier 1 that is well in excess of our regulatory requirements. This was the seventh consecutive year we have reduced our common share count, which is down 21% since 2012. In July 2019, we increased our quarterly common stock dividend to 51 cents per share, a 13% increase.

BUSINESS HIGHLIGHTS

The strength of our franchise remains evident. We serve one in three U.S.

households, we have strong distribution across both physical and digital channels, and we remain one of the largest lenders in the U.S. across a large and diversified client base. Despite our recent challenges, these strengths endure and you can see that if you look at the growth of some of our underlying business drivers. To be clear, we can do better, but I'll touch on some key highlights across our businesses over the past year.

In Community Banking, primary consumer checking customers increased 2% year-over-year, our ninth consecutive quarter of year-over-year growth. Our customers spent $448 billion across our debit and credit cards, an increase of 6%. We continued to invest across our various channels and delivered differentiated experiences to meet our customer needs. We ended the year with over 30 million digital active customers, a 4% increase, and mobile active customers of 24.4 million were 7% higher. Our card customers can now complete transactions more seamlessly, as we have begun rolling out new tap-to-pay contactless cards. This functionality is available at millions of merchants, in addition to our own more than 13,000 ATMs across the nation. We're making steady progress and the hard work of our teams is reflected in what we are hearing from customers, as our branch survey scores for both customer loyalty (64.2%, up from 60.2%) and overall satisfaction with most recent visit (79.9%, up from 78.7%) increased year-over-year.

On the Consumer Lending side, origination momentum accelerated across our Home Lending and Auto platforms. Our Auto portfolio returned to growth in 2019 after a multiyear transformation. In addition, we continued to invest to improve the customer experience and enhance our own operational capabilities in both these areas. As evidence, in 2019, for the first time, we had a month when more than half of all mortgage applications came to us through our online mortgage app. The online mortgage app is fully digital and shortens the time from origination to customer approval by approximately 30%.

And in Auto, our automated decisioning went from 40% at the end of 2018 to 57% today, which allows us to be responsive to dealers for whom speed is a top priority and also drive consistency that supports our focus on risk management.

Our wholesale businesses, including Commercial Banking and Corporate and Investment Banking, saw loan growth of 1% as we selectively expanded the portfolio. In Commercial Banking, we accelerated our efforts to deliver a more consistent customer experience by segmenting customers to the most appropriate coverage channel, virtual or market-based. Additionally, we developed a revamped customer onboarding platform and have begun rolling it out to customers. Over 12,000 accounts have been opened to date on the platform and the early results so far have been impressive, reducing the customer onboarding cycle time by two-thirds. These changes are critical to our ongoing efforts to not only serve our customers better, but also reduce risk and improve our operational capabilities. It is our intent to leverage these efforts and roll out the common onboarding platform to our other wholesale businesses.

The Corporate and Investment Bank performed well in 2019. We grew our overall U.S. investment banking fee market share by 50 basis points to 3.7% driven by strong growth in high-grade debt capital markets and in loan syndications. Overall, we raised $115 billion of debt capital for our clients. And our Markets businesses performed well, with strong performance across the FICC franchise, up 15%, including particularly strong results in our Credit, Rates, and Commodities businesses.

In Wealth and Investment Management, we continued to simplify our go-to-market and operating model. We brought together our private wealth management businesses and centralized previously siloed key supporting capabilities like Lending, Banking, and Operations across the platform. We also divested the Institutional

Retirement and Trust business. These changes are designed to simplify and focus our businesses to better serve the needs of our changing client base.

In addition, we had solid investment performance — on average, Wells Fargo Investment Institute's actively managed portfolios outperformed relevant Morningstar benchmarks by over 150 basis points. Client assets of $1.9 trillion increased 10% and we saw further momentum resulting from our Community Bank and Wealth and Investment Management partnership as closed referred investment assets grew 18% year-over-year in the fourth quarter.

Again, while we need to improve our overall financial results, positive momentum across many of our underlying business drivers speaks to the strength of the franchise and the substantial opportunities we have to improve financial performance in the future.

THE PATH TO SUCCESS

DOING THE WORK NECESSARY TO BUILD A STRONG FOUNDATION

To fully capture the opportunity to once again be one of the most respected and successful banks in the country, we must have a strong foundation and move with an extreme sense of urgency to fix what was wrong with the bank. We still have much more work to do to put these issues behind us, and our future depends on doing this successfully so we can regain trust with all stakeholders. This includes our clients, employees, regulators, lawmakers, shareholders, as well as the broader American population. Ultimately, we know our actions will dictate when that trust is completely regained, not our words. Given their importance, I've been spending the majority of my time on addressing these issues since joining the company.

ASSESSMENT – In an organization like Wells Fargo, providing an honest assessment and clear priorities to the entire organization is critical. I've given a clear message that we have not yet met our own expectations or the expectations of others. We must do what's necessary to put these issues behind us. Our ability to maximize the value of this great franchise is dependent on us running the company with the highest standards of operational excellence and integrity — beyond what we've done to date.

REGULATORS – I am often asked about our regulatory relationships so let me provide my perspective. My experience is that our regulators are clear, direct, tough, but fair. We are appropriately a highly regulated institution, and while we need to fulfill regulatory expectations, we recognize that what we want and what regulators want are not different. We are responsible for our actions and they are responsible for ensuring our actions are consistent with a clearly defined set of standards. It's our job to run the company such that we fulfill their expectations and those of the American public and other countries where we operate. Our job is to do the work that's necessary. Regulators and other stakeholders will determine when it's done to their satisfaction.

WHAT WE ARE DOING – Like any other problem, recognition of the importance and severity is a necessary first step — but this by itself is inadequate. We will take whatever actions are necessary. The management team will be judged and held accountable for resolving these issues.

We are making significant changes to our management, structure, processes, and culture to accomplish our work — changes that will make us more effective.

THE TEAM – First, I want to acknowledge that we have so many wonderful people at Wells Fargo who have done an amazing job serving our clients and customers in the face of adversity for several years now. They have been through so much and have helped us sustain such a great franchise — so I do want to say thank you to them for all that they've done. The warmth and support I've been greeted with as I've discussed our past issues and work in front of us tells a great deal about the character of many at the company. They understand our lack of progress makes their jobs far more difficult — and they are looking to management to do more to move the company forward.

To set us up for success, we will ensure we have the right people in place to both resolve these issues and be the stewards of this great company as we move forward. To that end, we have made some important changes to the senior management team to complement the talent that's here at Wells Fargo.

Scott Powell joined us as COO. When I arrived at the company, many on the senior management team made clear to me that we needed stronger execution skills. After several weeks at the company, I came to quickly agree. Scott will lead a transformation across the company where high-quality execution, clear accountability, and operational excellence become part of our culture.

Mike Weinbach will join us as CEO of Consumer Lending and will have responsibility for Home Lending, Auto, Credit Cards & Merchant Services, and Personal Lines & Loans, including Student Lending. We are one of the largest providers of consumer credit in the country and want to continue serving that important role for our customers and the U.S. economy. Mike has the right experience, skills, and knowledge to lead these franchises going forward.

Bill Daley joined as head of Public Affairs. He has a strong and experienced voice and brings perspectives from the public sector that we in business do not generally have but are critical for us as we make decisions.

Allen Parker, who served both as General Counsel and Interim CEO, has announced that he will be leaving the company in March. As I write this, we are engaged in a General Counsel search and have seen some terrific candidates.

Avid Modjtabai has announced that she will be retiring in March after 26 years at Wells Fargo. I will discuss below how we are restructuring Avid's responsibilities.

Ray Fischer has also joined us to run our Credit Cards & Merchant Services businesses, which will be part of Consumer Lending (more details below). Our card business is important to our franchise and we have an opportunity to make it even more significant. Ray is an experienced card and merchant services executive who brings deep knowledge and a fresh perspective to our business.

Saul Van Beurden joined us as our new head of Technology earlier in 2019. Saul has great experience as a technology leader in financial services and his impact will certainly be a key element of the company's control, customer experience, business and risk management transformation, and growth agenda.

Julie Scammahorn also joined us as our Chief Auditor earlier in 2019. Julie will play a critical role and hold us to the highest standards as we build effective execution into all we do.

These changes are all critical to our future, and I will continue to look at the structure and roles of our team to ensure we are best positioned for success. We need and will have the best talent and strong leadership at the company.

ORGANIZATION STRUCTURE – We have made several changes which I believe enable us to be more effective in pursuing our goals. First, we reorganized the company into five lines of business and announced several new business leaders to help further drive operating, control, and business performance.

> *Consumer and Small Business Banking – Mary Mack, who most recently led Consumer Banking, is now CEO of Consumer and Small Business Banking, responsible for Branch Banking and Small Business, which includes the company's 5,400 branches and delivers a full range of deposit, lending, investment, and payment products. Mary will now have additional responsibilities for Deposits and a newly established Digital team focused on acquiring and servicing new customers through digital channels.*
>
> *Consumer Lending – as mentioned earlier, Mike Weinbach will join us in a couple of months as CEO of Consumer Lending, elevating a core competency of the company that provides critical capabilities to fulfill the financial needs of customers. Mike will be responsible for Home Lending, Auto, Credit Cards & Merchant Services, and Personal Lines & Loans, including Student Lending.*
>
> *Commercial Banking – Perry Pelos is CEO of Commercial Banking, with both relationship and product responsibilities in serving businesses with annual sales generally in excess of $5 million. Perry is now responsible for Middle Market Banking, Commercial Capital, and Treasury Management. We're proud of our market position and believe we have great opportunities to expand our franchise by continuing to integrate these products and capabilities.*
>
> *Corporate and Investment Banking – Jon Weiss, who most recently ran our Wealth and Investment Management business, is now CEO of our Corporate and Investment Bank. The creation of a separate business line supporting the capital markets, banking, and investment needs of our corporate, government, and institutional clients is a recognition of the successful franchise we have today and our belief that we continue to have significant opportunities to serve the needs of our corporate and middle market clients more broadly. Commercial Real Estate and our International franchise will be a part of Corporate and Investment Banking.*

Wealth and Investment Management – Our Wealth and Investment Management business provides a full range of personalized wealth management, investment, asset management, and retirement products and services to clients. We restructured the businesses and management over the past couple of years and are conducting a search to replace Jon as the leader of this business.

This new organizational structure is flatter and provides important businesses more direct representation on our Operating Committee. It provides the necessary clarity and accountability and sets us up to build our businesses over the long term and increases our ability to successfully execute on our top priority, which is the risk, regulatory, and control work.

CHANGES TO HOW WE RUN THE COMPANY AND OUR CULTURE – We are also introducing a new set of disciplines in how we run the company which seek to preserve some important pieces of our culture while recognizing where we need to change. These changes are critical for our future and I'm confident will improve our performance.

Parts of our culture are wonderful and would take decades to recreate. People who work here love it. Wells Fargo really is like a second family to many. We focus on teamwork — not on the individual. People want to be successful and do what's right — though we recognize we have fallen short of this goal.

Our lack of progress and under-performance point to shortcomings. Going forward:

We will operate as one company, not a series of decentralized businesses.

We will continue to foster a culture of partnership, but we will move past the need for consensus and have open and direct fact-based discussions where we emerge with decisions.

We will have a different level of management discipline than we've had in the past and will value and expect high-quality execution.

There will be clear responsibility and accountability.

We will judge ourselves based upon our outcomes — not our words.

And we will ultimately judge ourselves versus the best as we believe that we should be the best.

As we've begun to implement this new culture, the response has been overwhelmingly supportive. But I understand it's different and is a significant change for many. We will be respectful of our past and of those who have built this great franchise — which includes so many still at the company today — but we must move forward. I'm confident these changes will be highly impactful. Respect was earned in the past, and we will earn it again.

CORPORATE AND SOCIAL RESPONSIBILITY

As we make the changes to build a stronger foundation for the company, we will continue to recognize and act upon the broader role we play in our communities. Notably, we became a proud signatory of the Statement on the Purpose of a Corporation that was issued by the Business Roundtable in August of this past year. It's simple and straightforward, and it's a clear statement that businesses are responsible to a broad set of constituents and have responsibilities beyond what some companies have believed historically. Given the businesses we're in and the reach we have, I believe our responsibilities and potential for impact are particularly great.

Like many companies, we are taking an active role in addressing important social and environmental challenges, and we are constantly asking ourselves: How can we improve these efforts to drive even more positive impact? We believe the answer is to invest in innovative solutions fueled by a range of resources and expertise from across our entire company. We see our philanthropy, which totaled $455 million in 2019, as only the beginning — a way to seed investments that our core business capabilities, people, and built-in scale can then power for even greater impact.

For example, we believe we have a responsibility to do our part to support the transition to a low-carbon economy and to work with our customers and communities to address the risks of climate change. Our $200 billion sustainable finance commitment, announced in 2018, is central to our efforts in supporting sustainable business opportunities, including providing needed capital to renewable energy companies and empowering clean technology entrepreneurs. We continued to make strong progress in 2019 and we have now provided approximately $49 billion in sustainable financing toward our commitment of $200 billion by 2030.

We are also one of the largest sources of capital for affordable housing development in the country. In 2019, Wells Fargo provided more than $4 billion of capital to support the development of more than 15,000 affordable housing units in communities in over 30 states. Building on this expertise, the Wells Fargo Foundation announced a $1 billion philanthropy commitment over six years to catalyze new ways to address the growing housing affordability crisis in the U.S., where more than 18 million households are spending 50% of their income on housing. We're working with a range of grantees to test and scale innovations that increase the number of affordable rental units, expand homeownership opportunities, and develop solutions to persistent homelessness in cities.

Our employees also care deeply about the communities we serve, and we have introduced new ways to turn that caring into opportunities to take action. In 2019, more than 100,000 of our people provided 1.9 million hours of volunteer service through efforts such as our new Dedicated Day of Service in which more than 900 Wells Fargo volunteer events were held on a single day this past September.

These are just a few examples of our ongoing commitment to the people and communities in which we do business. Our goal is to combine our giving, our expertise, and our ingenuity in order to move the needle on social and environmental issues that impact us all.

DIVERSITY AND INCLUSION

Diversity and inclusion are absolutely integral parts of our business. We serve a diverse group of clients and communities, and it's essential that our people reflect that diversity. Our goal is nothing less than ensuring that people across our workforce, communities, and supply chain feel valued and respected and have equal access to resources and opportunities to succeed.

And this isn't just cheap talk — while it's the right thing to do, it is my firm belief that bringing together people of different backgrounds, experiences, and identities leads to significantly better outcomes.

We're very focused on this across the company. I will be personally chairing our Enterprise Diversity & Inclusion Council. This group, composed of leaders from across the organization, meets monthly and is charged with driving the education and change necessary for making meaningful progress against our objectives. We are setting clear, specific, and measurable goals and will be holding people accountable to advancing our diversity and inclusion efforts at all levels.

To further support our efforts, we have ten different Team Member Networks (TMNs) formed around historically under-represented segments. Our TMNs bring together people of common interests, backgrounds, experiences, or identities, and provide forums to support career and professional development of their members, engage and volunteer in our communities together, and serve as additional mechanisms for embedding inclusive practices into our day-to-day operations. We have approximately 74,000 active participants across these networks.

We've made progress on a number of fronts but we also know we have much work to do. It won't be a straight line, but we're focused on it and will be holding ourselves accountable for advancing these goals over a period of time.

MEDIUM AND LONGER TERM OPPORTUNITIES

Our franchises are world class and are in the sweet spot of providing necessary financial services for consumers, small businesses, and middle market and large corporate companies. And importantly, we play a significant role in helping our customers and clients prosper as well as being an important enabler for U.S. economic growth. While I have spoken at length of our problems and our commitment to fix them, the underlying franchise itself remains strong, and our opportunities are greater than ever. The success of our business model is proven, assuming we run the company with the appropriate controls and work as one company with the goal of delivering for all our stakeholders.

All of our business segments have the breadth and scale that give us significant competitive advantage and allow us to deliver truly differentiated products and experiences for our customers and clients. Our opportunity to use technology to drive both automation and new solutions will continue to grow.

Our franchises, both individually and collectively, are the envy of many. So while our resources and attention today are appropriately focused on historical issues, as we move forward, we will be in a position to leverage our unique franchise and focus on generating stronger financial results.

And just to be clear, we are well aware that our expense levels are significantly too high. Part of this is driven by significant expense related to resolving historical issues, part is due to the necessary investments in technology, and part is due to significant inefficiencies that exist across the organization. But there is no reason why we shouldn't have best-in-class efficiency with these businesses at this scale — and that ultimately will be our goal.

And, though we've had pockets of strong performance, we are also well aware that our rate of customer and revenue growth is too low. Given what we've been through, this isn't surprising. We have been operating under an asset cap as part of the Federal Reserve consent order from February 2018 and there is certainly an opportunity cost to doing so. Management time and resources have not been as focused on growth as they otherwise would have been. But we have an opportunity to think differently, with a different level of rigor about how to grow the franchise. All of this points to great opportunity.

We have begun a process to rethink our plans for 2020 and beyond at a very detailed level. While the opportunities for improvement are clear at a macro level, we need business-by-business plans. Accordingly, we have begun conducting business reviews where we are looking at our businesses and plans in detail. We are reviewing all businesses as well as all of our enterprise functions.

This isn't merely a review of the numbers, but one where we use the facts to form a basis to discuss strategy and potential actions. We are asking each business leader to show us what best-in-class efficiency looks like — and what our path to achieve it is. We are reviewing revenue growth and return performance as well — and what a path to best-in-class looks like. We are discussing our competitors — large and small — and we are thinking through our unique options given our special franchise. These are analytical and strategic discussions that I don't think have occurred consistently across the company in some time given what has occurred.

The output of this work is designed to provide us roadmaps to not only improve our performance within each business but to also position us to understand our opportunities across the company and prioritize accordingly.

It's still very early in our process — but I will say that every session thus far has reinforced that our opportunities are meaningful. To do this properly, and given our priorities, it will take time — much of this year — to complete our work. But in the interim, we will devote all necessary resources to risk and control, and spend what's necessary. We will be as diligent as ever to drive efficiencies and control expenses, and we will begin to work through the business opportunities we have in front of us.

CLOSING THOUGHTS

In closing, I want to repeat my thanks to the wonderful people at Wells Fargo who have worked tirelessly to sustain this great company. We are lucky that you have persevered through the tough times, and I and the members of our Operating Committee will do all we can to help guide us through the necessary changes we need to make.

I'm confident in our ability to realize our potential — one that again puts us at the top of the respected financial institutions list, with a far more efficient organization and higher revenue growth than you see today. While there is much to do, and I know the path to success will be bumpy, I'm optimistic about our future and excited to be at a place with so many great people, and such strong franchises, doing incredibly important work.

CHARLES W. SCHARF

CEO
Wells Fargo & Company

Our Performance

$ in millions, except per share amounts	2019	2018	% CHANGE
FOR THE YEAR			
Wells Fargo net income	$ 19,549	22,393	(13)
Wells Fargo net income applicable to common stock	17,938	20,689	(13)
Diluted earnings per common share	4.05	4.28	(5)
Profitability ratios:			
Wells Fargo net income to average assets (ROA)	1.02 %	1.19	(14)
Wells Fargo net income applicable to common stock to average Wells Fargo common stockholders' equity (ROE)	10.23	11.53	(11)
Return on average tangible common equity (ROTCE)[1]	12.20	13.73	(11)
Efficiency ratio[2]	68.4	65.0	5
Total revenue	$ 85,063	86,408	(2)
Pre-tax pre-provision profit[3]	26,885	30,282	(11)
Dividends declared per common share	1.92	1.64	17
Average common shares outstanding	4,393.1	4,799.7	(8)
Diluted average common shares outstanding	4,425.4	4,838.4	(9)
Average loans	$ 950,956	945,197	1
Average assets	1,913,444	1,888,892	1
Average total deposits	1,286,261	1,275,857	1
Average consumer and small business banking deposits[4]	749,967	747,183	–
Net interest margin	2.73 %	2.91	(6)
AT YEAR-END			
Debt securities	$ 497,125	484,689	3
Loans	962,265	953,110	1
Allowance for loan losses	9,551	9,775	(2)
Goodwill	26,390	26,418	–
Equity securities	68,241	55,148	24
Assets	1,927,555	1,895,883	2
Deposits	1,322,626	1,286,170	3
Common stockholders' equity	166,669	174,359	(4)
Wells Fargo stockholders' equity	187,146	196,166	(5)
Total equity	187,984	197,066	(5)
Tangible common equity[1]	138,506	145,980	(5)
Capital ratios[5]:			
Total equity to assets	9.75 %	10.39	(6)
Risk-based capital[6]:			
Common Equity Tier 1	11.14	11.74	(5)
Tier 1 capital	12.76	13.46	(5)
Total capital	15.31	16.60	(8)
Tier 1 leverage	8.31	9.07	(8)
Common shares outstanding	4,134.4	4,581.3	(10)
Book value per common share[7]	$ 40.31	38.06	6
Tangible book value per common share[1, 7]	33.50	31.86	5
Team members (active, full-time equivalent)	259,800	258,700	–

1 Tangible common equity is a non-GAAP financial measure and represents total equity less preferred equity, noncontrolling interests, goodwill, certain identifiable intangible assets (other than mortgage servicing rights) and goodwill and other intangibles on nonmarketable equity securities, net of applicable deferred taxes. The methodology of determining tangible common equity may differ among companies. Management believes that return on average tangible common equity and tangible book value per common share, which utilize tangible common equity, are useful financial measures because they enable investors and others to assess the Company's use of equity. For additional information, including a corresponding reconciliation to GAAP financial measures, see the "Financial Review – Capital Management – Tangible Common Equity" section in this Report.

2 The efficiency ratio is noninterest expense divided by total revenue (net interest income and noninterest income).

3 Pre-tax pre-provision profit (PTPP) is total revenue less noninterest expense. Management believes that PTPP is a useful financial measure because it enables investors and others to assess the Company's ability to generate capital to cover credit losses through a credit cycle.

4 Consumer and small business banking deposits are total deposits excluding mortgage escrow and wholesale deposits.

5 See the "Financial Review – Capital Management" section and Note 29 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report for additional information.

6 The risk-based capital ratios were calculated under the lower of the Standardized or Advanced Approach determined pursuant to Basel III. Beginning January 1, 2018, the requirements for calculating common equity tier 1 and tier 1 capital, along with risk-weighted assets, became fully phased-in. Accordingly, the information presented reflects fully phased-in common equity tier 1 capital, tier 1 capital and risk-weighted assets for the years ended December 31, 2019 and 2018, but reflects all other ratios still in accordance with Transition Requirements. See the "Financial Review – Capital Management" section and Note 29 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report for additional information.

7 Book value per common share is common stockholders' equity divided by common shares outstanding. Tangible book value per common share is tangible common equity divided by common shares outstanding.

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STANDING COMMITTEES

1. Audit 2. Corporate Responsibilty 3. Credit 4. Finance
5. Governance and Nominating 6. Human Resources 7. Risk | As of February 15, 2020

Corporate Responsibility: 2019 Environmental, Social, and Governance Highlights

Wells Fargo believes in creating a thriving global economy that benefits all stakeholders. By combining our resources and expertise with scale of operations, the company can effect positive societal change and inclusive economic growth. Below are examples of progress made on that journey.

Building a better tomorrow starts with acknowledging the work still to be done. Wells Fargo is committed to continuing to do its part to build a stronger and more resilient company, workforce, global community, and environment.

COMMITTED
$1B

in philanthropic capital through 2025 to address the U.S. housing affordability crisis — from homelessness and transitional housing to rentals and homeownership

HELPED
435K

minority households purchase a home since 2016 through our commitment to increase homeownership among all minority communities

PROVIDED
APPROXIMATELY
$49B

in financing to sustainable businesses and projects since 2018 — with 67% toward low-carbon opportunities. Achieved 24% of our goal to invest $200 billion by 2030 to accelerate the transition to a low-carbon economy

ENABLED

9.2M

customers to better manage their credit by providing free access to their FICO® Score

ASSISTED

23K

aspiring homeowners through LIFT programs to become homeowners through education and down payment assistance grants since 2012

INTEND TO MEET

100%

of our global electricity needs with renewable energy* and entered our largest long-term renewable energy purchase to date, supporting a new utility scale solar asset that is scheduled to begin delivering solar energy to the grid in 2021

*Renewable energy sources include on-site solar, long-term contracts that fund net new sources of off-site renewable energy, and the purchase of renewable energy and renewable energy certificates (RECs).

INVESTED

$455M

in grants in 2019 to unlock economic opportunity for people and communities across the U.S. and internationally

HELPED

2M+

customers avoid overdraft charges with Overdraft Rewind®

PROVIDED

$1.15M

in project financing for new wind, solar, and fuel cell projects providing ***2.6K+ megawatts*** of renewable energy capacity

ACHIEVED A

100%

perfect score for the 16th year on the Corporate Equality Index (Human Rights Campaign)

All data is for January 1, 2019 – December 31, 2019, unless otherwise noted.

"I'm confident in our ability to realize our potential — one that again puts us at the top of the respected financial institutions list, with a far more efficient organization and higher revenue growth than you see today."

CHARLES W. SCHARF

WELLS FARGO & COMPANY 2019 FINANCIAL REPORT

This Annual Report, including the Financial Review and the Financial Statements and related Notes, contains forward-looking statements, which may include forecasts of our financial results and condition, expectations for our operations and business, and our assumptions for those forecasts and expectations. Do not unduly rely on forward-looking statements. Actual results may differ materially from our forward-looking statements due to several factors. Factors that could cause our actual results to differ materially from our forward-looking statements are described in this Report, including in the "Forward-Looking Statements" and "Risk Factors" sections, and in the "Regulation and Supervision" section of our Annual Report on Form 10-K for the year ended December 31, 2019 (2019 Form 10-K).

When we refer to "Wells Fargo," "the Company," "we," "our," or "us" in this Report, we mean Wells Fargo & Company and Subsidiaries (consolidated). When we refer to the "Parent," we mean Wells Fargo & Company. See the Glossary of Acronyms for definitions of terms used throughout this Report.

Financial Review

Overview

Wells Fargo & Company is a diversified, community-based financial services company with $1.9 trillion in assets. Founded in 1852 and headquartered in San Francisco, we provide banking, investment and mortgage products and services, as well as consumer and commercial finance, through 7,400 locations, more than 13,000 ATMs, digital (online, mobile and social), and contact centers (phone, email and correspondence), and we have offices in 32 countries and territories to support customers who conduct business in the global economy. With approximately 260,000 active, full-time equivalent team members, we serve one in three households in the United States and ranked No. 29 on *Fortune's* 2019 rankings of America's largest corporations. We ranked fourth in assets and third in the market value of our common stock among all U.S. banks at December 31, 2019.

On February 11, 2020, we announced a new organizational structure with five principal lines of business: Consumer and Small Business Banking; Consumer Lending; Commercial Banking; Corporate and Investment Banking; and Wealth and Investment Management.

Wells Fargo's top priority remains meeting its regulatory requirements in order to build the right foundation for all that lies ahead. To do that, the Company is committing the resources necessary to ensure that we operate with the strongest business practices and controls, maintain the highest level of integrity, and have in place the appropriate culture.

Federal Reserve Board Consent Order Regarding Governance Oversight and Compliance and Operational Risk Management

On February 2, 2018, the Company entered into a consent order with the Board of Governors of the Federal Reserve System (FRB). As required by the consent order, the Company's Board of Directors (Board) submitted to the FRB a plan to further enhance the Board's governance and oversight of the Company, and the Company submitted to the FRB a plan to further improve the Company's compliance and operational risk management program. The Company continues to engage with the FRB as the Company works to address the consent order provisions. The consent order also requires the Company, following the FRB's acceptance and approval of the plans and the Company's adoption and implementation of the plans, to complete an initial third-party review of the enhancements and improvements provided for in the plans. Until this third-party review is complete and the plans are approved and implemented to the satisfaction of the FRB, the Company's total consolidated assets will be limited to the level as of December 31, 2017. Compliance with this asset cap will be measured on a two-quarter daily average basis to allow for management of temporary fluctuations. As of the end of fourth quarter 2019, our total consolidated assets, as calculated pursuant to the requirements of the consent order, were below our level of total assets as of December 31, 2017. Additionally, after removal of the asset cap, a second third-party review must also be conducted to assess the efficacy and sustainability of the enhancements and improvements.

Consent Orders with the Consumer Financial Protection Bureau and Office of the Comptroller of the Currency Regarding Compliance Risk Management Program, Automobile Collateral Protection Insurance Policies, and Mortgage Interest Rate Lock Extensions

On April 20, 2018, the Company entered into consent orders with the Consumer Financial Protection Bureau (CFPB) and the Office of the Comptroller of the Currency (OCC) to pay an aggregate of $1 billion in civil money penalties to resolve matters regarding the Company's compliance risk management program and past practices involving certain automobile collateral protection insurance policies and certain mortgage interest rate lock extensions. As required by the consent orders, the Company submitted to the CFPB and OCC an enterprise-wide compliance risk management plan and a plan to enhance the Company's internal audit program with respect to federal consumer financial law and the terms of the consent orders. In addition, as required by the consent orders, the Company submitted for non-objection plans to remediate customers affected by the automobile collateral protection insurance and mortgage interest rate lock matters, as well as a plan for the management of remediation activities conducted by the Company.

Retail Sales Practices Matters

In September 2016, we announced settlements with the CFPB, the OCC, and the Office of the Los Angeles City Attorney, and entered into related consent orders with the CFPB and the OCC, in connection with allegations that some of our retail customers received products and services they did not request. As a result, it remains a top priority to rebuild trust through a comprehensive action plan that includes making things right for our customers, team members, and other stakeholders, and building a better Company for the future. Our priority of rebuilding trust has included numerous actions focused on identifying potential financial harm to customers resulting from these matters and providing remediation.

For additional information regarding retail sales practices matters, including related legal matters, see the "Risk Factors" section and Note 17 (Legal Actions) to Financial Statements in this Report.

Other Customer Remediation Activities

Our priority of rebuilding trust has also included an effort to identify other areas or instances where customers may have experienced financial harm, provide remediation as appropriate, and implement additional operational and control procedures. We are working with our regulatory agencies in this effort. We have previously disclosed key areas of focus as part of our rebuilding trust efforts and are in the process of providing remediation for those matters. We have accrued for the reasonably estimable remediation costs related to our rebuilding trust efforts, which amounts may change based on additional facts and information, as well as ongoing reviews and communications with our regulators.

As our ongoing reviews continue, it is possible that in the future we may identify additional items or areas of potential concern. To the extent issues are identified, we will continue to assess any customer harm and provide remediation as appropriate. For more information, including related legal and regulatory risk, see the "Risk Factors" section and Note 17 (Legal Actions) to Financial Statements in this Report.

Financial Performance

In 2019, we generated $19.5 billion of net income and diluted earnings per common share (EPS) of $4.05, compared with $22.4 billion of net income and EPS of $4.28 for 2018. Financial performance items for 2019 (compared with 2018) included:

- revenue of $85.1 billion, down from $86.4 billion, with net interest income of $47.2 billion, down $2.8 billion, or 6%, and noninterest income of $37.8 billion, up $1.4 billion, or 4%;
- the net interest margin was 2.73%, down 18 basis points;
- noninterest expense of $58.2 billion, up $2.1 billion, or 4%;
- an efficiency ratio of 68.4%, compared with 65.0%;
- average loans of $951.0 billion, up $5.8 billion;
- average deposits of $1.3 trillion, up $10.4 billion;
- our credit results remained strong with a net charge-off rate of 0.29%, flat compared with a year ago;
- nonaccrual loans of $5.3 billion, down $1.2 billion, or 18%;
- $30.2 billion in capital returned to our shareholders through common stock dividends and net share repurchases, up 17% from $25.8 billion a year ago; and
- return on assets (ROA) of 1.02% and return on equity (ROE) of 10.23%, down from 1.19% and 11.53%, respectively.

Table 1 presents a six-year summary of selected financial data and Table 2 presents selected ratios and per common share data.

Balance Sheet and Liquidity

Our balance sheet remained strong during 2019 with strong credit quality and solid levels of liquidity and capital. Our total assets were $1.9 trillion at December 31, 2019. Cash and other short-term investments decreased $10.1 billion from December 31, 2018, reflecting lower cash balances, partially offset by an increase in federal funds sold and securities purchased under resale agreements. Debt securities increased $12.4 billion from December 31, 2018, predominantly due to increases in trading and held-to-maturity debt securities. Loans increased $9.2 billion from December 31, 2018, driven by increases in commercial and industrial loans, commercial real estate mortgage loans, real estate 1-4 family first mortgage loans, automobile loans, credit card loans, and lease financing, partially offset by decreases in commercial real estate construction loans, real estate 1-4 family junior lien mortgage loans, and other revolving credit and installment loans.

Average deposits in 2019 were $1.3 trillion, up $10.4 billion from 2018, reflecting higher other time deposits, mortgage escrow deposits and commercial deposits. Our average deposit cost in 2019 was 67 basis points, up 23 basis points from a year ago, driven by increased retail banking promotional pricing for new deposits and a continued deposit mix shift to higher cost products.

Credit Quality

Credit quality remained solid in 2019, as losses remained low and we continued to originate high-quality loans, reflecting our long-term risk focus. Net charge-offs were $2.8 billion, or 0.29% of average loans, in 2019, flat compared with 2018.

Our commercial portfolio net charge-offs were $652 million, or 13 basis points of average commercial loans, in 2019, compared with $429 million, or 9 basis points, in 2018, predominantly driven by increased losses in our commercial and industrial loan portfolio. Our consumer portfolio net charge-offs were $2.1 billion, or 48 basis points of average consumer loans, in 2019, compared with $2.3 billion, or 52 basis points, in 2018, predominantly driven by decreased losses in our automobile portfolio, partially offset by increased losses in our credit card portfolio.

The allowance for credit losses of $10.5 billion at December 31, 2019, decreased $251 million from the prior year. The allowance coverage for total loans was 1.09% at December 31, 2019, compared with 1.12% at December 31, 2018. The allowance covered 3.8 times net charge-offs in 2019, compared with 3.9 in 2018. Future amounts of the allowance for credit losses will be based on a variety of factors, including loan growth, portfolio performance and general economic conditions. Our provision for credit losses in 2019 was $2.7 billion, compared with $1.7 billion in 2018. The provision for credit losses in both 2019 and 2018 reflected continuing solid underlying credit performance. The provision for credit losses in 2018 also reflected a higher level of credit quality improvement compared with 2019, as well as an improvement in the outlook associated with 2017 hurricane-related losses.

Nonperforming assets (NPAs) at December 31, 2019, were $5.6 billion, down $1.3 billion from December 31, 2018. Nonaccrual loans decreased $1.2 billion from December 31, 2018, driven by improvement across all consumer loan categories, including a decrease in consumer nonaccruals from sales of residential real estate mortgage loans as well as the reclassification of real estate 1-4 family mortgage nonaccrual loans to mortgage loans held for sale (MLHFS) in 2019. Foreclosed assets were down $148 million from December 31, 2018.

Capital

Our financial performance in 2019 allowed us to maintain a solid capital position with total equity of $188.0 billion at December 31, 2019, compared with $197.1 billion at December 31, 2018. We returned $30.2 billion to shareholders in 2019 ($25.8 billion in 2018) through common stock dividends and net share repurchases, and our net payout ratio (which is the ratio of (i) common stock dividends and share repurchases less issuances and stock compensation-related items, divided by (ii) net income applicable to common stock) was 168%. During 2019, we increased our quarterly common stock dividend from $0.43 to $0.51 per share. We continued to reduce our common share count through the repurchase of 502.4 million common shares during the year. We expect our share count to continue to decline in 2020 as a result of anticipated net share repurchases.

We believe an important measure of our capital strength is our Common Equity Tier 1 (CET1) ratio, which was 11.14% as of December 31, 2019, down from 11.74% a year ago, but still well above our internal target of 10%. Likewise, our other regulatory capital ratios remained strong. As of December 31, 2019, our eligible external total loss absorbing capacity (TLAC) as a percentage of total risk-weighted assets was 23.28%, compared with the required minimum of 22.0%. See the "Capital Management" section in this Report for more information regarding our capital, including the calculation of our regulatory capital amounts.

Table 1: Six-Year Summary of Selected Financial Data

(in millions, except per share amounts)		2019	2018	2017	2016	2015	2014	% Change 2019/ 2018	Five-year compound growth rate
Income statement									
Net interest income	$	**47,231**	49,995	49,557	47,754	45,301	43,527	**(6)%**	**2**
Noninterest income		**37,832**	36,413	38,832	40,513	40,756	40,820	**4**	**(2)**
Revenue		**85,063**	86,408	88,389	88,267	86,057	84,347	**(2)**	**—**
Provision for credit losses		**2,687**	1,744	2,528	3,770	2,442	1,395	**54**	**14**
Noninterest expense		**58,178**	56,126	58,484	52,377	49,974	49,037	**4**	**3**
Net income before noncontrolling interests		**20,041**	22,876	22,460	22,045	23,276	23,608	**(12)**	**(3)**
Less: Net income from noncontrolling interests		**492**	483	277	107	382	551	**2**	**(2)**
Wells Fargo net income		**19,549**	22,393	22,183	21,938	22,894	23,057	**(13)**	**(3)**
Earnings per common share		**4.08**	4.31	4.14	4.03	4.18	4.17	**(5)**	**—**
Diluted earnings per common share		**4.05**	4.28	4.10	3.99	4.12	4.10	**(5)**	**—**
Dividends declared per common share		**1.920**	1.640	1.540	1.515	1.475	1.350	**17**	**7**
Balance sheet (at year end)									
Federal funds sold and securities purchased under resale agreements	$	**102,140**	80,207	80,025	65,725	49,721	39,210	**27 %**	**21**
Debt securities		**497,125**	484,689	473,366	459,038	394,744	350,661	**3**	**7**
Loans		**962,265**	953,110	956,770	967,604	916,559	862,551	**1**	**2**
Allowance for loan losses		**9,551**	9,775	11,004	11,419	11,545	12,319	**(2)**	**(5)**
Goodwill		**26,390**	26,418	26,587	26,693	25,529	25,705	**—**	**1**
Equity securities		**68,241**	55,148	62,497	49,110	40,266	44,005	**24**	**9**
Assets		**1,927,555**	1,895,883	1,951,757	1,930,115	1,787,632	1,687,155	**2**	**3**
Deposits		**1,322,626**	1,286,170	1,335,991	1,306,079	1,223,312	1,168,310	**3**	**3**
Long-term debt		**228,191**	229,044	225,020	255,077	199,536	183,943	**—**	**4**
Wells Fargo stockholders' equity		**187,146**	196,166	206,936	199,581	192,998	184,394	**(5)**	**—**
Noncontrolling interests		**838**	900	1,143	916	893	868	**(7)**	**(1)**
Total equity		**187,984**	197,066	208,079	200,497	193,891	185,262	**(5)**	**—**

Table 2: Ratios and Per Common Share Data

		Year ended December 31,	
	2019	2018	2017
Profitability ratios			
Wells Fargo net income to average assets (ROA)	**1.02%**	1.19	1.15
Wells Fargo net income applicable to common stock to average Wells Fargo common stockholders' equity (ROE)	**10.23**	11.53	11.35
Return on average tangible common equity (ROTCE) (1)	**12.20**	13.73	13.55
Efficiency ratio (2)	**68.4**	65.0	66.2
Capital ratios (3)			
At year end:			
Wells Fargo common stockholders' equity to assets	**8.65**	9.20	9.38
Total equity to assets	**9.75**	10.39	10.66
Risk-based capital (4):			
Common Equity Tier 1	**11.14**	11.74	12.28
Tier 1 capital	**12.76**	13.46	14.14
Total capital	**15.31**	16.60	17.46
Tier 1 leverage	**8.31**	9.07	9.35
Average balances:			
Average Wells Fargo common stockholders' equity to average assets	**9.16**	9.50	9.37
Average total equity to average assets	**10.33**	10.77	10.64
Per common share data			
Dividend payout (5)	**47.4**	38.3	37.6
Book value (6)	**$ 40.31**	38.06	37.44

(1) Tangible common equity is a non-GAAP financial measure and represents total equity less preferred equity, noncontrolling interests, goodwill, certain identifiable intangible assets (other than mortgage servicing rights) and goodwill and other intangibles on nonmarketable equity securities, net of applicable deferred taxes. The methodology of determining tangible common equity may differ among companies. Management believes that return on average tangible common equity, which utilizes tangible common equity, is a useful financial measure because it enables investors and others to assess the Company's use of equity. For additional information, including a corresponding reconciliation to generally accepted accounting principles (GAAP) financial measures, see the "Capital Management – Tangible Common Equity" section in this Report.

(2) The efficiency ratio is noninterest expense divided by total revenue (net interest income and noninterest income).

(3) See the "Capital Management" section and Note 29 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report for additional information.

(4) The risk-based capital ratios were calculated under the lower of the Standardized or Advanced Approach determined pursuant to Basel III. Beginning January 1, 2018, the requirements for calculating common equity tier 1 and tier 1 capital, along with risk-weighted assets, became fully phased-in. Accordingly, the information presented reflects fully phased-in common equity tier 1 capital, tier 1 capital and risk-weighted assets for the years ended December 31, 2019 and 2018, but reflects all other ratios still in accordance with Transition Requirements. See the "Capital Management" section and Note 29 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report for additional information.

(5) Dividend payout ratio is dividends declared per common share as a percentage of diluted earnings per common share.

(6) Book value per common share is common stockholders' equity divided by common shares outstanding.

Earnings Performance

Wells Fargo net income for 2019 was $19.5 billion ($4.05 diluted EPS), compared with $22.4 billion ($4.28 diluted EPS) for 2018. Net income decreased in 2019, compared with 2018, due to a $2.8 billion decrease in net interest income, a $943 million increase in provision for credit losses, and a $2.1 billion increase in noninterest expense, partially offset by a $1.4 billion increase in noninterest income, and a $1.5 billion decrease in income tax expense. Net income in 2019 included a net discrete income tax expense of $435 million, compared with a net discrete income tax expense of $627 million in 2018.

Revenue, the sum of net interest income and noninterest income, was $85.1 billion in 2019, compared with $86.4 billion in 2018. Revenue decreased $1.3 billion in 2019, compared with 2018, due to a decrease in net interest income, partially offset by an increase in noninterest income. Our diversified sources of revenue generated by our businesses continued to be balanced between net interest income and noninterest income. In 2019, net interest income of $47.2 billion represented 56% of revenue, compared with $50.0 billion (58%) in 2018. See later in this section for discussions of net interest income, noninterest income and noninterest expense.

Table 3 presents the components of net interest income on a tax-equivalent basis, noninterest income and noninterest expense as a percentage of revenue for year-over-year results. Net interest income is presented on a taxable-equivalent basis to consistently reflect income from taxable and tax-exempt loans and debt and equity securities based on a 21% federal statutory tax rate for the periods ended December 31, 2019 and 2018, and 35% for the period ended December 31, 2017.

For a discussion of our 2018 financial results compared with 2017, see the "Earnings Performance" section of our Annual Report on Form 10-K for the year ended December 31, 2018.

Table 3: Net Interest Income, Noninterest Income and Noninterest Expense as a Percentage of Revenue

				Year ended December 31,	
(in millions)	**2019**	**% of revenue**	2018	% of revenue	2017	% of revenue
Interest income (on a taxable-equivalent basis)						
Debt securities	**$ 15,456**	**18%**	$ 14,947	17%	$ 14,084	16%
Mortgage loans held for sale (MLHFS)	**813**	**1**	777	1	786	1
Loans held for sale (LHFS)	**79**	**—**	140	—	50	—
Loans	**44,253**	**52**	44,086	51	41,551	47
Equity securities	**966**	**1**	999	1	821	1
Other interest income	**5,129**	**7**	4,359	6	2,941	3
Total interest income (on a taxable-equivalent basis)	**66,696**	**79**	65,308	76	60,233	68
Interest expense (on a taxable-equivalent basis)						
Deposits	**8,635**	**10**	5,622	7	3,013	3
Short-term borrowings	**2,317**	**3**	1,719	2	761	1
Long-term debt	**7,350**	**9**	6,703	8	5,157	6
Other interest expense	**551**	**—**	610	—	424	1
Total interest expense (on a taxable-equivalent basis)	**18,853**	**22**	14,654	17	9,355	11
Net interest income (on a taxable-equivalent basis)	**47,843**	**57**	50,654	59	50,878	57
Taxable-equivalent adjustment	**(612)**	**(1)**	(659)	(1)	(1,321)	(1)
Net interest income (A)	**47,231**	**56**	49,995	58	49,557	56
Noninterest income						
Service charges on deposit accounts	**4,798**	**6**	4,716	5	5,111	6
Trust and investment fees (1)	**14,072**	**17**	14,509	17	14,495	16
Card fees	**4,016**	**5**	3,907	5	3,960	4
Other fees (1)	**3,084**	**4**	3,384	4	3,557	4
Mortgage banking (1)	**2,715**	**3**	3,017	3	4,350	5
Insurance	**378**	**—**	429	—	1,049	1
Net gains from trading activities	**993**	**1**	602	1	542	1
Net gains on debt securities	**140**	**—**	108	—	479	1
Net gains from equity securities	**2,843**	**3**	1,515	2	1,779	2
Lease income	**1,612**	**2**	1,753	2	1,907	2
Other (1)	**3,181**	**3**	2,473	3	1,603	2
Total noninterest income (B)	**37,832**	**44**	36,413	42	38,832	44
Noninterest expense						
Salaries	**18,382**	**22**	17,834	21	17,363	20
Commission and incentive compensation	**10,828**	**13**	10,264	12	10,442	12
Employee benefits	**5,874**	**7**	4,926	6	5,566	6
Technology and equipment	**2,763**	**3**	2,444	3	2,237	3
Net occupancy	**2,945**	**3**	2,888	3	2,849	3
Core deposit and other intangibles	**108**	**—**	1,058	1	1,152	1
FDIC and other deposit assessments	**526**	**1**	1,110	1	1,287	1
Operating losses	**4,321**	**5**	3,124	4	5,492	6
Outside professional services	**3,198**	**4**	3,306	4	3,813	4
Other (2)	**9,233**	**10**	9,172	10	8,283	10
Total noninterest expense	**58,178**	**68**	56,126	65	58,484	66
Revenue (A) + (B)	**$ 85,063**		$ 86,408		$ 88,389	

(1) See Table 7 – Noninterest Income in this Report for additional detail.
(2) See Table 8 – Noninterest Expense in this Report for additional detail.

Net Interest Income

Net interest income is the interest earned on debt securities, loans (including yield-related loan fees) and other interest-earning assets minus the interest paid on deposits, short-term borrowings and long-term debt. The net interest margin is the average yield on earning assets minus the average interest rate paid for deposits and our other sources of funding.

Net interest income and the net interest margin in any one period can be significantly affected by a variety of factors including the mix and overall size of our earning assets portfolio and the cost of funding those assets. In addition, variable sources of interest income, such as loan fees, periodic dividends, and collection of interest on nonaccrual loans, can fluctuate from period to period.

Net interest income on a taxable-equivalent basis was $47.8 billion in 2019, compared with $50.7 billion in 2018. Net interest margin on a taxable-equivalent basis was 2.73% in 2019, compared with 2.91% in 2018. The decrease in both net interest income and net interest margin in 2019, compared with 2018, was driven by unfavorable impacts of repricing due to a flattening yield curve and mix of earning assets and funding sources, including sales of high yielding Pick-a-Pay loans, as well as higher costs on promotional retail banking deposits.

Table 4 presents the components of earning assets and funding sources as a percentage of earning assets to provide a more meaningful analysis of year-over-year changes that influenced net interest income.

Deposits are an important low-cost source of funding and affect both net interest income and the net interest margin. Deposits include noninterest-bearing deposits, interest-bearing checking, market rate and other savings, savings certificates, other time deposits, and deposits in non-U.S. offices. Average deposits were $1.3 trillion in 2019, flat compared with 2018, and represented 135% of average loans in both 2019 and 2018. Average deposits were 73% of average earning assets in both 2019 and 2018. Our average deposit cost in 2019 was 67 basis points, up 23 basis points from a year ago, driven by increased retail banking promotional pricing for new deposits and a continued deposit mix shift to higher cost products.

Table 5 presents the individual components of net interest income and the net interest margin. Net interest income and the net interest margin are presented on a taxable-equivalent basis in Table 5 to consistently reflect income from taxable and tax-exempt loans and debt and equity securities based on a 21% federal statutory tax rate for the periods ended December 31, 2019 and 2018, and 35% for the period ended December 31, 2017.

Table 4: Average Earning Assets and Funding Sources as a Percentage of Average Earning Assets

	Year ended December 31,					
	2019		2018			
(in millions)	Average balance	% of earning assets	Average balance	% of earning assets	Change from prior year	% Change from prior year
Earning assets						
Interest-earning deposits with banks	$ 135,741	8%	$ 156,366	9%	$ (20,625)	(13)%
Federal funds sold and securities purchased under resale agreements	99,286	6	78,547	5	20,739	26
Debt securities:						
Trading debt securities	93,655	5	83,526	5	10,129	12
Available-for-sale debt securities:						
Securities of U.S. Treasury and federal agencies	15,293	1	6,618	—	8,675	131
Securities of U.S. states and political subdivisions	44,203	3	47,884	3	(3,681)	(8)
Mortgage-backed securities:						
Federal agencies	154,160	9	156,052	9	(1,892)	(1)
Residential and commercial	5,363	—	7,769	—	(2,406)	(31)
Total mortgage-backed securities	159,523	9	163,821	9	(4,298)	(3)
Other debt securities	43,675	2	46,875	3	(3,200)	(7)
Total available-for-sale debt securities	262,694	15	265,198	15	(2,504)	(1)
Held-to-maturity debt securities:						
Securities of U.S. Treasury and federal agencies	44,850	3	44,735	3	115	—
Securities of U.S. states and political subdivisions	8,644	1	6,253	—	2,391	38
Federal agency and mortgage-backed securities	95,559	5	94,216	5	1,343	1
Other debt securities	52	—	361	—	(309)	(86)
Total held-to-maturity debt securities	149,105	9	145,565	8	3,540	2
Total debt securities	505,454	29	494,289	28	11,165	2
Mortgage loans held for sale (1)	19,808	1	18,394	1	1,414	8
Loans held for sale (1)	1,708	—	2,526	—	(818)	(32)
Loans:						
Commercial loans:						
Commercial and industrial – U.S.	284,888	16	275,656	16	9,232	3
Commercial and industrial – Non-U.S.	64,274	4	60,718	4	3,556	6
Real estate mortgage	121,813	7	122,947	7	(1,134)	(1)
Real estate construction	21,183	1	23,609	1	(2,426)	(10)
Lease financing	19,302	1	19,392	1	(90)	—
Total commercial loans	511,460	29	502,322	29	9,138	2
Consumer loans:						
Real estate 1-4 family first mortgage	288,059	16	284,178	16	3,881	1
Real estate 1-4 family junior lien mortgage	31,989	2	36,687	2	(4,698)	(13)
Credit card	38,865	2	36,780	2	2,085	6
Automobile	45,901	3	48,115	3	(2,214)	(5)
Other revolving credit and installment	34,682	2	37,115	2	(2,433)	(7)
Total consumer loans	439,496	25	442,875	25	(3,379)	(1)
Total loans (1)	950,956	54	945,197	54	5,759	1
Equity securities	35,930	2	38,092	2	(2,162)	(6)
Other	5,579	—	5,071	1	508	10
Total earning assets	$ 1,754,462	100%	$ 1,738,482	100%	$ 15,980	1 %
Funding sources						
Deposits:						
Interest-bearing checking	$ 59,121	4%	$ 63,243	4%	$ (4,122)	(7)%
Market rate and other savings	705,957	40	684,882	39	21,075	3
Savings certificates	30,266	2	20,653	1	9,613	47
Other time deposits	93,368	5	84,822	5	8,546	10
Deposits in non-U.S. offices	53,438	3	63,945	4	(10,507)	(16)
Total interest-bearing deposits	942,150	54	917,545	53	24,605	3
Short-term borrowings	115,337	7	104,267	6	11,070	11
Long-term debt	232,491	13	224,268	13	8,223	4
Other liabilities	25,771	1	27,648	1	(1,877)	(7)
Total interest-bearing liabilities	1,315,749	75	1,273,728	73	42,021	3
Portion of noninterest-bearing funding sources	438,713	25	464,754	27	(26,041)	(6)
Total funding sources	$ 1,754,462	100%	$ 1,738,482	100%	$ 15,980	1 %
Noninterest-earning assets						
Cash and due from banks	$ 19,558		18,777		$ 781	4 %
Goodwill	26,409		26,453		(44)	—
Other	113,015		105,180		7,835	7
Total noninterest-earning assets	$ 158,982		150,410		$ 8,572	6 %
Noninterest-bearing funding sources						
Deposits	$ 344,111		358,312		$ (14,201)	(4)%
Other liabilities	55,963		53,496		2,467	5
Total equity	197,621		203,356		(5,735)	(3)
Noninterest-bearing funding sources used to fund earning assets	(438,713)		(464,754)		26,041	(6)
Net noninterest-bearing funding sources	$ 158,982		150,410		$ 8,572	6 %
Total assets	$ 1,913,444		1,888,892		$ 24,552	1 %

(1) Nonaccrual loans are included in their respective loan categories.

Table 5: Average Balances, Yields and Rates Paid (Taxable-Equivalent Basis) (1)

	2019			2018			2017		
(in millions)	Average balance	Yields/ rates	Interest income/ expense	Average balance	Yields/ rates	Interest income/ expense	Average balance	Yields/ rates	Interest income/ expense
Earning assets									
Interest-earning deposits with banks	$ 135,741	2.12%	$ 2,875	156,366	1.82%	$ 2,854	201,864	1.07%	$ 2,162
Federal funds sold and securities purchased under resale agreements	99,286	2.18	2,164	78,547	1.82	1,431	74,697	0.98	735
Debt securities (2):									
Trading debt securities	93,655	3.36	3,149	83,526	3.42	2,856	74,475	3.16	2,356
Available-for-sale debt securities:									
Securities of U.S. Treasury and federal agencies	15,293	2.07	316	6,618	1.70	112	15,966	1.49	239
Securities of U.S. states and political subdivisions	44,203	3.87	1,709	47,884	3.77	1,806	52,658	3.95	2,082
Mortgage-backed securities:									
Federal agencies	154,160	2.85	4,397	156,052	2.79	4,348	145,310	2.60	3,782
Residential and commercial	5,363	4.19	225	7,769	4.62	358	11,839	5.33	631
Total mortgage-backed securities	159,523	2.90	4,622	163,821	2.87	4,706	157,149	2.81	4,413
Other debt securities	43,675	4.23	1,846	46,875	4.22	1,980	48,714	3.68	1,794
Total available-for-sale debt securities	262,694	3.23	8,493	265,198	3.24	8,604	274,487	3.11	8,528
Held-to-maturity debt securities:									
Securities of U.S. Treasury and federal agencies	44,850	2.19	982	44,735	2.19	980	44,705	2.19	979
Securities of U.S. states and political subdivisions	8,644	3.97	343	6,253	4.34	271	6,268	5.32	334
Federal agency and other mortgage-backed securities	95,559	2.60	2,487	94,216	2.36	2,221	78,330	2.34	1,832
Other debt securities	52	3.71	2	361	4.00	15	2,194	2.50	55
Total held-to-maturity debt securities	149,105	2.56	3,814	145,565	2.40	3,487	131,497	2.43	3,200
Total debt securities	505,454	3.06	15,456	494,289	3.02	14,947	480,459	2.93	14,084
Mortgage loans held for sale (3)	19,808	4.10	813	18,394	4.22	777	20,780	3.78	786
Loans held for sale (3)	1,708	4.60	79	2,526	5.56	140	1,487	3.40	50
Loans:									
Commercial loans:									
Commercial and industrial – U.S.	284,888	4.25	12,107	275,656	4.16	11,465	272,034	3.75	10,196
Commercial and industrial – Non-U.S.	64,274	3.71	2,385	60,718	3.53	2,143	57,198	2.86	1,639
Real estate mortgage	121,813	4.40	5,356	122,947	4.29	5,279	129,990	3.74	4,859
Real estate construction	21,183	5.17	1,095	23,609	4.94	1,167	24,813	4.10	1,017
Lease financing	19,302	4.52	873	19,392	4.74	919	19,128	3.74	715
Total commercial loans	511,460	4.27	21,816	502,322	4.18	20,973	503,163	3.66	18,426
Consumer loans:									
Real estate 1-4 family first mortgage	288,059	3.81	10,974	284,178	4.04	11,481	277,751	4.03	11,206
Real estate 1-4 family junior lien mortgage	31,989	5.63	1,800	36,687	5.38	1,975	42,780	4.82	2,062
Credit card	38,865	12.58	4,889	36,780	12.72	4,678	35,600	12.23	4,355
Automobile	45,901	5.15	2,362	48,115	5.18	2,491	57,900	5.34	3,094
Other revolving credit and installment	34,682	6.95	2,412	37,115	6.70	2,488	38,935	6.18	2,408
Total consumer loans	439,496	5.11	22,437	442,875	5.22	23,113	452,966	5.11	23,125
Total loans (3)	950,956	4.65	44,253	945,197	4.66	44,086	956,129	4.35	41,551
Equity securities	35,930	2.69	966	38,092	2.62	999	36,105	2.27	821
Other	5,579	1.62	90	5,071	1.46	74	5,069	0.85	44
Total earning assets	$ 1,754,462	3.80%	$ 66,696	1,738,482	3.76%	$ 65,308	1,776,590	3.40%	$ 60,233
Funding sources									
Deposits:									
Interest-bearing checking	$ 59,121	1.33%	$ 789	63,243	0.96%	$ 606	49,474	0.49%	$ 242
Market rate and other savings	705,957	0.59	4,132	684,882	0.31	2,157	682,053	0.14	983
Savings certificates	30,266	1.59	481	20,653	0.57	118	22,190	0.30	67
Other time deposits	93,368	2.46	2,295	84,822	2.25	1,906	61,625	1.43	880
Deposits in non-U.S. offices	53,438	1.75	938	63,945	1.30	835	123,816	0.68	841
Total interest-bearing deposits	942,150	0.92	8,635	917,545	0.61	5,622	939,158	0.32	3,013
Short-term borrowings	115,337	2.01	2,317	104,267	1.65	1,719	98,922	0.77	761
Long-term debt	232,491	3.16	7,350	224,268	2.99	6,703	246,195	2.09	5,157
Other liabilities	25,771	2.13	551	27,648	2.21	610	21,872	1.94	424
Total interest-bearing liabilities	1,315,749	1.43	18,853	1,273,728	1.15	14,654	1,306,147	0.72	9,355
Portion of noninterest-bearing funding sources	438,713	—	—	464,754	—	—	470,443	—	—
Total funding sources	$ 1,754,462	1.07	18,853	1,738,482	0.85	14,654	1,776,590	0.53	9,355
Net interest margin and net interest income on a taxable-equivalent basis (4)		2.73%	$ 47,843		2.91%	$ 50,654		2.87%	$ 50,878
Noninterest-earning assets									
Cash and due from banks	$ 19,558			18,777			18,622		
Goodwill	26,409			26,453			26,629		
Other	113,015			105,180			111,164		
Total noninterest-earning assets	$ 158,982			150,410			156,415		
Noninterest-bearing funding sources									
Deposits	$ 344,111			358,312			365,464		
Other liabilities	55,963			53,496			55,740		
Total equity	197,621			203,356			205,654		
Noninterest-bearing funding sources used to fund earning assets	(438,713)			(464,754)			(470,443)		
Net noninterest-bearing funding sources	$ 158,982			150,410			156,415		
Total assets	$ 1,913,444			1,888,892			1,933,005		
Average prime rate		5.28%			4.91%			4.10%	
Average three-month London Interbank Offered Rate (LIBOR)		2.33			2.31			1.26	

(1) Yields/rates and amounts include the effects of hedge and risk management activities associated with the respective asset and liability categories.
(2) Yields/rates are based on interest income/expense amounts for the period. The average balance amounts represent amortized cost for the periods presented.
(3) Nonaccrual loans and related income are included in their respective loan categories.
(4) Includes taxable-equivalent adjustments of $612 million, $659 million and $1.3 billion for the years ended December 31, 2019, 2018 and 2017, respectively, predominantly related to tax-exempt income on certain loans and securities.

Table 6 allocates the changes in net interest income on a taxable-equivalent basis to changes in either average balances or average rates for both interest-earning assets and interest-bearing liabilities. Because of the numerous simultaneous volume and rate changes during any period, it is not possible to precisely allocate such changes between volume and rate. For this table, changes that are not solely due to either volume or rate are allocated to these categories on a pro-rata basis based on the absolute value of the change due to average volume and average rate.

Table 6: Analysis of Changes in Net Interest Income

						Year ended December 31,
			2019 over 2018			2018 over 2017
(in millions)	Volume	Rate	Total	Volume	Rate	Total
Increase (decrease) in interest income:						
Interest-earning deposits with banks	$ **(407)**	**428**	**21**	(569)	1,261	692
Federal funds sold and securities purchased under resale agreements	**419**	**314**	**733**	40	656	696
Debt securities:						
Trading debt securities	**343**	**(50)**	**293**	298	202	500
Available-for-sale debt securities:						
Securities of U.S. Treasury and federal agencies	**175**	**29**	**204**	(157)	30	(127)
Securities of U.S. states and political subdivisions	**(143)**	**46**	**(97)**	(184)	(92)	(276)
Mortgage-backed securities:						
Federal agencies	**(50)**	**99**	**49**	285	281	566
Residential and commercial	**(103)**	**(30)**	**(133)**	(197)	(76)	(273)
Total mortgage-backed securities	**(153)**	**69**	**(84)**	88	205	293
Other debt securities	**(139)**	**5**	**(134)**	(70)	256	186
Total available-for-sale debt securities	**(260)**	**149**	**(111)**	(323)	399	76
Held-to-maturity debt securities:						
Securities of U.S. Treasury and federal agencies	**2**	**—**	**2**	1	—	1
Securities of U.S. states and political subdivisions	**97**	**(25)**	**72**	(1)	(62)	(63)
Federal agency mortgage-backed securities	**33**	**233**	**266**	373	16	389
Other debt securities	**(12)**	**(1)**	**(13)**	(62)	22	(40)
Total held-to-maturity debt securities	**120**	**207**	**327**	311	(24)	287
Mortgage loans held for sale	**59**	**(23)**	**36**	(95)	86	(9)
Loans held for sale	**(40)**	**(21)**	**(61)**	47	43	90
Commercial loans:						
Commercial and industrial – U.S.	**390**	**252**	**642**	138	1,131	1,269
Commercial and industrial – Non-U.S.	**130**	**112**	**242**	105	399	504
Real estate mortgage	**(51)**	**128**	**77**	(272)	692	420
Real estate construction	**(124)**	**52**	**(72)**	(51)	201	150
Lease financing	**(4)**	**(42)**	**(46)**	10	194	204
Total commercial loans	**341**	**502**	**843**	(70)	2,617	2,547
Consumer loans:						
Real estate 1-4 family first mortgage	**155**	**(662)**	**(507)**	248	27	275
Real estate 1-4 family junior lien mortgage	**(263)**	**88**	**(175)**	(312)	225	(87)
Credit card	**262**	**(51)**	**211**	146	177	323
Automobile	**(115)**	**(14)**	**(129)**	(512)	(91)	(603)
Other revolving credit and installment	**(167)**	**91**	**(76)**	(116)	196	80
Total consumer loans	**(128)**	**(548)**	**(676)**	(546)	534	(12)
Total loans	**213**	**(46)**	**167**	(616)	3,151	2,535
Equity securities	**(59)**	**26**	**(33)**	47	131	178
Other	**7**	**9**	**16**	—	30	30
Total increase in interest income	**395**	**993**	**1,388**	(860)	5,935	5,075
Increase (decrease) in interest expense:						
Deposits:						
Interest-bearing checking	**(42)**	**225**	**183**	82	282	364
Market rate and other savings	**65**	**1,910**	**1,975**	4	1,170	1,174
Savings certificates	**75**	**288**	**363**	(5)	56	51
Other time deposits	**202**	**187**	**389**	407	619	1,026
Deposits in non-U.S. offices	**(152)**	**255**	**103**	(534)	528	(6)
Total interest-bearing deposits	**148**	**2,865**	**3,013**	(46)	2,655	2,609
Short-term borrowings	**196**	**402**	**598**	43	915	958
Long-term debt	**254**	**393**	**647**	(495)	2,041	1,546
Other liabilities	**(38)**	**(21)**	**(59)**	122	64	186
Total increase in interest expense	**560**	**3,639**	**4,199**	(376)	5,675	5,299
Increase (decrease) in net interest income on a taxable-equivalent basis	$ **(165)**	**(2,646)**	**(2,811)**	(484)	260	(224)

Noninterest Income

Table 7: Noninterest Income

		Year ended December 31,	
(in millions)	**2019**	2018	2017
Service charges on deposit accounts	**$ 4,798**	4,716	5,111
Trust and investment fees:			
Brokerage advisory, commissions and other fees	**9,237**	9,436	9,358
Trust and investment management	**3,038**	3,316	3,372
Investment banking	**1,797**	1,757	1,765
Total trust and investment fees	**14,072**	14,509	14,495
Card fees	**4,016**	3,907	3,960
Other fees:			
Lending related charges and fees	**1,379**	1,526	1,568
Cash network fees	**452**	481	506
Commercial real estate brokerage commissions	**358**	468	462
Wire transfer and other remittance fees	**474**	477	448
All other fees	**421**	432	573
Total other fees	**3,084**	3,384	3,557
Mortgage banking:			
Servicing income, net	**522**	1,373	1,427
Net gains on mortgage loan origination/sales activities	**2,193**	1,644	2,923
Total mortgage banking	**2,715**	3,017	4,350
Insurance	**378**	429	1,049
Net gains from trading activities	**993**	602	542
Net gains on debt securities	**140**	108	479
Net gains from equity securities	**2,843**	1,515	1,779
Lease income	**1,612**	1,753	1,907
Life insurance investment income	**658**	651	594
All other	**2,523**	1,822	1,009
Total	**$ 37,832**	36,413	38,832

Noninterest income of $37.8 billion represented 44% of revenue for 2019, compared with $36.4 billion, or 42%, for 2018 and $38.8 billion, or 44%, for 2017. The increase in noninterest income in 2019, compared with 2018, was predominantly due to higher net gains from equity securities (including higher deferred compensation plan investment results, which are offset in employee benefits expense), higher all other income, and higher net gains from trading activities. These increases in 2019, compared with 2018, were partially offset by lower trust and investment fees, mortgage banking income, and other fees. The decline in noninterest income in 2018, compared with 2017, was predominantly due to lower net gains on mortgage loan origination/sales activities driven by decreased origination volumes and margins, lower insurance income due to the sale of Wells Fargo Insurance Services in fourth quarter 2017, lower service charges on deposit accounts, lower gains on debt securities, and lower deferred compensation plan investment results (offset in employee benefits expense). These decreases in 2018, compared with 2017, were partially offset by higher gains from equity securities and higher all other income. For more information on our performance obligations and the nature of services performed for certain of our revenues discussed below, see Note 22 (Revenue from Contracts with Customers) to Financial Statements in this Report.

Service charges on deposit accounts increased to $4.8 billion in 2019, compared with $4.7 billion in 2018, predominantly due to higher overdraft fees resulting from increased consumer payment transactions, partially offset by the impact of a higher earnings credit rate applied to commercial accounts due to higher interest rates.

Brokerage advisory, commissions and other fees decreased to $9.2 billion in 2019, compared with $9.4 billion in 2018, due to lower asset-based fees and lower transactional revenue. Retail brokerage client assets totaled $1.6 trillion at December 31, 2019, compared with $1.5 trillion at December 31, 2018. Asset-based fees are calculated on the market value of the assets as of the beginning of each quarter. All retail brokerage services are provided by our WIM operating segment. For additional information on retail brokerage client assets, see the discussion and Tables 9d and 9e in the "Operating Segment Results – Wealth and Investment Management – Retail Brokerage Client Assets" section in this Report.

Trust and investment management fees decreased to $3.0 billion in 2019, compared with $3.3 billion in 2018, largely driven by lower trust fees due to the sale of our Institutional Retirement and Trust (IRT) business in 2019.

Our assets under management (AUM), including IRT client assets still on our platform, totaled $705.9 billion at December 31, 2019, compared with $638.3 billion at December 31, 2018. Substantially all of our AUM is managed by our Wealth and Investment Management (WIM) operating segment. Our assets under administration (AUA), including IRT client assets still on our platform, totaled $1.8 trillion at December 31, 2019, compared with $1.7 trillion at December 31, 2018. We had AUM and AUA associated with the IRT business of $21 billion and $915 billion, respectively, at December 31, 2019. No IRT client assets were transitioned to the buyer's platform as of December 31, 2019.

We closed the sale of our IRT business on July 1, 2019. We will continue to administer client assets at the direction of the buyer for up to 24 months from the closing date pursuant to a transition services agreement. The buyer will receive post-closing revenue from the client assets and will pay us a fee for certain costs that we incur to administer the client assets during the transition period. The transition services fee will be recognized as other noninterest income, and the expenses we incur will be recognized in the same manner as they were prior to the close of the sale. Transition period revenue is expected to approximate transition period expenses and is subject to downward adjustment as client assets transition to the buyer's platform.

Additional information regarding our WIM operating segment AUM is provided in Table 9f and the related discussion in the "Operating Segment Results – Wealth and Investment Management – Trust and Investment Client Assets Under Management" section in this Report.

Other fees decreased to $3.1 billion in 2019 from $3.4 billion in 2018, predominantly driven by the sale of our commercial real estate brokerage business (Eastdil Secured (Eastdil)) on October 1, 2019 and lower lending related charges and fees.

Mortgage banking income, consisting of net servicing income and net gains on loan origination/sales activities, totaled $2.7 billion in 2019, compared with $3.0 billion in 2018. For more information, see Note 11 (Mortgage Banking Activities) to Financial Statements in this Report.

Net servicing income was $522 million in 2019, compared with $1.4 billion in 2018, due to a decrease in net servicing fees and changes in the fair value of mortgage servicing rights (MSRs). Net servicing fees decreased $369 million from 2018, primarily driven by a decrease in contractually specified fees as a result of prepayments and sales of MSRs. In addition to servicing fees, net servicing income includes amortization of commercial MSRs, changes in the fair value of residential MSRs, as well as changes in the fair value of derivatives (economic hedges) used to hedge the residential MSRs. The total fair value of our residential MSRs declined in 2019, compared with 2018, driven by lower mortgage interest rates and higher prepayments. The net MSR valuation loss on our residential MSRs increased in

2019, compared with 2018, due to a decrease in hedge carry income from a flatter yield curve environment in 2019. Table 7a presents the components of the market-related valuation changes to our residential MSRs, net of hedge results.

Table 7a: Market-Related Valuation Changes on Residential MSRs, Net of Hedge Results

	Year ended December 31,		
(in millions)	**2019**	2018	2017
MSR valuation gain (loss)	**$ (2,569)**	960	(126)
Net derivative gains (losses) from economic hedges of residential MSRs	**2,318**	(1,072)	413
Net MSR valuation gain (loss)	**$ (251)**	(112)	287

Our portfolio of loans serviced for others was $1.6 trillion at December 31, 2019, and $1.7 trillion at December 31, 2018. At December 31, 2019, the ratio of combined residential and commercial MSRs to related loans serviced for others was 0.79%, compared with 0.94% at December 31, 2018. See the "Risk Management – Asset/Liability Management – Mortgage Banking Interest Rate and Market Risk" section in this Report for additional information regarding our MSRs risks and hedging approach.

Net gains on mortgage loan origination/sales activities was $2.2 billion in 2019, compared with $1.6 billion in 2018. The increase in 2019, compared with 2018, was primarily due to increases in origination volumes and margins. The production margin on residential held-for-sale mortgage loan originations, which represents net gains on residential mortgage loan origination/sales activities divided by total residential held-for-sale mortgage loan originations, provides a measure of the profitability of our residential mortgage origination activity. Table 7b presents the information used in determining the production margin.

Table 7b: Selected Mortgage Production Data

		Year ended December 31,		
		2019	2018	2017
Net gains on mortgage loan origination/sales activities (in millions):				
Residential	(A)	**$ 1,518**	1,174	2,140
Commercial		**337**	265	358
Residential pipeline and unsold/repurchased loan management (1)		**338**	205	425
Total		**$ 2,193**	1,644	2,923
Residential real estate originations (in billions):				
Held-for-sale	(B)	**$ 135**	132	160
Held-for-investment		**69**	45	52
Total		**$ 204**	177	212
Production margin on residential held-for-sale mortgage originations	(A)/(B)	**1.12%**	0.89	1.34

(1) Primarily includes the results of Government National Mortgage Association (GNMA) loss mitigation activities, interest rate management activities and changes in estimate to the liability for mortgage loan repurchase losses.

The production margin was 1.12% for 2019, compared with 0.89% for 2018. The increase in the production margin in 2019, compared with 2018, was due to higher margins in both retail and correspondent production channels and a shift to more retail origination volume, which has a higher production margin.

Mortgage applications were $311 billion in 2019, compared with $230 billion in 2018. The real estate 1-4 family first mortgage unclosed pipeline was $33 billion at December 31, 2019, compared with $18 billion at December 31, 2018. For additional information about our mortgage banking activities and results, see the "Risk Management – Asset/Liability Management – Mortgage Banking Interest Rate and Market Risk" section and Note 11 (Mortgage Banking Activities) and Note 19 (Fair Values of Assets and Liabilities) to Financial Statements in this Report.

Net gains from trading activities, which reflect unrealized changes in fair value of our trading positions and realized gains and losses, were $993 million in 2019, compared with $602 million in 2018. The increase in 2019, compared with 2018, reflected higher trading volumes for rates and commodities, credit, and residential mortgage-backed securities, partially offset by lower equity and foreign exchange trading income. Net gains from trading activities exclude interest and dividend income and expense on trading securities, which are reported within interest income from debt and equity securities and other interest income. For additional information about trading activities, see the "Risk Management – Asset/Liability Management – Market Risk – Trading Activities" section and Note 4 (Trading Activities) to Financial Statements in this Report.

Net gains on debt and equity securities totaled $3.0 billion for 2019 and $1.6 billion for 2018. The increase in 2019 was predominantly driven by higher deferred compensation gains (offset in employee benefits expense) and higher unrealized gains on equity securities, partially offset by lower net realized gains from nonmarketable equity securities. Table 8a presents results for our deferred compensation plan and related investments. Net gains on debt and equity securities also included other-than-temporary impairment (OTTI) write-downs of $308 million for 2019 and $380 million for 2018. The decrease in OTTI in 2019 reflected a $214 million impairment taken in 2018 related to the sale of our ownership stake in The Rock Creek Group, LP (RockCreek), partially offset by higher write-downs in our investment portfolio in 2019.

Lease income was $1.6 billion in 2019, compared with $1.8 billion in 2018. The decrease in 2019, compared with 2018, was driven by reductions in the size of the equipment leasing portfolio.

All other income was $2.5 billion in 2019, compared with $1.8 billion in 2018. All other income includes losses on low income housing tax credit investments (excluding related tax credits recorded in income tax expense), foreign currency adjustments, income from investments accounted for under the equity method, hedge accounting results related to hedges of foreign currency risk, and the results of certain economic hedges, any of which can cause decreases and net losses in other income. The increase in all other income in 2019, compared with 2018, was predominantly driven by pre-tax gains on the sales of our IRT business, Eastdil, and Business Payroll Services, partially offset by lower gains from the sales of purchased credit-impaired (PCI) loans in 2019, as well as higher losses on low income housing tax credit investments in 2019.

Noninterest Expense

Table 8: Noninterest Expense

		Year ended December 31,	
(in millions)	2019	2018	2017
Salaries	$ 18,382	17,834	17,363
Commission and incentive compensation	10,828	10,264	10,442
Employee benefits	5,874	4,926	5,566
Technology and equipment	2,763	2,444	2,237
Net occupancy (1)	2,945	2,888	2,849
Core deposit and other intangibles	108	1,058	1,152
FDIC and other deposit assessments	526	1,110	1,287
Operating losses	4,321	3,124	5,492
Outside professional services	3,198	3,306	3,813
Contract services (2)	2,489	2,192	1,638
Leases (3)	1,155	1,334	1,351
Advertising and promotion	1,076	857	614
Outside data processing	673	660	891
Travel and entertainment	580	618	687
Postage, stationery and supplies	518	515	544
Telecommunications	367	361	364
Foreclosed assets	163	188	251
Insurance	100	101	100
All other (2)	2,112	2,346	1,843
Total	$ 58,178	56,126	58,484

(1) Represents expenses for both leased and owned properties.
(2) The amount for 2017 has been revised to conform with the current period presentation whereby temporary help is included in contract services rather than in all other noninterest expense.
(3) Represents expenses for assets we lease to customers.

Noninterest expense was $58.2 billion in 2019, up 4% from $56.1 billion in 2018, which was down 4% from $58.5 billion in 2017. The increase in 2019, compared with 2018, was driven by higher personnel expenses, operating losses, technology and equipment, and advertising and promotion expense, partially offset by lower core deposit and other intangibles expense, Federal Deposit Insurance Corporation (FDIC), leases, and other expense. The decrease in 2018, compared with 2017, was driven by lower operating losses from a decline in litigation accruals, lower personnel expenses, lower outside data processing, and lower FDIC expense, partially offset by higher advertising and promotion, technology and equipment, and other expense.

Personnel expenses, which include salaries, commissions, incentive compensation and employee benefits, were up $2.1 billion, or 6%, in 2019, compared with 2018, due to higher deferred compensation costs (offset in net gains from equity securities), higher salaries driven by the impact of staffing mix changes and annual salary increases, as well as higher incentive compensation and commissions. The increase in incentive compensation and commissions was due to increased revenue from mortgage banking originations, market sensitive businesses (trading, debt and equity securities activities) and investment banking, partially offset by lower brokerage fees. Table 8a presents results for our deferred compensation plan and related investments.

Table 8a: Deferred Compensation Plan and Related Investments

	Year ended December 31,	
(in millions)	2019	2018
Net interest income	$ 70	60
Net gains (losses) from equity securities	664	(303)
Total revenue (losses) from deferred compensation plan investments	734	(243)
Employee benefits expense (1)	739	(242)
Income (loss) before income tax expense	$ (5)	(1)

(1) Represents change in deferred compensation plan liability.

Technology and equipment expense was up 13% in 2019, compared with 2018, due to higher impairment expenses on capitalized software and computer software licensing and maintenance costs, reflecting the strategic reassessment of technology projects in WIM.

Core deposit and other intangibles expense was down 90% in 2019, compared with 2018, due to lower amortization expense reflecting the end of the 10-year amortization period on Wachovia intangibles.

FDIC and other deposit assessments were down 53% in 2019, compared with 2018, due to the completion of the FDIC surcharge which ended September 30, 2018.

Operating losses were up $1.2 billion, or 38%, in 2019, compared with 2018, due to higher litigation accruals for a variety of matters, including previously disclosed retail sales practices matters, partially offset by lower remediation expense.

Outside professional and contract services expense was up 3% in 2019, compared with 2018, reflecting an increase in project spending, partially offset by lower legal expense.

Leases expense was down 13% in 2019, compared with 2018, driven by reductions in the size of the operating lease portfolio.

Advertising and promotion expense was up 26% in 2019, compared with 2018, due to increases in marketing and brand campaign volumes.

All other noninterest expense was down 10% in 2019, compared with 2018, due to a sales tax refund in 2019, higher gains on the sale of corporate properties in 2019, compared with 2018, and pension plan settlement expense in 2018 that did not recur in 2019.

Income Tax Expense

Our effective income tax rate in 2019 was 17.5%, compared with 20.2% in 2018. The 2019 and 2018 effective income tax rates reflected the non-tax-deductible treatment of certain litigation accruals. The 2018 effective income tax rate also reflected income tax expense related to the reconsideration of reserves for state income taxes following the U.S. Supreme Court decision in *South Dakota v. Wayfair, Inc.* and the recognition of $164 million of income tax expense associated with the final re-measurement of our initial estimates for the impacts of the Tax Cuts & Jobs Act (Tax Act). See Note 24 (Income Taxes) to Financial Statements in this Report for additional information about our income taxes.

Operating Segment Results

As of December 31, 2019, we were organized for management reporting purposes into three operating segments: Community Banking; Wholesale Banking; and Wealth and Investment Management (WIM). These segments are defined by product type and customer segment and their results are based on our management reporting process. The management reporting process is based on U.S. GAAP with specific adjustments, such as for funds transfer pricing for asset/liability management, for shared revenues and expenses, and tax-equivalent adjustments to consistently reflect income from taxable and tax-exempt sources. On February 11, 2020, we announced a new organizational structure with five principal lines of business: Consumer and Small Business Banking; Consumer Lending; Commercial Banking; Corporate and Investment Banking; and Wealth and Investment Management. This new organizational structure is intended to help drive operating, control, and business performance. The Company is currently in the process of transitioning to this new organizational structure, including identifying leadership for some of these principal business lines and aligning management reporting and allocation methodologies. These changes will not impact the consolidated financial results of the Company, but are expected to result in changes to our operating segments. We will update our operating segment disclosures, including comparative financial results, when the Company completes its transition and is managed in accordance with the new organizational structure. Table 9 and the following discussion present our results by operating segment. For additional description of our operating segments, including additional financial information and the underlying management reporting process, see Note 27 (Operating Segments) to Financial Statements in this Report.

Table 9: Operating Segment Results – Highlights

					Year ended December 31,
(in millions, except average balances which are in billions)	Community Banking	Wholesale Banking	Wealth and Investment Management	Other (1)	Consolidated Company
2019					
Revenue	**$ 45,316**	**27,677**	**17,341**	**(5,271)**	**85,063**
Provision (reversal of provision) for credit losses	**2,319**	**378**	**5**	**(15)**	**2,687**
Net income (loss)	**7,398**	**10,696**	**2,713**	**(1,258)**	**19,549**
Average loans	**$ 459.4**	**475.3**	**75.6**	**(59.3)**	**951.0**
Average deposits	**782.0**	**422.5**	**146.0**	**(64.2)**	**1,286.3**
2018					
Revenue	$ 46,913	28,706	16,376	(5,587)	86,408
Provision (reversal of provision) for credit losses	1,783	(58)	(5)	24	1,744
Net income (loss)	10,394	11,032	2,580	(1,613)	22,393
Average loans	$ 463.7	465.7	74.6	(58.8)	945.2
Average deposits	757.2	423.7	165.0	(70.0)	1,275.9
2017					
Revenue	$ 47,018	30,000	17,072	(5,701)	88,389
Provision (reversal of provision) for credit losses	2,555	(19)	(5)	(3)	2,528
Net income (loss)	10,938	9,914	2,770	(1,439)	22,183
Average loans	$ 475.7	465.6	71.9	(57.1)	956.1
Average deposits	729.6	464.2	189.0	(78.2)	1,304.6

(1) Includes the elimination of certain items that are included in more than one business segment, substantially all of which represents products and services for WIM customers served through Community Banking distribution channels.

Community Banking offers a complete line of diversified financial products and services for consumers and small businesses with annual sales generally up to $5 million in which the owner generally is the financial decision maker. These financial products and services include checking and savings accounts, credit and debit cards, automobile, student, mortgage, home equity and small business lending, as well as referrals to Wholesale Banking and WIM business partners. The Community Banking segment also includes the results of our Corporate Treasury activities net of allocations (including funds transfer pricing, capital, liquidity and certain corporate expenses) in support of other segments and results of investments in our affiliated venture capital and private equity partnerships. Table 9a provides additional financial information for Community Banking.

Table 9a: Community Banking

				Year ended December 31,	
(in millions, except average balances which are in billions)	2019	2018	% Change	2017	% Change
Net interest income	$ **27,610**	29,219	(6)%	$ 28,658	2%
Noninterest income:					
Service charges on deposit accounts	**2,823**	2,641	7	2,909	(9)
Trust and investment fees:					
Brokerage advisory, commissions and other fees (1)	**1,931**	1,887	2	1,830	3
Trust and investment management (1)	**805**	910	(12)	889	2
Investment banking (2)	**(93)**	(35)	NM	(59)	41
Total trust and investment fees	**2,643**	2,762	(4)	2,660	4
Card fees	**3,655**	3,543	3	3,613	(2)
Other fees	**1,278**	1,359	(6)	1,497	(9)
Mortgage banking	**2,307**	2,659	(13)	3,895	(32)
Insurance	**44**	83	(47)	139	(40)
Net gains (losses) from trading activities	**24**	28	(14)	(251)	111
Net gains (losses) on debt securities	**51**	(3)	NM	709	NM
Net gains from equity securities (3)	**2,155**	1,505	43	1,455	3
Other income of the segment	**2,726**	3,117	(13)	1,734	80
Total noninterest income	**17,706**	17,694	—	18,360	(4)
Total revenue	**45,316**	46,913	(3)	47,018	—
Provision for credit losses	**2,319**	1,783	30	2,555	(30)
Noninterest expense:					
Personnel expense	**22,867**	21,252	8	20,381	4
Technology and equipment	**2,423**	2,356	3	2,157	9
Net occupancy	**2,236**	2,166	3	2,111	3
Core deposit and other intangibles	**3**	404	(99)	446	(9)
FDIC and other deposit assessments	**327**	624	(48)	715	(13)
Outside professional services	**1,942**	1,560	24	1,875	(17)
Operating losses	**3,846**	2,656	45	5,312	(50)
Other expense of the segment	**(948)**	(527)	(80)	(382)	(38)
Total noninterest expense	**32,696**	30,491	7	32,615	(7)
Income before income tax expense and noncontrolling interests	**10,301**	14,639	(30)	11,848	24
Income tax expense	**2,426**	3,784	(36)	634	497
Less: Net income from noncontrolling interests (4)	**477**	461	3	276	67
Net income	$ **7,398**	10,394	(29)	$ 10,938	(5)
Average loans	$ **459.4**	463.7	(1)	$ 475.7	(3)
Average deposits	**782.0**	757.2	3	729.6	4

NM - Not meaningful
(1) Represents income on products and services for WIM customers served through Community Banking distribution channels which is eliminated in consolidation.
(2) Includes underwriting fees paid to Wells Fargo Securities for services related to the issuance of our corporate securities which are offset in our Wholesale Banking segment and eliminated in consolidation.
(3) Largely represents gains resulting from venture capital investments.
(4) Reflects results attributable to noncontrolling interests predominantly associated with the Company's consolidated venture capital investments.

Community Banking reported net income of $7.4 billion in 2019, down $3.0 billion, or 29%, from 2018. Revenue was $45.3 billion in 2019, down $1.6 billion, or 3%, from 2018. The decrease in revenue in 2019 was due to lower net interest income, gains from the sales of purchased credit-impaired (PCI) residential mortgage loans, mortgage banking revenue driven by a decrease in servicing income, and trust and investment fees, partially offset by higher gains on equity securities, service charges on deposit accounts, and card fees.

The provision for credit losses in 2019 increased $536 million from 2018 due to a higher level of credit quality improvement in 2018 compared with 2019, partially offset by lower net charge-offs in the automobile portfolio in 2019.

Noninterest expense of $32.7 billion in 2019 increased $2.2 billion, or 7%, from 2018. The increase in 2019 was predominantly driven by higher personnel expense, operating losses reflecting litigation accruals for a variety of matters, including previously disclosed retail sales practices matters, and outside professional services expense, partially offset by lower other expense, core deposit and other intangibles amortization expense, and FDIC and other deposit assessments expense.

Income tax expense was $2.4 billion in 2019, down $1.4 billion from $3.8 billion in 2018. The decrease in income tax expense in 2019 was driven by lower pre-tax income, and reflected the non-tax-deductible treatment of certain litigation accruals.

Average loans decreased $4.3 billion in 2019, or 1%, from 2018 driven by decreases in real estate 1-4 family junior lien mortgage, automobile, other revolving credit and installment, and commercial loans, partially offset by higher real estate 1-4 family first mortgage and credit card loans. Average deposits increased $24.8 billion in 2019, or 3%, from 2018.

Wholesale Banking provides financial solutions to businesses with annual sales generally in excess of $5 million and to financial institutions globally. Products and businesses include Commercial Banking, Commercial Real Estate, Corporate and Investment Banking, Credit Investment Portfolio, Treasury Management, and Commercial Capital. Table 9b provides additional financial information for Wholesale Banking.

Table 9b: Wholesale Banking

					Year ended December 31,
(in millions, except average balances which are in billions)	**2019**	2018	% Change	2017	% Change
Net interest income	**$ 17,699**	18,690	(5)%	$ 18,810	(1)%
Noninterest income:					
Service charges on deposit accounts	**1,974**	2,074	(5)	2,201	(6)
Trust and investment fees:					
Brokerage advisory, commissions and other fees	**292**	317	(8)	304	4
Trust and investment management	**486**	445	9	523	(15)
Investment banking	**1,889**	1,783	6	1,827	(2)
Total trust and investment fees	**2,667**	2,545	5	2,654	(4)
Card fees	**359**	362	(1)	345	5
Other fees	**1,801**	2,019	(11)	2,054	(2)
Mortgage banking	**412**	362	14	458	(21)
Insurance	**303**	312	(3)	872	(64)
Net gains from trading activities	**915**	516	77	701	(26)
Net gains (losses) on debt securities	**89**	102	(13)	(232)	144
Net gains from equity securities	**416**	293	42	116	153
Other income of the segment	**1,042**	1,431	(27)	2,021	(29)
Total noninterest income	**9,978**	10,016	—	11,190	(10)
Total revenue	**27,677**	28,706	(4)	30,000	(4)
Provision (reversal of provision) for credit losses	**378**	(58)	752	(19)	NM
Noninterest expense:					
Personnel expense	**5,560**	5,567	—	6,603	(16)
Technology and equipment	**38**	48	(21)	55	(13)
Net occupancy	**388**	403	(4)	425	(5)
Core deposit and other intangibles	**92**	378	(76)	414	(9)
FDIC and other deposit assessments	**172**	419	(59)	481	(13)
Outside professional services	**600**	958	(37)	1,134	(16)
Operating losses	**35**	246	(86)	74	232
Other expense of the segment	**8,467**	8,138	4	7,438	9
Total noninterest expense	**15,352**	16,157	(5)	16,624	(3)
Income before income tax expense and noncontrolling interest	**11,947**	12,607	(5)	13,395	(6)
Income tax expense (1)	**1,246**	1,555	(20)	3,496	(56)
Less: Net income (loss) from noncontrolling interest	**5**	20	(75)	(15)	233
Net income	**$ 10,696**	11,032	(3)	$ 9,914	11
Average loans	**$ 475.3**	465.7	2	$ 465.6	—
Average deposits	**422.5**	423.7	—	464.2	(9)

NM - Not meaningful

(1) Income tax expense for our Wholesale Banking operating segment included income tax credits related to low-income housing and renewable energy investments of $1.8 billion, $1.6 billion and $1.4 billion for the years ended December 31, 2019, 2018 and 2017, respectively.

Wholesale Banking reported net income of $10.7 billion in 2019, down $336 million, or 3%, from 2018. The decrease in 2019 was predominantly due to lower net interest income, partially offset by lower noninterest expense. Revenue of $27.7 billion in 2019 decreased $1.0 billion, or 4%, from 2018.

Net interest income of $17.7 billion in 2019 decreased $1.0 billion, or 5%, from 2018. The decrease in net interest income in 2019 was due to lower credit spreads on loans, trading assets, and debt securities, as well as the impact of migration from noninterest-bearing to interest-bearing deposits.

Noninterest income of $10.0 billion in 2019 was flat compared with 2018.

The provision for credit losses in 2019 increased $436 million from 2018, driven by lower recoveries reflecting a higher level of credit quality improvement in 2018 compared with 2019.

Noninterest expense of $15.4 billion in 2019 decreased $805 million, or 5%, compared with 2018. The decrease in 2019 was predominantly due to lower core deposit and other intangibles amortization expense, FDIC and other deposit assessments expense, operating losses, and lease expense (within other expense), as well as the impact of the sale of Eastdil, partially offset by increased project expense (within other expense).

Average loans of $475.3 billion in 2019 increased $9.6 billion, or 2%, compared with 2018. Loan growth in 2019 from commercial and industrial loans was partially offset by declines in commercial real estate loans. Average deposits of $422.5 billion in 2019 decreased $1.2 billion from 2018. The decline in 2019 was driven by commercial customers allocating more cash to alternative higher-rate liquid investments.

Wealth and Investment Management provides a full range of personalized wealth management, investment and retirement products and services to clients across U.S.-based businesses including Wells Fargo Advisors, The Private Bank, Abbot Downing, and Wells Fargo Asset Management. We deliver financial planning, private banking, credit, investment management and fiduciary services to high-net worth and ultra-high-net worth individuals and families. We also serve clients' brokerage needs and provide investment management capabilities delivered to global institutional clients through separate accounts and the Wells Fargo Funds. The sale of our IRT business closed on July 1, 2019. For additional information on the sale of our IRT business, including its impact on our AUM, AUA and associated revenue and expenses, see the "Noninterest Income" section in this Report. Tables 9c through 9f provide additional financial information for WIM.

Table 9c: Wealth and Investment Management

				Year ended December 31,	
(in millions, except average balances which are in billions)	2019	2018	% Change	2017	% Change
Net interest income	$ **4,037**	4,441	(9)%	$ 4,641	(4)%
Noninterest income:					
Service charges on deposit accounts	**16**	16	—	17	(6)
Trust and investment fees:					
Brokerage advisory, commissions and other fees	**8,946**	9,161	(2)	9,072	1
Trust and investment management	**2,587**	2,893	(11)	2,877	1
Investment banking	**6**	9	(33)	(2)	550
Total trust and investment fees	**11,539**	12,063	(4)	11,947	1
Card fees	**6**	6	—	6	—
Other fees	**17**	17	—	18	(6)
Mortgage banking	**(12)**	(11)	(9)	(10)	(10)
Insurance	**72**	82	(12)	88	(7)
Net gains from trading activities	**53**	57	(7)	92	(38)
Net gains on debt securities	**—**	9	(100)	2	350
Net gains (losses) from equity securities	**272**	(283)	196	208	NM
Other income of the segment	**1,341**	(21)	NM	63	NM
Total noninterest income	**13,304**	11,935	11	12,431	(4)
Total revenue	**17,341**	16,376	6	17,072	(4)
Provision (reversal of provision) for credit losses	**5**	(5)	200	(5)	—
Noninterest expense:					
Personnel expense	**8,477**	8,085	5	8,126	(1)
Technology and equipment	**304**	42	624	28	50
Net occupancy	**448**	440	2	431	2
Core deposit and other intangibles	**13**	276	(95)	292	(5)
FDIC and other deposit assessments	**49**	116	(58)	154	(25)
Outside professional services	**684**	815	(16)	834	(2)
Operating losses	**452**	232	95	115	102
Other expense of the segment	**3,282**	2,932	12	2,643	11
Total noninterest expense	**13,709**	12,938	6	12,623	2
Income before income tax expense and noncontrolling interest	**3,627**	3,443	5	4,454	(23)
Income tax expense	**904**	861	5	1,668	(48)
Less: Net income from noncontrolling interest	**10**	2	400	16	(88)
Net income	$ **2,713**	2,580	5	$ 2,770	(7)
Average loans	$ **75.6**	74.6	1	$ 71.9	4
Average deposits	**146.0**	165.0	(12)	189.0	(13)

NM - Not meaningful

WIM reported net income of $2.7 billion in 2019, up $133 million, or 5%, from 2018. Revenue of $17.3 billion in 2019 increased $965 million, or 6%, from 2018.

Net interest income of $4.0 billion in 2019 decreased $404 million, or 9%, from 2018 predominantly due to the impact of lower deposit balances.

Noninterest income of $13.3 billion in 2019 increased $1.4 billion, or 11%, from 2018, predominantly due to the $1.1 billion gain on the sale of our IRT business and higher net gains from equity securities on increased deferred compensation plan investment results (largely offset by higher employee benefits expense), partially offset by lower asset-based fees.

Noninterest income in 2018 reflected an impairment on the sale of our ownership stake in RockCreek.

The provision for credit losses was $5 million in 2019, compared with a reversal of provision of $5 million in 2018.

Noninterest expense of $13.7 billion in 2019 increased $771 million, or 6%, from 2018 due to higher personnel expense on increased deferred compensation plan expense (offset in net gains from equity securities), technology and equipment expense including $265 million of capitalized software impairment and computer software licensing and maintenance costs, reflecting the strategic reassessment of technology projects, operating losses, and project expense (within other expense), partially offset by lower core deposits and other intangibles amortization expense.

Average loans of $75.6 billion in 2019 increased $1.0 billion from 2018 driven by growth in nonconforming mortgage loans. Average deposits of $146.0 billion in 2019 decreased $19.0 billion, or 12%, from 2018 as customers allocated more cash into higher yielding liquid alternatives.

The following discussions provide additional information for client assets we oversee in our retail brokerage advisory and trust and investment management business lines.

Retail Brokerage Client Assets Brokerage advisory, commissions and other fees are received for providing full-service and discount brokerage services predominantly to retail brokerage clients. Offering advisory account relationships to our brokerage clients is an important component of our broader strategy of meeting their financial needs. Although a majority of our retail brokerage client assets are in accounts that earn brokerage commissions, the fees from those accounts generally represent transactional commissions based on the number and size of transactions executed at the client's direction. Fees from advisory accounts are based on a percentage of the market value of the assets as of the beginning of the quarter, which vary across the account types based on the distinct services provided, and are affected by investment performance as well as asset inflows and outflows. A majority of our brokerage advisory, commissions and other fee income is earned from advisory accounts. Table 9d shows advisory account client assets as a percentage of total retail brokerage client assets at December 31, 2019, 2018 and 2017.

Table 9d: Retail Brokerage Client Assets

			Year ended December 31,
(in billions)	2019	2018	2017
Retail brokerage client assets	$ 1,646.0	1,487.6	1,651.3
Advisory account client assets	589.5	501.1	542.8
Advisory account client assets as a percentage of total client assets	36%	34	33

Retail Brokerage advisory accounts include assets that are financial advisor-directed and separately managed by third-party managers, as well as certain client-directed brokerage assets where we earn a fee for advisory and other services, but do not have investment discretion. For the years ended December 31, 2019, 2018 and 2017, the average fee rate by account type ranged from 80 to 120 basis points. Table 9e presents retail brokerage advisory account client assets activity by account type for the years ended December 31, 2019, 2018 and 2017. The activity in 2019 reflected higher market valuations and net outflows primarily from the correspondent clearing business.

Table 9e: Retail Brokerage Advisory Account Client Assets

					Year ended
(in billions)	Balance, beginning of period	Inflows (1)	Outflows (2)	Market impact (3)	Balance, end of period
December 31, 2019					
Client directed (4)	**$ 151.5**	**33.5**	**(41.8)**	**26.2**	**169.4**
Financial advisor directed (5)	**141.9**	**33.9**	**(34.7)**	**35.2**	**176.3**
Separate accounts (6)	**136.4**	**24.2**	**(29.7)**	**29.2**	**160.1**
Mutual fund advisory (7)	**71.3**	**11.8**	**(14.1)**	**14.7**	**83.7**
Total advisory client assets	**$ 501.1**	**103.4**	**(120.3)**	**105.3**	**589.5**
December 31, 2018					
Client directed (4)	$ 170.9	33.6	(41.0)	(12.0)	151.5
Financial advisor directed (5)	147.0	30.0	(32.9)	(2.2)	141.9
Separate accounts (6)	149.1	23.8	(29.1)	(7.4)	136.4
Mutual fund advisory (7)	75.8	12.8	(13.8)	(3.5)	71.3
Total advisory client assets	$ 542.8	100.2	(116.8)	(25.1)	501.1
December 31, 2017					
Client directed (4)	$ 159.1	37.1	(39.2)	13.9	170.9
Financial advisor directed (5)	115.7	30.6	(24.5)	25.2	147.0
Separate accounts (6)	125.7	26.1	(23.5)	20.8	149.1
Mutual fund advisory (7)	63.3	13.1	(11.1)	10.5	75.8
Total advisory client assets	$ 463.8	106.9	(98.3)	70.4	542.8

(1) Inflows include new advisory account assets, contributions, dividends and interest.
(2) Outflows include closed advisory account assets, withdrawals and client management fees.
(3) Market impact reflects gains and losses on portfolio investments.
(4) Investment advice and other services are provided to client, but decisions are made by the client and the fees earned are based on a percentage of the advisory account assets, not the number and size of transactions executed by the client.
(5) Professionally managed portfolios with fees earned based on respective strategies and as a percentage of certain client assets.
(6) Professional advisory portfolios managed by Wells Fargo Asset Management or third-party asset managers. Fees are earned based on a percentage of certain client assets.
(7) Program with portfolios constructed of load-waived, no-load and institutional share class mutual funds. Fees are earned based on a percentage of certain client assets.

Trust and Investment Client Assets Under Management We earn trust and investment management fees from managing and administering assets, including mutual funds, separate accounts, and personal trust assets, through our asset management and wealth businesses. Prior to the sale of our IRT business, which closed on July 1, 2019, we also earned fees from managing employee benefit trusts through the retirement business. Our asset management business is conducted by Wells Fargo Asset Management (WFAM), which offers Wells Fargo proprietary mutual funds and manages institutional separate accounts, and our wealth business manages assets for high net worth clients. Substantially all of our trust and investment management fee income is earned from AUM where we have discretionary management authority over the investments and generate fees as a percentage of the market value of the AUM. For additional information on the sale of our IRT business, including its impact on our AUM, AUA and associated revenue and expenses, see the "Noninterest Income" section in this Report. Table 9f presents AUM activity for the years ended December 31, 2019, 2018 and 2017.

Table 9f: WIM Trust and Investment – Assets Under Management

					Year ended
(in billions)	Balance, beginning of period	Inflows (1)	Outflows (2)	Market impact (3)	Balance, end of period
December 31, 2019					
Assets managed by WFAM (4):					
Money market funds (5)	**$ 112.4**	**18.2**	**—**	**—**	**130.6**
Other assets managed	**353.5**	**75.1**	**(86.1)**	**35.7**	**378.2**
Assets managed by Wealth and IRT (6)	**170.7**	**33.6**	**(40.5)**	**23.6**	**187.4**
Total assets under management	**$ 636.6**	**126.9**	**(126.6)**	**59.3**	**696.2**
December 31, 2018					
Assets managed by WFAM (4):					
Money market funds (5)	$ 108.2	4.2	—	—	112.4
Other assets managed	395.7	85.5	(120.2)	(7.5)	353.5
Assets managed by Wealth and IRT (6)	186.2	36.3	(39.5)	(12.3)	170.7
Total assets under management	$ 690.1	126.0	(159.7)	(19.8)	636.6
December 31, 2017					
Assets managed by WFAM (4):					
Money market funds (5)	$ 102.6	5.6	—	—	108.2
Other assets managed	379.6	116.0	(130.9)	31.0	395.7
Assets managed by Wealth and IRT (6)	168.5	41.1	(39.4)	16.0	186.2
Total assets under management	$ 650.7	162.7	(170.3)	47.0	690.1

(1) Inflows include new managed account assets, contributions, dividends and interest.
(2) Outflows include closed managed account assets, withdrawals and client management fees.
(3) Market impact reflects gains and losses on portfolio investments.
(4) Assets managed by WFAM consist of equity, alternative, balanced, fixed income, money market, and stable value, and include client assets that are managed or sub-advised on behalf of other Wells Fargo lines of business.
(5) Money Market funds activity is presented on a net inflow or net outflow basis, because the gross flows are not meaningful nor used by management as an indicator of performance.
(6) Includes \$5.0 billion, \$4.9 billion and \$5.5 billion as of December 31, 2019, 2018 and 2017, respectively, of client assets invested in proprietary funds managed by WFAM.

Balance Sheet Analysis

At December 31, 2019, our assets totaled $1.9 trillion, up $31.7 billion from December 31, 2018. Asset growth was predominantly due to increases in federal funds sold and securities purchased under resale agreements, debt securities, and equity securities, which increased $21.9 billion, $12.4 billion, and $13.1 billion, respectively, partially offset by a $30.2 billion decline in interest-earning deposits with banks.

The following discussion provides additional information about the major components of our balance sheet. Information regarding our capital and changes in our asset mix is included in the "Earnings Performance – Net Interest Income" and "Capital Management" sections and Note 29 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report.

Available-for-Sale and Held-to-Maturity Debt Securities

Table 10: Available-for-Sale and Held-to-Maturity Debt Securities

	December 31, 2019			December 31, 2018		
(in millions)	**Amortized cost**	**Net unrealized gain (loss)**	**Fair value**	Amortized cost	Net unrealized gain (loss)	Fair value
Available-for-sale	**$ 260,060**	**3,399**	**263,459**	272,471	(2,559)	269,912
Held-to-maturity	**153,933**	**2,927**	**156,860**	144,788	(2,673)	142,115
Total (1)	**413,993**	**6,326**	**420,319**	417,259	(5,232)	412,027

(1) Available-for-sale debt securities are carried on the balance sheet at fair value. Held-to-maturity debt securities are carried on the balance sheet at amortized cost.

Table 10 presents a summary of our available-for-sale and held-to-maturity debt securities, which increased $2.7 billion in balance sheet carrying value from December 31, 2018, due to higher net unrealized gains, partially offset by paydowns, sales and maturities exceeding purchases.

The total net unrealized gains on available-for-sale debt securities were $3.4 billion at December 31, 2019, up from net unrealized losses of $2.6 billion at December 31, 2018, driven by lower interest rates and tighter credit spreads.

The size and composition of our available-for-sale and held-to-maturity debt securities is dependent upon the Company's liquidity and interest rate risk management objectives. Our business generates assets and liabilities, such as loans, deposits and long-term debt, which have different maturities, yields, re-pricing, prepayment characteristics and other provisions that expose us to interest rate and liquidity risk.

The available-for-sale debt securities portfolio primarily consists of liquid, high-quality U.S. Treasury and federal agency debt, and agency mortgage-backed securities (MBS), in addition to securities issued by U.S. states and political subdivisions, corporate debt securities, and highly rated collateralized loan obligations (CLOs). The available-for-sale debt securities portfolio can be used to meet funding needs that arise in the normal course of business or due to market stress. Changes in our interest rate risk profile may occur due to changes in overall economic or market conditions, which could influence loan origination demand, prepayment speeds, or deposit balances and mix. In response, the available-for-sale debt securities portfolio can be rebalanced to meet the Company's interest rate risk management objectives. In addition to meeting liquidity and interest rate risk management objectives, the available-for-sale debt securities portfolio may provide yield enhancement over other short-term assets. See the "Risk Management – Asset/Liability Management" section in this Report for more information on liquidity and interest rate risk.

The held-to-maturity debt securities portfolio predominantly consists of high-quality U.S. Treasury debt, agency MBS and securities issued by U.S. states and political subdivisions where our intent is to hold these securities to maturity and collect the contractual cash flows. The held-to-maturity debt securities portfolio may also provide yield enhancement over short-term assets.

We analyze debt securities for OTTI quarterly or more often if a potential loss-triggering event occurs. In 2019, we recognized $63 million of OTTI write-downs on debt securities. For a discussion of our OTTI accounting policies and underlying considerations and analysis, see Note 1 (Summary of Significant Accounting Policies) and Note 5 (Available-for-Sale and Held-to-Maturity Debt Securities) to Financial Statements in this Report.

At December 31, 2019, debt securities included $53.8 billion of municipal bonds, of which 96.9% were rated "A-" or better based predominantly on external ratings. Additionally, some of the debt securities in our total municipal bond portfolio are guaranteed against loss by bond insurers. These guaranteed bonds are predominantly investment grade and were generally underwritten in accordance with our own investment standards prior to the determination to purchase, without relying on the bond insurer's guarantee in making the investment decision. The credit quality of our municipal bond holdings are monitored as part of our ongoing impairment analysis.

The weighted-average expected maturity of debt securities available-for-sale was 4.7 years at December 31, 2019. The expected remaining maturity is shorter than the remaining contractual maturity for the 63.5% of this portfolio that is MBS because borrowers generally have the right to prepay obligations before the underlying mortgages mature. The estimated effects of a 200 basis point increase or decrease in interest rates on the fair value and the expected remaining maturity of the MBS available-for-sale portfolio are shown in Table 11.

Table 11: Mortgage-Backed Securities Available for Sale

(in billions)	Fair value	Net unrealized gain (loss)	Expected remaining maturity (in years)
At December 31, 2019			
Actual	167.2	2.2	4.6
Assuming a 200 basis point:			
Increase in interest rates	151.3	(13.7)	6.9
Decrease in interest rates	176.9	11.9	3.2

The weighted-average expected remaining maturity of debt securities held-to-maturity (HTM) was 4.9 years at December 31, 2019. HTM debt securities are measured at amortized cost and, therefore, changes in the fair value of our held-to-maturity MBS resulting from changes in interest rates are not recognized in earnings. See Note 5 (Available-for-Sale and Held-to-Maturity Debt Securities) to Financial Statements in this Report for a summary of debt securities by security type.

Loan Portfolios

Table 12 provides a summary of total outstanding loans by portfolio segment. Total loans increased $9.2 billion from December 31, 2018, largely driven by an increase in consumer loans.

Consumer loans were up $6.8 billion from December 31, 2018, predominantly due to growth in the real estate 1-4 family first mortgage portfolio, as mortgage loan originations were partially offset by paydowns and $4.0 billion of sales of PCI loans, predominantly Pick-a-Pay, in 2019. We also purchased $3.3 billion of mortgage loans in 2019 as a result of exercising servicer cleanup calls. In addition, during 2019, we reclassified $1.9 billion of existing mortgage loans to MLHFS in anticipation of future whole loan sales.

Commercial loans also increased from December 31, 2018, predominantly driven by growth in our commercial and industrial loan portfolio, reflecting growth in our Corporate and Investment Banking business and purchases of CLOs in loan form within our Credit Investment Portfolio, partially offset by declines in our Commercial Banking business.

Table 12: Loan Portfolios

(in millions)		**December 31, 2019**	December 31, 2018
Commercial	**$**	**515,719**	513,405
Consumer		**446,546**	439,705
Total loans		**962,265**	953,110
Change from prior year	**$**	**9,155**	(3,660)

Average loan balances and a comparative detail of average loan balances is included in Table 5 under "Earnings Performance – Net Interest Income" earlier in this Report. Additional information on total loans outstanding by portfolio segment and class of financing receivable is included in the "Risk Management – Credit Risk Management" section in this Report. Period-end balances and other loan related information are in Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Table 13 shows contractual maturities for selected classes of commercial loans and the distribution of loans to changes in interest rates.

Table 13: Maturities for Selected Commercial Loan Categories

		December 31, 2019			
(in millions)		Within one year	After one year through five years	After five years	Total
Selected loan maturities:					
Commercial and industrial	$	130,342	196,460	27,323	354,125
Real estate mortgage		27,951	64,506	29,367	121,824
Real estate construction		9,219	10,178	542	19,939
Total selected loans	$	167,512	271,144	57,232	495,888
Distribution of loans to changes in interest rates:					
Loans at fixed interest rates	$	22,660	28,688	18,479	69,827
Loans at floating/variable interest rates		144,852	242,456	38,753	426,061
Total selected loans	$	167,512	271,144	57,232	495,888

Deposits

Deposits were $1.3 trillion at December 31, 2019, up $36.5 billion from December 31, 2018, due to an increase in commercial deposits, consumer and small business banking deposits, and mortgage escrow deposits reflecting an inflow of higher mortgage payoffs to be remitted to investors in accordance with servicing contracts, partially offset by a decrease in other time deposits. The increase in commercial deposits was due to higher balances in corporate and investment banking deposits, and commercial real estate deposits. The increase in consumer and small business banking deposits was due to higher balances in high-yield savings, certificates of deposit (CDs), and noninterest-bearing deposits, partially offset by declines in brokerage sweeps. Table 14 provides additional information regarding deposits. Information regarding the impact of deposits on net interest income and a comparison of average deposit balances is provided in the "Earnings Performance – Net Interest Income" section and Table 5 earlier in this Report.

Table 14: Deposits

($ in millions)		Dec 31, 2019	% of total deposits		Dec 31, 2018	% of total deposits	% Change
Noninterest-bearing	$	344,496	26%	$	349,534	27%	(1)
Interest-bearing checking		62,814	5		56,797	4	11
Market rate and other savings		751,080	57		703,338	55	7
Savings certificates		31,715	2		22,648	2	40
Other time deposits		78,609	6		95,602	7	(18)
Deposits in non-U.S. offices (1)		53,912	4		58,251	5	(7)
Total deposits	$	1,322,626	100%	$	1,286,170	100%	3

(1) Includes Eurodollar sweep balances of $34.2 billion and $31.8 billion at December 31, 2019 and 2018, respectively.

Equity

Total equity was $188.0 billion at December 31, 2019, compared with $197.1 billion at December 31, 2018. The decrease was driven by a $21.6 billion increase in treasury stock and a $1.7 billion decline in preferred stock, partially offset by an $8.5 billion increase in retained earnings net of dividends paid, and a $5.0 billion increase in cumulative other comprehensive income predominantly due to fair value adjustments to available-for-sale debt securities. The increase in treasury stock was the result of the repurchase of 502.4 million shares of common stock in 2019, an increase of 34% from 2018.

Off-Balance Sheet Arrangements

In the ordinary course of business, we engage in financial transactions that are not recorded on the balance sheet, or may be recorded on the balance sheet in amounts that are different from the full contract or notional amount of the transaction. Our off-balance sheet arrangements include commitments to lend and purchase debt and equity securities, transactions with unconsolidated entities, guarantees, derivatives, and other commitments. These transactions are designed to (1) meet the financial needs of customers, (2) manage our credit, market or liquidity risks, and/or (3) diversify our funding sources.

Commitments to Lend

We enter into commitments to lend to customers, which are usually at a stated interest rate, if funded, and for specific purposes and time periods. When we enter into commitments, we are exposed to credit risk. The maximum credit risk for these commitments will generally be lower than the contractual amount because a significant portion of these commitments are not funded. For more information, see Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Commitments to Purchase Debt and Equity Securities

We enter into commitments to purchase securities under resale agreements. We also may enter into commitments to purchase debt and equity securities to provide capital for customers' funding, liquidity or other future needs. For more information, see Note 16 (Guarantees, Pledged Assets and Collateral, and Other Commitments) to Financial Statements in this Report.

Transactions with Unconsolidated Entities

In the normal course of business, we enter into various types of on- and off-balance sheet transactions with special purpose entities (SPEs), which are corporations, trusts, limited liability companies or partnerships that are established for a limited purpose. Generally, SPEs are formed in connection with securitization transactions and are considered variable interest entities (VIEs). For more information, see Note 10 (Securitizations and Variable Interest Entities) to Financial Statements in this Report.

Guarantees and Other Arrangements

Guarantees are contracts that contingently require us to make payments to a guaranteed party based on an event or a change in an underlying asset, liability, rate or index. Guarantees are generally in the form of standby letters of credit, direct pay letters of credit, written options, recourse obligations, exchange and clearing house guarantees, indemnifications, and other types of similar arrangements. For more information, see Note 16 (Guarantees, Pledged Assets and Collateral, and Other Commitments) to Financial Statements in this Report.

Derivatives

We use derivatives to manage exposure to market risk, including interest rate risk, credit risk and foreign currency risk, and to assist customers with their risk management objectives. Derivatives are recorded on the balance sheet at fair value, and volume can be measured in terms of the notional amount, which is generally not exchanged, but is used only as the basis on which interest and other payments are determined. The notional amount is not recorded on the balance sheet and is not, when viewed in isolation, a meaningful measure of the risk profile of the instruments. For more information, see Note 18 (Derivatives) to Financial Statements in this Report.

Contractual Cash Obligations

In the ordinary course of business, we enter into other contractual obligations that may require future cash payments, including debt issuances for the funding of operations and leases for premises and equipment.

Table 15 summarizes these contractual obligations as of December 31, 2019, excluding accrued expenses and other liabilities, short-term borrowings and obligations for pension and postretirement benefit plans. For more information, see Note 14 (Short-Term Borrowings) and Note 23 (Employee Benefits and Other Expenses) to Financial Statements in this Report.

Table 15: Contractual Cash Obligations

							December 31, 2019
(in millions)	Note(s) to Financial Statements	Less than 1 year	1-3 years	3-5 years	More than 5 years	Indeterminate maturity	Total
Contractual payments by period:							
Deposits (1)	13	$ 88,259	21,484	6,036	3,070	1,203,777	1,322,626
Long-term debt (2)	15	39,646	73,329	29,776	85,440	—	228,191
Interest (3)		6,805	8,748	5,733	19,648	—	40,934
Operating leases	7	1,006	1,942	1,347	1,672	—	5,967
Unrecognized tax obligations	24	5	—	—	—	3,676	3,681
Commitments to purchase debt and equity securities (4)	16	2,706	—	—	18	—	2,724
Purchase and other obligations (5)		855	1,009	438	314	—	2,616
Total contractual obligations		$ 139,282	106,512	43,330	110,162	1,207,453	1,606,739

(1) Includes interest-bearing and noninterest-bearing checking, and market rate and other savings accounts.
(2) Balances are presented net of unamortized debt discounts and premiums and purchase accounting adjustments.
(3) Represents the future interest obligations related to interest-bearing time deposits and long-term debt in the normal course of business including a net reduction of $7.1 billion related to hedges used to manage interest rate risk. These interest obligations assume no early debt redemption. We estimated variable interest rate payments using December 31, 2019, rates, which we held constant until maturity. We have excluded interest related to structured notes where our payment obligation is contingent on the performance of certain benchmarks.
(4) Includes unfunded commitments to purchase debt securities of $18 million and equity securities of $2.7 billion, respectively. Substantially all of our equity commitments are included in the 'Less than one year' category as there are no specified contribution dates in the agreements. These obligations may be requested at any time by the investment manager.
(5) Represents agreements related to unrecognized obligations to purchase goods or services.

We are subject to the income tax laws of the U.S., its states and municipalities, and those of the non-U.S. jurisdictions in which we operate. We have various unrecognized tax obligations related to these operations that may require future cash tax payments to various taxing authorities. Because of their uncertain nature, the expected timing and amounts of these payments generally are not reasonably estimable or determinable. We attempt to estimate the amount payable in the next 12 months based on the status of our tax examinations and settlement discussions. See Note 24 (Income Taxes) to Financial Statements in this Report for more information.

Wells Fargo manages a variety of risks that can significantly affect our financial performance and our ability to meet the expectations of our customers, shareholders, regulators and other stakeholders.

Risk is Part of our Business Model The Company measures and manages risk as part of our business, including in connection with the products and services we offer to our customers. The risks we take include financial, such as credit, interest rate, market, liquidity and funding risks, and non-financial, such as operational including compliance and model risks, strategic and reputation risks.

Risk Profile Our risk profile is a holistic view of all risks we hold at a point in time, including emerging risks. The Company monitors its risk profile, and the Board periodically reviews reports and analysis concerning our risk profile.

Risk Capacity Risk capacity refers to the maximum level of risk that the Company could assume given its current level of resources before triggering regulatory and other constraints on its capital and liquidity needs.

Risk Appetite Management defines and the Board approves the Company's risk appetite, which is the amount of risk the Company is comfortable taking given its current level of resources. Risk appetite defines which risks are acceptable and at what level and guides business and risk leaders. Risk appetite boundaries are set within the Company's risk capacity. The Company's risk appetite is articulated in a statement of risk appetite, which is approved at least annually by the Board. The Company continuously monitors its risk appetite, and the Board reviews periodic risk appetite reports and analysis.

Risk and Strategy The Company's risk profile, risk capacity, risk appetite, and risk management effectiveness (e.g., the holistic measure of the quality and effectiveness of the Company's risk management activities, including the functional or programmatic use of controls and capabilities to manage risks) are considered in the strategic planning process, which is closely linked with the Company's capital planning process. The Company's Independent Risk Management (IRM) organization participates in strategic planning at several points in the process, providing challenge to and independent assessment of the Company's self-assessment of the risks associated with strategic planning initiatives. IRM also independently assesses the impact of the strategic plan on risk capacity, risk appetite, and risk management effectiveness at the business group, enterprise function, and aggregate Company level. Risk decisions related to the strategic plan are approved by the Enterprise Risk & Control Committee (ERCC), a management governance committee that governs the management of all risk types. After a critical review, the strategic plan is presented to the Board each year for review and approval.

Everyone Manages Risk Every team member creates risk in the course of performing business activities and is required to manage that risk. Risk is everyone's responsibility. Every team member is required to comply with applicable laws, regulations, and Company policies.

Risk and Culture The Board holds management accountable for establishing and maintaining the right risk culture and effectively managing risk. Team members are strongly encouraged and expected to speak up when they see something that could cause harm to the Company's customers, communities, team members, shareholders, or reputation. Because risk management is everyone's responsibility, all team members are expected to challenge risk decisions when appropriate and to escalate their concerns when they have not been addressed. Team member performance evaluations are tied to, and take into account, effective risk management. The Company's performance management and incentive compensation programs are designed to establish a balanced framework for risk and reward under core principles that team members are expected to know and practice. The Board, through its Human Resources Committee, plays an important role in overseeing and providing credible challenge to the Company's performance management and incentive compensation programs.

Risk Management Framework The Company's risk management framework sets forth the core principles on how the Company seeks to manage and govern its risk. Many Company policies and documents anchor to the risk management framework's core principles. The Board's Risk Committee annually reviews and approves the risk management framework.

Risk Governance

Role of the Board The Board oversees the Company's business, including its risk management. The Board assesses management's performance, provides credible challenge, and holds management accountable for maintaining an effective risk management program and for adhering to risk management expectations.

Board Committee Structure The Board carries out its risk oversight responsibilities directly and through its committees.

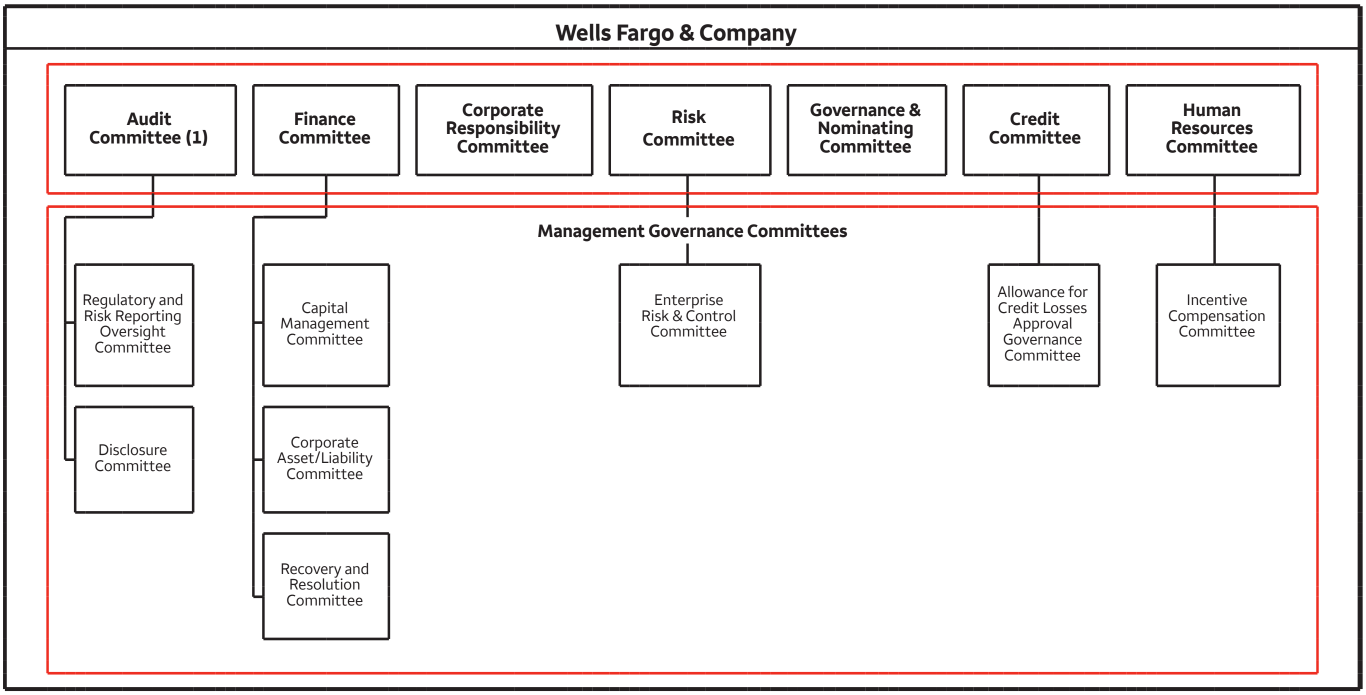
The Risk Committee approves the Company's risk management framework and oversees its implementation, including the processes established by management to identify, assess, measure, monitor, and manage risks. It also monitors the Company's adherence to its risk appetite. In addition, the Risk Committee oversees IRM and the performance of the Chief Risk Officer (CRO) who reports functionally to the Risk Committee and administratively to the CEO.

Management Committee Structure The Company has established management committees, including those focused on risk, that support management in carrying out its governance and risk management responsibilities. One type of management committee is a governance committee, which is a decision making body that operates for a particular purpose.

Each management governance committee is expected to discuss, document, and make decisions regarding significant risk issues, emerging risks, and risk acceptances; review and monitor progress related to critical and high-risk issues and remediation efforts within its scope, including lessons learned; and report key challenges, decisions, escalations, other actions, and open issues as appropriate.

Table 16 below presents the structure of the Company's Board committees and management governance committees, including relevant reporting and escalation paths.

Table 16: Board and Management-level Governance Committee Structure



(1) The Audit Committee additionally oversees the internal audit function; external auditor independence, activities, and performance; and the disclosure framework for financial, regulatory and risk reports prepared for the Board, management, and bank regulatory agencies; and assists the Board in its oversight of the Company's compliance with legal and regulatory requirements.

Management Governance Committees Reporting to the Risk Committee of the Board The ERCC governs the management of all risk types, including financial risks and non-financial risks. The ERCC receives information about risk and control events, addresses escalated risks and issues, actively oversees risk control, and provides regular updates to the Risk Committee regarding current and emerging risks and management's assessment of the effectiveness of the Company's risk management program.

The ERCC is chaired by the CRO, with membership made up of the CEO and the heads of business groups and certain enterprise functions. The Chief Auditor attends all meetings of the ERCC. The ERCC has a direct escalation path to the Risk Committee. The ERCC also escalates credit risks and issues to the Credit Committee and certain human capital risks and issues to the Human Resources Committee. In addition, the CRO has the authority to escalate anything directly to the Board. Risks and issues are escalated to the ERCC in accordance with applicable policies and procedures governing escalations.

Each business group and enterprise function has a risk and control committee, which are management governance committees with mandates that align with the ERCC but with their scope limited to the relevant business groups or enterprise functions. The focus of these committees is on the risks that each business group or enterprise function generates and is responsible for managing, and the controls each business group or enterprise function is expected to have in place.

In addition to each risk and control committee, management governance committees dedicated to specific risk types and risk topics also report to the ERCC to help provide more comprehensive governance of risks.

Risk Operating Model - Roles and Responsibilities

The Company has three lines of defense: the front line, Independent Risk Management, and Internal Audit. Our risk operating model creates necessary interaction, interdependencies, and ongoing engagement among the lines of defense:

- **Front Line** The front line, which is composed of business groups and certain activities of enterprise functions, is the first line of defense. In the course of its business activities, the front line identifies, measures and assesses, manages, controls, monitors, and reports on risk associated with its business activities and balances risk and reward in decision making while remaining within the Company's risk appetite.
- **Independent Risk Management** IRM is the second line of defense. It establishes and maintains the Company's risk management program and provides oversight, including challenge to and independent assessment of the front line's execution of its risk management responsibilities.
- **Internal Audit** Internal Audit is the third line of defense. It is responsible for acting as an independent assurance function and validates that the risk management program is adequately designed and functioning effectively.

Risk Type Classifications

The Company uses common classifications, hierarchies, and ratings to enable consistency across risk management programs and aggregation of information. Risk type classifications permit the Company to identify and prioritize its risk exposures, including emerging risk exposures.

Operational Risk Management

Operational risk, which in addition to those discussed in this section, includes compliance risk and model risk, is the risk resulting from inadequate or failed internal processes, people and systems, or from external events.

The Board's Risk Committee has primary oversight responsibility for all aspects of operational risk, including significant supporting programs and/or policies regarding the Company's business resiliency and disaster recovery, data management, information security, technology, and third-party risk management. As part of its oversight responsibilities, the Board's Risk Committee approves the operational risk statement of risk appetite including inner and outer boundary thresholds, reviews and approves significant operational risk policies, and oversees the Company's operational risk management program.

At the management level, the Operational Risk Group organization, which is part of IRM, has primary oversight responsibility for operational risk. The Operational Risk Group reports to the CRO and also provides periodic reports related to operational risk to the Board's Risk Committee. Technology, Third Party and Information Risk Oversight, which is part of the Operational Risk Group, has oversight responsibility for technology risk, third-party risk, information risk management, and information security risk. Enterprise Data Governance, which is part of the Operational Risk Group, has oversight responsibility for data management risk. Oversight of human capital risk, an operational risk, is performed by the Human Resources function with reporting paths to relevant management governance committees including to the ERCC.

Information security is a significant operational risk for financial institutions such as Wells Fargo, and includes the risk arising from unauthorized access, use, disclosure, disruption, modification, or destruction of information or information systems. The Board is actively engaged in the oversight of the Company's information security risk management and cyber defense programs. The Board's Risk Committee has primary oversight responsibility for information security risk and approves the Company's information security program, which includes the information security policy and the cyber defense program. A Technology Subcommittee of the Risk Committee assists the Risk Committee in providing oversight of technology, information security, and cybersecurity risks as well as data management risk. The Technology Subcommittee reviews and recommends to the Risk Committee for approval any significant supporting information security risk (including cybersecurity risk), technology risk, and data management risk programs and/or policies, including the Company's data management strategy. The Technology Subcommittee reports to the Risk Committee and both provide updates to the full Board.

Wells Fargo and other financial institutions continue to be the target of various evolving and adaptive cyber attacks, including malware and denial-of-service, as part of an effort to disrupt the operations of financial institutions, potentially test their cybersecurity capabilities, commit fraud, or obtain confidential, proprietary or other information. Cyber attacks have also focused on targeting online applications and services, such as online banking, as well as cloud-based services provided by third parties, and have targeted the infrastructure of the internet causing the widespread unavailability of websites and degrading website performance. Wells Fargo has not experienced any material losses relating to these or other types of cyber attacks. Cybersecurity risk is a priority for Wells Fargo, and we continue to develop and enhance our controls, processes and systems in order to protect our networks, computers, software and data from attack, damage or unauthorized access. Wells Fargo is also proactively involved in industry cybersecurity efforts and working with other parties, including our third-party service providers and governmental agencies, to continue to enhance defenses and improve resiliency to cybersecurity threats. See the "Risk Factors" section in this Report for additional information regarding the risks associated with a failure or breach of our operational or security systems or infrastructure, including as a result of cyber attacks.

Compliance Risk Management

Compliance risk (a type of operational risk) is the risk resulting from the failure to comply with laws (legislation, regulations and rules) and regulatory guidance, and the failure to appropriately address associated impacts, including to customers. Compliance risk encompasses violations of applicable internal policies, program requirements, procedures, and standards related to ethical principles applicable to the banking industry.

The Board's Risk Committee has primary oversight responsibility for all aspects of compliance risk, including financial crimes risk. As part of its oversight responsibilities, the Board's Risk Committee approves the compliance risk and financial crimes risk statement of risk appetites including inner and outer boundary thresholds, reviews and approves significant supporting compliance risk and financial crimes risk policies and programs, and oversees the Company's compliance risk management and financial crimes risk management programs. A Compliance Subcommittee of the Risk Committee assists the Risk Committee in providing oversight of the Company's compliance program and compliance risk management. The Compliance Subcommittee reports to the Risk Committee and both provide updates to the full Board.

Conduct risk, a sub-category of compliance risk, is the risk of inappropriate, unethical, or unlawful behavior on the part of team members or individuals acting on behalf of the Company, caused by deliberate or unintentional actions or business practices. The Board has enhanced its oversight of conduct risk to oversee the alignment of team member conduct to the Company's risk appetite (which the Board approves annually). The Board's Risk Committee has primary oversight responsibility for enterprise-wide conduct risk and risk management components of the Company's culture, while the responsibilities of the Board's Human Resources Committee include oversight of the Company's enterprise-wide culture, Code of Ethics and Business Conduct, conflicts of interest program, human capital management (including talent management and succession planning), performance management program, and incentive compensation risk management program.

At the management level, Wells Fargo Compliance, which is part of IRM, monitors the implementation of the Company's compliance and conduct risk programs. Financial Crimes Risk Management, which is part of Wells Fargo Compliance, oversees and monitors financial crimes risk. Wells Fargo Compliance reports to the CRO and also provides periodic reports related to compliance risk to the Board's Risk Committee and Compliance Subcommittee. We continue to enhance our oversight of operational and compliance risk management, including as required by the FRB's February 2, 2018, and the CFPB/OCC's April 20, 2018, consent orders.

Model Risk Management

Model risk (a type of operational risk) is the risk arising from the potential for adverse consequences from decisions made based on model outputs that may be incorrect or used inappropriately.

The Board's Risk Committee has primary oversight responsibility for model risk. As part of its oversight responsibilities, the Board's Risk Committee oversees the Company's model risk management policy, model validation activities, model performance, model issue remediation status, and adherence to model risk appetite metrics.

At the management level, the Model Risk function, which is part of IRM, has primary oversight responsibility for model risk and is responsible for governance, validation and monitoring of model risk across the Company. The Model Risk function reports to the CRO and also provides periodic reports related to model risk to the Board's Risk Committee.

Strategic Risk Management

Strategic risk is the risk to earnings, capital, or liquidity arising from adverse business decisions, improper implementation of strategic initiatives, or inadequate responses to changes in the external operating environment.

The Board has primary oversight responsibility for strategic planning and oversees management's development and implementation of and approves the Company's strategic plan, and considers whether it is aligned with the Company's risk appetite and risk management effectiveness. Management develops, executes and recommends strategic corporate transactions and the Board evaluates management's proposals, including their impact on the Company's risk profile and financial position. The Board's Risk Committee has primary oversight responsibility for the Company's strategic risk and the adequacy of the Company's strategic risk management program, including associated risk management practices, processes and controls. The Board's Risk Committee also receives updates from management regarding new business initiatives activity and risks related to new or changing products, as appropriate.

At the management level, the Strategic Risk Oversight function, which is part of IRM, has primary oversight responsibility for strategic risk. The Strategic Risk Oversight function reports into the CRO and also provides periodic reports related to strategic risk to the Board's Risk Committee.

Reputation Risk Management

Reputation risk is the risk arising from the potential that negative stakeholder opinion or negative publicity regarding the Company's business practices, whether true or not, will adversely impact current or projected financial conditions and resilience, cause a decline in the customer base, or result in costly litigation. Stakeholders include team members, customers, communities, shareholders, regulators, elected officials, advocacy groups, and media organizations.

The Board's Risk Committee has primary oversight responsibility for company-wide reputation risk, while each Board committee has reputation risk oversight responsibilities related to their primary oversight responsibilities. As part of its oversight responsibilities, the Board's Risk Committee receives reports from management that help it monitor how effectively the Company is managing reputation risk. As part of its oversight responsibilities for social and public responsibility matters, the Board's Corporate Responsibility Committee also receives reports from management relating to the Company's brand and stakeholder perception of the Company.

At the management level, the Reputation Risk Oversight function, which is part of IRM, has primary oversight responsibility for reputation risk. The Reputation Risk Oversight function reports into the CRO and also provides periodic reports related to reputation risk to the Board's Risk Committee.

Credit Risk Management

We define credit risk as the risk of loss associated with a borrower or counterparty default (failure to meet obligations in accordance with agreed upon terms). Credit risk exists with many of our assets and exposures such as debt security holdings, certain derivatives, and loans.

The Board's Credit Committee has primary oversight responsibility for credit risk. At the management level, Credit Risk, which is part of IRM, has primary oversight responsibility for credit risk. Credit Risk reports to the CRO and also provides periodic reports related to credit risk to the Board's Credit Committee.

The following discussion focuses on our loan portfolios, which represent the largest component of assets on our balance sheet for which we have credit risk. Table 17 presents our total loans outstanding by portfolio segment and class of financing receivable.

Table 17: Total Loans Outstanding by Portfolio Segment and Class of Financing Receivable

(in millions)		Dec 31, 2019	Dec 31, 2018
Commercial:			
Commercial and industrial	$	**354,125**	350,199
Real estate mortgage		**121,824**	121,014
Real estate construction		**19,939**	22,496
Lease financing		**19,831**	19,696
Total commercial		**515,719**	513,405
Consumer:			
Real estate 1-4 family first mortgage		**293,847**	285,065
Real estate 1-4 family junior lien mortgage		**29,509**	34,398
Credit card		**41,013**	39,025
Automobile		**47,873**	45,069
Other revolving credit and installment		**34,304**	36,148
Total consumer		**446,546**	439,705
Total loans	$	**962,265**	953,110

We manage our credit risk by establishing what we believe are sound credit policies for underwriting new business, while monitoring and reviewing the performance of our existing loan portfolios. We employ various credit risk management and monitoring activities to mitigate risks associated with multiple risk factors affecting loans we hold, could acquire or originate including:

- Loan concentrations and related credit quality
- Counterparty credit risk
- Economic and market conditions
- Legislative or regulatory mandates
- Changes in interest rates
- Merger and acquisition activities
- Reputation risk

Our credit risk management oversight process is governed centrally, but provides for decentralized management and accountability by our lines of business. Our overall credit process includes comprehensive credit policies, disciplined credit underwriting, frequent and detailed risk measurement and modeling, extensive credit training programs, and a continual loan review and audit process.

A key to our credit risk management is adherence to a well-controlled underwriting process, which we believe is appropriate for the needs of our customers as well as investors who purchase the loans or securities collateralized by the loans.

Credit Quality Overview Solid credit quality continued in 2019, as our net charge-off rate remained low at 0.29% of average total loans. Our loss rate reflected improvements in the credit performance of our automobile portfolio, partially offset by a lower volume of recoveries in other loan portfolios. In particular:

- Nonaccrual loans were $5.3 billion at December 31, 2019, down from $6.5 billion at December 31, 2018. Commercial nonaccrual loans increased to $2.3 billion at December 31, 2019, compared with $2.2 billion at December 31, 2018, and consumer nonaccrual loans declined to $3.1 billion at December 31, 2019, compared with $4.3 billion at December 31, 2018. A decline in real estate 1-4 family mortgage nonaccrual loans reflecting an improved housing market, sales of nonaccrual mortgage loans, and the reclassification of nonaccrual mortgage loans to MLHFS was partially offset by an increase in commercial and industrial nonaccrual loans driven by the oil and gas portfolio. Nonaccrual loans represented 0.56% of total loans at December 31, 2019, compared with 0.68% at December 31, 2018.
- Net charge-offs as a percentage of our average commercial and consumer portfolios were 0.13% and 0.48%, respectively, in 2019, compared with 0.09% and 0.52% in 2018.
- Loans that are not government insured/guaranteed and 90 days or more past due and still accruing were $78 million and $855 million in our commercial and consumer portfolios, respectively, at December 31, 2019, compared with $94 million and $885 million at December 31, 2018.
- Our provision for credit losses was $2.7 billion in 2019, compared with $1.7 billion in 2018. The provision for credit losses in both 2019 and 2018 reflected continuing solid underlying credit performance. The provision for credit losses in 2018 also reflected a higher level of credit quality improvement compared with 2019, as well as an improvement in the outlook associated with 2017 hurricane-related losses.
- The allowance for credit losses declined to $10.5 billion, or 1.09% of total loans, at December 31, 2019, compared with $10.7 billion, or 1.12%, at December 31, 2018.

Additional information on our loan portfolios and our credit quality trends follows.

PURCHASED CREDIT-IMPAIRED (PCI) LOANS Loans acquired with evidence of credit deterioration since their origination and where it is probable that we will not collect all contractually required principal and interest payments are PCI loans. A nonaccretable difference is established for PCI loans to absorb losses expected on the contractual amounts of those loans. Amounts absorbed by the nonaccretable difference do not affect the income statement or the allowance for credit losses. The carrying value of PCI loans at December 31, 2019, totaled $568 million, compared with $5.0 billion at December 31, 2018. The decline in carrying value was due to the sale of $4.0 billion of PCI loans, predominantly Pick-a-Pay, during 2019 and paydowns.

For additional information on PCI loans, see the "Risk Management – Credit Risk Management – Real Estate 1-4 Family Mortgage Loans – Pick-a-Pay Portfolio" section in this Report, Note 1 (Summary of Significant Accounting Policies) and Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Significant Loan Portfolio Reviews Measuring and monitoring our credit risk is an ongoing process that tracks delinquencies, collateral values, Fair Isaac Corporation (FICO) scores, economic trends by geographic areas, loan-level risk grading for certain portfolios (typically commercial) and other indications of credit risk. Our credit risk monitoring process is designed to enable early identification of developing risk and to support our determination of an appropriate allowance for credit losses. The following discussion provides additional characteristics and analysis of our significant portfolios. See Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report for more analysis and credit metric information for each of the following portfolios.

COMMERCIAL AND INDUSTRIAL LOANS AND LEASE FINANCING For purposes of portfolio risk management, we aggregate commercial and industrial loans and lease financing according to market segmentation and standard industry codes. We generally subject commercial and industrial loans and lease financing to individual risk assessment using our internal borrower and collateral quality ratings. Our ratings are aligned to regulatory definitions of pass and criticized categories with criticized segmented among special mention, substandard, doubtful and loss categories.

The commercial and industrial loans and lease financing portfolio totaled $374.0 billion, or 39% of total loans, at December 31, 2019. The net charge-off rate for this portfolio was 0.18% in 2019, compared with 0.13% in 2018. At December 31, 2019, 0.44% of this portfolio was nonaccruing, compared with 0.43% at December 31, 2018. Nonaccrual loans in this portfolio increased $64 million in 2019, due to a customer in the utilities industry, as well as increases in the oil, gas and pipeline portfolio, partially offset by improvement across various industry categories. Also, $16.6 billion of the commercial and industrial loan and lease financing portfolio was internally classified as criticized in accordance with regulatory guidance at December 31, 2019, compared with $15.8 billion at December 31, 2018.

Most of our commercial and industrial loans and lease financing portfolio is secured by short-term assets, such as accounts receivable, inventory and debt securities, as well as long-lived assets, such as equipment and other business assets. Generally, the collateral securing this portfolio represents a secondary source of repayment.

Table 18 provides our commercial and industrial loans and lease financing by industry, and includes non-U.S. loans of $71.7 billion and $63.7 billion at December 31, 2019 and 2018, respectively. Significant industry concentrations of non-U.S. loans include $31.2 billion and $25.6 billion in the financials except banks category and $19.9 billion and $18.1 billion in the banks category at December 31, 2019 and 2018, respectively. The industry categories were updated in 2019 to align with industry groupings that our regulators use to monitor industry concentration risks.

Loans to financials except banks, our largest industry concentration, were $117.3 billion, or 12% of total outstanding loans, at December 31, 2019, compared with $105.9 billion, or 11% of total outstanding loans, at December 31, 2018. This industry category includes loans to investment firms, financial vehicles, and non-bank creditors, including those that invest in financial assets backed predominantly by commercial or residential real estate or consumer loan assets. We limit our loan amounts to a percentage of the value of the underlying assets considering underlying credit risk, asset duration, and ongoing performance.

Oil, gas and pipeline loans totaled $13.6 billion, or 1% of total outstanding loans, at December 31, 2019, compared with $12.8 billion, or 1% of total outstanding loans, at December 31, 2018.

Table 18: Commercial and Industrial Loans and Lease Financing by Industry (1)

	December 31, 2019			December 31, 2018		
(in millions)	Nonaccrual loans	Total portfolio	% of total loans	Nonaccrual loans	Total portfolio	% of total loans
Financials except banks	$ 112	117,312	12%	$ 305	105,925	11%
Equipment, machinery and parts manufacturing	36	23,457	2	47	20,850	2
Technology, telecom and media	28	22,447	2	26	25,681	3
Real estate and construction	47	22,011	2	31	23,380	2
Banks	—	20,070	2	—	18,407	2
Retail	105	19,923	2	87	19,541	2
Materials and commodities	33	16,375	2	136	18,688	2
Automobile related	24	15,996	2	16	16,801	2
Food and beverage manufacturing	9	14,991	2	48	15,448	2
Health care and pharmaceuticals	28	14,920	2	124	15,529	2
Oil, gas and pipelines	615	13,562	1	417	12,840	1
Entertainment and recreation	44	13,462	1	33	14,045	1
Transportation services	224	10,957	1	176	12,029	1
Commercial services	50	10,455	1	48	10,591	1
Agribusiness	35	7,539	1	46	7,996	1
Utilities	224	5,995	1	6	5,756	1
Insurance and fiduciaries	1	5,525	1	1	5,510	1
Government and education	6	5,363	1	3	6,160	1
Other (2)	19	13,596	1	26	14,718	1
Total	$ 1,640	373,956	39%	$ 1,576	369,895	39%

(1) Industry categories are based on the North American Industry Classification System and the amounts reported include non-U.S. loans. The industry categories were updated in 2019 to align with industry groupings that our regulators use to monitor industry concentration risks. The amounts for December 31, 2018, have been reclassified to conform with the current period presentation. See Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report for a breakout of non-U.S. commercial loans.
(2) No other single industry had total loans in excess of $4.7 billion and $4.5 billion at December 31, 2019 and 2018, respectively.

Risk mitigation actions, including the restructuring of repayment terms, securing collateral or guarantees, and entering into extensions, are based on a re-underwriting of the loan and our assessment of the borrower's ability to perform under the agreed-upon terms. Extension terms generally range from six to thirty-six months and may require that the borrower provide additional economic support in the form of partial repayment, or additional collateral or guarantees. In cases where the value of collateral or financial condition of the borrower is insufficient to repay our loan, we may rely upon the support of an outside repayment guarantee in providing the extension.

Our ability to seek performance under a guarantee is directly related to the guarantor's creditworthiness, capacity and willingness to perform, which is evaluated on an annual basis, or more frequently as warranted. Our evaluation is based on the most current financial information available and is focused on various key financial metrics, including net worth, leverage, and current and future liquidity. We consider the guarantor's reputation, creditworthiness, and willingness to work with us based on our analysis, as well as other lenders' experience with the guarantor. Our assessment of the guarantor's credit strength is reflected in our loan risk ratings for such loans. The loan risk rating and accruing status are important factors in our allowance for credit losses methodology.

In considering the accrual status of the loan, we evaluate the collateral and future cash flows, as well as the anticipated support of any repayment guarantor. In many cases, the strength of the guarantor provides sufficient assurance that full repayment of the loan is expected. When full and timely collection of the loan becomes uncertain, including the performance of the guarantor, we place the loan on nonaccrual status. As appropriate, we also charge the loan down in accordance with our charge-off policies, generally to the net realizable value of the collateral securing the loan, if any.

COMMERCIAL REAL ESTATE (CRE) We generally subject CRE loans to individual risk assessment using our internal borrower and collateral quality ratings. Our ratings are aligned to regulatory definitions of pass and criticized categories with criticized segmented among special mention, substandard, doubtful and loss categories. The CRE portfolio, which included $8.4 billion of non-U.S. CRE loans, totaled $141.8 billion, or 15% of total loans, at December 31, 2019, and consisted of $121.8 billion of mortgage loans and $19.9 billion of construction loans.

Table 19 summarizes CRE loans by state and property type with the related nonaccrual totals. The portfolio is diversified both geographically and by property type. The largest geographic concentrations of CRE loans are in California, New York, Florida and Texas, which combined represented 49% of the total CRE portfolio. By property type, the largest concentrations are office buildings at 26% and apartments at 17% of the portfolio. CRE nonaccrual loans totaled 0.43% of the CRE outstanding balance at both December 31, 2019, and December 31, 2018. At December 31, 2019, we had $3.8 billion of criticized CRE mortgage loans, compared with $4.5 billion at December 31, 2018, and $187 million of criticized CRE construction loans, compared with $289 million at December 31, 2018.

Table 19: CRE Loans by State and Property Type

								December 31, 2019
	Real estate mortgage		Real estate construction		Total			
(in millions)	Nonaccrual loans	Total portfolio	Nonaccrual loans	Total portfolio	Nonaccrual loans	Total portfolio		% of total loans
By state:								
California	$ 149	32,079	12	4,415	161	36,494		4%
New York	21	12,076	2	1,863	23	13,939		1
Florida	23	8,081	4	1,450	27	9,531		1
Texas	42	7,877	5	1,389	47	9,266		1
Arizona	70	4,212	—	303	70	4,515		1
Washington	9	3,757	—	709	9	4,466		1
North Carolina	17	3,823	4	540	21	4,363		1
Georgia	15	3,819	—	401	15	4,220		*
Virginia	6	2,808	—	680	6	3,488		*
New Jersey	16	2,846	—	628	16	3,474		*
Other	205	40,446	14	7,561	219	48,007	(1)	5
Total	$ 573	121,824	41	19,939	614	141,763		15%
By property:								
Office buildings	$ 105	34,188	6	2,919	111	37,107		4%
Apartments	9	18,243	—	6,415	9	24,658		3
Industrial/warehouse	81	15,813	2	1,492	83	17,305		2
Retail (excluding shopping center)	128	14,510	5	210	133	14,720		2
Shopping center	2	10,816	—	1,313	2	12,129		1
Hotel/motel	16	10,319	—	1,459	16	11,778		1
Mixed use properties (2)	92	6,377	1	487	93	6,864		1
Institutional	39	3,617	10	1,924	49	5,541		*
Collateral pool	—	2,328	—	198	—	2,526		*
Agriculture	91	2,116	—	10	91	2,126		*
Other	10	3,497	17	3,512	27	7,009		1
Total	$ 573	121,824	41	19,939	614	141,763		15%

* Less than 1%.
(1) Includes 40 states; no state had loans in excess of $3.5 billion.
(2) Mixed use properties combines residential, commercial, cultural, and other usage within the same building. This also includes data centers, flexible spaces leased to multiple tenants, light manufacturing, and other specialized uses.

NON-U.S. LOANS Our classification of non-U.S. loans is based on whether the borrower's primary address is outside of the United States. At December 31, 2019, non-U.S. loans totaled $80.5 billion, representing approximately 8% of our total consolidated loans outstanding, compared with $71.9 billion, or approximately 8% of total consolidated loans outstanding, at December 31, 2018. Non-U.S. loans were approximately 4% of our consolidated total assets at both December 31, 2019, and December 31, 2018.

COUNTRY RISK EXPOSURE Our country risk monitoring process incorporates centralized monitoring of economic, political, social, legal, and transfer risks in countries where we do or plan to do business, along with frequent dialogue with our customers, counterparties and regulatory agencies. We establish exposure limits for each country through a centralized oversight process based on customer needs, and through consideration of the relevant and distinct risk of each country. We monitor exposures closely and adjust our country limits in response to changing conditions.

We evaluate our individual country risk exposure based on our assessment of the borrower's ability to repay, which gives consideration for allowable transfers of risk, such as guarantees and collateral, and may be different from the reporting based on the borrower's primary address. Our largest single country exposure outside the U.S. based on our assessment of risk at

December 31, 2019, was the United Kingdom, which totaled $31.6 billion, and included $8.0 billion of sovereign claims. Our United Kingdom sovereign claims arise predominantly from deposits we have placed with the Bank of England pursuant to regulatory requirements in support of our London branch.

The United Kingdom withdrew from the European Union (Brexit) on January 31, 2020, and is currently subject to a transition period during which the terms and conditions of its exit are being negotiated. As the United Kingdom exits from the European Union, our primary goal is to continue to serve our existing clients in the United Kingdom and the European Union, as well as to continue to meet the needs of our domestic clients as they do business in those locations. We have an existing authorized bank in Ireland and an asset management entity in Luxembourg. Additionally, we established a broker dealer in France. We are in the process of leveraging these entities to continue to serve clients in the European Union and continue to take actions to update our business operations in the United Kingdom and European Union, including implementing new supplier contracts and staffing arrangements. For additional information on risks associated with Brexit, see the "Risk Factors" section in this Report.

Table 20 provides information regarding our top 20 exposures by country (excluding the U.S.) and our Eurozone exposure, based on our assessment of risk, which gives consideration to the country of any guarantors and/or underlying collateral. With respect to Table 20:

- Lending exposure includes outstanding loans, unfunded credit commitments, and deposits with non-U.S. banks. These balances are presented prior to the deduction of allowance for credit losses or collateral received under the terms of the credit agreements, if any.
- Securities exposure represents debt and equity securities of non-U.S. issuers. Long and short positions are netted, and net short positions are reflected as negative exposure.
- Derivatives and other exposure represents foreign exchange contracts, derivative contracts, securities resale agreements, and securities lending agreements.

Table 20: Select Country Exposures

									December 31, 2019
	Lending		Securities		Derivatives and other		Total exposure		
(in millions)	Sovereign	Non-sovereign	Sovereign	Non-sovereign	Sovereign	Non-sovereign	Sovereign	Non-sovereign (1)	Total
Top 20 country exposures:									
United Kingdom	$ 7,989	21,617	—	881	2	1,067	7,991	23,565	31,556
Canada	36	17,661	(68)	194	—	272	(32)	18,127	18,095
Cayman Islands	—	7,442	—	31	—	126	—	7,599	7,599
Ireland	225	4,971	—	102	—	137	225	5,210	5,435
China	—	4,022	5	408	59	20	64	4,450	4,514
Luxembourg	—	3,636	—	654	—	83	—	4,373	4,373
Bermuda	—	3,824	—	103	—	54	—	3,981	3,981
Guernsey	—	3,554	—	1	—	65	—	3,620	3,620
Germany	—	2,773	—	128	3	42	3	2,943	2,946
Netherlands	—	2,019	—	364	20	126	20	2,509	2,529
South Korea	—	2,023	—	268	—	6	—	2,297	2,297
Brazil	—	2,075	—	1	1	1	1	2,077	2,078
France	—	1,882	—	137	29	9	29	2,028	2,057
Australia	—	1,720	—	145	—	8	—	1,873	1,873
India	—	1,734	—	130	—	—	—	1,864	1,864
Chile	—	1,698	—	(1)	—	—	—	1,697	1,697
Switzerland	—	1,482	—	(51)	—	57	—	1,488	1,488
Taiwan	—	1,369	—	(6)	1	2	1	1,365	1,366
United Arab Emirates	—	1,323	—	—	—	3	—	1,326	1,326
Hong Kong	—	1,333	—	(14)	1	2	1	1,321	1,322
Total top 20 country exposures	$ 8,250	88,158	(63)	3,475	116	2,080	8,303	93,713	102,016
Eurozone exposure:									
Eurozone countries included in Top 20 above (2)	$ 225	15,281	—	1,385	52	397	277	17,063	17,340
Spain	—	401	—	466	—	30	—	897	897
Belgium	—	766	—	(72)	—	1	—	695	695
Austria	—	305	—	—	—	—	—	305	305
Other Eurozone countries	—	230	—	55	—	1	—	286	286
Total Eurozone exposure	$ 225	16,983	—	1,834	52	429	277	19,246	19,523

(1) For countries presented in the table, total non-sovereign exposure comprises $53.1 billion exposure to financial institutions and $42.8 billion to non-financial corporations at December 31, 2019.
(2) Consists of exposure to Ireland, Luxembourg, Germany, Netherlands and France, which are included in the Top 20 country exposures.

REAL ESTATE 1-4 FAMILY MORTGAGE LOANS Our real estate 1-4 family mortgage loan portfolio is composed of both first and junior lien mortgage loans, which are presented in Table 21.

Table 21: Real Estate 1-4 Family Mortgage Loans

	December 31, 2019		December 31, 2018	
(in millions)	Balance	% of portfolio	Balance	% of portfolio
Real estate 1-4 family first mortgage	$ 293,847	91%	$ 285,065	89%
Real estate 1-4 family junior lien mortgage	29,509	9	34,398	11
Total real estate 1-4 family mortgage loans	$ 323,356	100%	$ 319,463	100%

The real estate 1-4 family mortgage loan portfolio includes some loans with adjustable-rate features and some with an interest-only feature as part of the loan terms. Interest-only loans were approximately 3% and 4% of total loans at December 31, 2019 and 2018, respectively. We believe we have manageable adjustable-rate mortgage (ARM) reset risk across our mortgage loan portfolios. We do not offer option ARM products, nor do we offer variable-rate mortgage products with fixed payment amounts, commonly referred to within the financial services industry as negative amortizing mortgage loans. The option ARMs we do have are included in the Pick-a-Pay portfolio which was acquired from Wachovia. For more information, see the "Pick-a-Pay Portfolio" section in this Report.

We continue to modify real estate 1-4 family mortgage loans to assist homeowners and other borrowers experiencing financial difficulties. Loans are generally underwritten at the time of the modification in accordance with underwriting guidelines established for our loan modification programs. Under these programs, we may provide concessions such as interest rate reductions, forbearance of principal, and in some cases, principal forgiveness. These programs generally include trial payment periods of three to four months, and after successful completion and compliance with terms during this period, the loan is permanently modified. Loans included under these programs are accounted for as troubled debt restructurings (TDRs) at the start of a trial period or at the time of permanent modification, if no trial period is used. See the "Critical Accounting Policies – Allowance for Credit Losses" section in this Report for discussion on how we determine the allowance for credit losses attributable to our modified residential real estate portfolios.

Part of our credit monitoring includes tracking delinquency, current FICO scores and loan/combined loan to collateral values (LTV/CLTV) on the entire real estate 1-4 family mortgage loan portfolio. These credit risk indicators on the non-PCI mortgage portfolio exclude government insured/guaranteed loans. Loans 30 days or more delinquent at December 31, 2019, totaled $3.0 billion, or 1% of total non-PCI mortgages, compared with $4.0 billion, or 1%, at December 31, 2018. Loans with FICO scores lower than 640 totaled $7.6 billion, or 2% of total non-PCI mortgages at December 31, 2019, compared with $9.7 billion, or 3%, at December 31, 2018. Mortgages with a LTV/CLTV greater than 100% totaled $2.5 billion at December 31, 2019, or 1% of total non-PCI mortgages, compared with $3.9 billion, or 1%, at December 31, 2018. Information regarding credit quality indicators, including PCI credit quality indicators, can be found in Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Real estate 1-4 family mortgage loans by state are presented in Table 22. Our real estate 1-4 family non-PCI mortgage loans to borrowers in California represented 13% of total loans at December 31, 2019, located predominantly within the larger metropolitan areas, with no single California metropolitan area consisting of more than 5% of total loans. We monitor changes in real estate values and underlying economic or market conditions for all geographic areas of our real estate 1-4 family mortgage portfolios as part of our credit risk management process. Our underwriting and periodic review of loans and lines secured by residential real estate collateral includes original appraisals adjusted for the change in Home Price Index (HPI) or estimates from automated valuation models (AVMs) to support property values. AVMs are computer-based tools used to estimate the market value of homes. AVMs are a lower-cost alternative to appraisals and support valuations of large numbers of properties in a short period of time using market comparables and price trends for local market areas. The primary risk associated with the use of AVMs is that the value of an individual property may vary significantly from the average for the market area. We have processes to periodically validate AVMs and specific risk management guidelines addressing the circumstances when AVMs may be used. AVMs are not allowed in real estate 1-4 family mortgage origination underwriting. Broker evaluations and enhanced desktop appraisal reports are allowed in junior lien originations and some first lien line of credit originations up to $250,000. An appraisal is required for all real estate 1-4 family mortgage commitments greater than $250,000. Additional information about appraisals, AVMs, and our policy for their use can be found in Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Table 22: Real Estate 1-4 Family Mortgage Loans by State

(in millions)	Real estate 1-4 family first mortgage	Real estate 1-4 family junior lien mortgage	Total real estate 1-4 family mortgage	% of total loans
			December 31, 2019	
Real estate 1-4 family mortgage loans (excluding PCI):				
California	$ 118,256	8,054	126,310	13%
New York	31,336	1,508	32,844	3
New Jersey	14,113	2,744	16,857	2
Florida	11,804	2,600	14,404	2
Washington	10,863	655	11,518	1
Virginia	8,857	1,712	10,569	1
Texas	8,963	596	9,559	1
North Carolina	5,839	1,388	7,227	1
Colorado	6,382	664	7,046	1
Other (1)	65,709	9,575	75,284	8
Government insured/guaranteed loans (2)	11,170	—	11,170	1
Real estate 1-4 family loans (excluding PCI)	293,292	29,496	322,788	34
Real estate 1-4 family PCI loans	555	13	568	—
Total	$ 293,847	29,509	323,356	34%

(1) Consists of 41 states; no state had loans in excess of $7.0 billion.
(2) Represents loans whose repayments are predominantly insured by the Federal Housing Administration (FHA) or guaranteed by the Department of Veterans Affairs (VA).

First Mortgage Portfolio Our total real estate 1-4 family first lien mortgage portfolio (first mortgage) increased $8.8 billion in 2019. Mortgage loan originations of $67.4 billion in 2019 were partially offset by paydowns and $4.0 billion of sales of PCI loans, predominantly Pick-a-Pay. Also, we purchased $3.3 billion of mortgage loans in 2019 as a result of exercising servicer cleanup calls. In addition, during 2019, we reclassified $1.9 billion of existing mortgage loans to MLHFS in anticipation of future whole loan sales. We also originated $3.4 billion of nonconforming mortgage loan originations as MLHFS in 2019, in anticipation of the issuance of residential mortgage-backed securities.

The credit performance associated with our real estate 1-4 family first mortgage portfolio remained strong in 2019, as measured through nonaccrual loans and net charge-offs. Nonaccrual loans decreased to $2.2 billion at December 31, 2019, compared with $3.2 billion at December 31, 2018, driven by nonaccrual loan sales, the reclassification of nonaccrual loans to MLHFS in anticipation of future sales, and overall continued credit improvement. Net charge-offs as a percentage of average real estate 1-4 family first mortgage loans was a net recovery of 0.02% in 2019, compared with a net recovery of 0.03% in 2018.

Table 23 shows certain delinquency and loss information for the first mortgage portfolio and lists the top five states by outstanding balance.

Table 23: First Mortgage Portfolio Performance

	Outstanding balance		% of loans 30 days or more past due		Loss (recovery) rate	
	December 31,		December 31,		Year ended December 31,	
(in millions)	**2019**	2018	**2019**	2018	**2019**	2018
California	**$ 118,256**	109,092	**0.48%**	0.68	**(0.02)**	(0.06)
New York	**31,336**	28,954	**0.83**	1.12	**0.02**	0.04
New Jersey	**14,113**	13,811	**1.40**	1.91	**0.02**	0.03
Florida	**11,804**	12,350	**1.81**	2.58	**(0.06)**	(0.17)
Washington	**10,863**	9,677	**0.29**	0.57	**(0.02)**	(0.06)
Other	**95,750**	93,261	**1.20**	1.70	**(0.02)**	(0.02)
Total	**282,122**	267,145	**0.86**	1.23	**(0.02)**	(0.03)
Government insured/guaranteed loans	**11,170**	12,932				
PCI	**555**	4,988				
Total first mortgage portfolio	**$ 293,847**	285,065				

Pick-a-Pay Portfolio The Pick-a-Pay portfolio was one of the consumer residential mortgage portfolios we acquired from Wachovia. The Pick-a-Pay portfolio is included in consumer real estate 1-4 family first mortgage loans throughout this Report. Pick-a-Pay option payment loans may have fixed or adjustable rates with payment options that may include a minimum payment, an interest-only payment or fully amortizing payment (both 15- and 30-year options). Table 24 provides balances by types of loans as of December 31, 2019.

Table 24: Pick-a-Pay Portfolio

					December 31,
			2019		2018
(in millions)		**Adjusted unpaid principal balance (1)**	**% of total**	Adjusted unpaid principal balance (1)	% of total
Option payment loans	**$**	**4,571**	**50%**	$ 8,813	50%
Non-option payment adjustable-rate and fixed-rate loans		**2,161**	**24**	2,848	16
Full-term loan modifications		**2,320**	**26**	6,080	34
Total adjusted unpaid principal balance	**$**	**9,052**	**100%**	$ 17,741	100%
Total carrying value	**$**	**8,936**		$ 16,115	

(1) Adjusted unpaid principal balance includes write-downs taken on loans where severe delinquency (normally 180 days) or other indications of severe borrower financial stress exist that indicate there will be a loss of contractually due amounts upon final resolution of the loan.

Our Pick-a-Pay portfolio included PCI loans with a carrying value of $519 million at December 31, 2019, compared with $4.9 billion at December 31, 2018. During 2019, we sold $4.0 billion of Pick-a-Pay PCI loans that resulted in a gain of $1.6 billion. The accretable yield balance of our Pick-a-Pay PCI loan portfolio was $134 million ($229 million for all PCI loans) at December 31, 2019, compared with $2.8 billion ($3.0 billion for all PCI loans) at December 31, 2018. The decrease was predominantly due to Pick-a-Pay PCI loan sales. The estimated weighted-average life was approximately 5.1 years and 5.5 years at December 31, 2019 and 2018, respectively. The accretable yield percentage for Pick-a-Pay PCI loans for fourth quarter 2019 was 11.69%.

For additional information on PCI loans, see Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report.

Junior Lien Mortgage Portfolio The junior lien mortgage portfolio consists of residential mortgage lines and loans that are subordinate in rights to an existing lien on the same property. It is not unusual for these lines and loans to have draw periods, interest-only payments, balloon payments, adjustable rates and similar features. Junior lien loan products are mostly amortizing payment loans with fixed interest rates and repayment periods between five to 30 years.

We continuously monitor the credit performance of our junior lien mortgage portfolio for trends and factors that influence the frequency and severity of loss, such as junior lien mortgage performance when the first mortgage loan is delinquent. Table 25 shows certain delinquency and loss information for the junior lien mortgage portfolio and lists the top five states by outstanding balance. The decrease in outstanding balances since December 31, 2018, predominantly reflected loan paydowns. As of December 31, 2019, 4% of the outstanding balance of the junior lien mortgage portfolio was associated with loans that had a combined loan to value (CLTV) ratio in excess of 100%. Of those junior lien mortgages with a CLTV ratio in excess of 100%, 3% were 30 days or more past due. CLTV means the ratio of the total loan balance of first mortgages and junior lien mortgages (including unused line amounts for credit line products) to property collateral value. The unsecured portion (the outstanding amount that was in excess of the most recent property collateral value) of the outstanding balances of these loans totaled 1% of the junior lien mortgage portfolio at December 31, 2019. For additional information on consumer loans by LTV/CLTV, see Table 6.12 in Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Table 25: Junior Lien Mortgage Portfolio Performance

	Outstanding balance		% of loans 30 days or more past due		Loss (recovery) rate	
	December 31,		December 31,		Year ended December 31,	
(in millions)	**2019**	2018	**2019**	2018	**2019**	2018
California	$ **8,054**	9,338	**1.62%**	1.67	**(0.44)**	(0.46)
New Jersey	**2,744**	3,152	**2.74**	2.57	**0.07**	0.25
Florida	**2,600**	3,140	**2.93**	2.73	**(0.09)**	—
Virginia	**1,712**	2,020	**1.97**	1.91	**(0.02)**	0.19
Pennsylvania	**1,674**	1,929	**2.16**	2.10	**(0.10)**	0.15
Other	**12,712**	14,802	**2.05**	2.12	**(0.18)**	(0.07)
Total	**29,496**	34,381	**2.07**	2.08	**(0.21)**	(0.11)
PCI	**13**	17				
Total junior lien mortgage portfolio	$ **29,509**	34,398				

Our junior lien, as well as first lien, lines of credit portfolios generally have draw periods of 10, 15 or 20 years with variable interest rate and payment options available during the draw period of (1) interest-only or (2) 1.5% of outstanding principal balance plus accrued interest. As of December 31, 2019, lines of credit in a draw period primarily used the interest-only option. During the draw period, the borrower has the option of converting all or a portion of the line from a variable interest rate to a fixed rate with terms including interest-only payments for a fixed period between three to seven years or a fully amortizing payment with a fixed period between five to 30 years. At the end of the draw period, a line of credit generally converts to an amortizing payment schedule with repayment terms of up to 30 years based on the balance at time of conversion. Certain lines and loans have been structured with a balloon payment, which requires full repayment of the outstanding balance at the end of the term period. The conversion of lines or loans to fully amortizing or balloon payoff may result in a significant payment increase, which can affect some borrowers' ability to repay the outstanding balance.

On a monthly basis, we monitor the payment characteristics of borrowers in our first and junior lien lines of credit portfolios. In December 2019, approximately 46% of these borrowers paid only the minimum amount due and approximately 51% paid more than the minimum amount due. The rest were either delinquent or paid less than the minimum amount due. For the borrowers with an interest-only payment feature, approximately 30% paid only the minimum amount due and approximately 65% paid more than the minimum amount due.

The lines that enter their amortization period may experience higher delinquencies and higher loss rates than the ones in their draw or term period. We have considered this increased inherent risk in our allowance for credit loss estimate.

In anticipation of our borrowers reaching the end of their contractual commitment, we have created a program to inform, educate and help these borrowers transition from interest-only to fully-amortizing payments or full repayment. We monitor the performance of the borrowers moving through the program in an effort to refine our ongoing program strategy.

Table 26 reflects the outstanding balance of our portfolio of junior lien mortgages, including lines and loans, and first lien lines segregated into scheduled end of draw or end of term periods and products that are currently amortizing, or in balloon repayment status. At December 31, 2019, $488 million, or 2%, of lines in their draw period were 30 days or more past due, compared with $399 million, or 4%, of amortizing lines of credit. Included in the amortizing amounts in Table 26 is $46 million of end-of-term balloon payments which were past due. The unfunded credit commitments for junior and first lien lines totaled $58.9 billion at December 31, 2019.

Table 26: Junior Lien Mortgage Line and Loan and First Lien Mortgage Line Portfolios Payment Schedule

			Scheduled end of draw/term						
(in millions)		**Outstanding balance December 31, 2019**	2020	2021	2022	2023	2024	2025 and thereafter (1)	Amortizing
Junior lien lines and loans	$	**29,496**	334	863	3,308	2,276	1,850	11,754	9,111
First lien lines		**10,384**	139	414	1,618	1,214	956	4,328	1,715
Total	$	**39,880**	473	1,277	4,926	3,490	2,806	16,082	10,826
% of portfolios		**100%**	**1**	**3**	**12**	**9**	**7**	**40**	**28**

(1) Substantially all lines and loans are scheduled to convert to amortizing loans by the end of 2029, with annual scheduled amounts through 2029 ranging from $1.9 billion to $4.8 billion and averaging $3.2 billion per year.

CREDIT CARDS Our credit card portfolio totaled $41.0 billion at December 31, 2019, which represented 4% of our total outstanding loans. The net charge-off rate for our credit card portfolio was 3.53% for 2019, compared with 3.51% for 2018.

AUTOMOBILE Our automobile portfolio totaled $47.9 billion at December 31, 2019. The net charge-off rate for our automobile portfolio was 0.67% for 2019, compared with 1.21% for 2018. The decrease in the net charge-off rate for 2019, compared with 2018, was driven by lower early losses on higher quality originations.

OTHER REVOLVING CREDIT AND INSTALLMENT Other revolving credit and installment loans totaled $34.3 billion at December 31, 2019, and largely included student and securities-based loans. Our private student loan portfolio totaled $10.6 billion at December 31, 2019. The net charge-off rate for other revolving credit and installment loans was 1.59% for 2019, compared with 1.53% for 2018.

NONPERFORMING ASSETS (NONACCRUAL LOANS AND FORECLOSED ASSETS) Table 27 summarizes nonperforming assets (NPAs) for each of the last five years. We generally place loans on nonaccrual status when:

- the full and timely collection of interest or principal becomes uncertain (generally based on an assessment of the borrower's financial condition and the adequacy of collateral, if any), such as in bankruptcy or other circumstances;
- they are 90 days (120 days with respect to real estate 1-4 family mortgages) past due for interest or principal, unless both well-secured and in the process of collection;
- part of the principal balance has been charged off; or
- for junior lien mortgages, we have evidence that the related first lien mortgage may be 120 days past due or in the process of foreclosure regardless of the junior lien delinquency status.

Credit card loans are not placed on nonaccrual status, but are generally fully charged off when the loan reaches 180 days past due.

Note 1 (Summary of Significant Accounting Policies – Loans) to Financial Statements in this Report describes our accounting policy for nonaccrual and impaired loans and foreclosed assets. For additional information on impaired loans, see Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Nonaccrual loans were $5.3 billion at December 31, 2019, down $1.2 billion from a year ago. Consumer nonaccrual loans were down $1.2 billion from a year ago predominantly due to a decrease in real estate 1-4 family mortgage nonaccrual loans, reflecting broad-based credit improvement, sales of nonaccrual mortgage loans, and the reclassification of nonaccrual mortgage loans to MLHFS. Commercial nonaccrual loans increased $66 million from a year ago, predominantly due to an increase in commercial and industrial nonaccrual loans, driven by a customer in the utilities industry, as well as increases in the oil, gas and pipeline portfolio, partially offset by credit improvement across various industry categories. Additionally, foreclosed assets decreased $148 million from December 31, 2018, driven by sales of commercial assets.

Table 27: Nonperforming Assets (Nonaccrual Loans and Foreclosed Assets)

						December 31,
(in millions)		**2019**	2018	2017	2016	2015
Nonaccrual loans:						
Commercial:						
Commercial and industrial	$	**1,545**	1,486	1,899	3,199	1,363
Real estate mortgage		**573**	580	628	685	969
Real estate construction		**41**	32	37	43	66
Lease financing		**95**	90	76	115	26
Total commercial		**2,254**	2,188	2,640	4,042	2,424
Consumer:						
Real estate 1-4 family first mortgage (1)		**2,150**	3,183	3,732	4,516	6,829
Real estate 1-4 family junior lien mortgage (1)		**796**	945	1,086	1,206	1,495
Automobile		**106**	130	130	106	121
Other revolving credit and installment		**40**	50	58	51	49
Total consumer		**3,092**	4,308	5,006	5,879	8,494
Total nonaccrual loans (2)(3)	$	**5,346**	6,496	7,646	9,921	10,918
As a percentage of total loans		**0.56%**	0.68	0.80	1.03	1.19
Foreclosed assets:						
Government insured/guaranteed (4)	$	**50**	88	120	197	446
Non-government insured/guaranteed		**253**	363	522	781	979
Total foreclosed assets		**303**	451	642	978	1,425
Total nonperforming assets	$	**5,649**	6,947	8,288	10,899	12,343
As a percentage of total loans		**0.59%**	0.73	0.87	1.13	1.35

(1) Real estate 1-4 family mortgage loans predominantly insured by the FHA or guaranteed by the VA are not placed on nonaccrual status because they are insured or guaranteed.
(2) Financial information for periods prior to December 31, 2018, has been revised to exclude mortgage loans held for sale (MLHFS), loans held for sale (LHFS) and loans held at fair value of $390 million, $463 million, and $464 million at December 31, 2017, 2016, and 2015, respectively.
(3) Excludes PCI loans because they continue to earn interest income from accretable yield, independent of performance in accordance with their contractual terms.
(4) Consistent with regulatory reporting requirements, foreclosed real estate resulting from government insured/guaranteed loans are classified as nonperforming. Both principal and interest related to these foreclosed real estate assets are collectible because the loans were predominantly insured by the FHA or guaranteed by the VA. Receivables related to the foreclosure of certain government guaranteed real estate mortgage loans are excluded from this table and included in Accounts Receivable in Other Assets. For more information on the classification of certain government-guaranteed mortgage loans upon foreclosure, see Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report.

Table 28 provides a summary of nonperforming assets during 2019.

Table 28: Nonperforming Assets by Quarter During 2019

	December 31, 2019		September 30, 2019		June 30, 2019		March 31, 2019	
(in millions)	**Balance**	**% of total loans**	Balance	% of total loans	Balance	% of total loans	Balance	% of total loans
Nonaccrual loans:								
Commercial:								
Commercial and industrial	**$ 1,545**	**0.44%**	$ 1,539	0.44%	$ 1,634	0.47%	$ 1,986	0.57%
Real estate mortgage	**573**	**0.47**	669	0.55	737	0.60	699	0.57
Real estate construction	**41**	**0.21**	32	0.16	36	0.17	36	0.16
Lease financing	**95**	**0.48**	72	0.37	63	0.33	76	0.40
Total commercial	**2,254**	**0.44**	2,312	0.45	2,470	0.48	2,797	0.55
Consumer:								
Real estate 1-4 family first mortgage (1)	**2,150**	**0.73**	2,261	0.78	2,425	0.85	3,026	1.06
Real estate 1-4 family junior lien mortgage (1)	**796**	**2.70**	819	2.66	868	2.71	916	2.77
Automobile	**106**	**0.22**	110	0.24	115	0.25	116	0.26
Other revolving credit and installment	**40**	**0.12**	43	0.12	44	0.13	50	0.14
Total consumer	**3,092**	**0.69**	3,233	0.73	3,452	0.79	4,108	0.94
Total nonaccrual loans (2)	**5,346**	**0.56**	5,545	0.58	5,922	0.62	6,905	0.73
Foreclosed assets:								
Government insured/guaranteed (3)	**50**		59		68		75	
Non-government insured/guaranteed	**253**		378		309		361	
Total foreclosed assets	**303**		437		377		436	
Total nonperforming assets	**$ 5,649**	**0.59%**	$ 5,982	0.63%	$ 6,299	0.66%	$ 7,341	0.77%
Change in NPAs from prior quarter	**$ (333)**		(317)		(1,042)		394	

(1) Real estate 1-4 family mortgage loans predominantly insured by the FHA or guaranteed by the VA are not placed on nonaccrual status because they are insured or guaranteed.
(2) Excludes PCI loans because they continue to earn interest income from accretable yield, independent of performance in accordance with their contractual terms.
(3) Consistent with regulatory reporting requirements, foreclosed real estate resulting from government insured/guaranteed loans are classified as nonperforming. Both principal and interest related to these foreclosed real estate assets are collectible because the loans were predominantly insured by the FHA or guaranteed by the VA. Receivables related to the foreclosure of certain government guaranteed real estate mortgage loans are excluded from this table and included in Accounts Receivable in Other Assets. For more information on the classification of certain government-guaranteed residential mortgage loans upon foreclosure, see Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report.

Table 29 provides an analysis of the changes in nonaccrual loans.

Table 29: Analysis of Changes in Nonaccrual Loans

		Quarter ended			Year ended Dec 31,	
(in millions)	**Dec 31, 2019**	Sep 30, 2019	Jun 30, 2019	Mar 31, 2019	**2019**	2018
Commercial nonaccrual loans						
Balance, beginning of period	$ **2,312**	2,470	2,797	2,188	**2,188**	2,640
Inflows	**652**	710	621	1,238	**3,221**	2,767
Outflows:						
Returned to accruing	**(124)**	(52)	(46)	(43)	**(265)**	(323)
Foreclosures	**—**	(78)	(2)	(15)	**(95)**	(12)
Charge-offs	**(201)**	(194)	(187)	(158)	**(740)**	(636)
Payments, sales and other	**(385)**	(544)	(713)	(413)	**(2,055)**	(2,248)
Total outflows	**(710)**	(868)	(948)	(629)	**(3,155)**	(3,219)
Balance, end of period	**2,254**	2,312	2,470	2,797	**2,254**	2,188
Consumer nonaccrual loans						
Balance, beginning of period	**3,233**	3,452	4,108	4,308	**4,308**	5,006
Inflows	**473**	448	437	552	**1,910**	2,433
Outflows:						
Returned to accruing	**(227)**	(274)	(250)	(248)	**(999)**	(1,304)
Foreclosures	**(29)**	(32)	(34)	(42)	**(137)**	(166)
Charge-offs	**(45)**	(44)	(34)	(49)	**(172)**	(292)
Payments, sales and other	**(313)**	(317)	(775)	(413)	**(1,818)**	(1,369)
Total outflows	**(614)**	(667)	(1,093)	(752)	**(3,126)**	(3,131)
Balance, end of period	**3,092**	3,233	3,452	4,108	**3,092**	4,308
Total nonaccrual loans	$ **5,346**	5,545	5,922	6,905	**5,346**	6,496

Typically, changes to nonaccrual loans period-over-period represent inflows for loans that are placed on nonaccrual status in accordance with our policy, offset by reductions for loans that are paid down, charged off, sold, foreclosed, or are no longer classified as nonaccrual as a result of continued performance and an improvement in the borrower's financial condition and loan repayment capabilities.

While nonaccrual loans are not free of loss content, we believe exposure to loss is significantly mitigated by the following factors at December 31, 2019:

- 86% of total commercial nonaccrual loans and 99% of total consumer nonaccrual loans are secured. Of the consumer nonaccrual loans, 95% are secured by real estate and 88% have a combined LTV (CLTV) ratio of 80% or less.
- losses of $360 million and $941 million have already been recognized on 19% of commercial nonaccrual loans and 35% of consumer nonaccrual loans, respectively, in accordance with our charge-off policies. Once we write down loans to the net realizable value (fair value of collateral less estimated costs to sell), we re-evaluate each loan regularly and record additional write-downs if needed.
- 71% of commercial nonaccrual loans were current on interest and 66% of commercial nonaccrual loans were current on both principal and interest. These commercial loans were on nonaccrual status because the full or timely collection of interest or principal had become uncertain.
- of the $1.3 billion of consumer loans in bankruptcy or discharged in bankruptcy, and classified as nonaccrual, $916 million were current.
- the remaining risk of loss of all nonaccrual loans has been considered and we believe is adequately covered by the allowance for loan losses.

We continue to work with our customers experiencing financial difficulty to determine if they can qualify for a loan modification so that they can stay in their homes. Under our proprietary modification programs, customers may be required to provide updated documentation, and some programs require completion of payment during trial periods to demonstrate sustained performance before the loan can be removed from nonaccrual status.

If interest due on all nonaccrual loans (including loans that were, but are no longer on nonaccrual status at year end) had been accrued under the original terms, approximately $361 million of interest would have been recorded as income on these loans, compared with $316 million actually recorded as interest income in 2019, versus $446 million and $426 million, respectively, in 2018.

Table 30 provides a summary of foreclosed assets and an analysis of changes in foreclosed assets.

Table 30: Foreclosed Assets

		Quarter ended				Year ended Dec 31,	
(in millions)		**Dec 31, 2019**	Sep 30, 2019	Jun 30, 2019	Mar 31, 2019	**2019**	2018
Summary by loan segment							
Government insured/guaranteed	$	**50**	59	68	75	**50**	88
Commercial		**62**	180	101	124	62	127
Consumer		**191**	198	208	237	**191**	236
Total foreclosed assets		**303**	437	377	436	**303**	451
Analysis of changes in foreclosed assets							
Balance, beginning of period	$	**437**	377	436	451	**451**	642
Net change in government insured/guaranteed (1)		**(9)**	(9)	(7)	(13)	**(38)**	(32)
Additions to foreclosed assets (2)		**126**	235	144	193	**698**	778
Reductions:							
Sales		**(250)**	(155)	(199)	(205)	**(809)**	(957)
Write-downs and gains (losses) on sales		**(1)**	(11)	3	10	**1**	20
Total reductions		**(251)**	(166)	(196)	(195)	**(808)**	(937)
Balance, end of period	$	**303**	437	377	436	**303**	451

(1) Foreclosed government insured/guaranteed loans are temporarily transferred to and held by us as servicer, until reimbursement is received from FHA or VA.
(2) Includes loans moved into foreclosed assets from nonaccrual status, PCI loans transitioned directly to foreclosed assets and repossessed automobiles.

Foreclosed assets at December 31, 2019, included $222 million of foreclosed residential real estate, of which 23% is predominantly FHA insured or VA guaranteed and expected to have minimal or no loss content. The remaining amount of foreclosed assets has been written down to estimated net realizable value. Of the $303 million in foreclosed assets at December 31, 2019, 69% have been in the foreclosed assets portfolio one year or less.

TROUBLED DEBT RESTRUCTURINGS (TDRs)

Table 31: Troubled Debt Restructurings (TDRs)

					December 31,
(in millions)	**2019**	2018	2017	2016	2015
Commercial:					
Commercial and industrial	$ **1,183**	1,623	2,096	2,584	1,123
Real estate mortgage	**669**	704	901	1,119	1,456
Real estate construction	**36**	39	44	91	125
Lease financing	**13**	56	35	6	1
Total commercial TDRs	**1,901**	2,422	3,076	3,800	2,705
Consumer:					
Real estate 1-4 family first mortgage	**7,589**	10,629	12,080	14,134	16,812
Real estate 1-4 family junior lien mortgage	**1,407**	1,639	1,849	2,074	2,306
Credit card	**520**	449	356	300	299
Automobile	**81**	89	87	85	105
Other revolving credit and installment	**170**	154	126	101	73
Trial modifications	**115**	149	194	299	402
Total consumer TDRs	**9,882**	13,109	14,692	16,993	19,997
Total TDRs	$ **11,783**	15,531	17,768	20,793	22,702
TDRs on nonaccrual status	$ **2,833**	4,058	4,801	6,193	6,506
TDRs on accrual status:					
Government insured/guaranteed	**1,190**	1,299	1,359	1,526	1,771
Non-government insured/guaranteed	**7,760**	10,174	11,608	13,074	14,425
Total TDRs	$ **11,783**	15,531	17,768	20,793	22,702

Table 32: TDRs Balance by Quarter During 2019

(in millions)	**Dec 31, 2019**	Sep 30, 2019	Jun 30, 2019	Mar 31, 2019
Commercial:				
Commercial and industrial	$ **1,183**	1,162	1,294	1,740
Real estate mortgage	**669**	598	620	681
Real estate construction	**36**	40	43	45
Lease financing	**13**	16	31	46
Total commercial TDRs	**1,901**	1,816	1,988	2,512
Consumer:				
Real estate 1-4 family first mortgage	**7,589**	7,905	8,218	10,343
Real estate 1-4 family junior lien mortgage	**1,407**	1,457	1,550	1,604
Credit card	**520**	504	486	473
Automobile	**81**	82	85	85
Other revolving credit and installment	**170**	167	159	156
Trial modifications	**115**	123	127	136
Total consumer TDRs	**9,882**	10,238	10,625	12,797
Total TDRs	$ **11,783**	12,054	12,613	15,309
TDRs on nonaccrual status	$ **2,833**	2,775	3,058	4,037
TDRs on accrual status:				
Government insured/guaranteed	**1,190**	1,199	1,209	1,275
Non-government insured/guaranteed	**7,760**	8,080	8,346	9,997
Total TDRs	$ **11,783**	12,054	12,613	15,309

Table 31 and Table 32 provide information regarding the recorded investment of loans modified in TDRs. The allowance for loan losses for TDRs was $1.0 billion and $1.2 billion at December 31, 2019 and 2018, respectively. See Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report for additional information regarding TDRs. In those situations where principal is forgiven, the entire amount of such forgiveness is immediately charged off. When we delay the timing on the repayment of a portion of principal (principal forbearance), we charge off the amount of forbearance if that amount is not considered fully collectible.

Our nonaccrual policies are generally the same for all loan types when a restructuring is involved. We typically re-underwrite loans at the time of restructuring to determine whether there is sufficient evidence of sustained repayment capacity based on the borrower's documented income, debt to income ratios, and other factors. Loans lacking sufficient evidence of sustained repayment capacity at the time of modification are charged down to the fair value of the collateral, if applicable. For an accruing loan that has been modified, if the borrower has demonstrated performance under the previous terms and the underwriting process shows the capacity to continue to perform under the restructured terms, the loan will generally remain in accruing status. Otherwise, the loan will be placed in nonaccrual status and may be returned to accruing status when the borrower demonstrates a sustained period of performance, generally six consecutive months of payments, or equivalent, inclusive of consecutive payments made prior to modification. Loans will also be placed on nonaccrual status, and a corresponding charge-off is recorded to the loan balance, when we believe that principal and interest contractually due under the modified agreement will not be collectible.

Table 33 provides an analysis of the changes in TDRs. Loans modified more than once are reported as TDR inflows only in the period they are first modified. Other than resolutions such as foreclosures, sales and transfers to held for sale, we may remove loans held for investment from TDR classification, but only if they have been refinanced or restructured at market terms and qualify as a new loan.

TDRs of $11.8 billion at December 31, 2019, decreased $3.7 billion from December 31, 2018, due to paydowns, as well as a reclassification of $1.7 billion in real estate 1-4 family first mortgage TDR loans to MLHFS.

Table 33: Analysis of Changes in TDRs

		Quarter ended				Year ended Dec 31,	
(in millions)		**Dec 31, 2019**	Sep 30, 2019	Jun 30, 2019	Mar 31, 2019	**2019**	2018
Commercial TDRs							
Balance, beginning of period	$	**1,816**	1,988	2,512	2,422	**2,422**	3,076
Inflows (1)		**476**	293	232	539	**1,540**	1,764
Outflows							
Charge-offs		**(48)**	(66)	(37)	(44)	**(195)**	(284)
Foreclosure		**(1)**	—	—	—	**(1)**	(15)
Payments, sales and other (2)		**(342)**	(399)	(719)	(405)	**(1,865)**	(2,119)
Balance, end of period		**1,901**	1,816	1,988	2,512	**1,901**	2,422
Consumer TDRs							
Balance, beginning of period		**10,238**	10,625	12,797	13,109	**13,109**	14,692
Inflows (1)		**350**	360	336	439	**1,485**	1,747
Outflows							
Charge-offs		**(57)**	(56)	(61)	(60)	**(234)**	(223)
Foreclosure		**(61)**	(70)	(74)	(86)	**(290)**	(470)
Payments, sales and other (2)		**(580)**	(617)	(2,364)	(593)	**(4,154)**	(2,591)
Net change in trial modifications (3)		**(8)**	(4)	(9)	(12)	**(34)**	(46)
Balance, end of period		**9,882**	10,238	10,625	12,797	**9,882**	13,109
Total TDRs	$	**11,783**	12,054	12,613	15,309	**11,783**	15,531

(1) Inflows include loans that modify, even if they resolve within the period, as well as gross advances on term loans that modified in a prior period and net advances on revolving TDRs that modified in a prior period.
(2) Other outflows include normal amortization/accretion of loan basis adjustments and loans transferred to held for sale. Occasionally, loans that have been refinanced or restructured at market terms qualify as new loans, which are also included as other outflows.
(3) Net change in trial modifications includes: inflows of new TDRs entering the trial payment period, net of outflows for modifications that either (i) successfully perform and enter into a permanent modification, or (ii) did not successfully perform according to the terms of the trial period plan and are subsequently charged-off, foreclosed upon or otherwise resolved.

LOANS 90 DAYS OR MORE PAST DUE AND STILL ACCRUING Loans 90 days or more past due are still accruing if they are (1) well-secured and in the process of collection or (2) real estate 1-4 family mortgage loans or consumer loans exempt under regulatory rules from being classified as nonaccrual until later delinquency, usually 120 days past due. PCI loans are not included in past due and still accruing loans even when they are 90 days or more contractually past due. These PCI loans are considered to be accruing because they continue to earn interest from accretable yield, independent of performance in accordance with their contractual terms.

Excluding insured/guaranteed loans, loans 90 days or more past due and still accruing at December 31, 2019, were down $46 million, or 5%, from December 31, 2018, due to payments, other loss mitigation activities, and credit stabilization.

Loans 90 days or more past due and still accruing whose repayments are predominantly insured by the FHA or guaranteed by the VA for mortgages were $6.4 billion at December 31, 2019, down from $7.7 billion at December 31, 2018, due to an improvement in delinquencies, as well as a reduction in the portfolio.

Table 34 reflects non-PCI loans 90 days or more past due and still accruing by class for loans not government insured/guaranteed. For additional information on delinquencies by loan class, see Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Table 34: Loans 90 Days or More Past Due and Still Accruing (1)

					December 31,
(in millions)	**2019**	2018	2017	2016	2015
Total (excluding PCI (2)):	**$ 7,285**	8,704	11,532	11,437	13,866
Less: FHA insured/VA guaranteed (3)	**6,352**	7,725	10,475	10,467	12,863
Less: Student loans guaranteed under the FFELP (4)	**—**	—	—	3	26
Total, not government insured/guaranteed	**$ 933**	979	1,057	967	977
By segment and class, not government insured/guaranteed:					
Commercial:					
Commercial and industrial	**$ 47**	43	26	28	97
Real estate mortgage	**31**	51	23	36	13
Real estate construction	**—**	—	—	—	4
Total commercial	**78**	94	49	64	114
Consumer:					
Real estate 1-4 family first mortgage	**112**	124	213	170	220
Real estate 1-4 family junior lien mortgage	**32**	32	60	56	65
Credit card	**546**	513	492	452	397
Automobile	**78**	114	143	112	79
Other revolving credit and installment	**87**	102	100	113	102
Total consumer	**855**	885	1,008	903	863
Total, not government insured/guaranteed	**$ 933**	979	1,057	967	977

(1) Financial information for periods prior to December 31, 2018, has been revised to exclude MLHFS, LHFS and loans held at fair value, which reduced "Total, not government insured/guaranteed" by $6 million, $5 million and $4 million at December 31, 2017, 2016 and 2015, respectively.
(2) PCI loans totaled $102 million, $370 million, $1.4 billion, $2.0 billion and $2.9 billion at December 31, 2019, 2018, 2017, 2016 and 2015, respectively.
(3) Represents loans whose repayments are predominantly insured by the FHA or guaranteed by the VA.
(4) Represents loans whose repayments are largely guaranteed by agencies on behalf of the U.S. Department of Education under the Federal Family Education Loan Program (FFELP). All remaining student loans guaranteed under the FFELP were sold as of March 31, 2017.

NET CHARGE-OFFS

Table 35: Net Charge-offs

	Year ended								Quarter ended	
	December 31,		December 31,		September 30,		June 30,		March 31,	
($ in millions)	Net loan charge-offs	% of avg. loans	Net loan charge-offs	% of avg. loans (1)	Net loan charge-offs	% of avg. loans (1)	Net loan charge-offs	% of avg. loans (1)	Net loan charge-offs	% of avg. loans (1)
2019										
Commercial:										
Commercial and industrial	**$ 607**	**0.17%**	**$ 168**	**0.19%**	**$ 147**	**0.17%**	**$ 159**	**0.18%**	**$ 133**	**0.15%**
Real estate mortgage	**6**	**—**	**4**	**0.01**	**(8)**	**(0.02)**	**4**	**0.01**	**6**	**0.02**
Real estate construction	**(12)**	**(0.06)**	**—**	**—**	**(8)**	**(0.14)**	**(2)**	**(0.04)**	**(2)**	**(0.04)**
Lease financing	**51**	**0.26**	**31**	**0.63**	**8**	**0.17**	**4**	**0.09**	**8**	**0.17**
Total commercial	**652**	**0.13**	**203**	**0.16**	**139**	**0.11**	**165**	**0.13**	**145**	**0.11**
Consumer:										
Real estate 1-4 family first mortgage	**(50)**	**(0.02)**	**(3)**	**—**	**(5)**	**(0.01)**	**(30)**	**(0.04)**	**(12)**	**(0.02)**
Real estate 1-4 family junior lien mortgage	**(66)**	**(0.21)**	**(16)**	**(0.20)**	**(22)**	**(0.28)**	**(19)**	**(0.24)**	**(9)**	**(0.10)**
Credit card	**1,370**	**3.53**	**350**	**3.48**	**319**	**3.22**	**349**	**3.68**	**352**	**3.73**
Automobile	**306**	**0.67**	**87**	**0.73**	**76**	**0.65**	**52**	**0.46**	**91**	**0.82**
Other revolving credit and installment	**550**	**1.59**	**148**	**1.71**	**138**	**1.60**	**136**	**1.56**	**128**	**1.47**
Total consumer	**2,110**	**0.48**	**566**	**0.51**	**506**	**0.46**	**488**	**0.45**	**550**	**0.51**
Total	**$ 2,762**	**0.29%**	**$ 769**	**0.32%**	**$ 645**	**0.27%**	**$ 653**	**0.28%**	**$ 695**	**0.30%**
2018										
Commercial:										
Commercial and industrial	$ 423	0.13%	$ 132	0.15%	$ 148	0.18%	$ 58	0.07%	$ 85	0.10%
Real estate mortgage	(28)	(0.02)	(12)	(0.04)	(1)	—	—	—	(15)	(0.05)
Real estate construction	(13)	(0.05)	(1)	(0.01)	(2)	(0.04)	(6)	(0.09)	(4)	(0.07)
Lease financing	47	0.24	13	0.26	7	0.14	15	0.32	12	0.25
Total commercial	429	0.09	132	0.10	152	0.12	67	0.05	78	0.06
Consumer:										
Real estate 1-4 family first mortgage	(88)	(0.03)	(22)	(0.03)	(25)	(0.04)	(23)	(0.03)	(18)	(0.03)
Real estate 1-4 family junior lien mortgage	(40)	(0.11)	(10)	(0.11)	(9)	(0.10)	(13)	(0.13)	(8)	(0.09)
Credit card	1,292	3.51	338	3.54	299	3.22	323	3.61	332	3.69
Automobile	584	1.21	133	1.16	130	1.10	113	0.93	208	1.64
Other revolving credit and installment	567	1.53	150	1.64	133	1.44	135	1.44	149	1.60
Total consumer	2,315	0.52	589	0.53	528	0.47	535	0.49	663	0.60
Total	$ 2,744	0.29%	$ 721	0.30%	$ 680	0.29%	$ 602	0.26%	$ 741	0.32%

(1) Quarterly net charge-offs (recoveries) as a percentage of average respective loans are annualized.

Table 35 presents net charge-offs for the four quarters and full year of 2019 and 2018. Net charge-offs in 2019 were $2.8 billion (0.29% of average total loans outstanding), compared with $2.7 billion (0.29%) in 2018.

The increase in commercial and industrial net charge-offs in 2019 was driven by lower recoveries, and higher losses in our oil and gas portfolio. The decrease in consumer net charge-offs in 2019 was driven by lower losses, predominantly in the automobile portfolio, partially offset by a slight increase in losses in the credit card portfolio.

ALLOWANCE FOR CREDIT LOSSES The allowance for credit losses, which consists of the allowance for loan losses and the allowance for unfunded credit commitments, is management's estimate of credit losses inherent in the loan portfolio and unfunded credit commitments at the balance sheet date, excluding loans carried at fair value. The detail of the changes in the allowance for credit losses by portfolio segment (including charge-offs and recoveries by loan class) is in Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

We apply a disciplined process and methodology to establish our allowance for credit losses each quarter. This process takes into consideration many factors, including historical and forecasted loss trends, loan-level credit quality ratings and loan grade-specific characteristics. The process involves subjective and complex judgments. In addition, we review a variety of credit metrics and trends. These credit metrics and trends, however, do not solely determine the amount of the allowance for credit losses as we use several analytical tools. Our estimation approach for the commercial portfolio reflects the estimated probability of default in accordance with the borrower's financial strength, and the severity of loss in the event of default, considering the quality of any underlying collateral. Probability of default and severity at the time of default are statistically derived through historical observations of defaults and losses after default within each credit risk rating. Our estimation approach for the consumer portfolio uses forecasted losses that represent our best estimate of inherent loss based on historical experience, quantitative and other mathematical techniques. For additional information on our allowance for credit losses, see the "Critical Accounting Policies – Allowance for Credit Losses" section and Note 1 (Summary of Significant Accounting Policies) and Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Table 36 presents the allocation of the allowance for credit losses by loan segment and class for the last five years.

Table 36: Allocation of the Allowance for Credit Losses (ACL)

	Dec 31, 2019		Dec 31, 2018		Dec 31, 2017		Dec 31, 2016		Dec 31, 2015	
(in millions)	**ACL**	**Loans as % of total loans**	ACL	Loans as % of total loans	ACL	Loans as % of total loans	ACL	Loans as % of total loans	ACL	Loans as % of total loans
Commercial:										
Commercial and industrial	**$ 3,600**	**37%**	$ 3,628	37%	$ 3,752	35%	$ 4,560	34%	$ 4,231	33%
Real estate mortgage	**1,236**	**13**	1,282	13	1,374	13	1,320	14	1,264	13
Real estate construction	**1,079**	**2**	1,200	2	1,238	3	1,294	2	1,210	3
Lease financing	**330**	**2**	307	2	268	2	220	2	167	1
Total commercial	**6,245**	**54**	6,417	54	6,632	53	7,394	52	6,872	50
Consumer:										
Real estate 1-4 family first mortgage	**692**	**30**	750	30	1,085	30	1,270	29	1,895	30
Real estate 1-4 family junior lien mortgage	**247**	**3**	431	3	608	4	815	5	1,223	6
Credit card	**2,252**	**4**	2,064	4	1,944	4	1,605	4	1,412	4
Automobile	**459**	**5**	475	5	1,039	5	817	6	529	6
Other revolving credit and installment	**561**	**4**	570	4	652	4	639	4	581	4
Total consumer	**4,211**	**46**	4,290	46	5,328	47	5,146	48	5,640	50
Total	**$ 10,456**	**100%**	$ 10,707	100%	$ 11,960	100%	$ 12,540	100%	$ 12,512	100%

	Dec 31, 2019	Dec 31, 2018	Dec 31, 2017	Dec 31, 2016	Dec 31, 2015
Components:					
Allowance for loan losses	**$ 9,551**	9,775	11,004	11,419	11,545
Allowance for unfunded credit commitments	**905**	932	956	1,121	967
Allowance for credit losses	**$ 10,456**	10,707	11,960	12,540	12,512
Allowance for loan losses as a percentage of total loans	**0.99%**	1.03	1.15	1.18	1.26
Allowance for loan losses as a percentage of total net charge-offs	**346**	356	376	324	399
Allowance for credit losses as a percentage of total loans	**1.09**	1.12	1.25	1.30	1.37
Allowance for credit losses as a percentage of total nonaccrual loans	**196**	165	156	126	115

In addition to the allowance for credit losses, there was $387 million at December 31, 2019, and $480 million at December 31, 2018, of nonaccretable difference to absorb losses on PCI loans of $568 million at December 31, 2019, and $5.0 billion at December 31, 2018. The allowance for credit losses is lower than otherwise would have been required without PCI loan accounting. As a result of PCI loans, certain ratios of the Company may not be directly comparable with credit-related metrics for other financial institutions. For additional information on PCI loans, see the "Risk Management – Credit Risk Management – Purchased Credit-Impaired Loans" section, Note 1 (Summary of Significant Accounting Policies) and Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

The ratio of the allowance for credit losses to total nonaccrual loans may fluctuate significantly from period to period due to such factors as the mix of loan types in the portfolio, borrower credit strength and the value and marketability of collateral.

The allowance for credit losses decreased $251 million, or 2%, in 2019, due to improvement in the credit quality of our commercial and residential real estate portfolios, partially offset by an increase in the allowance for the credit card portfolio reflecting increased volume and a shift in portfolio mix. Total provision for credit losses was $2.7 billion in 2019 and $1.7 billion in 2018. The provision for credit losses was $75 million less than net charge-offs in 2019, reflecting the same changes mentioned above for the allowance for credit losses, compared with $1.0 billion less than net charge-offs in 2018. For a discussion of our 2018 provision for credit losses compared with 2017, see the "Risk Management – Credit Risk Management – Allowance for Credit Losses" section of our Annual Report on Form 10-K for the year ended December 31, 2018.

We believe the allowance for credit losses of $10.5 billion at December 31, 2019, was appropriate to cover credit losses inherent in the loan portfolio, including unfunded credit commitments, at that date. The entire allowance for credit losses is available to absorb credit losses inherent in the total loan portfolio. The allowance for credit losses is subject to change and reflects existing factors as of the date of determination, including economic or market conditions and ongoing internal and external examination processes. Due to the sensitivity of the allowance for credit losses to changes in the economic and business environment, it is possible that we will incur incremental credit losses not anticipated as of the balance sheet date. Future amounts of the allowance for credit losses will be based on a variety of factors, including loan growth, portfolio performance and general economic conditions. Our process for determining the allowance for credit losses is discussed in the "Critical Accounting Policies – Allowance for Credit Losses" section and Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report.

LIABILITY FOR MORTGAGE LOAN REPURCHASE LOSSES We sell residential mortgage loans to various parties, including (1) government-sponsored entities (GSEs) Federal Home Loan Mortgage Corporation (FHLMC) and Federal National Mortgage Association (FNMA) who include the mortgage loans in GSE-guaranteed mortgage securitizations, (2) SPEs that issue private label MBS, and (3) other financial institutions that purchase mortgage loans for investment or private label securitization. In addition, we pool FHA-insured and VA-guaranteed mortgage loans that are then used to back securities guaranteed by the Government National Mortgage Association (GNMA). We may be required to repurchase these mortgage loans, indemnify the securitization trust, investor or insurer, or reimburse the securitization trust, investor or insurer for credit losses incurred on loans (collectively, repurchase) in the event of a breach of contractual representations or warranties that is not remedied within a period (usually 90 days or less) after we receive notice of the breach.

In connection with our sales and securitization of residential mortgage loans to various parties, we have established a mortgage repurchase liability, initially at fair value, related to various representations and warranties that reflect management's estimate of losses for loans for which we could have a repurchase obligation, whether or not we currently service those loans, based on a combination of factors. Our mortgage repurchase liability estimation process also incorporates a forecast of repurchase demands associated with mortgage insurance rescission activity.

Customary with industry practice, we have the right of recourse against correspondent lenders from whom we have purchased loans with respect to representations and warranties. Historical recovery rates as well as projected lender performance are incorporated in the establishment of our mortgage repurchase liability.

We do not typically receive repurchase requests from GNMA, FHA and the Department of Housing and Urban Development (HUD) or VA. As an originator of an FHA-insured or VA-guaranteed loan, we are responsible for obtaining the insurance with the FHA or the guarantee with the VA. To the extent we are not able to obtain the insurance or the guarantee we must request permission to repurchase the loan from the GNMA pool. Such repurchases from GNMA pools typically represent a self-initiated process upon discovery of the uninsurable loan (usually within 180 days from funding of the loan). Alternatively, in lieu of repurchasing loans from GNMA pools, we may be asked by FHA/HUD or the VA to indemnify them (as applicable) for defects found in the Post Endorsement Technical Review process or audits performed by FHA/HUD or the VA. The Post Endorsement Technical Review is a process whereby HUD performs underwriting audits of closed/insured FHA loans for potential deficiencies. Our liability for mortgage loan repurchase losses incorporates probable losses associated with such indemnification.

RISKS RELATING TO SERVICING ACTIVITIES In addition to servicing loans in our portfolio, we act as servicer and/or master servicer of residential mortgage loans included in GSE-guaranteed mortgage securitizations, GNMA-guaranteed mortgage securitizations of FHA-insured/VA-guaranteed mortgages and private label mortgage securitizations, as well as for unsecuritized loans owned by institutional investors. The following discussion summarizes the primary duties and requirements of servicing and related industry developments.

The loans we service were originated by us or by other mortgage loan originators. As servicer, our primary duties are typically to (1) collect payments due from borrowers, (2) advance certain delinquent payments of principal and interest on the mortgage loans, (3) maintain and administer any hazard, title or primary mortgage insurance policies relating to the mortgage loans, (4) maintain any required escrow accounts for payment of taxes and insurance and administer escrow payments, (5) foreclose on defaulted mortgage loans or, to the extent consistent with the related servicing agreement, consider alternatives to foreclosure, such as loan modifications or short sales, and (6) for loans sold into private label securitizations, manage the foreclosed property through liquidation. As master servicer, our primary duties are typically to (1) supervise, monitor and oversee the servicing of the mortgage loans by the servicer, (2) consult with each servicer and use reasonable efforts to cause the servicer to observe its servicing obligations, (3) prepare monthly distribution statements to security holders and, if required by the securitization documents, certain periodic reports required to be filed with the Securities and Exchange Commission (SEC), (4) if required by the securitization documents, calculate distributions and loss allocations on the mortgage-backed securities, (5) prepare tax and information returns of the securitization trust, and (6) advance amounts required by non-affiliated servicers who fail to perform their advancing obligations.

Each agreement under which we act as servicer or master servicer generally specifies a standard of responsibility for actions we take in such capacity and provides protection against expenses and liabilities we incur when acting in compliance with the specified standard. For example, private label securitization agreements under which we act as servicer or master servicer typically provide that the servicer and the master servicer are entitled to indemnification by the securitization trust for taking action or refraining from taking action in good faith or for errors in judgment. However, we are not indemnified, but rather are required to indemnify the securitization trustee, against any failure by us, as servicer or master servicer, to perform our servicing obligations or against any of our acts or omissions that involve willful misfeasance, bad faith or gross negligence in the performance of, or reckless disregard of, our duties. In addition, if we commit a material breach of our obligations as servicer or master servicer, we may be subject to termination if the breach is not cured within a specified period following notice, which can generally be given by the securitization trustee or a specified percentage of security holders. Whole loan sale contracts under which we act as servicer generally include similar provisions with respect to our actions as servicer. The standards governing servicing in GSE-guaranteed securitizations, and the possible remedies for violations of such standards, vary, and those standards and remedies are determined by servicing guides maintained by the GSEs, contracts between the GSEs and individual servicers and topical guides published by the GSEs from time to time. Such remedies could include indemnification or repurchase of an affected mortgage loan. In addition, in connection with our servicing activities, we could become subject to consent orders and settlement agreements with federal and state regulators for alleged servicing issues and practices. In general, these can require us to provide customers with loan modification relief, refinancing relief, and foreclosure prevention and assistance, as well as can impose certain monetary penalties on us.

Asset/Liability Management

Asset/liability management involves evaluating, monitoring and managing interest rate risk, market risk, liquidity and funding. Primary oversight of interest rate risk and market risk resides with the Finance Committee of our Board, which oversees the administration and effectiveness of financial risk management policies and processes used to assess and manage these risks. Primary oversight of liquidity and funding resides with the Risk Committee of the Board. At the management level, we utilize a Corporate Asset/Liability Committee (Corporate ALCO), which consists of management from finance, risk and business groups, to oversee these risks and provide periodic reports to the Board's Finance Committee and Risk Committee as appropriate. As discussed in more detail for market risk activities below, we employ separate management level oversight specific to market risk.

INTEREST RATE RISK Interest rate risk, which potentially can have a significant earnings impact, is an integral part of being a financial intermediary. We are subject to interest rate risk because:

- assets and liabilities may mature or reprice at different times (for example, if assets reprice faster than liabilities and interest rates are generally rising, earnings will initially increase);
- assets and liabilities may reprice at the same time but by different amounts (for example, when the general level of interest rates is rising, we may increase rates paid on checking and savings deposit accounts by an amount that is less than the general rise in market interest rates);
- short-term and long-term market interest rates may change by different amounts (for example, the shape of the yield curve may affect new loan yields and funding costs differently);
- the remaining maturity of various assets or liabilities may shorten or lengthen as interest rates change (for example, if long-term mortgage interest rates increase sharply, MBS held in the debt securities portfolio may pay down slower than anticipated, which could impact portfolio income); or
- interest rates may also have a direct or indirect effect on loan demand, collateral values, credit losses, mortgage origination volume, the fair value of MSRs and other financial instruments, the value of the pension liability and other items affecting earnings.

We assess interest rate risk by comparing outcomes under various net interest income simulations using many interest rate scenarios that differ in the direction of interest rate changes, the degree of change over time, the speed of change and the projected shape of the yield curve. These simulations require assumptions regarding drivers of earnings and balance sheet composition such as loan originations, prepayment speeds on loans and debt securities, deposit flows and mix, as well as pricing strategies.

Currently, our profile is such that we project net interest income will benefit modestly from higher interest rates as our assets would reprice faster and to a greater degree than our liabilities, while in the case of lower interest rates, our assets would reprice downward and to a greater degree than our liabilities.

Our most recent simulations estimate net interest income sensitivity over the next two years under a range of both lower and higher interest rates. Measured impacts from standardized ramps (gradual changes) and shocks (instantaneous changes) are summarized in Table 37, indicating net interest income sensitivity relative to the Company's base net interest income plan. Ramp scenarios assume interest rates move gradually in parallel across the yield curve relative to the base scenario in year one, and the full amount of the ramp is held as a constant differential to the base scenario in year two. The following describes the simulation assumptions for the scenarios presented in Table 37:

- Simulations are dynamic and reflect anticipated growth across assets and liabilities.
- Other macroeconomic variables that could be correlated with the changes in interest rates are held constant.
- Mortgage prepayment and origination assumptions vary across scenarios and reflect only the impact of the higher or lower interest rates.
- Our base scenario deposit forecast incorporates mix changes consistent with the base interest rate trajectory. Deposit mix is modeled to be the same as in the base scenario across the alternative scenarios. In higher interest rate scenarios, customer activity that shifts balances into higher-yielding products could reduce expected net interest income.
- We hold the size of the projected debt and equity securities portfolios constant across scenarios.

Table 37: Net Interest Income Sensitivity Over Next Two-Year Horizon Relative to Base Expectation

			Lower Rates	Higher Rates	
($ in billions)	Base		100 bps Ramp Parallel Decrease	100 bps Instantaneous Parallel Increase	200 bps Ramp Parallel Increase
First Year of Forecasting Horizon					
Net Interest Income Sensitivity to Base Scenario		$	(1.8) - (1.3)	1.5 - 2.0	1.1 - 1.6
Key Rates at Horizon End					
Fed Funds Target	1.87	%	0.87	2.87	3.87
10-year CMT (1)	1.97		0.97	2.97	3.97
Second Year of Forecasting Horizon					
Net Interest Income Sensitivity to Base Scenario		$	(4.4) - (3.9)	2.0 - 2.5	2.7 - 3.2
Key Rates at Horizon End					
Fed Funds Target	2.25	%	1.25	3.25	4.25
10-year CMT (1)	2.36		1.36	3.36	4.36

(1) U.S. Constant Maturity Treasury Rate

The sensitivity results above do not capture interest rate sensitive noninterest income and expense impacts. Our interest rate sensitive noninterest income and expense is predominantly driven by mortgage banking activities, and may move in the opposite direction of our net interest income. Mortgage originations generally decline in response to higher interest rates and generally increase, particularly refinancing activity, in response to lower interest rates. Mortgage results are also impacted by the valuation of MSRs and related hedge positions. See the "Risk Management – Asset/Liability Management – Mortgage Banking Interest Rate and Market Risk" section in this Report for more information.

Interest rate sensitive noninterest income also results from changes in earnings credit for noninterest-bearing deposits that reduce treasury management deposit service fees. Additionally, for the trading portfolio, our trading assets are (before the effects of certain economic hedges) generally less sensitive to changes in interest rates than the related funding liabilities. As a result, net interest income from the trading portfolio contracts and expands as interest rates rise and fall, respectively. The impact to net interest income does not include the fair value changes of trading securities and loans, which, along with the effects of related economic hedges, are recorded in noninterest income.

We use the debt securities portfolio and exchange-traded and over-the-counter (OTC) interest rate derivatives to hedge our interest rate exposures. See the "Balance Sheet Analysis – Available-for-Sale and Held-to-Maturity Debt Securities" section in this Report for more information on the use of the available-for-sale and held-to-maturity securities portfolios. The notional or contractual amount, credit risk amount and fair value of the derivatives used to hedge our interest rate risk exposures as of December 31, 2019, and December 31, 2018, are presented in Note 18 (Derivatives) to Financial Statements in this Report. We use derivatives for asset/liability management in two main ways:

- to convert the cash flows from selected asset and/or liability instruments/portfolios including investments, commercial loans and long-term debt, from fixed-rate payments to floating-rate payments, or vice versa; and
- to economically hedge our mortgage origination pipeline, funded mortgage loans and MSRs using interest rate swaps, swaptions, futures, forwards and options.

MORTGAGE BANKING INTEREST RATE AND MARKET RISK We originate, fund and service mortgage loans, which subjects us to various risks, including credit, liquidity and interest rate risks. Based on market conditions and other factors, we reduce credit and liquidity risks by selling or securitizing a majority of the long-term fixed-rate mortgage and ARM loans we originate. On the other hand, we may hold originated ARMs and fixed-rate mortgage loans in our loan portfolio as an investment for our deposits. We determine whether the loans will be held for investment or held for sale at the time of commitment. We may subsequently change our intent to hold loans for investment and sell some or all of our ARMs or fixed-rate mortgages as part of our corporate asset/liability management. We may also acquire and add to our securities available for sale a portion of the securities issued at the time we securitize MLHFS.

Interest rate and market risk can be substantial in the mortgage business. Changes in interest rates may potentially reduce total origination and servicing fees, the value of our residential MSRs measured at fair value, the value of MLHFS and the associated income and loss reflected in mortgage banking noninterest income, the income and expense associated with instruments (economic hedges) used to hedge changes in the fair value of MSRs and MLHFS, and the value of derivative loan commitments (interest rate "locks") extended to mortgage applicants.

Interest rates affect the amount and timing of origination and servicing fees because consumer demand for new mortgages and the level of refinancing activity are sensitive to changes in mortgage interest rates. Typically, a decline in mortgage interest rates will lead to an increase in mortgage originations and fees and may also lead to an increase in servicing fee income, depending on the level of new loans added to the servicing portfolio and prepayments. Given the time it takes for consumer behavior to fully react to interest rate changes, as well as the time required for processing a new application, providing the commitment, and securitizing and selling the loan, interest rate changes will affect origination and servicing fees with a lag. The amount and timing of the impact on origination and servicing fees will depend on the magnitude, speed and duration of the change in interest rates.

We measure originations of MLHFS at fair value where an active secondary market and readily available market prices exist to reliably support fair value pricing models used for these loans. Loan origination fees on these loans are recorded when earned, and related direct loan origination costs are recognized when incurred. We also measure at fair value certain of our other interests held related to residential loan sales and securitizations. We believe fair value measurement for MLHFS and other interests held, which we hedge with free-standing derivatives (economic hedges) along with our MSRs measured at fair value, reduces certain timing differences and better matches changes in the value of these assets with changes in the value of derivatives used as economic hedges for these assets. During 2017, 2018, and 2019, in response to continued secondary market illiquidity, as well as our desire to retain high-quality loans on our balance sheet, we continued to originate certain prime non-agency loans to be substantially held for investment. We did however designate a small portion of our non-agency originations in 2018 and 2019 to MLHFS in support of future issuances of private label residential mortgage backed securities (RMBS). We issued $2.4 billion and $441 million of RMBS in 2019 and 2018, respectively.

We initially measure all of our MSRs at fair value and carry substantially all of them at fair value depending on our strategy for managing interest rate risk. Under this method, the MSRs are recorded at fair value at the time we sell or securitize the related mortgage loans. The carrying value of MSRs carried at fair value reflects changes in fair value at the end of each quarter and changes are included in net servicing income, a component of mortgage banking noninterest income. If the fair value of the MSRs increases, income is recognized; if the fair value of the MSRs decreases, a loss is recognized. We use a dynamic and sophisticated model to estimate the fair value of our MSRs and periodically benchmark our estimates to independent appraisals. The valuation of MSRs can be highly subjective and involve complex judgments by management about matters that are inherently unpredictable. See "Critical Accounting Policies – Valuation of Residential Mortgage Servicing Rights" section in this Report for additional information. Changes in interest rates influence a variety of significant assumptions included in the periodic valuation of MSRs, including prepayment speeds, expected returns and potential risks on the servicing asset portfolio, costs to service, the value of escrow balances and other servicing valuation elements. For key economic assumptions and the sensitivity of the fair value of MSRs, see Table 10.6 in Note 10 (Securitizations and Variable Interest Entities) to Financial Statements in this Report.

An increase in interest rates generally reduces the propensity for refinancing, extends the expected duration of the servicing portfolio and, therefore, increases the estimated fair value of the MSRs. However, an increase in interest rates can also reduce mortgage loan demand and, therefore, reduce origination income. A decline in interest rates generally increases the propensity for refinancing, reduces the expected duration of the servicing portfolio and therefore reduces the estimated fair value of MSRs. This reduction in fair value causes a charge to income for MSRs carried at fair value, net of any gains on free-standing derivatives (economic hedges) used to hedge MSRs. We may choose not to fully hedge the entire potential decline in the value of our MSRs resulting from a decline in interest rates because the potential increase in origination/servicing fees in that scenario provides a partial "natural business hedge."

The price risk associated with our MSRs is economically hedged with a combination of highly liquid interest rate forward instruments including mortgage forward contracts, interest rate swaps and interest rate options. All of the instruments included in the hedge are marked to fair value daily. Because the hedging instruments are traded in predominantly highly liquid markets, their prices are readily observable and are fully reflected in each quarter's mark to market. Quarterly MSR hedging results include a combination of directional gain or loss due to market changes as well as any carry income generated. If the economic hedge is effective, its overall directional hedge gain or loss will offset the change in the valuation of the underlying MSR asset. Gains or losses associated with these economic hedges are included in mortgage banking noninterest income. Consistent with our longstanding approach to hedging interest rate risk in the mortgage business, the size of the hedge and the particular combination of forward hedging instruments at any point in time is designed to reduce the volatility of the mortgage business's earnings over various time frames within a range of mortgage interest rates. Because market factors, the composition of the mortgage servicing portfolio and the relationship between the origination and servicing sides of our mortgage business change continually, the types of instruments used in our hedging are reviewed daily and rebalanced based on our evaluation of current market factors and the interest rate risk inherent in our MSRs portfolio. Throughout 2019, our economic hedging strategy primarily used forward mortgage purchase contracts that were effective at offsetting the impact of interest rates on the value of the MSR asset.

Mortgage forward contracts are designed to pass the full economics of the underlying reference mortgage securities to the holder of the contract, including both the directional gain and loss from the forward delivery of the reference securities and the corresponding carry income. Carry income represents the contract's price accretion from the forward delivery price to the spot price including both the yield earned on the reference securities and the market implied cost of financing during the period. The actual amount of carry income earned on the hedge each quarter will depend on the amount of the underlying asset that is hedged and the particular instruments included in the hedge. The level of carry income is driven by the slope of the yield curve and other market driven supply and demand factors affecting the specific reference securities. A steep yield curve generally produces higher carry income while a flat or inverted yield curve can result in lower or potentially negative carry income. The level of carry income is also affected by the type of instrument used. In general, mortgage forward contracts tend to produce higher carry income than interest rate swap contracts. Carry income is recognized over the life of the mortgage forward as a component of the contract's mark to market gain or loss.

Hedging the various sources of interest rate risk in mortgage banking is a complex process that requires sophisticated modeling and constant monitoring. While we attempt to balance these various aspects of the mortgage business, there are several potential risks to earnings:

- Valuation changes for MSRs associated with interest rate changes are recorded in earnings immediately within the accounting period in which those interest rate changes occur, whereas the impact of those same changes in interest rates on origination and servicing fees occur with a lag and over time. Thus, the mortgage business could be protected from adverse changes in interest rates over a period of time on a cumulative basis but still display large variations in income from one accounting period to the next.
- The degree to which our net gains on loan originations offsets valuation changes for MSRs is imperfect, varies at different points in the interest rate cycle, and depends not just on the direction of interest rates but on the pattern of quarterly interest rate changes.
- Origination volumes, the valuation of MSRs and hedging results and associated costs are also affected by many factors. Such factors include the mix of new business between ARMs and fixed-rate mortgages, the relationship between short-term and long-term interest rates, the degree of volatility in interest rates, the relationship between mortgage interest rates and other interest rate markets, and other interest rate factors. Additional factors that can impact the valuation of the MSRs include changes in servicing and foreclosure costs due to changes in investor or regulatory guidelines, as well as individual state foreclosure legislation, and changes in discount rates due to market participants requiring a higher return due to updated market expectations on costs and risks associated with investing in MSRs. Many of these factors are hard to predict and we may not be able to directly or perfectly hedge their effect.
- While our hedging activities are designed to balance our mortgage banking interest rate risks, the financial instruments we use may not perfectly correlate with the values and income being hedged. For example, the change in the value of ARM production held for sale from changes in mortgage interest rates may or may not be fully offset by index-based financial instruments used as economic hedges for such ARMs. Hedge results may also be impacted as the overall level of hedges changes as interest rates change, or as there are other changes in the market for mortgage forwards that may affect the implied carry on the MSRs. For example, the hedge-carry income on our economic hedges for the MSRs did not continue at levels consistent with 2018 as the flat to inverted yield curve resulted in negative hedge carry in 2019.

The total carrying value of our residential and commercial MSRs was $12.9 billion and $16.1 billion at December 31, 2019 and 2018, respectively. The weighted-average note rate on our portfolio of loans serviced for others was 4.25% and 4.32% at December 31, 2019 and 2018, respectively. The carrying value of our total MSRs represented 0.79% and 0.94% of mortgage loans serviced for others at December 31, 2019 and 2018, respectively.

As part of our mortgage banking activities, we enter into commitments to fund residential mortgage loans at specified times in the future. A mortgage loan commitment can be either a floating rate commitment, where the interest rate is not yet determined, or it can be an interest rate lock that binds us to lend funds to a potential borrower at a specified interest rate and within a specified period of time, generally up to 60 days after inception of the rate lock. These loan commitments are derivative loan commitments if the loans that will result from the exercise of the commitments will be held for sale. These derivative loan commitments are recognized at fair value on the balance sheet with changes in their fair values recorded as part of mortgage banking noninterest income. The fair value of these commitments include, at inception and during the life of the loan commitment, the expected net future cash flows related to the associated servicing of the loan as part of the fair value measurement of derivative loan commitments. Changes subsequent to inception are based on changes in fair value of the underlying loan resulting from the exercise of the commitment and changes in the probability that the loan will not fund within the terms of the commitment, referred to as a fall-out factor. The value of the underlying loan commitment is affected by changes in interest rates and the passage of time.

Outstanding derivative loan commitments (interest rate "locks") expose us to the risk that the price of the mortgage loans underlying the commitments might decline due to increases in mortgage interest rates from inception of the rate lock to the funding of the loan. To minimize this risk, we employ mortgage forwards and options and Eurodollar futures and options contracts as economic hedges against the potential decreases in the values of the loans. We expect that these derivative financial instruments will experience changes in fair value that will either fully or partially offset the changes in fair value of the derivative loan commitments. However, changes in investor demand, such as concerns about credit risk, can also cause changes in the spread relationships between underlying loan value and the derivative financial instruments that cannot be hedged.

MARKET RISK Market risk is the risk of possible economic loss from adverse changes in market risk factors such as interest rates, credit spreads, foreign exchange rates, equity and commodity prices, and the risk of possible loss due to counterparty exposure. This applies to implied volatility risk, basis risk, and market liquidity risk. It also includes price risk in the trading book, mortgage servicing rights and the hedge effectiveness risk associated with the mortgage book, and impairment on private equity investments.

The Board's Finance Committee has primary oversight responsibility for market risk and oversees the Company's market risk exposure and market risk management strategies. In addition, the Board's Risk Committee has certain oversight responsibilities with respect to market risk, including adjusting the Company's market risk appetite with input from the Finance Committee. The Finance Committee also reports key market risk matters to the Risk Committee.

At the management level, the Market and Counterparty Risk Management function, which is part of IRM, has primary oversight responsibility for market risk. The Market and Counterparty Risk Management function reports into the CRO and also provides periodic reports related to market risk to the Board's Finance Committee.

MARKET RISK – TRADING ACTIVITIES We engage in trading activities to accommodate the investment and risk management activities of our customers and to execute economic hedging to manage certain balance sheet risks. These trading activities predominantly occur within our Wholesale Banking businesses and to a lesser extent other divisions of the Company. Debt securities held for trading, equity securities held for trading, trading loans and trading derivatives are financial instruments used in our trading activities, and all are carried at fair value. Income earned on the financial instruments used in our trading activities include net interest income, changes in fair value and realized gains and losses. Net interest income earned from our trading activities is reflected in the interest income and interest expense components of our income statement. Changes in fair value of the financial instruments used in our trading activities are reflected in net gains on trading activities, a component of noninterest income in our income statement. For more information on the financial instruments used in our trading activities and the income from these trading activities, see Note 4 (Trading Activities) to Financial Statements in this Report.

Value-at-risk (VaR) is a statistical risk measure used to estimate the potential loss from adverse moves in the financial markets. The Company uses VaR metrics complemented with sensitivity analysis and stress testing in measuring and monitoring market risk. These market risk measures are monitored at both the business unit level and at aggregated levels on a daily basis. Our corporate market risk management function aggregates and monitors all exposures to ensure risk measures are within our established risk appetite. Changes to the market risk profile are analyzed and reported on a daily basis. The Company monitors various market risk exposure measures from a variety of perspectives, including line of business, product, risk type, and legal entity.

Trading VaR is the measure used to provide insight into the market risk exhibited by the Company's trading positions. The Company calculates Trading VaR for risk management purposes to establish line of business and Company-wide risk limits. Trading VaR is calculated based on all trading positions on our balance sheet.

Table 38 shows the Company's Trading General VaR by risk category. Our Trading General VaR uses a historical simulation model which assumes that historical changes in market values are representative of the potential future outcomes and measures the expected earnings loss of the Company over a 1-day time interval at a 99% confidence level. Our historical simulation model is based on equally weighted data from a 12-month historical look-back period. We believe using a 12-month look-back period helps ensure the Company's VaR is responsive to current market conditions. The 99% confidence level equates to an expectation that the Company would incur single-day trading losses in excess of the VaR estimate on average once every 100 trading days.

Average Company Trading General VaR was $22 million for the year ended December 31, 2019, compared with $15 million for the year ended December 31, 2018. The increase in average Company Trading General VaR for the year ended December 31, 2019, was mainly driven by changes in portfolio composition.

Table 38: Trading 1-Day 99% General VaR by Risk Category

								Year ended
	December 31, 2019				December 31, 2018			
(in millions)	**Period end**	**Average**	**Low**	**High**	Period end	Average	Low	High
Company Trading General VaR Risk Categories								
Credit	**$ 15**	**17**	**11**	**30**	18	16	10	55
Interest rate	**14**	**27**	**9**	**49**	28	17	6	52
Equity	**5**	**5**	**4**	**11**	5	8	2	16
Commodity	**2**	**2**	**1**	**6**	2	1	1	4
Foreign exchange	**1**	**1**	**1**	**1**	1	1	0	3
Diversification benefit (1)	**(13)**	**(30)**			(33)	(28)		
Company Trading General VaR	**$ 24**	**22**			21	15		

(1) The period-end VaR was less than the sum of the VaR components described above, which is due to portfolio diversification. The diversification effect arises because the risks are not perfectly correlated causing a portfolio of positions to usually be less risky than the sum of the risks of the positions alone. The diversification benefit is not meaningful for low and high metrics since they may occur on different days.

Sensitivity Analysis Given the inherent limitations of the VaR models, the Company uses other measures, including sensitivity analysis, to measure and monitor risk. Sensitivity analysis is the measure of exposure to a single risk factor, such as a 0.01% increase in interest rates or a 1% increase in equity prices. We conduct and monitor sensitivity on interest rates, credit spreads, volatility, equity, commodity, and foreign exchange exposure. Sensitivity analysis complements VaR as it provides an indication of risk relative to each factor irrespective of historical market moves.

Stress Testing While VaR captures the risk of loss due to adverse changes in markets using recent historical market data, stress testing is designed to capture the Company's exposure to extreme but low probability market movements. Stress scenarios estimate the risk of losses based on management's assumptions of abnormal but severe market movements such as severe credit spread widening or a large decline in equity prices. These scenarios assume that the market moves happen instantaneously and no repositioning or hedging activity takes place to mitigate losses as events unfold (a conservative approach since experience demonstrates otherwise).

An inventory of scenarios is maintained representing both historical and hypothetical stress events that affect a broad range of market risk factors with varying degrees of correlation and differing time horizons. Hypothetical scenarios assess the impact of large movements in financial variables on portfolio values. Typical examples include a 1% (100 basis point) increase across the yield curve or a 10% decline in equity market indexes. Historical scenarios utilize an event-driven approach: the stress scenarios are based on plausible but rare events, and the analysis addresses how these events might affect the risk factors relevant to a portfolio.

The Company's stress testing framework is also used in calculating results in support of the Federal Reserve Board's Comprehensive Capital Analysis and Review (CCAR) and internal stress tests. Stress scenarios are regularly reviewed and updated to address potential market events or concerns. For more detail on the CCAR process, see the "Capital Management" section in this Report.

MARKET RISK – EQUITY SECURITIES We are directly and indirectly affected by changes in the equity markets. We make and manage direct investments in start-up businesses, emerging growth companies, management buy-outs, acquisitions and corporate recapitalizations. We also invest in non-affiliated funds that make similar private equity investments. These private equity investments are made within capital allocations approved by management and the Board. The Board's policy is to review business developments, key risks and historical returns for the private equity investment portfolio at least annually. Management reviews these investments at least quarterly and assesses them for possible OTTI and observable price changes. For nonmarketable equity securities, the analysis is based on facts and circumstances of each individual investment and the expectations for that investment's cash flows, capital needs, the viability of its business model, our exit strategy, and observable price changes that are similar to the investments held. Investments in nonmarketable equity securities include private equity investments accounted for under the equity method, fair value through net income, and the measurement alternative.

In conjunction with the March 2008 initial public offering (IPO) of Visa, Inc. (Visa), we received approximately 20.7 million shares of Visa Class B common stock, the class which was apportioned to member banks of Visa at the time of the IPO. To manage our exposure to Visa and realize the value of the appreciated Visa shares, we incrementally sold these shares through a series of sales, thereby eliminating this position as of September 30, 2015. As part of these sales, we agreed to compensate the buyer for any additional contributions to a litigation settlement fund for the litigation matters associated with the Class B shares we sold. Our exposure to this retained litigation risk has been updated quarterly and is reflected on our balance sheet. For additional information about the associated litigation matters, see the "Interchange Litigation" section in Note 17 (Legal Actions) to Financial Statements in this Report.

As part of our business to support our customers, we trade public equities, listed/OTC equity derivatives and convertible bonds. We have parameters that govern these activities. We also have marketable equity securities that include investments relating to our venture capital activities. We manage these marketable equity securities within capital risk limits approved by management and the Board and monitored by Corporate ALCO and the Market Risk Committee. The fair value changes in these marketable equity securities are recognized in net income. For more information, see Note 8 (Equity Securities) to Financial Statements in this Report.

Changes in equity market prices may also indirectly affect our net income by (1) the value of third-party assets under management and, hence, fee income, (2) borrowers whose ability to repay principal and/or interest may be affected by the stock market, or (3) brokerage activity, related commission income and other business activities. Each business line monitors and manages these indirect risks.

LIQUIDITY AND FUNDING The objective of effective liquidity management is to ensure that we can meet customer loan requests, customer deposit maturities/withdrawals and other cash commitments efficiently under both normal operating conditions and under periods of Wells Fargo-specific and/or market stress. To achieve this objective, the Board establishes liquidity guidelines that require sufficient asset-based liquidity to cover potential funding requirements and to avoid over-dependence on volatile, less reliable funding markets. These guidelines are monitored on a monthly basis by the Corporate ALCO and on a quarterly basis by the Board. These guidelines are established and monitored for both the consolidated company and for the Parent on a stand-alone basis to ensure that the Parent is a source of strength for its regulated, deposit-taking banking subsidiaries.

Liquidity Standards We are subject to a rule, issued by the FRB, OCC and FDIC, that includes a quantitative liquidity requirement consistent with the liquidity coverage ratio (LCR) established by the Basel Committee on Banking Supervision (BCBS). The rule requires banking institutions, such as Wells Fargo, to hold high-quality liquid assets (HQLA), such as central bank reserves and government and corporate debt that can be converted easily and quickly into cash, in an amount equal to or greater than its projected net cash outflows during a 30-day stress period. The rule is applicable to the Company on a consolidated basis and to our insured depository institutions (IDIs) with total assets greater than $10 billion. In addition, rules issued by the FRB impose enhanced liquidity management standards on large bank holding companies (BHC) such as Wells Fargo.

The FRB, OCC and FDIC have proposed a rule that would implement a stable funding requirement, the net stable funding ratio (NSFR), which would require large banking organizations, such as Wells Fargo, to maintain a sufficient amount of stable funding in relation to their assets, derivative exposures and commitments over a one-year horizon period.

Liquidity Coverage Ratio As of December 31, 2019, the consolidated Company and Wells Fargo Bank, N.A., were above the minimum LCR requirement of 100%, which is calculated as HQLA divided by projected net cash outflows, as each is defined under the LCR rule. Table 39 presents the Company's quarterly average values for the daily-calculated LCR and its components calculated pursuant to the LCR rule requirements.

Table 39: Liquidity Coverage Ratio

(in millions, except ratio)	Average for Quarter ended December 31, 2019
HQLA (1)(2)	$ 373,362
Projected net cash outflows	312,019
LCR	120%

(1) Excludes excess HQLA at Wells Fargo Bank, N.A.
(2) Net of applicable haircuts required under the LCR rule.

Liquidity Sources We maintain liquidity in the form of cash, cash equivalents and unencumbered high-quality, liquid debt securities. These assets make up our primary sources of liquidity which are presented in Table 40. Our primary sources of liquidity are substantially the same in composition as HQLA under the LCR rule; however, our primary sources of liquidity will generally exceed HQLA calculated under the LCR rule due to the applicable haircuts to HQLA and the exclusion of excess HQLA at our subsidiary IDIs required under the LCR rule.

Our cash is predominantly on deposit with the Federal Reserve. Debt securities included as part of our primary sources of liquidity are comprised of U.S. Treasury and federal agency debt, and mortgage-backed securities issued by federal agencies within our debt securities portfolio. We believe these debt securities provide quick sources of liquidity through sales or by pledging to obtain financing, regardless of market conditions. Some of these debt securities are within the held-to-maturity portion of our debt securities portfolio and as such are not intended for sale but may be pledged to obtain financing. Some of the legal entities within our consolidated group of companies are subject to various regulatory, tax, legal and other restrictions that can limit the transferability of their funds. We believe we maintain adequate liquidity for these entities in consideration of such funds transfer restrictions.

Table 40: Primary Sources of Liquidity

	December 31, 2019			December 31, 2018		
(in millions)	**Total**	**Encumbered**	**Unencumbered**	Total	Encumbered	Unencumbered
Interest-earning deposits with banks	**$ 119,493**	**—**	**119,493**	149,736	—	149,736
Debt securities of U.S. Treasury and federal agencies	**61,099**	**3,107**	**57,992**	57,688	1,504	56,184
Mortgage-backed securities of federal agencies (1)	**258,589**	**41,135**	**217,454**	244,211	35,656	208,555
Total	**$ 439,181**	**44,242**	**394,939**	451,635	37,160	414,475

(1) Included in encumbered securities at December 31, 2019, were securities with a fair value of $263 million which were purchased in December 2019, but settled in January 2020.

In addition to our primary sources of liquidity shown in Table 40, liquidity is also available through the sale or financing of other debt securities including trading and/or available-for-sale debt securities, as well as through the sale, securitization or financing of loans, to the extent such debt securities and loans are not encumbered. In addition, other debt securities in our held-to-maturity portfolio, to the extent not encumbered, may be pledged to obtain financing.

Deposits have historically provided a sizable source of relatively low-cost funds. Deposits were 137% of total loans at December 31, 2019, and 135% at December 31, 2018.

Additional funding is provided by long-term debt and short-term borrowings. Table 41 shows selected information for short-term borrowings, which generally mature in less than 30 days. For additional information, see Note 14 (Short-Term Borrowings) to Financial Statements in this Report.

Table 41: Short-Term Borrowings

					Quarter ended
(in millions)	**Dec 31, 2019**	Sep 30, 2019	Jun 30, 2019	Mar 31, 2019	Dec 31, 2018
Balance, period end					
Federal funds purchased and securities sold under agreements to repurchase	$ **92,403**	110,399	102,560	93,896	92,430
Other short-term borrowings	**12,109**	13,509	12,784	12,701	13,357
Total	$ **104,512**	123,908	115,344	106,597	105,787
Average daily balance for period					
Federal funds purchased and securities sold under agreements to repurchase	$ **103,614**	109,499	102,557	95,721	93,483
Other short-term borrowings	**12,335**	12,343	12,197	12,930	12,479
Total	$ **115,949**	121,842	114,754	108,651	105,962
Maximum month-end balance for period					
Federal funds purchased and securities sold under agreements to repurchase (1)	$ **111,727**	110,399	105,098	97,650	93,918
Other short-term borrowings (2)	**12,708**	13,509	12,784	14,129	13,357

(1) Highest month-end balance in each of the last five quarters was in October, September, May and January 2019, and November 2018.
(2) Highest month-end balance in each of the last five quarters was in October, September, June, and February 2019, and December 2018.

Long-Term Debt We access domestic and international capital markets for long-term funding (generally greater than one year) through issuances of registered debt securities, private placements and asset-backed secured funding. We issue long-term debt in a variety of maturities and currencies to achieve cost-efficient funding and to maintain an appropriate maturity profile. Proceeds from securities issued were used for general corporate purposes, and, unless otherwise specified in the applicable prospectus or prospectus supplement, we expect the proceeds from securities issued in the future will be used for the same purposes. Depending on market conditions, we may purchase our outstanding debt securities from time to time in privately negotiated or open market transactions, by tender offer, or otherwise. We issued $53.4 billion of long-term debt in 2019 and $9.7 billion in January and February of 2020. For additional information, see Note 15 (Long-Term Debt) to Financial Statements in this Report.

Credit Ratings Investors in the long-term capital markets, as well as other market participants, generally will consider, among other factors, a company's debt rating in making investment decisions. Rating agencies base their ratings on many quantitative and qualitative factors, including capital adequacy, liquidity, asset quality, business mix, the level and quality of earnings, and rating agency assumptions regarding the probability and extent of federal financial assistance or support for certain large financial institutions. Adverse changes in these factors could result in a reduction of our credit rating; however, our debt securities do not contain credit rating covenants.

On October 21, 2019, DBRS Morningstar confirmed the Company's ratings and maintained the stable trend for all ratings. On December 16, 2019, Fitch Ratings, Inc., affirmed the Company's ratings and maintained the stable outlook for all ratings. Both the Parent and Wells Fargo Bank, N.A., remain among the highest-rated financial firms in the United States.

See the "Risk Factors" section in this Report for additional information regarding our credit ratings and the potential impact a credit rating downgrade would have on our liquidity and operations, as well as Note 18 (Derivatives) to Financial Statements in this Report for information regarding additional collateral and funding obligations required for certain derivative instruments in the event our credit ratings were to fall below investment grade.

The credit ratings of the Parent and Wells Fargo Bank, N.A., as of December 31, 2019, are presented in Table 42.

Table 42: Credit Ratings as of December 31, 2019

	Wells Fargo & Company		Wells Fargo Bank, N.A.	
	Senior debt	Short-term borrowings	Long-term deposits	Short-term borrowings
Moody's	A2	P-1	Aa1	P-1
S&P Global Ratings	A-	A-2	A+	A-1
Fitch Ratings, Inc.	A+	F1	AA	F1+
DBRS Morningstar	AA (low)	R-1 (middle)	AA	R-1 (high)

FEDERAL HOME LOAN BANK MEMBERSHIP The Federal Home Loan Banks (the FHLBs) are a group of cooperatives that lending institutions use to finance housing and economic development in local communities. We are a member of the FHLBs based in Dallas, Des Moines and San Francisco. Each member of the FHLBs is required to maintain a minimum investment in capital stock of the applicable FHLB. The board of directors of each FHLB can increase the minimum investment requirements in the event it has concluded that additional capital is required to allow it to meet its own regulatory capital requirements. Any increase in the minimum investment requirements outside of specified ranges requires the approval of the Federal Housing Finance Agency. Because the extent of any obligation to increase our investment in any of the FHLBs depends entirely upon the occurrence of a future event, potential future payments to the FHLBs are not determinable.

LIBOR TRANSITION Due to uncertainty surrounding the suitability and sustainability of the London Interbank Offered Rate (LIBOR), central banks and global regulators have called for financial market participants to prepare for the discontinuation of LIBOR by the end of 2021. LIBOR is a widely-referenced benchmark rate, which is published in five currencies and a range of tenors, and seeks to estimate the cost at which banks can borrow on an unsecured basis from other banks. We have a significant number of assets and liabilities referenced to LIBOR and other interbank offered rates (IBORs) such as commercial loans, adjustable-rate mortgage loans, derivatives, debt securities, and long-term debt. As of December 31, 2019, we had over $500 billion of assets, consisting mostly of commercial loans, over $80 billion of liabilities, and over $400 billion of off-balance sheet commitments linked to IBORs. These amounts exclude derivative assets and liabilities on our consolidated balance sheet. As of December 31, 2019, the notional amount of our IBOR-linked interest rate derivative contracts was over $10 trillion, of which over $8 trillion related to contracts with central counterparty clearinghouses. Each of the IBOR-linked amounts referenced above will vary in future periods as current contracts expire with potential replacement contracts using either IBOR or an alternative reference rate. As of December 31, 2019, U.S. dollar LIBOR represented substantially all of the IBOR-linked amounts referenced above; however, we had exposure to all primary IBORs.

Accordingly, we established a LIBOR Transition Office (LTO) in February 2018, with senior management and Board oversight. The LTO is responsible for developing a coordinated strategy to transition the IBOR-linked contracts and processes across Wells Fargo to alternative reference rates and serves as primary conduit between Wells Fargo and relevant industry groups, such as the Alternative Reference Rates Committee (ARRC). Among other activities, the program structure created by the LTO is designed to (i) identify the types of exposures (e.g., products, systems, models) and risks associated with the transition, (ii) assess the provisions in our contracts that could apply in connection with the transition, (iii) incorporate more robust IBOR fallback language (contractual provisions that provide for transition to alternative reference rates upon defined trigger events) into new IBOR-linked product contracts, (iv) coordinate alternative reference rate product design, (v) appraise operational and infrastructure enhancements necessary to use alternative reference rates, (vi) facilitate systems and application revisions, including model development and validation, (vii) assess the funding issues, basis risk, and other finance, accounting, and tax impacts of transitioning away from IBORs, (viii) develop plans to minimize negative financial outcomes, (ix) coordinate an enterprise-wide process for managing outreach and communications with our customers, and (x) implement a process to escalate key risks. When assessing risks associated with the transition away from IBORs, the LTO is reviewing both orderly and disorderly transition scenarios.

In an effort to mitigate the risks associated with a transition away from IBORs, the LTO is in the process of implementing the following initiatives: (i) compiling an enterprise contract inventory of IBOR-related terms, (ii) implementing more robust fallback language and disclosures related to LIBOR transition, (iii) developing a plan to amend legacy contracts to reference alternative reference rates, (iv) enhancing systems to support new fallback language and new products linked to alternative reference rates, (v) preparing internal and external communications regarding an IBOR transition, (vi) developing internal guidance focused on issues related to IBORs and alternative reference rate products, and (vii) evaluating policies and procedures in light of the transition away from LIBOR and other IBORs and the introduction of new products linked to alternative reference rates.

In addition, the Company is actively working with regulators, industry working groups (such as the ARRC) and trade associations that are developing guidance to facilitate an orderly transition away from the use of LIBOR. We continue to assess the risks and related impacts associated with a transition away from IBORs. See the "Risk Factors" section in this Report for additional information regarding the potential impact of a benchmark rate, such as LIBOR, or other referenced financial metric being significantly changed, replaced, or discontinued.

Although the Company did not issue any long-term debt with an interest rate indexed to the Secured Overnight Financing Rate (SOFR) in 2019, we did issue $1.0 billion of long-term debt indexed to SOFR in 2018. SOFR is published by the Federal Reserve Bank of New York as an alternative to U.S. dollar LIBOR and is a broad measure of the cost of borrowing cash overnight collateralized by U.S. Treasury securities.

Capital Management

We have an active program for managing capital through a comprehensive process for assessing the Company's overall capital adequacy. Our objective is to maintain capital at an amount commensurate with our risk profile and risk tolerance objectives, and to meet both regulatory and market expectations. We primarily fund our working capital needs through the retention of earnings net of both dividends and share repurchases, as well as through the issuance of preferred stock and long and short-term debt. Retained earnings increased $8.5 billion from December 31, 2018, predominantly from Wells Fargo net income of $19.5 billion, less common and preferred stock dividends of $9.9 billion. During 2019, we issued 48.8 million shares of common stock, excluding conversions of preferred shares. During 2019, we repurchased 502.4 million shares of common stock at a cost of $24.5 billion. The amount of our repurchases are subject to various factors as discussed in the "Securities Repurchases" section below. For additional information about share repurchases, see Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report.

In third quarter 2019, we redeemed $1.6 billion of our Preferred Stock, Series K. In January 2020, we issued $2.0 billion of our Preferred Stock, Series Z. In February 2020, we announced a redemption of the remaining outstanding shares of our Preferred Stock, Series K, and a partial redemption of our Preferred Stock, Series T. For more information, see Note 20 (Preferred Stock) to Financial Statements in this Report.

Regulatory Capital Guidelines

The Company and each of our IDIs are subject to various regulatory capital adequacy requirements administered by the FRB and the OCC. Risk-based capital (RBC) guidelines establish a risk-adjusted ratio relating capital to different categories of assets and off-balance sheet exposures as discussed below.

RISK-BASED CAPITAL AND RISK-WEIGHTED ASSETS The Company is subject to rules issued by federal banking regulators to implement Basel III capital requirements for U.S. banking organizations. The federal banking regulators' capital rules, among other things, require on a fully phased-in basis:

- a minimum Common Equity Tier 1 (CET1) ratio of 9.00%, comprised of a 4.50% minimum requirement plus a capital conservation buffer of 2.50% and for us, as a global systemically important bank (G-SIB), a capital surcharge of 2.00%;
- a minimum tier 1 capital ratio of 10.50%, comprised of a 6.00% minimum requirement plus the capital conservation buffer of 2.50% and the G-SIB capital surcharge of 2.00%;
- a minimum total capital ratio of 12.50%, comprised of a 8.00% minimum requirement plus the capital conservation buffer of 2.50% and the G-SIB capital surcharge of 2.00%;
- a potential countercyclical buffer of up to 2.50% to be added to the minimum capital ratios, which could be imposed by regulators at their discretion if it is determined that a period of excessive credit growth is contributing to an increase in systemic risk; and
- a minimum tier 1 leverage ratio of 4.00%.

The Basel III capital requirements for calculating CET1 and tier 1 capital, along with risk-weighted assets (RWAs), are fully phased-in. However, the requirements for determining tier 2 and total capital are still in accordance with Transition Requirements and are scheduled to be fully phased-in by the end of 2021. The Basel III capital rules contain two frameworks for calculating capital requirements, a Standardized Approach and an Advanced Approach applicable to certain institutions, including Wells Fargo. Accordingly, in the assessment of our capital adequacy, we must report the lower of our CET1, tier 1 and total capital ratios calculated under the Standardized Approach and under the Advanced Approach.

On April 10, 2018, the FRB issued a proposed rule that would add a stress capital buffer and a stress leverage buffer to the minimum capital and tier 1 leverage ratio requirements. The buffers would be calculated based on the decrease in a financial institution's risk-based capital and tier 1 leverage ratios under the supervisory severely adverse scenario in CCAR, plus four quarters of planned common stock dividends. The stress capital buffer would replace the 2.50% capital conservation buffer under the Standardized Approach, whereas the stress leverage buffer would be added to the current 4.00% minimum tier 1 leverage ratio.

As a G-SIB, we are also subject to the FRB's rule implementing the additional capital surcharge of between 1.00-4.50% on the minimum capital requirements of G-SIBs. Under the rule, we must annually calculate our surcharge under two methods and use the higher of the two surcharges. The first method (method one) considers our size, interconnectedness, cross-jurisdictional activity, substitutability, and complexity, consistent with the methodology developed by the BCBS and the Financial Stability Board (FSB). The second (method two) uses similar inputs, but replaces substitutability with use of short-term wholesale funding and will generally result in higher surcharges than the BCBS methodology. Because the G-SIB capital surcharge is calculated annually based on data that can differ over time, the amount of the surcharge is subject to change in future years.

The tables that follow provide information about our risk-based capital and related ratios as calculated under Basel III capital guidelines. Although we continue to report certain capital amounts and ratios in accordance with Transition Requirements for banking industry regulatory reporting purposes, we are managing our capital on a fully phased-in basis. For information about our capital requirements calculated in accordance with Transition Requirements, see Note 29 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report.

Table 43 summarizes our CET1, tier 1 capital, total capital, RWAs and capital ratios on a fully phased-in basis at December 31, 2019 and 2018.

Table 43: Capital Components and Ratios (Fully Phased-In) (1)

			December 31, 2019		December 31, 2018	
(in millions, except ratios)		Required Minimum Capital Ratios	Advanced Approach	Standardized Approach	Advanced Approach	Standardized Approach
Common Equity Tier 1	(A)		$ 138,760	138,760	146,363	146,363
Tier 1 Capital	(B)		158,949	158,949	167,866	167,866
Total Capital (2)	(C)		187,813	195,703	198,103	206,346
Risk-Weighted Assets	(D)		1,230,066	1,245,853	1,177,350	1,247,210
Common Equity Tier 1 Capital Ratio	(A)/(D)	9.00%	11.28	11.14 *	12.43	11.74 *
Tier 1 Capital Ratio	(B)/(D)	10.50	12.92	12.76 *	14.26	13.46 *
Total Capital Ratio (2)	(C)/(D)	12.50	15.27 *	15.71	16.83	16.54 *

* Denotes the lowest capital ratio as determined under the Advanced and Standardized Approaches.

(1) See Table 44 for information regarding the calculation and components of CET1, tier 1 capital, total capital and RWAs.

(2) The fully phased-in total capital amounts and ratios are considered non-GAAP financial measures that are used by management, bank regulatory agencies, investors and analysts to assess and monitor the Company's capital position. See Table 44 for information regarding the calculation and components of our fully phased-in total capital amounts, including a corresponding reconciliation to GAAP financial measures.

Table 44 provides information regarding the calculation and composition of our risk-based capital under the Advanced and Standardized Approaches at December 31, 2019 and December 31, 2018.

Table 44: Risk-Based Capital Calculation and Components

(in millions)			December 31, 2019 Advanced Approach	December 31, 2019 Standardized Approach	December 31, 2018 Advanced Approach	December 31, 2018 Standardized Approach
Total equity		$	**187,984**	**187,984**	197,066	197,066
Adjustments:						
Preferred stock			**(21,549)**	**(21,549)**	(23,214)	(23,214)
Additional paid-in capital on ESOP preferred stock			**(71)**	**(71)**	(95)	(95)
Unearned ESOP shares			**1,143**	**1,143**	1,502	1,502
Noncontrolling interests			**(838)**	**(838)**	(900)	(900)
Total common stockholders' equity			**166,669**	**166,669**	174,359	174,359
Adjustments:						
Goodwill			**(26,390)**	**(26,390)**	(26,418)	(26,418)
Certain identifiable intangible assets (other than MSRs)			**(437)**	**(437)**	(559)	(559)
Goodwill and other intangibles on nonmarketable equity securities (included in other assets)			**(2,146)**	**(2,146)**	(2,187)	(2,187)
Applicable deferred taxes related to goodwill and other intangible assets (1)			**810**	**810**	785	785
Other			**254**	**254**	383	383
Common Equity Tier 1			**138,760**	**138,760**	146,363	146,363
Common Equity Tier 1		$	**138,760**	**138,760**	146,363	146,363
Preferred stock			**21,549**	**21,549**	23,214	23,214
Additional paid-in capital on ESOP preferred stock			**71**	**71**	95	95
Unearned ESOP shares			**(1,143)**	**(1,143)**	(1,502)	(1,502)
Other			**(288)**	**(288)**	(304)	(304)
Total Tier 1 capital	(A)		**158,949**	**158,949**	167,866	167,866
Long-term debt and other instruments qualifying as Tier 2			**26,515**	**26,515**	27,946	27,946
Qualifying allowance for credit losses (2)			**2,566**	**10,456**	2,463	10,706
Other			**(217)**	**(217)**	(172)	(172)
Total Tier 2 capital (Fully Phased-In)	(B)		**28,864**	**36,754**	30,237	38,480
Effect of Transition Requirements			**520**	**520**	695	695
Total Tier 2 capital (Transition Requirements)		$	**29,384**	**37,274**	30,932	39,175
Total qualifying capital (Fully Phased-In)	(A)+(B)	$	**187,813**	**195,703**	198,103	206,346
Total Effect of Transition Requirements			**520**	**520**	695	695
Total qualifying capital (Transition Requirements)		$	**188,333**	**196,223**	198,798	207,041
Risk-Weighted Assets (RWAs) (3)(4):						
Credit risk		$	**790,784**	**1,210,209**	803,273	1,201,246
Market risk			**35,644**	**35,644**	45,964	45,964
Operational risk			**403,638**	**—**	328,113	—
Total RWAs		$	**1,230,066**	**1,245,853**	1,177,350	1,247,210

(1) Determined by applying the combined federal statutory rate and composite state income tax rates to the difference between book and tax basis of the respective goodwill and intangible assets at period end.

(2) Under the Advanced Approach, the allowance for credit losses that exceeds expected credit losses is eligible for inclusion in Tier 2 Capital, to the extent the excess allowance does not exceed 0.60% of Advanced credit RWAs, and under the Standardized Approach, the allowance for credit losses is includable in Tier 2 Capital up to 1.25% of Standardized credit RWAs, with any excess allowance for credit losses being deducted from total RWAs.

(3) RWAs calculated under the Advanced Approach utilize a risk-sensitive methodology, which relies upon the use of internal credit models based upon our experience with internal rating grades. Advanced Approach also includes an operational risk component, which reflects the risk of operating loss resulting from inadequate or failed internal processes or systems.

(4) Under the regulatory guidelines for risk-based capital, on-balance sheet assets and credit equivalent amounts of derivatives and off-balance sheet items are assigned to one of several broad risk categories according to the obligor, or, if relevant, the guarantor or the nature of any collateral. The aggregate dollar amount in each risk category is then multiplied by the risk weight associated with that category. The resulting weighted values from each of the risk categories are aggregated for determining total RWAs.

Table 45 presents the changes in Common Equity Tier 1 under the Advanced Approach for the year ended December 31, 2019.

Table 45: Analysis of Changes in Common Equity Tier 1 (Advanced Approach)

(in millions)		
Common Equity Tier 1 at December 31, 2018	$	146,363
Net income applicable to common stock		17,938
Common stock dividends		(8,444)
Common stock issued, repurchased, and stock compensation-related items		(21,719)
Changes in cumulative other comprehensive income		4,544
Cumulative effect from change in accounting policies (1)		(11)
Goodwill		27
Certain identifiable intangible assets (other than MSRs)		122
Goodwill and other intangibles on nonmarketable equity securities (included in other assets)		41
Applicable deferred taxes related to goodwill and other intangible assets (2)		26
Other		(127)
Change in Common Equity Tier 1		(7,603)
Common Equity Tier 1 at December 31, 2019	$	138,760

(1) Effective January 1, 2019, we adopted Accounting Standards Update (ASU) 2016-02 – Leases (Topic 842) and subsequent related Updates, ASU 2017-08 – Receivables – Nonrefundable Fees and Other Costs (Subtopic 310-20): *Premium Amortization on Purchased Callable Debt Securities*. See Note 1 (Summary of Significant Accounting Policies) for more information.
(2) Determined by applying the combined federal statutory rate and composite state income tax rates to the difference between book and tax basis of the respective goodwill and intangible assets at period end.

Table 46 presents net changes in the components of RWAs under the Advanced and Standardized Approaches for the year ended December 31, 2019.

Table 46: Analysis of Changes in RWAs

(in millions)		Advanced Approach	Standardized Approach
RWAs at December 31, 2018	$	1,177,350	1,247,210
Net change in credit risk RWAs		(12,489)	8,963
Net change in market risk RWAs		(10,320)	(10,320)
Net change in operational risk RWAs		75,525	—
Total change in RWAs		52,716	(1,357)
RWAs at December 31, 2019	$	1,230,066	1,245,853

TANGIBLE COMMON EQUITY We also evaluate our business based on certain ratios that utilize tangible common equity. Tangible common equity is a non-GAAP financial measure and represents total equity less preferred equity, noncontrolling interests, goodwill, certain identifiable intangible assets (other than MSRs) and goodwill and other intangibles on nonmarketable equity securities, net of applicable deferred taxes. These tangible common equity ratios are as follows:

- Tangible book value per common share, which represents tangible common equity divided by common shares outstanding; and
- Return on average tangible common equity (ROTCE), which represents our annualized earnings contribution as a percentage of tangible common equity.

The methodology of determining tangible common equity may differ among companies. Management believes that tangible book value per common share and return on average tangible common equity, which utilize tangible common equity, are useful financial measures because they enable investors and others to assess the Company's use of equity.

Table 47 provides a reconciliation of these non-GAAP financial measures to GAAP financial measures.

Table 47: Tangible Common Equity

		Balance at period end			Average balance for the year ended		
(in millions, except ratios)		**Dec 31, 2019**	Dec 31, 2018	Dec 31, 2017	**Dec 31, 2019**	Dec 31, 2018	Dec 31, 2017
Total equity		**$ 187,984**	197,066	208,079	**197,621**	203,356	205,654
Adjustments:							
Preferred stock		**(21,549)**	(23,214)	(25,358)	**(22,522)**	(24,956)	(25,592)
Additional paid-in capital on ESOP preferred stock		**(71)**	(95)	(122)	**(81)**	(125)	(139)
Unearned ESOP shares		**1,143**	1,502	1,678	**1,306**	2,159	2,143
Noncontrolling interests		**(838)**	(900)	(1,143)	**(962)**	(929)	(948)
Total common stockholders' equity	(A)	**166,669**	174,359	183,134	**175,362**	179,505	181,118
Adjustments:							
Goodwill		**(26,390)**	(26,418)	(26,587)	**(26,409)**	(26,453)	(26,629)
Certain identifiable intangible assets (other than MSRs)		**(437)**	(559)	(1,624)	**(493)**	(1,088)	(2,176)
Goodwill and other intangibles on nonmarketable equity securities (included in other assets)		**(2,146)**	(2,187)	(2,155)	**(2,174)**	(2,197)	(2,184)
Applicable deferred taxes related to goodwill and other intangible assets (1)		**810**	785	962	**792**	866	1,570
Tangible common equity	(B)	**$ 138,506**	145,980	153,730	**147,078**	150,633	151,699
Common shares outstanding	(C)	**4,134.4**	4,581.3	4,891.6	**N/A**	N/A	N/A
Net income applicable to common stock	(D)	**N/A**	N/A	N/A	**$ 17,938**	20,689	20,554
Book value per common share	(A)/(C)	**$ 40.31**	38.06	37.44	**N/A**	N/A	N/A
Tangible book value per common share	(B)/(C)	**33.50**	31.86	31.43	**N/A**	N/A	N/A
Return on average common stockholders' equity (ROE)	(D)/(A)	**N/A**	N/A	N/A	**10.23%**	11.53	11.35
Return on average tangible common equity (ROTCE)	(D)/(B)	**N/A**	N/A	N/A	**12.20**	13.73	13.55

(1) Determined by applying the combined federal statutory rate and composite state income tax rates to the difference between book and tax basis of the respective goodwill and intangible assets at period end.

SUPPLEMENTARY LEVERAGE RATIO As a BHC, we are required to maintain a supplementary leverage ratio (SLR) of at least 5.00% (comprised of a 3.00% minimum requirement plus a supplementary leverage buffer of 2.00%) to avoid restrictions on capital distributions and discretionary bonus payments. Our IDIs are required to maintain a SLR of at least 6.00% to be considered well-capitalized under applicable regulatory capital adequacy guidelines. In April 2018, the FRB and OCC proposed rules (the "Proposed SLR Rules") that would replace the 2.00% supplementary leverage buffer with a buffer equal to one-half of our G-SIB capital surcharge. The Proposed SLR Rules would similarly tailor the current 6.00% SLR requirement for our IDIs. At December 31, 2019, our SLR for the Company was 7.07%, and we also exceeded the applicable SLR requirements for each of our IDIs. See Table 48 for information regarding the calculation and components of the SLR.

Table 48: Supplementary Leverage Ratio

(in millions, except ratio)			Quarter ended December 31, 2019
Tier 1 capital	(A)	$	158,949
Total average assets			1,941,843
Less: Goodwill and other permitted Tier 1 capital deductions (net of deferred tax liabilities)			28,546
Total adjusted average assets			1,913,297
Plus adjustments for off-balance sheet exposures:			
Derivatives (1)			67,645
Repo-style transactions (2)			5,162
Other (3)			261,625
Total off-balance sheet exposures			334,432
Total leverage exposure	(B)	$	2,247,729
Supplementary leverage ratio	(A)/(B)		7.07%

(1) Adjustment represents derivatives and collateral netting exposures as defined for supplementary leverage ratio determination purposes.
(2) Adjustment represents counterparty credit risk for repo-style transactions where Wells Fargo & Company is the principal (i.e., principal counterparty facing the client).
(3) Adjustment represents credit equivalent amounts of other off-balance sheet exposures not already included as derivatives and repo-style transactions exposures.

OTHER REGULATORY CAPITAL MATTERS As a G-SIB, we are required to have a minimum amount of equity and unsecured long-term debt for purposes of resolvability and resiliency, often referred to as Total Loss Absorbing Capacity (TLAC). U.S. G-SIBs are required to have a minimum TLAC amount (consisting of CET1 capital and additional tier 1 capital issued directly by the top-tier or covered BHC plus eligible external long-term debt) equal to the greater of (i) 18.00% of RWAs and (ii) 7.50% of total leverage exposure (the denominator of the SLR calculation). Additionally, U.S. G-SIBs are required to maintain (i) a TLAC buffer equal to 2.50% of RWAs plus our applicable G-SIB capital surcharge calculated under method one plus any applicable countercyclical buffer to be added to the 18.00% minimum and (ii) an external TLAC leverage buffer equal to 2.00% of total leverage exposure to be added to the 7.50% minimum, in order to avoid restrictions on capital distributions and discretionary bonus payments. U.S. G-SIBs are also required to have a minimum amount of eligible unsecured long-term debt equal to the greater of (i) 6.00% of RWAs plus our applicable G-SIB capital surcharge calculated under method two and (ii) 4.50% of the total leverage exposure. Under the Proposed SLR Rules, the 2.00% external TLAC leverage buffer would be replaced with a buffer equal to one-half of our applicable G-SIB capital surcharge, and the leverage component for calculating the minimum amount of eligible unsecured long-term debt would be modified from 4.50% of total leverage exposure to 2.50% of total leverage exposure plus one-half of our applicable G-SIB capital surcharge. As of December 31, 2019, our eligible external TLAC as a percentage of total risk-weighted assets was 23.28% compared with a required minimum of 22.00%. Similar to the risk-based capital requirements, we determine minimum required TLAC based on the greater of RWAs determined under the Standardized and Advanced approaches.

In addition, as discussed in the "Risk Management – Asset/Liability Management – Liquidity and Funding – Liquidity Standards" section in this Report, federal banking regulators have issued a final rule regarding the U.S. implementation of the Basel III LCR and a proposed rule regarding the NSFR.

Capital Planning and Stress Testing

Our planned long-term capital structure is designed to meet regulatory and market expectations. We believe that our long-term targeted capital structure enables us to invest in and grow our business, satisfy our customers' financial needs in varying environments, access markets, and maintain flexibility to return capital to our shareholders. Our long-term targeted capital structure also considers capital levels sufficient to exceed capital requirements including the G-SIB capital surcharge. Accordingly, based on the final Basel III capital rules under the lower of the Standardized or Advanced Approaches CET1 capital ratios, we currently target a long-term CET1 capital ratio at or in excess of 10.00%, which includes a 2.00% G-SIB capital surcharge. Our capital targets are subject to change based on various factors, including changes to the regulatory capital framework and expectations for large banks promulgated by bank regulatory agencies, planned capital actions, changes in our risk profile and other factors. As discussed above in the "Capital Management – Regulatory Capital Guidelines – Risk-Based Capital and Risk-Weighted Assets" section of this Report, the FRB has proposed including a stress capital buffer to replace the current 2.50% capital conservation buffer. Under the proposal, it is expected that the adoption of current expected credit loss (CECL) accounting would be included in the calculation of the stress capital buffer. We expect that implementation of the stress capital buffer may increase the level and volatility of minimum capital ratio requirements, which may cause our current long-term CET1 capital ratio target of 10.00% to increase.

Under the FRB's capital plan rule, large BHCs are required to submit capital plans annually for review to determine if the FRB has any objections before making any capital distributions. The rule requires updates to capital plans in the event of material changes in a BHC's risk profile, including as a result of any significant acquisitions. The FRB assesses, among other things, the overall financial condition, risk profile, and capital adequacy of BHCs when evaluating capital plans.

Our 2019 capital plan, which was submitted on April 4, 2019, as part of CCAR, included a comprehensive capital outlook supported by an assessment of expected sources and uses of capital over a given planning horizon under a range of expected and stress scenarios. As part of the 2019 CCAR, the FRB also generated a supervisory stress test, which assumed a sharp decline in the economy and significant decline in asset pricing using the information provided by the Company to estimate performance. The FRB reviewed the supervisory stress results both as required under the Dodd-Frank Act using a common set of capital actions for all large BHCs and by taking into account the Company's proposed capital actions. The FRB published its supervisory stress test results as required under the Dodd-Frank Act on June 21, 2019. On June 27, 2019, the FRB notified us that it did not object to our capital plan included in the 2019 CCAR.

Federal banking regulators require stress tests to evaluate whether an institution has sufficient capital to continue to operate during periods of adverse economic and financial conditions. These stress testing requirements set forth the timing and type of stress test activities large BHCs and banks must undertake as well as rules governing stress testing controls, oversight and disclosure requirements. The rules also limit a large BHC's ability to make capital distributions to the extent its actual capital issuances were less than amounts indicated in its capital plan. Under the FRB's stress testing rule, we were required to submit a mid-cycle stress test based on second quarter data and scenarios developed by the Company. We submitted the results of the mid-cycle stress test to the FRB and disclosed a summary of the results in October 2019. In October 2019, the FRB finalized rules that eliminate the mid-cycle stress test requirement for banks beginning in 2020.

Securities Repurchases
From time to time the Board authorizes the Company to repurchase shares of our common stock. Although we announce when the Board authorizes share repurchases, we typically do not give any public notice before we repurchase our shares. Future stock repurchases may be private or open-market repurchases, including block transactions, accelerated or delayed block transactions, forward repurchase transactions, and similar transactions. Additionally, we may enter into plans to purchase stock that satisfy the conditions of Rule 10b5-1 of the Securities Exchange Act of 1934. Various factors determine the amount of our share repurchases, including our capital requirements, the number of shares we expect to issue for employee benefit plans and acquisitions, market conditions (including the trading price of our stock), and regulatory and legal considerations, including the FRB's response to our capital plan and to changes in our risk profile. Due to the various factors impacting the amount of our share repurchases and the fact that we tend to be in the market regularly to satisfy repurchase considerations under our capital plan, our share repurchases occur at various price levels. We may suspend share repurchase activity at any time.

In October 2018, the Board authorized the repurchase of 350 million shares of our common stock. In July 2019, the Board authorized the repurchase of an additional 350 million shares of our common stock. At December 31, 2019, we had remaining authority to repurchase approximately 243 million shares, subject to regulatory and legal conditions. For more information about share repurchases during fourth quarter 2019, see Part II, Item 5 in our 2019 Form 10-K.

Historically, our policy has been to repurchase shares under the "safe harbor" conditions of Rule 10b-18 of the Securities Exchange Act of 1934 including a limitation on the daily volume of repurchases. Rule 10b-18 imposes an additional daily volume limitation on share repurchases during a pending merger or acquisition in which shares of our stock will constitute some or all of the consideration. Our management may determine that during a pending stock merger or acquisition when the safe harbor would otherwise be available, it is in our best interest to repurchase shares in excess of this additional daily volume limitation. In such cases, we intend to repurchase shares in compliance with the other conditions of the safe harbor, including the standing daily volume limitation that applies whether or not there is a pending stock merger or acquisition.

Regulatory Matters

Since the enactment of the Dodd-Frank Act in 2010, the U.S. financial services industry has been subject to a significant increase in regulation and regulatory oversight initiatives. This increased regulation and oversight has substantially changed how most U.S. financial services companies conduct business and has increased their regulatory compliance costs. The following highlights the more significant regulations and regulatory oversight initiatives that have affected or may affect our business. For additional information about the regulatory matters discussed below and other regulations and regulatory oversight matters, see Part I, Item 1 "Regulation and Supervision" of our 2019 Form 10-K, and the "Capital Management," "Forward-Looking Statements" and "Risk Factors" sections and Note 29 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report.

Dodd-Frank Act
The Dodd-Frank Act is the most significant financial reform legislation since the 1930s and is driving much of the current U.S. regulatory reform efforts. The following provides additional information on the Dodd-Frank Act, including certain of its rulemaking initiatives.

- *Enhanced supervision and regulation of systemically important firms.* The Dodd-Frank Act grants broad authority to federal banking regulators to establish enhanced supervisory and regulatory requirements for systemically important firms. The FRB has finalized a number of regulations implementing enhanced prudential requirements for large bank holding companies (BHCs) like Wells Fargo regarding risk-based capital and leverage, risk and liquidity management, and imposing debt-to-equity limits on any BHC that regulators determine poses a grave threat to the financial stability of the United States. The FRB and OCC have also finalized rules implementing stress testing requirements for large BHCs and national banks. The FRB has also finalized enhanced prudential standards that implement single counterparty credit limits, and has proposed a rule to establish remediation requirements for large BHCs experiencing financial distress. Similarly, the FRB has proposed additional requirements regarding effective risk management practices at large BHCs, including its expectations for boards of directors and senior management. In addition to the authorization of enhanced supervisory and regulatory requirements for systemically important firms, the Dodd-Frank Act also established the Financial Stability Oversight Council and the Office of Financial Research, which may recommend new systemic risk management requirements and require new reporting of systemic risks. The OCC, under separate authority, has also finalized guidelines establishing heightened governance and risk management standards for large national banks such as Wells Fargo Bank, N.A. The OCC guidelines require covered banks to establish and adhere to a written risk governance framework in order to manage and control their risk-taking activities. The guidelines also formalize roles and responsibilities for risk management practices within covered banks and create certain risk oversight responsibilities for their boards of directors.
- *Regulation of consumer financial products.* The Dodd-Frank Act established the Consumer Financial Protection Bureau (CFPB) to ensure consumers receive clear and accurate

disclosures regarding financial products and to protect them from hidden fees and unfair, deceptive or abusive practices. With respect to residential mortgage lending, the CFPB issued a number of final rules implementing new origination, notification, disclosure and other requirements, as well as additional limitations on the fees and charges that may be increased from the estimates provided by lenders. The CFPB finalized amendments to the rule implementing the Home Mortgage Disclosure Act, resulting in a significant expansion of the data points lenders are required to collect and report to the CFPB. The CFPB also expanded the transactions covered by the rule and increased the reporting frequency from annual to quarterly for large volume lenders, such as Wells Fargo, beginning January 1, 2020. With respect to other financial products, the CFPB finalized rules, most of which became effective on April 1, 2019, to make prepaid cards subject to similar consumer protections as those provided by more traditional debit and credit cards such as fraud protection and expanded access to account information. In addition to these rulemaking activities, the CFPB is continuing its on-going supervisory examination activities of the financial services industry with respect to a number of consumer businesses and products, including mortgage lending and servicing, fair lending requirements, student lending activities, and automobile finance.
- *Volcker Rule.* The Volcker Rule, with certain exceptions, prohibits banking entities from engaging in proprietary trading or owning any interest in or sponsoring or having certain relationships with a hedge fund, a private equity fund or certain structured transactions that are deemed covered funds. Federal banking regulators, the SEC, and the Commodity Futures Trading Commission (CFTC) jointly released a final rule to implement the Volcker Rule's restrictions, and have adopted amendments to the rule to streamline and tailor the requirements for compliance.
- *Regulation of swaps and other derivatives activities.* The Dodd-Frank Act established a comprehensive framework for regulating over-the-counter derivatives and authorized the CFTC and the SEC to regulate swaps and security-based swaps, respectively. The CFTC has adopted rules applicable to our provisionally registered swap dealer, Wells Fargo Bank, N.A., that require, among other things, extensive regulatory and public reporting of swaps, central clearing and trading of swaps on exchanges or other multilateral platforms, and compliance with comprehensive internal and external business conduct standards. The SEC has implemented parallel rules applicable to security-based swaps, and is expected to implement additional related rules. In addition, federal regulators have adopted final rules establishing initial and variation margin requirements for swaps and security-based swaps not centrally cleared, rules placing restrictions on a party's right to exercise default rights under derivatives and other qualified financial contracts against applicable banking organizations, and record-keeping requirements for qualified financial contracts. All of these new rules, as well as others being considered by regulators in other jurisdictions, may negatively impact customer demand for over-the-counter derivatives, impact our ability to offer customers new derivatives or amendments to existing derivatives, and may increase our costs for engaging in swaps, security-based swaps, and other derivatives activities.
- *Regulation of interchange transaction fees (the Durbin Amendment).* The FRB has enacted a rule to implement the Durbin Amendment to the Dodd-Frank Act, which limits debit card interchange transaction fees to those reasonable and proportional to the cost of the transaction. The rule generally established that the maximum allowable interchange fee that an issuer may receive or charge for an electronic debit transaction is the sum of 21 cents per transaction and 5 basis points multiplied by the value of the transaction.

Regulatory Capital Guidelines and Capital Plans
The Company and each of our insured depository institutions are subject to various regulatory capital adequacy requirements administered by the FRB and the OCC. For example, the Company is subject to rules issued by federal banking regulators to implement Basel III capital requirements for U.S. banking organizations. The Company and its insured depository institutions are also required to maintain specified supplementary leverage ratios. Federal banking regulators have also issued a final rule regarding the U.S. implementation of the Basel III liquidity coverage ratio. For more information on the final capital, leverage and liquidity rules, and additional capital requirements applicable to us, see the "Capital Management" and "Risk Management – Asset/Liability Management – Liquidity and Funding – Liquidity Standards" sections in this Report.

"Living Will" Requirements and Related Matters
Rules adopted by the FRB and the FDIC under the Dodd-Frank Act require large financial institutions, including Wells Fargo, to prepare and periodically submit resolution plans, also known as "living wills," that would facilitate their rapid and orderly resolution in the event of material financial distress or failure. Under the rules, rapid and orderly resolution means a reorganization or liquidation of the covered company under the U.S. Bankruptcy Code that can be accomplished in a reasonable period of time and in a manner that substantially mitigates the risk that failure would have serious adverse effects on the financial stability of the United States. In addition to the Company's resolution plan, our national bank subsidiary, Wells Fargo Bank, N.A. (the "Bank"), is also required to prepare and periodically submit a resolution plan. If the FRB and/or FDIC determine that our resolution plan has deficiencies, they may impose more stringent capital, leverage or liquidity requirements on us or restrict our growth, activities or operations until we adequately remedy the deficiencies. If the FRB and/or FDIC ultimately determine that we have been unable to remedy any deficiencies, they could require us to divest certain assets or operations. On June 27, 2019, we submitted our resolution plan to the FRB and FDIC. On December 17, 2019, the FRB and FDIC announced that the Company's 2019 resolution plan did not have any deficiencies, but they identified a specific shortcoming that would need to be addressed.

If Wells Fargo were to fail, it may be resolved in a bankruptcy proceeding or, if certain conditions are met, under the resolution regime created by the Dodd-Frank Act known as the "orderly liquidation authority." The orderly liquidation authority allows for the appointment of the FDIC as receiver for a systemically important financial institution that is in default or in danger of default if, among other things, the resolution of the institution under the U.S. Bankruptcy Code would have serious adverse effects on financial stability in the United States. If the FDIC is appointed as receiver for Wells Fargo & Company (the "Parent"), then the orderly liquidation authority, rather than the U.S. Bankruptcy Code, would determine the powers of the receiver and the rights and obligations of our security holders. The FDIC's orderly liquidation authority requires that security holders of a company in receivership bear all losses before U.S. taxpayers are exposed to any losses, and allows the FDIC to disregard the strict priority of creditor claims under the U.S. Bankruptcy Code in certain circumstances.

The strategy described in our most recent resolution plan is a single point of entry strategy, in which the Parent would likely be the only material legal entity to enter resolution proceedings. However, we are not obligated to maintain a single point of entry strategy, and the strategy described in our resolution plan is not binding in the event of an actual resolution of Wells Fargo, whether conducted under the U.S. Bankruptcy Code or by the FDIC under the orderly liquidation authority. The FDIC has announced that a single point of entry strategy may be a desirable strategy under its implementation of the orderly liquidation authority, but not all aspects of how the FDIC might exercise this authority are known and additional rulemaking is possible.

To facilitate the orderly resolution of systemically important financial institutions in case of material distress or failure, federal banking regulations require that institutions, such as Wells Fargo, maintain a minimum amount of equity and unsecured debt to absorb losses and recapitalize operating subsidiaries. Federal banking regulators have also required measures to facilitate the continued operation of operating subsidiaries notwithstanding the failure of their parent companies, such as limitations on parent guarantees, and have issued guidance encouraging institutions to take legally binding measures to provide capital and liquidity resources to certain subsidiaries in order to facilitate an orderly resolution. In response to the regulators' guidance and to facilitate the orderly resolution of the Company, on June 28, 2017, the Parent entered into a support agreement, as amended and restated on June 26, 2019 (the "Support Agreement"), with WFC Holdings, LLC, an intermediate holding company and subsidiary of the Parent (the "IHC"), the Bank, Wells Fargo Securities, LLC ("WFS"), Wells Fargo Clearing Services, LLC ("WFCS"), and certain other direct and indirect subsidiaries of the Parent designated as material entities for resolution planning purposes (the "Covered Entities") or identified as related support entities in our resolution plan (the "Related Support Entities"). Pursuant to the Support Agreement, the Parent transferred a significant amount of its assets, including the majority of its cash, deposits, liquid securities and intercompany loans (but excluding its equity interests in its subsidiaries and certain other assets), to the IHC and will continue to transfer those types of assets to the IHC from time to time. In the event of our material financial distress or failure, the IHC will be obligated to use the transferred assets to provide capital and/or liquidity to the Bank, WFS, WFCS, and the Covered Entities pursuant to the Support Agreement. Under the Support Agreement, the IHC will also provide funding and liquidity to the Parent through subordinated notes and a committed line of credit, which, together with the issuance of dividends, is expected to provide the Parent, during business as usual operating conditions, with the same access to cash necessary to service its debts, pay dividends, repurchase its shares, and perform its other obligations as it would have had if it had not entered into these arrangements and transferred any assets. If certain liquidity and/or capital metrics fall below defined triggers, or if the Parent's board of directors authorizes it to file a case under the U.S. Bankruptcy Code, the subordinated notes would be forgiven, the committed line of credit would terminate, and the IHC's ability to pay dividends to the Parent would be restricted, any of which could materially and adversely impact the Parent's liquidity and its ability to satisfy its debts and other obligations, and could result in the commencement of bankruptcy proceedings by the Parent at an earlier time than might have otherwise occurred if the Support Agreement were not implemented. The respective obligations under the Support Agreement of the Parent, the IHC, the Bank, and the Related Support Entities are secured pursuant to a related security agreement.

In addition to our resolution plans, we must also prepare and submit to the FRB a recovery plan that identifies a range of options that we may consider during times of idiosyncratic or systemic economic stress to remedy any financial weaknesses and restore market confidence without extraordinary government support. Recovery options include the possible sale, transfer or disposal of assets, securities, loan portfolios or businesses. The Bank must also prepare and submit to the OCC a recovery plan that sets forth the Bank's plan to remain a going concern when the Bank is experiencing considerable financial or operational stress, but has not yet deteriorated to the point where liquidation or resolution is imminent. If either the FRB or the OCC determines that our recovery plan is deficient, they may impose fines, restrictions on our business or ultimately require us to divest assets.

Other Regulatory Related Matters

- *Broker-dealer standards of conduct.* In June 2019, the SEC finalized a rule that requires broker-dealers to act in the best interest of a retail customer when making a recommendation of any securities transaction or investment strategy involving securities. This rule impacts the manner in which business is conducted with customers seeking investment advice and may affect certain investment product offerings.
- *Community Reinvestment Act (CRA) rating.* In March 2017, we announced that the OCC had downgraded our most recent CRA rating, which covers the years 2009 – 2012, to "Needs to Improve" due to previously issued regulatory consent orders. A "Needs to Improve" rating imposes regulatory restrictions and limitations on certain of the Company's nonbank activities, including its ability to engage in certain nonbank mergers and acquisitions or undertake new financial in nature activities, and CRA performance is taken into account by regulators in reviewing applications to establish bank branches and for approving proposed bank mergers and acquisitions. The rating also results in the loss of expedited processing of applications to undertake certain activities, and requires the Company to receive prior regulatory approval for certain activities, including to issue or prepay certain subordinated debt obligations, open or relocate bank branches, or make certain public welfare investments. In addition, a "Needs to Improve" rating could have an impact on the Company's relationships with certain states, counties, municipalities or other public agencies to the extent applicable law, regulation or policy limits, restricts or influences whether such entity may do business with a company that has a below "Satisfactory" rating.
- *FRB consent order regarding governance oversight and compliance and operational risk management.* On February 2, 2018, the Company entered into a consent order with the FRB. As required by the consent order, the Board submitted to the FRB a plan to further enhance the Board's governance and oversight of the Company, and the Company submitted to the FRB a plan to further improve the Company's compliance and operational risk management program. The Company continues to engage with the FRB as the Company works to address the consent order provisions. The consent order also requires the Company, following the FRB's acceptance and approval of the plans and the Company's

adoption and implementation of the plans, to complete an initial third-party review of the enhancements and improvements provided for in the plans. Until this third-party review is complete and the plans are approved and implemented to the satisfaction of the FRB, the Company's total consolidated assets will be limited to the level as of December 31, 2017. Compliance with this asset cap will be measured on a two-quarter daily average basis to allow for management of temporary fluctuations. Additionally, after removal of the asset cap, a second third-party review must also be conducted to assess the efficacy and sustainability of the enhancements and improvements.

- *Consent orders with the CFPB and OCC regarding compliance risk management program, automobile collateral protection insurance policies, and mortgage interest rate lock extensions*. On April 20, 2018, the Company entered into consent orders with the CFPB and OCC to pay an aggregate of $1 billion in civil money penalties to resolve matters regarding the Company's compliance risk management program and past practices involving certain automobile collateral protection insurance policies and certain mortgage interest rate lock extensions. As required by the consent orders, the Company submitted to the CFPB and OCC an enterprise-wide compliance risk management plan and a plan to enhance the Company's internal audit program with respect to federal consumer financial law and the terms of the consent orders. In addition, as required by the consent orders, the Company submitted for non-objection plans to remediate customers affected by the automobile collateral protection insurance and mortgage interest rate lock matters, as well as a plan for the management of remediation activities conducted by the Company.
- *OCC approval of director and senior executive officer appointments and certain post-termination payments.* Under the April 2018 consent order with the OCC, Wells Fargo Bank, N.A., remains subject to requirements that were originally imposed in November 2016 to provide prior written notice to, and obtain non-objection from, the OCC with respect to changes in directors and senior executive officers, and remains subject to certain regulatory limitations on post-termination payments to certain individuals and employees.

Critical Accounting Policies

Our significant accounting policies (see Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report) are fundamental to understanding our results of operations and financial condition because they require that we use estimates and assumptions that may affect the value of our assets or liabilities and financial results. Five of these policies are critical because they require management to make difficult, subjective and complex judgments about matters that are inherently uncertain and because it is likely that materially different amounts would be reported under different conditions or using different assumptions. These policies govern:

- the allowance for credit losses;
- the valuation of residential MSRs;
- the fair value of financial instruments;
- income taxes; and
- liability for contingent litigation losses.

Management and the Board's Audit Committee have reviewed and approved these critical accounting policies.

Allowance for Credit Losses

We maintain an allowance for credit losses, which consists of the allowance for loan losses and the allowance for unfunded credit commitments, which is management's estimate of credit losses inherent in the loan portfolio, including unfunded credit commitments, at the balance sheet date, excluding loans carried at fair value. For a description of our related accounting policies, see Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report.

Changes in the allowance for credit losses and, therefore, in the related provision for credit losses, can materially affect net income. In applying the judgment and review required to determine the allowance for credit losses, management considers changes in economic conditions, customer behavior, and collateral value, among other influences. From time to time, economic factors or business decisions, such as the addition or liquidation of a loan product or business unit, may affect the loan portfolio, causing management to increase or decrease the allowance for credit losses. While our methodology attributes portions of the allowance for credit losses to specific portfolio segments (commercial and consumer), the entire allowance for credit losses is available to absorb credit losses inherent in the total loan portfolio and unfunded credit commitments.

Judgment is specifically applied in:

- *Credit risk ratings applied to individual commercial loans and unfunded credit commitments.* We estimate the probability of default in accordance with the borrower's financial strength using a borrower quality rating and the severity of loss in the event of default using a collateral quality rating. Collectively, these ratings are referred to as credit risk ratings and are assigned to our commercial loans. Probability of default and severity at the time of default are statistically derived through historical observations of defaults and losses after default within each credit risk rating. Commercial loan risk ratings are evaluated based on each situation by experienced senior credit officers and are subject to periodic review by an internal team of credit specialists.
- *Economic assumptions applied to pools of consumer loans (statistically modeled).* Losses are estimated using economic variables to represent our best estimate of inherent loss. Our forecasted losses are modeled using a range of economic scenarios.
- *Selection of a credit loss estimation model that fits the credit risk characteristics of its portfolio*. We use both internally developed and vendor supplied models in this process. We often use expected loss, transition rate, flow rate, competing hazard, vintage maturation, and time series or statistical trend models, including those with economic correlations. Management must use judgment in establishing additional input metrics for the modeling processes, considering further stratification into reference data time series, sub-product, origination channel, vintage, loss type, geographic location and other predictive characteristics. The models used to determine the allowance for credit losses are validated in accordance with Company policies by an internal model validation group.
- *Assessment of limitations to credit loss estimation models.* We apply our judgment to adjust our modeled estimates to

reflect other risks that may be identified from current conditions and developments in selected portfolios.

- *Identification and measurement of impaired loans, including loans modified in a TDR.* Our experienced senior credit officers may consider a loan impaired based on their evaluation of current information and events, including loans modified in a TDR. The measurement of impairment is typically based on an analysis of the present value of expected future cash flows. The development of these expectations requires significant management judgment and review.
- *An amount for imprecision or uncertainty which reflects management's overall estimate of the effect of quantitative and qualitative factors on inherent credit losses.* This amount represents management's judgment of risks inherent in the processes and assumptions used in establishing the allowance for credit losses. This imprecision considers economic environmental factors, modeling assumptions and performance, process risk, and other subjective factors, including industry trends and emerging risk assessments.

SENSITIVITY TO CHANGES Table 49 demonstrates the impact of the sensitivity of our estimates on our allowance for credit losses.

Table 49: Allowance for Credit Losses Sensitivity Summary

(in billions)		December 31, 2019 Estimated increase/(decrease) in allowance
Assumption:		
Favorable (1)	$	(3.1)
Adverse (2)		7.1

(1) Represents a one risk rating upgrade throughout our commercial portfolio segment and a more optimistic economic outlook for modeled losses on our consumer portfolio segment.
(2) Represents a one risk rating downgrade throughout our commercial portfolio segment, a more pessimistic economic outlook for modeled losses on our consumer portfolio segment, and incremental deterioration for PCI loans.

The sensitivity analyses provided in the previous table are hypothetical scenarios and are not considered probable. They do not represent management's view of inherent losses in the portfolio as of the balance sheet date. Because significant judgment is used, it is possible that others performing similar analyses could reach different conclusions. See the "Risk Management – Credit Risk Management – Allowance for Credit Losses" section and Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report for further discussion of our allowance for credit losses.

Valuation of Residential Mortgage Servicing Rights (MSRs)

MSRs are assets that represent the rights to service mortgage loans for others. We recognize MSRs when we purchase servicing rights from third parties, or retain servicing rights in connection with the sale or securitization of loans we originate (asset transfers). We also have acquired MSRs in the past under co-issuer agreements that provide for us to service loans that were originated and securitized by third-party correspondents.

We carry our MSRs related to residential mortgage loans at fair value. Periodic changes in our residential MSRs and the economic hedges used to hedge our residential MSRs are reflected in earnings.

We use a model to estimate the fair value of our residential MSRs. The model is validated by an internal model validation group operating in accordance with Company policies. The model calculates the present value of estimated future net servicing income and incorporates inputs and assumptions that market participants use in estimating fair value. Certain significant inputs and assumptions generally are not observable in the market and require judgment to determine. If observable market indications do become available, these are factored into the estimates as appropriate:

- *The mortgage loan prepayment speed used to estimate future net servicing income.* The prepayment speed is the annual rate at which borrowers are forecasted to repay their mortgage loan principal; this rate also includes estimated borrower defaults. We use models to estimate prepayment speeds and borrower defaults which are influenced by changes in mortgage interest rates and borrower behavior.
- *The discount rate used to present value estimated future net servicing income.* The discount rate is the required rate of return investors in the market would expect for an asset with similar risk. To determine the discount rate, we consider the risk premium for uncertainties in the cash flow estimates such as from servicing operations (e.g., possible changes in future servicing costs, ancillary income and earnings on escrow accounts).
- *The expected cost to service loans used to estimate future net servicing income.* The cost to service loans includes estimates for unreimbursed expenses, such as delinquency and foreclosure costs, which considers the number of defaulted loans as well as changes in servicing processes associated with default and foreclosure management.

Both prepayment speed and discount rate assumptions can, and generally will, change quarterly as market conditions and mortgage interest rates change. For example, an increase in either the prepayment speed or discount rate assumption results in a decrease in the fair value of the MSRs, while a decrease in either assumption would result in an increase in the fair value of the MSRs. In recent years, there have been significant market-driven fluctuations in loan prepayment speeds and the discount rate. These fluctuations can be rapid and may be significant in the future. Additionally, while our current valuation reflects our best estimate of servicing costs, future regulatory or investor changes in servicing standards, as well as changes in individual state foreclosure legislation or additional market participant information regarding servicing cost assumptions, may have an impact on our servicing cost assumption and our MSR valuation in future periods.

For a description of our valuation and sensitivity of MSRs, see Note 1 (Summary of Significant Accounting Policies), Note 10 (Securitizations and Variable Interest Entities), Note 11 (Mortgage Banking Activities) and Note 19 (Fair Values of Assets and Liabilities) to Financial Statements in this Report.

Fair Value of Financial Instruments

Fair value represents the price that would be received to sell the financial asset or paid to transfer the financial liability in an orderly transaction between market participants at the measurement date.

We use fair value measurements to record fair value adjustments to certain financial instruments and to determine fair value disclosures. For example, assets and liabilities held for trading purposes, marketable equity securities not held for trading purposes, debt securities available for sale, derivatives and most of our residential MLHFS are carried at fair value each period. Other financial instruments, such as certain MLHFS, most nonmarketable equity securities and substantially all of our loans held for investment, are not carried at fair value each period but may require nonrecurring fair value adjustments due to application of lower-of-cost-or-market accounting, measurement alternative accounting or write-downs of individual assets. We also disclose our estimate of fair value for financial instruments not recorded at fair value, such as loans held for investment or issuances of long-term debt.

The accounting requirements for fair value measurements include a three-level hierarchy for disclosure of assets and liabilities recorded at fair value. The classification of assets and liabilities within the hierarchy is based on whether the inputs to the valuation methodology used for measurement are observable or unobservable. Observable inputs reflect market-derived or market-based information obtained from independent sources, while unobservable inputs reflect our estimates about market data. For additional information on fair value levels, see Note 19 (Fair Values of Assets and Liabilities) to Financial Statements in this Report.

When developing fair value measurements, we maximize the use of observable inputs and minimize the use of unobservable inputs. When available, we use quoted prices in active markets to measure fair value. If quoted prices in active markets are not available, fair value measurement is based upon models that generally use market-based or independently sourced market parameters, including interest rate yield curves, prepayment speeds, option volatilities and currency rates. However, when observable market data is limited or not available, fair value estimates are typically determined using internally-developed models based on unobservable inputs. Internal models used to determine fair value are validated in accordance with Company policies by an internal model validation group. Additionally, we use third-party pricing services to obtain fair values, which are used to either record the price of an instrument or to corroborate internally-developed prices. Third-party price validation procedures are performed over the reasonableness of the fair value measurements. For additional information on our use of pricing services, see Note 19 (Fair Value of Assets and Liabilities) to Financial Statements in this Report.

When using internally-developed models based on unobservable inputs, management judgment is necessary as we are required to make judgments about significant assumptions market participants would use to estimate fair value. Determination of these assumptions includes consideration of market conditions and liquidity levels. Changes in the market conditions, such as reduced liquidity in the capital markets or changes in secondary market activities, may reduce the availability and reliability of quoted prices or observable data used to determine fair value. In such cases, it may be appropriate to adjust available quoted prices or observable market data. For example, we adjust the vendor or broker price using internal models based on discounted cash flows when the impact of illiquid markets has not already been incorporated in the fair value measurement. Additionally, for certain residential MLHFS and certain debt and equity securities where the significant inputs have become unobservable due to illiquid markets and vendor or broker pricing is not used, our discounted cash flow model uses a discount rate that reflects what we believe a market participant would require in light of the illiquid market.

We continually assess the level and volume of market activity in our debt and equity security classes in determining adjustments, if any, to price quotes. Given market conditions can change over time, our determination of which securities markets are considered active or inactive can change. If we determine a market to be inactive, the degree to which price quotes require adjustment, can also change.

Significant judgment is also required to determine whether certain assets measured at fair value are classified as Level 2 or Level 3 of the fair value hierarchy as described in Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report.

When making this judgment, we consider available information, including observable market data, indications of market liquidity and orderliness, and our understanding of the valuation techniques and significant inputs used to estimate fair value. The classification of Level 2 or Level 3 is based upon the specific facts and circumstances of each instrument or instrument category and judgments are made regarding the significance of the Level 3 inputs to each instrument's fair value measurement in its entirety. If Level 3 inputs are considered significant, the instrument is classified as Level 3.

Table 50 presents our (1) assets and liabilities recorded at fair value on a recurring basis and (2) Level 3 assets and liabilities recorded at fair value on a recurring basis, both presented as a percentage of our total assets and total liabilities.

Table 50: Fair Value Level 3 Summary

	December 31, 2019		December 31, 2018	
($ in billions)	**Total balance**	**Level 3 (1)**	Total balance	Level 3 (1)
Assets carried at fair value	**$ 428.6**	**24.3**	408.4	25.3
As a percentage of total assets	**22%**	**1**	22	1
Liabilities carried at fair value	**$ 26.5**	**1.8**	28.2	1.6
As a percentage of total liabilities	**2%**	*****	2	*

* Less than 1%.
(1) Before derivative netting adjustments.

See Note 19 (Fair Values of Assets and Liabilities) to Financial Statements in this Report for a complete discussion on our fair value of financial instruments, our related measurement techniques and the impact to our financial statements.

Income Taxes

We file consolidated and separate company U.S. federal income tax returns, non-U.S. tax returns and various combined and separate company state tax returns.

We evaluate two components of income tax expense: current and deferred income tax expense. Current income tax expense represents our estimated taxes to be paid or refunded for the current period and includes income tax expense related to our uncertain tax positions. Uncertain tax positions that meet the more likely than not recognition threshold are measured to determine the amount of benefit to recognize. An uncertain tax position is measured at the largest amount of benefit that management believes has a greater than 50% likelihood of realization upon settlement. Tax benefits not meeting our realization criteria represent unrecognized tax benefits.

Deferred income tax expense results from changes in deferred tax assets and liabilities between periods. We determine deferred income taxes using the balance sheet method. Under this method, the net deferred tax asset or liability is based on the tax effects of the differences between the book and tax basis of assets and liabilities, and recognizes enacted changes in tax rates and laws in the period in which they occur. Deferred tax assets are recognized subject to management's judgment that realization is more likely than not.

We do not intend to distribute earnings of certain non-U.S. subsidiaries in a taxable manner, and therefore intend to limit distributions of non-U.S. earnings previously taxed in the U.S., that would qualify for the 100% dividends received deduction, and that would not result in any significant state or non-U.S. taxes. All other undistributed non-U.S. earnings will continue to be permanently reinvested outside the U.S. and the related tax liability on these earnings is insignificant.

The income tax laws of the jurisdictions in which we operate are complex and subject to different interpretations by the taxpayer and the relevant government taxing authorities. In establishing a provision for income tax expense, we must make judgments and interpretations about the application of these inherently complex tax laws. We must also make estimates about when in the future certain items will affect taxable income in the various tax jurisdictions, both domestic and international. Our interpretations may be subjected to review during examination by taxing authorities and disputes may arise over the respective tax positions. We attempt to resolve these disputes during the tax examination and audit process and ultimately through the court systems when applicable.

We monitor relevant tax authorities and revise our estimate of accrued income taxes due to changes in income tax laws and their interpretation by the courts and regulatory authorities on a quarterly basis. Revisions of our estimate of accrued income taxes also may result from our own income tax planning and from the resolution of income tax controversies. Such revisions in our estimates may be material to our operating results for any given quarter.

See Note 24 (Income Taxes) to Financial Statements in this Report for a further description of our provision for income taxes and related income tax assets and liabilities.

Liability for Contingent Litigation Losses

The Company is involved in a number of judicial, regulatory, governmental, arbitration and other proceedings or investigations concerning matters arising from the conduct of its business activities, and many of those proceedings and investigations expose the Company to potential financial loss. We establish accruals for legal actions when potential losses associated with the actions become probable and the costs can be reasonably estimated. For such accruals, we record the amount we consider to be the best estimate within a range of potential losses that are both probable and estimable; however, if we cannot determine a best estimate, then we record the low end of the range of those potential losses. The actual costs of resolving legal actions may be substantially higher or lower than the amounts accrued for those actions.

We apply judgment when establishing an accrual for potential losses associated with legal actions and in establishing the range of reasonably possible losses in excess of the accrual. Our judgment in establishing accruals and the range of reasonably possible losses in excess of the Company's accrual for probable and estimable losses is influenced by our understanding of information currently available related to the legal evaluation and potential outcome of actions, including input and advice on these matters from our internal counsel, external counsel and senior management. These matters may be in various stages of investigation, discovery or proceedings. They may also involve a wide variety of claims across our businesses, legal entities and jurisdictions. The eventual outcome may be a scenario that was not considered or was considered remote in anticipated occurrence. Accordingly, our estimate of potential losses will change over time and the actual losses may vary significantly.

The outcomes of legal actions are unpredictable and subject to significant uncertainties, and it is inherently difficult to determine whether any loss is probable or even possible. It is also inherently difficult to estimate the amount of any loss and there may be matters for which a loss is probable or reasonably possible but not currently estimable. Accordingly, actual losses may be in excess of the established accrual or the range of reasonably possible loss.

See Note 17 (Legal Actions) to Financial Statements in this Report for further information.

Current Accounting Developments

Table 51 provides the significant accounting updates applicable to us that have been issued by the Financial Accounting Standards Board (FASB) but are not yet effective.

Table 51: Current Accounting Developments – Issued Standards

Description	Effective date and financial statement impact
ASU 2018-12 – Financial Services – Insurance (Topic 944): ***Targeted Improvements to the Accounting for Long-Duration Contracts*** **and subsequent related updates**	
The Update requires all features in long-duration insurance contracts that meet the definition of a market risk benefit to be measured at fair value through earnings with changes in fair value attributable to our own credit risk recognized in other comprehensive income. Currently, two measurement models exist for these features, fair value and insurance accrual. The Update requires the use of a standardized discount rate and routine updates for insurance assumptions used in valuing the liability for future policy benefits for traditional long-duration contracts. The Update also simplifies the amortization of deferred acquisition costs.	The guidance becomes effective on January 1, 2022. Certain of our variable annuity reinsurance products meet the definition of market risk benefits and will require the associated insurance related reserves for these products to be measured at fair value as of the earliest period presented, with the cumulative effect on fair value for changes attributable to our own credit risk recognized in the beginning balance of accumulated other comprehensive income. The cumulative effect of the difference between fair value and carrying value, excluding the effect of our own credit, will be recognized in the opening balance of retained earnings. As of December 31, 2019, we held $1.1 billion in insurance-related reserves of which $489 million was in scope of the Update. A total of $429 million was associated with products that meet the definition of market risk benefits, and of this amount, $17 million was measured at fair value under current accounting standards. The market risk benefits are largely indexed to U.S. equity and fixed income markets. Upon adoption, we may incur periodic earnings volatility from changes in the fair value of market risk benefits generally due to the long duration of these contracts. We plan to economically hedge this volatility, where feasible. The ultimate impact of these changes will depend on the composition of our market risk benefits portfolio at the date of adoption. Changes in the accounting for the liability of future policy benefits for traditional long-duration contracts and deferred acquisition costs will be applied to all outstanding long-duration contracts on the basis of their existing carrying amounts at the beginning of the earliest period presented, and are not expected to be material.
ASU 2016-13 – Financial Instruments – Credit Losses (Topic 326): ***Measurement of Credit Losses on Financial Instruments*** **and subsequent related updates**	
The Update changes the accounting for the measurement of credit losses on loans and debt securities. For loans and held-to-maturity debt securities, the Update requires a current expected credit loss (CECL) measurement to estimate the allowance for credit losses (ACL) for the remaining contractual term, adjusted for prepayments, of the financial asset (including off-balance sheet credit exposures) using historical experience, current conditions, and reasonable and supportable forecasts. The Update eliminates the existing guidance for PCI loans, but requires an allowance for purchased financial assets with more than an insignificant deterioration of credit since origination. In addition, the Update modifies the other-than-temporary impairment model for available-for-sale debt securities to require an allowance for credit impairment instead of a direct write-down, which allows for reversal of credit impairments in future periods based on improvements in credit.	We adopted the guidance on January 1, 2020. Our implementation process included development of loss forecasting models, evaluation of technical accounting topics, updates to our allowance documentation, reporting processes, and related internal controls. Upon adoption, we recognized an overall decrease in our ACL of approximately $1.3 billion, as a cumulative effect adjustment from change in accounting policies. This adjustment, net of income tax adjustments, increased our retained earnings and regulatory capital amounts and ratios. For more information on the impact of CECL by type of financial asset, see Table 51b (ASU 2016-03 Adoption Impact to Allowance for Credit Losses (ACL)) in this Report. Our approach for estimating expected life-time credit losses for loans and debt securities includes the following key components: • An initial loss forecast period of one year for all portfolio segments and classes of financing receivables and off-balance-sheet credit exposures. This period reflects management's expectation of losses based on forward-looking economic scenarios over that time. • A historical loss forecast period covering the remaining contractual term, adjusted for prepayments, by portfolio segment and class of financing receivables based on the change in key historical economic variables during representative historical expansionary and recessionary periods. • A reversion period of up to two years connecting the initial loss forecast to the historical loss forecast based on economic conditions at the measurement date. • Utilization of discounted cash flow (DCF) methods to measure credit impairment for loans modified in a troubled debt restructuring, unless they are collateral dependent and measured at the fair value of collateral. The DCF methods obtain estimated life-time credit losses using the conceptual components described above. • For available-for-sale debt securities and certain beneficial interests classified as held-to-maturity, we utilize the DCF methods to measure the ACL, which incorporate expected credit losses using the conceptual components described above. The ACL on available-for-sale debt securities is subject to a limitation based on the fair value of the debt securities. We expect future changes in our ACL to be more volatile under CECL. Future amounts of the ACL will be based on a variety of factors, including changes in loan volumes, portfolio credit quality, and general economic conditions. General economic conditions will be forecasted using economic variables, which will create volatility as those variables change over time. See Table 51a for key economic variables used for our loan portfolios.

Table 51a: Key Economic Variables

Loan Portfolio	Key economic variables
Total commercial	• Gross domestic product • Commercial real estate asset prices, where applicable
Real estate 1-4 family mortgage	• Home price index • Unemployment rate
Other consumer (including credit card, automobile, and other revolving credit and installment)	• Unemployment rate

Table 51b: ASU 2016-13 Adoption Impact to Allowance for Credit Losses (ACL) (1)

	Dec 31, 2019			ASU 2016-13 Adoption Impact	Jan 1, 2020	
(in billions)	Balance Outstanding	ACL Balance	Coverage		ACL Balance	Coverage
Total commercial (2)	$ 515.7	6.2	1.2%	$ (2.9)	3.4	0.7%
Real estate 1-4 family mortgage (3)	323.4	0.9	0.3	—	0.9	0.3
Credit card (4)	41.0	2.3	5.5	0.7	2.9	7.1
Automobile (4)	47.9	0.5	1.0	0.3	0.7	1.5
Other revolving credit and installment (4)	34.3	0.6	1.6	0.6	1.2	3.5
Total consumer	446.5	4.2	0.9	1.5	5.7	1.3
Total loans	962.3	10.5	1.1	(1.3)	9.1	0.9
Available-for-sale and held-to-maturity debt securities and other assets (5)	420.0	0.1	NM	—	0.1	NM
Total	$ 1,382.3	10.6	NM	$ (1.3)	9.3	NM

NM – Not meaningful
(1) Amounts presented in this table may not equal the sum of its components due to rounding.
(2) Decrease reflecting shorter contractual maturities given limitation to contractual term.
(3) Impact reflects an increase due to longer contractual term, offset by expectation of recoveries in collateral value on mortgage loans previously written down significantly below current recovery value.
(4) Increase due to longer contractual term or indeterminate maturities.
(5) Excludes other financial assets in the scope of CECL that do not have an allowance for credit losses based on the nature of the asset.

Other Accounting Developments

The following Updates are applicable to us but are not expected to have a material impact on our consolidated financial statements:

- ASU 2020-01 – Investments - Equity Securities (Topic 321), Investments – Equity Method and Joint Ventures (Topic 323), and Derivatives and Hedging (Topic 815): *Clarifying the Interactions between Topic 321, Topic 323, and Topic 815 (a consensus of the FASB Emerging Issues Task Force)*
- ASU 2019-12 – Income Taxes (Topic 740): *Simplifying the Accounting for Income Taxes*
- ASU 2019-04 – Codification Improvements to Topic 326, *Financial Instruments – Credit Losses*, Topic 815, *Derivatives and Hedging*, and Topic 825, *Financial Instruments*. This Update includes guidance on recoveries of financial assets, which has been included in the discussion for ASU 2016-13 above.
- ASU 2018-17 – Consolidation (Topic 810): *Targeted Improvements to Related Party Guidance for Variable Interest Entities*
- ASU 2018-15 – Intangibles – Goodwill and Other – Internal-Use Software (Subtopic 350-40): *Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract (a consensus of the FASB Emerging Issues Task Force)*
- ASU 2018-13 – Fair Value Measurement (Topic 820): *Disclosure Framework – Changes to the Disclosure Requirements for Fair Value Measurement.* We fully adopted this guidance in first quarter 2020.
- ASU 2017-04 – Intangibles – Goodwill and Other (Topic 350): *Simplifying the Test for Goodwill Impairment*

Forward-Looking Statements

This document contains forward-looking statements. In addition, we may make forward-looking statements in our other documents filed or furnished with the SEC, and our management may make forward-looking statements orally to analysts, investors, representatives of the media and others. Forward-looking statements can be identified by words such as "anticipates," "intends," "plans," "seeks," "believes," "estimates," "expects," "target," "projects," "outlook," "forecast," "will," "may," "could," "should," "can" and similar references to future periods. In particular, forward-looking statements include, but are not limited to, statements we make about: (i) the future operating or financial performance of the Company, including our outlook for future growth; (ii) our noninterest expense and efficiency ratio; (iii) future credit quality and performance, including our expectations regarding future loan losses and our allowance for credit losses; (iv) the appropriateness of the allowance for credit losses; (v) our expectations regarding net interest income and net interest margin; (vi) loan growth or the reduction or mitigation of risk in our loan portfolios; (vii) future capital or liquidity levels or targets, our estimated Common Equity Tier 1 ratio, and our estimated total loss absorbing capacity ratio; (viii) the performance of our mortgage business and any related exposures; (ix) the expected outcome and impact of legal, regulatory and legislative developments, as well as our expectations regarding compliance therewith; (x) future common stock dividends, common share repurchases and other uses of capital; (xi) our targeted range for return on assets, return on equity, and return on tangible common equity; (xii) expectations regarding our effective income tax rate; (xiii) the outcome of contingencies, such as legal proceedings; and (xiv) the Company's plans, objectives and strategies.

Forward-looking statements are not based on historical facts but instead represent our current expectations and assumptions regarding our business, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict. Our actual results may differ materially from those contemplated by the forward-looking statements. We caution you, therefore, against relying on any of these forward-looking statements. They are neither statements of historical fact nor guarantees or assurances of future performance. While there is no assurance that any list of risks and uncertainties or risk factors is complete, important factors that could cause actual results to differ materially from those in the forward-looking statements include the following, without limitation:

- current and future economic and market conditions, including the effects of declines in housing prices, high unemployment rates, U.S. fiscal debt, budget and tax matters, geopolitical matters, and any slowdown in global economic growth;
- our capital and liquidity requirements (including under regulatory capital standards, such as the Basel III capital standards) and our ability to generate capital internally or raise capital on favorable terms;
- financial services reform and other current, pending or future legislation or regulation that could have a negative effect on our revenue and businesses, including the Dodd-Frank Act and other legislation and regulation relating to bank products and services;
- developments in our mortgage banking business, including the extent of the success of our mortgage loan modification efforts, the amount of mortgage loan repurchase demands that we receive, any negative effects relating to our mortgage servicing, loan modification or foreclosure practices, and the effects of regulatory or judicial requirements or guidance impacting our mortgage banking business and any changes in industry standards;
- our ability to realize any efficiency ratio or expense target as part of our expense management initiatives, including as a result of business and economic cyclicality, seasonality, changes in our business composition and operating environment, growth in our businesses and/or acquisitions, and unexpected expenses relating to, among other things, litigation and regulatory matters;
- the effect of the current interest rate environment or changes in interest rates or in the level or composition of our assets or liabilities on our net interest income, net interest margin and our mortgage originations, mortgage servicing rights and mortgage loans held for sale;
- significant turbulence or a disruption in the capital or financial markets, which could result in, among other things, reduced investor demand for mortgage loans, a reduction in the availability of funding or increased funding costs, and declines in asset values and/or recognition of other-than-temporary impairment on securities held in our debt securities and equity securities portfolios;
- the effect of a fall in stock market prices on our investment banking business and our fee income from our brokerage, asset and wealth management businesses;
- negative effects from the retail banking sales practices matter and from other instances where customers may have experienced financial harm, including on our legal, operational and compliance costs, our ability to engage in certain business activities or offer certain products or services, our ability to keep and attract customers, our ability to attract and retain qualified team members, and our reputation;
- resolution of regulatory matters, litigation, or other legal actions, which may result in, among other things, additional costs, fines, penalties, restrictions on our business activities, reputational harm, or other adverse consequences;
- a failure in or breach of our operational or security systems or infrastructure, or those of our third-party vendors or other service providers, including as a result of cyber attacks;
- the effect of changes in the level of checking or savings account deposits on our funding costs and net interest margin;
- fiscal and monetary policies of the Federal Reserve Board;
- changes to U.S. tax guidance and regulations, as well as the effect of discrete items on our effective income tax rate;
- our ability to develop and execute effective business plans and strategies; and
- the other risk factors and uncertainties described under "Risk Factors" in this Report.

In addition to the above factors, we also caution that the amount and timing of any future common stock dividends or repurchases will depend on the earnings, cash requirements and financial condition of the Company, market conditions, capital requirements (including under Basel capital standards), common stock issuance requirements, applicable law and regulations (including federal securities laws and federal banking regulations), and other factors deemed relevant by the

Company's Board of Directors, and may be subject to regulatory approval or conditions.

For more information about factors that could cause actual results to differ materially from our expectations, refer to our reports filed with the Securities and Exchange Commission, including the discussion under "Risk Factors" in this Report, as filed with the Securities and Exchange Commission and available on its website at www.sec.gov.

Any forward-looking statement made by us speaks only as of the date on which it is made. Factors or events that could cause our actual results to differ may emerge from time to time, and it is not possible for us to predict all of them. We undertake no obligation to publicly update any forward-looking statement, whether as a result of new information, future developments or otherwise, except as may be required by law.

Forward-looking Non-GAAP Financial Measures. From time to time management may discuss forward-looking non-GAAP financial measures, such as forward-looking estimates or targets for return on average tangible common equity. We are unable to provide a reconciliation of forward-looking non-GAAP financial measures to their most directly comparable GAAP financial measures because we are unable to provide, without unreasonable effort, a meaningful or accurate calculation or estimation of amounts that would be necessary for the reconciliation due to the complexity and inherent difficulty in forecasting and quantifying future amounts or when they may occur. Such unavailable information could be significant to future results.

Risk Factors

An investment in the Company involves risk, including the possibility that the value of the investment could fall substantially and that dividends or other distributions on the investment could be reduced or eliminated. We discuss below risk factors that could adversely affect our financial results and condition, and the value of, and return on, an investment in the Company.

RISKS RELATED TO THE ECONOMY, FINANCIAL MARKETS, INTEREST RATES AND LIQUIDITY

As one of the largest lenders in the U.S. and a provider of financial products and services to consumers and businesses across the U.S. and internationally, our financial results have been, and will continue to be, materially affected by general economic conditions, and a deterioration in economic conditions or in the financial markets may materially adversely affect our lending and other businesses and our financial results and condition. We generate revenue from the interest and fees we charge on the loans and other products and services we sell, and a substantial amount of our revenue and earnings comes from the net interest income and fee income that we earn from our consumer and commercial lending and banking businesses, including our mortgage banking business. These businesses have been, and will continue to be, materially affected by the state of the U.S. economy, particularly unemployment levels and home prices. Although the U.S. economy has continued to gradually improve from the depressed levels of 2008 and early 2009, economic growth has at times been slow and uneven. In addition, the negative effects and continued uncertainty stemming from U.S. fiscal and political matters, including concerns about deficit levels, taxes and U.S. debt ratings, have impacted and may continue to impact the global economic recovery. Moreover, geopolitical matters, including international political unrest or disturbances, Britain's vote to withdraw from the European Union, as well as continued concerns over commodity prices, restrictions on international trade and corresponding retaliatory measures, and global economic difficulties, may impact the stability of financial markets and the global economy. In particular, Britain's withdrawal from the European Union and the final terms of its exit following the existing transition period could increase economic barriers between Britain and the European Union, limit our ability to conduct business in the European Union, impose additional costs on us, subject us to different laws, regulations and/or regulatory authorities, or adversely impact our business, financial results and operating model. For example, certain operations of our broker-dealer in London may be impacted by the terms and conditions of Britain's exit. Although we are transitioning certain of these operations to other European countries, there is no guarantee that we will be able to operate or conduct business in the European Union in the same manner or with the same effectiveness following the end of the transition period for Britain's withdrawal. A prolonged period of slow growth in the global economy, particularly in the U.S., or any deterioration in general economic conditions and/or the financial markets resulting from the above matters or any other events or factors that may disrupt or dampen the global economic recovery, could materially adversely affect our financial results and condition.

A weakening in business or economic conditions, including higher unemployment levels or declines in home prices, can also adversely affect our borrowers' ability to repay their loans, which can negatively impact our credit performance. If unemployment levels worsen or if home prices fall we would expect to incur elevated charge-offs and provision expense from increases in our allowance for credit losses. These conditions may adversely affect not only consumer loan performance but also commercial and CRE loans, especially for those business borrowers that rely on the health of industries that may experience deteriorating economic conditions. The ability of these and other borrowers to repay their loans may deteriorate, causing us, as one of the largest commercial and CRE lenders in the U.S., to incur significantly higher credit losses. In addition, weak or deteriorating economic conditions make it more challenging for us to increase our consumer and commercial loan portfolios by making loans to creditworthy borrowers at attractive yields. Furthermore, weak economic conditions, as well as competition and/or increases in interest rates, could soften demand for our loans resulting in our retaining a much higher amount of lower yielding liquid assets on our balance sheet. If economic conditions do not continue to improve or if the economy worsens and unemployment rises, which also would likely result in a decrease in consumer and business confidence and spending, the demand for our credit products, including our mortgages, may fall, reducing our interest and noninterest income and our earnings.

A deterioration in business and economic conditions, which may erode consumer and investor confidence levels, and/or increased volatility of financial markets, also could adversely affect financial results for our fee-based businesses, including our investment advisory, mutual fund, securities brokerage, wealth management, and investment banking businesses. In 2019, approximately 25% of our revenue was fee income, which included trust and investment fees, card fees and other fees. We earn fee income from managing assets for others and providing brokerage and other investment advisory and wealth management services. Because investment management fees are often based on the value of assets under management, a fall in the market prices of those assets could reduce our fee income. Changes in stock market prices could affect the trading activity of investors, reducing commissions and other fees we earn from our brokerage business. In addition, adverse market conditions may negatively affect the performance of products we have provided to customers, which may expose us to legal actions or additional costs. The U.S. stock market experienced all-time highs in 2019, but also experienced significant volatility and there is no guarantee that high price levels will continue or that price levels will stabilize. Poor economic conditions and volatile or unstable financial markets also can negatively affect our debt and equity underwriting and advisory businesses, as well as our trading activities and venture capital businesses. Any deterioration in global financial markets and economies, including as a result of any international political unrest or disturbances, may adversely affect the revenues and earnings of our international operations, particularly our global financial institution and correspondent banking services.

For more information, refer to the "Risk Management – Asset/Liability Management" and "– Credit Risk Management" sections in this Report.

Changes in interest rates and financial market values could reduce our net interest income and earnings, as well as our other comprehensive income, including as a result of recognizing losses on the debt and equity securities that we hold in our portfolio or trade for our customers. Our net interest income is the interest we earn on loans, debt securities and other assets we hold less the interest we pay on our deposits, long-term and short-term debt, and other liabilities. Net interest income is a measure of both our net interest margin – the difference between the yield we earn on our assets and the interest rate we pay for deposits and our other sources of funding – and the amount of earning assets we hold. Changes in either our net interest margin or the amount or mix of earning assets we hold could affect our net interest income and our earnings. Changes in interest rates can affect our net interest margin. Although the yield we earn on our assets and our funding costs tend to move in the same direction in response to changes in interest rates, one can rise or fall faster than the other, causing our net interest margin to expand or contract. If our funding costs rise faster than the yield we earn on our assets or if the yield we earn on our assets falls faster than our funding costs, our net interest margin could contract.

The amount and type of earning assets we hold can affect our yield and net interest margin. We hold earning assets in the form of loans and debt and equity securities, among other assets. As noted above, if the economy worsens we may see lower demand for loans by creditworthy customers, reducing our net interest income and yield. In addition, our net interest income and net interest margin can be negatively affected by a prolonged low interest rate environment as it may result in us holding lower yielding loans and securities on our balance sheet, particularly if we are unable to replace the maturing higher yielding assets with similar higher yielding assets. Increases in interest rates, however, may negatively affect loan demand and could result in higher credit losses as borrowers may have more difficulty making higher interest payments. As described below, changes in interest rates also affect our mortgage business, including the value of our MSRs.

Changes in the slope of the "yield curve" – or the spread between short-term and long-term interest rates – could also reduce our net interest margin. Normally, the yield curve is upward sloping, meaning short-term rates are lower than long-term rates. When the yield curve flattens, or even inverts, our net interest margin could decrease if the cost of our short-term funding increases relative to the yield we can earn on our long-term assets. Moreover, a negative interest rate environment, in which interest rates drop below zero, could reduce our net interest margin and net interest income due to a likely decline in the interest we could earn on loans and other earning assets, while also likely requiring us to pay to maintain our deposits with the FRB.

The interest we earn on our loans may be tied to U.S.-denominated interest rates such as the federal funds rate while the interest we pay on our debt may be based on international rates such as LIBOR. If the federal funds rate were to fall without a corresponding decrease in LIBOR, we might earn less on our loans without any offsetting decrease in our funding costs. This could lower our net interest margin and our net interest income.

We assess our interest rate risk by estimating the effect on our earnings under various scenarios that differ based on assumptions about the direction, magnitude and speed of interest rate changes and the slope of the yield curve. We hedge some of that interest rate risk with interest rate derivatives. We also rely on the "natural hedge" that our mortgage loan originations and servicing rights can provide.

We generally do not hedge all of our interest rate risk. There is always the risk that changes in interest rates, credit spreads or option volatility could reduce our net interest income and earnings, as well as our other comprehensive income, in material amounts, especially if actual conditions turn out to be materially different than what we assumed. For example, if interest rates rise or fall faster than we assumed or the slope of the yield curve changes, we may incur significant losses on debt securities we hold as investments. To reduce our interest rate risk, we may rebalance our portfolios of debt securities, equity securities and loans, refinance our debt and take other strategic actions. We may incur losses when we take such actions.

We hold debt and equity securities, including U.S. Treasury and federal agency securities and federal agency MBS, securities of U.S. states and political subdivisions, residential and commercial MBS, corporate debt securities, other asset-backed securities and marketable equity securities, including securities relating to our venture capital activities. Because of changing economic and market conditions, as well as credit ratings, affecting issuers and the performance of any collateral underlying the securities, we may be required to recognize OTTI in future periods on the securities we hold. Furthermore, the value of the debt securities we hold can fluctuate due to changes in interest rates, issuer creditworthiness, and other factors. Our net income also is exposed to changes in interest rates, credit spreads, foreign exchange rates, and equity and commodity prices in connection with our trading activities, which are conducted primarily to accommodate the investment and risk management activities of our customers, as well as when we execute economic hedging to manage certain balance sheet risks. Trading debt securities and equity securities held for trading are carried at fair value with realized and unrealized gains and losses recorded in noninterest income. As part of our business to support our customers, we trade public debt and equity securities that are subject to market fluctuations with gains and losses recognized in net income. In addition, although high market volatility can increase our exposure to trading-related losses, periods of low volatility may have an adverse effect on our businesses as a result of reduced customer activity levels. Although we have processes in place to measure and monitor the risks associated with our trading activities, including stress testing and hedging strategies, there can be no assurance that our processes and strategies will be effective in avoiding losses that could have a material adverse effect on our financial results.

The value of our marketable and nonmarketable equity securities can fluctuate from quarter to quarter. Marketable equity securities are carried at fair value with unrealized gains and losses reflected in earnings. Nonmarketable equity securities are carried under the cost method, equity method, or measurement alternative, while others are carried at fair value with unrealized gains and losses reflected in earnings. Earnings from our equity securities portfolio may be volatile and hard to predict, and may have a significant effect on our earnings from period to period. When, and if, we recognize gains may depend on a number of factors, including general economic and market conditions, the prospects of the companies in which we invest, when a company goes public, the size of our position relative to the public float, and whether we are subject to any resale restrictions.

Nonmarketable equity securities include our private equity and venture capital investments that could result in significant OTTI losses for those investments carried under the measurement alternative or equity method. If we determine there is OTTI for an investment, we write-down the carrying value of the investment, resulting in a charge to earnings, which could be significant.

For more information, refer to the "Risk Management – Asset/Liability Management – Interest Rate Risk", "– Mortgage Banking Interest Rate and Market Risk", "– Market Risk – Trading Activities", and "– Market Risk – Equity Securities" and the "Balance Sheet Analysis – Available-for-Sale and Held-to-Maturity Debt Securities" sections in this Report and Note 4 (Trading Activities), Note 5 (Available-for-Sale and Held-to-Maturity Debt Securities) and Note 8 (Equity Securities) to Financial Statements in this Report.

Uncertainty about the future of the London Interbank Offered Rate (LIBOR) may adversely affect our business, results of operations, and financial condition. Due to uncertainty surrounding the suitability and sustainability of LIBOR, central banks and global regulators have called for financial market participants to prepare for the discontinuation of LIBOR by the end of 2021. We have a significant number of assets and liabilities referenced to LIBOR and other interbank offered rates such as commercial loans, adjustable-rate mortgage loans, derivatives, debt securities, and long-term debt. When any such benchmark rate or other referenced financial metric is significantly changed, replaced or discontinued, or ceases to be recognized as an acceptable market benchmark rate or financial metric, there may be uncertainty or differences in the calculation of the applicable interest rate or payment amount depending on the terms of the governing instrument.

This could impact the financial performance of previously booked transactions, result in losses on financial instruments we hold, require different hedging strategies or result in ineffective or increased basis risk on existing hedges, impact the overall interest rate environment and the availability or cost of floating-rate funding, and affect our capital and liquidity planning and management. In addition, the transition to using any new benchmark rate or other financial metric may require changes to existing transaction data, products, systems, models, operations, and pricing processes, require substantial changes to existing documentation and the renegotiation of a substantial volume of previously booked transactions, and could result in significant operational, systems, or other practical challenges, increased compliance, legal and operational costs, heightened expectations and scrutiny from regulators, reputational harm, or other adverse consequences. Furthermore, the transition away from widely used benchmark rates like LIBOR could result in customers or other market participants challenging the determination of their interest payments, disputing the interpretation or implementation of contract "fallback" provisions and other transition related changes, or entering into fewer transactions or postponing their financing needs, which could reduce our revenue and adversely affect our business. Moreover, to the extent borrowers with loans referenced to LIBOR, such as adjustable rate mortgage loans, experience higher interest payments as a result of the transition to a new benchmark rate, our customers' ability to repay their loans may be adversely affected, which can negatively impact our credit performance.

For additional information on the discontinuation of LIBOR and the steps we are taking to address and mitigate the risks we have identified, refer to the "Risk Management - Asset/Liability Management - LIBOR Transition" section in this Report.

Effective liquidity management, which ensures that we can meet customer loan requests, customer deposit maturities/withdrawals and other cash commitments, including principal and interest payments on our debt, efficiently under both normal operating conditions and other unpredictable circumstances of industry or financial market stress, is essential for the operation of our business, and our financial results and condition could be materially adversely affected if we do not effectively manage our liquidity. Our liquidity is essential for the operation of our business. We primarily rely on bank deposits to be a low-cost and stable source of funding for the loans we make and the operation of our business. Customer deposits, which include noninterest-bearing deposits, interest-bearing checking, savings certificates, certain market rate and other savings, and certain non-U.S. deposits, have historically provided us with a sizable source of relatively stable and low-cost funds. In addition to customer deposits, our sources of liquidity include certain debt and equity securities, our ability to sell or securitize loans in secondary markets and to pledge loans to access secured borrowing facilities through the FHLB and the FRB, and our ability to raise funds in domestic and international money through capital markets.

Our liquidity and our ability to fund and run our business could be materially adversely affected by a variety of conditions and factors, including financial and credit market disruption and volatility or a lack of market or customer confidence in financial markets in general similar to what occurred during the financial crisis in 2008 and early 2009, which may result in a loss of customer deposits or outflows of cash or collateral and/or our inability to access capital markets on favorable terms. Market disruption and volatility could impact our credit spreads, which are the amount in excess of the interest rate of U.S. Treasury securities, or other benchmark securities, of the same maturity that we need to pay to our funding providers. Increases in interest rates and our credit spreads could significantly increase our funding costs. Other conditions and factors that could materially adversely affect our liquidity and funding include a lack of market or customer confidence in the Company or negative news about the Company or the financial services industry generally which also may result in a loss of deposits and/or negatively affect our ability to access the capital markets; our inability to sell or securitize loans or other assets; disruptions or volatility in the repurchase market which also may increase our short-term funding costs; and, as described below, reductions in one or more of our credit ratings. Many of the above conditions and factors may be caused by events over which we have little or no control. While market conditions have improved since the financial crisis, there can be no assurance that significant disruption and volatility in the financial markets will not occur in the future. For example, concerns over geopolitical issues, commodity and currency prices, as well as global economic conditions, may cause financial market volatility.

In addition, concerns regarding U.S. government debt levels and any associated downgrade of U.S. government debt ratings may cause uncertainty and volatility as well. A downgrade of the sovereign debt ratings of the U.S. government or the debt ratings of related institutions, agencies or instrumentalities, as well as other fiscal or political events could, in addition to causing economic and financial market disruptions, materially adversely affect the market value of the U.S. government securities that we hold, the availability of those securities as collateral for borrowing, and our ability to access capital markets on favorable terms, as well as have other material adverse effects on the operation of our business and our financial results and condition.

As noted above, we rely heavily on bank deposits for our funding and liquidity. We compete with banks and other financial services companies for deposits. If our competitors raise the rates they pay on deposits our funding costs may increase, either because we raise our rates to avoid losing deposits or because we lose deposits and must rely on more expensive sources of funding. Higher funding costs reduce our net interest margin and net interest income. Checking and savings account balances and other forms of customer deposits may decrease when customers perceive alternative investments, such as the stock market, as providing a better risk/return tradeoff. When customers move money out of bank deposits and into other investments, we may lose a relatively low-cost source of funds, increasing our funding costs and negatively affecting our liquidity.

If we are unable to continue to fund our assets through customer bank deposits or access capital markets on favorable terms or if we suffer an increase in our borrowing costs or otherwise fail to manage our liquidity effectively (including on an intraday basis), our liquidity, net interest margin, financial results and condition may be materially adversely affected. As we did during the financial crisis, we may also need, or be required by our regulators, to raise additional capital through the issuance of common stock, which could dilute the ownership of existing stockholders, or reduce or even eliminate our common stock dividend to preserve capital or in order to raise additional capital.

For more information, refer to the “Risk Management – Asset/Liability Management” section in this Report.

Adverse changes in our credit ratings could have a material adverse effect on our liquidity, cash flows, financial results and condition. Our borrowing costs and ability to obtain funding are influenced by our credit ratings. Reductions in one or more of our credit ratings could adversely affect our ability to borrow funds and raise the costs of our borrowings substantially and could cause creditors and business counterparties to raise collateral requirements or take other actions that could adversely affect our ability to raise funding. Credit ratings and credit ratings agencies’ outlooks are based on the ratings agencies’ analysis of many quantitative and qualitative factors, such as our capital adequacy, liquidity, asset quality, business mix, the level and quality of our earnings, rating agency assumptions regarding the probability and extent of federal financial assistance or support, and other rating agency specific criteria. In addition to credit ratings, our borrowing costs are affected by various other external factors, including market volatility and concerns or perceptions about the financial services industry generally. There can be no assurance that we will maintain our credit ratings and outlooks and that credit ratings downgrades in the future would not materially affect our ability to borrow funds and borrowing costs.

Downgrades in our credit ratings also may trigger additional collateral or funding obligations which could negatively affect our liquidity, including as a result of credit-related contingent features in certain of our derivative contracts. Although a one or two notch downgrade in our current credit ratings would not be expected to trigger a material increase in our collateral or funding obligations, a more severe credit rating downgrade of our long-term and short-term credit ratings could increase our collateral or funding obligations and the effect on our liquidity could be material.

For information on our credit ratings, see the “Risk Management – Asset/Liability Management – Liquidity and Funding – Credit Ratings” section and for information regarding additional collateral and funding obligations required of certain derivative instruments in the event our credit ratings were to fall below investment grade, see Note 18 (Derivatives) to Financial Statements in this Report.

We rely on dividends from our subsidiaries for liquidity, and federal and state law, as well as certain contractual arrangements, can limit those dividends. Wells Fargo & Company, the parent holding company (the “Parent”), is a separate and distinct legal entity from its subsidiaries. It receives substantially all of its funding and liquidity from dividends and other distributions from its subsidiaries. We generally use these dividends and distributions, among other things, to pay dividends on our common and preferred stock and interest and principal on our debt. Federal and state laws limit the amount of dividends and distributions that our bank and some of our nonbank subsidiaries, including our broker-dealer subsidiaries, may pay to the Parent. In addition, under a Support Agreement dated June 28, 2017, as amended and restated on June 26, 2019, among the Parent, WFC Holdings, LLC, an intermediate holding company and subsidiary of the Parent (the “IHC”), Wells Fargo Bank, N.A., Wells Fargo Securities, LLC, Wells Fargo Clearing Services, LLC, and certain other direct and indirect subsidiaries of the Parent designated as material entities for resolution planning purposes or identified as related support entities in our resolution plan, the IHC may be restricted from making dividend payments to the Parent if certain liquidity and/or capital metrics fall below defined triggers or if the Parent’s board of directors authorizes it to file a case under the U.S. Bankruptcy Code. Also, our right to participate in a distribution of assets upon a subsidiary’s liquidation or reorganization is subject to the prior claims of the subsidiary’s creditors.

For more information, refer to the “Regulation and Supervision – Dividend Restrictions” and “– Holding Company Structure” sections in our 2019 Form 10-K and to Note 3 (Cash, Loan and Dividend Restrictions) and Note 29 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report.

RISKS RELATED TO FINANCIAL REGULATORY REFORM AND OTHER LEGISLATION AND REGULATIONS

Enacted legislation and regulation, including the Dodd-Frank Act, as well as future legislation and/or regulation, could require us to change certain of our business practices, reduce our revenue and earnings, impose additional costs on us or otherwise adversely affect our business operations and/or competitive position. Our parent company, our subsidiary banks and many of our nonbank subsidiaries such as those related to our brokerage and mutual fund businesses, are subject to significant and extensive regulation under state and federal laws in the U.S., as well as the applicable laws of the various jurisdictions outside of the U.S. where they conduct business. These regulations protect depositors, federal deposit insurance funds, consumers, investors, team members, and the banking and financial system as a whole, not necessarily our security holders. Economic, market and political conditions during the past few years have led to a significant amount of legislation and regulation in the U.S. and abroad affecting the financial services industry, as well as heightened expectations and scrutiny of financial services companies from banking regulators. These laws and regulations may continue to affect the manner in which we do business and the products and services that we provide, affect or restrict our ability to compete in our current businesses or our ability to enter into or acquire new businesses, reduce or limit our revenue in businesses or impose additional fees, assessments or taxes on us, intensify the regulatory supervision of us and the financial services industry, and adversely affect our business operations or have other negative consequences. Our businesses and revenues in non-U.S. jurisdictions are also subject to risks from political, economic and social developments in those jurisdictions, including sanctions or business restrictions, asset freezes or confiscation, unfavorable political or diplomatic developments, or financial or social instability. In addition, greater government oversight and scrutiny of financial services companies has increased our operational and compliance costs as we must continue to devote substantial resources to enhancing our procedures and controls and meeting heightened regulatory standards and expectations. Any failure to meet regulatory requirements, standards or expectations, either in the U.S. or in non-U.S. jurisdictions, could result in fees, penalties, restrictions on our ability to engage in certain business activities, or other adverse consequences.

On July 21, 2010, the Dodd-Frank Act, which, among other things, imposes significant requirements and restrictions impacting the financial services industry, became law. The Dodd-Frank Act has resulted in significant rulemaking by federal regulators, including the FRB, OCC, CFPB, FDIC, SEC and CFTC, which may continue to impact our business, including the types of products and services we can provide, the manner in which we operate our businesses, and our compliance and risk management activities. The Dodd-Frank Act, including the rules implementing its provisions and the interpretation of those rules, may continue to result in a loss of revenue, require us to change certain of our business practices, limit our ability to pursue certain business opportunities, increase our capital requirements and impose additional assessments and costs on us and otherwise adversely affect our business operations and have other negative consequences.

Our consumer businesses, including our mortgage, automobile, credit card and other consumer lending and non-lending businesses, are subject to numerous and, in many cases, highly complex consumer protection laws and regulations, as well as enhanced regulatory scrutiny and more and expanded regulatory examinations and/or investigations. In particular, the CFPB's rules, which primarily impact our consumer businesses, may continue to increase our compliance costs and require changes in our business practices, which could limit or negatively affect the products and services that we offer our customers. If we fail to meet enhanced regulatory requirements and expectations with respect to our consumer businesses, we may be subject to increased costs, fines, penalties, restrictions on our business activities including the products and services we can provide, and/or harm to our reputation.

The Dodd-Frank Act's proposed prohibitions or limitations on proprietary trading and private fund investment activities, known as the "Volcker Rule," also may reduce our revenue. Federal banking regulators, the SEC and the CFTC jointly released a final rule to implement the Volcker Rule's restrictions, and have adopted amendments to the rule to streamline and tailor the requirements for compliance.

In addition, the Dodd-Frank Act established a comprehensive framework for regulating over-the-counter derivatives and federal regulators, including the CFTC and SEC, have adopted rules regulating swaps, security-based swaps, derivatives activities, and other broker-dealer conduct and activities. These rules may continue to negatively impact customer demand for over-the-counter derivatives, impact our ability to offer customers new derivatives or amendments to existing derivatives, and increase our costs for engaging in swaps, security-based swaps, and other derivatives activities. Moreover, these rules may impact the manner in which we conduct business with customers seeking investment advice and may affect certain investment product offerings.

We are also subject to various rules and regulations related to the prevention of financial crimes and combating terrorism, including the U.S. Patriot Act of 2001. These rules and regulations require us to, among other things, implement policies and procedures related to anti-money laundering, anti-bribery and corruption, fraud, compliance, suspicious activities, currency transaction reporting and due diligence on customers. Although we have policies and procedures designed to comply with these rules and regulations, to the extent they are not fully effective or do not meet heightened regulatory standards or expectations, we may be subject to fines, penalties, restrictions on certain activities, reputational harm, or other adverse consequences.

Our businesses are also subject to laws and regulations enacted by U.S. and non-U.S. regulators and governmental authorities relating to the privacy of the information of customers, team members and others. These laws and regulations, among other things, increase our compliance obligations; have a significant impact on our businesses' collection, processing, sharing, use, and retention of personal data and reporting of data breaches; and provide for significantly increased penalties for non-compliance.

In March 2017, we announced that the OCC had downgraded our most recent Community Reinvestment Act (CRA) rating, which covers the years 2009-2012, to "Needs to Improve" due to previously issued regulatory consent orders. A "Needs to Improve" rating imposes regulatory restrictions and limitations on certain of the Company's nonbank activities, including its ability to engage in certain nonbank mergers and acquisitions or undertake new financial in nature activities, and CRA performance is taken into account by regulators in reviewing applications to establish bank branches and for approving proposed bank mergers and acquisitions. The rating also results in the loss of expedited processing of applications to undertake certain activities, and requires the Company to receive prior regulatory approval for certain activities, including to issue or prepay certain subordinated debt obligations, open or relocate bank branches, or make certain public welfare investments. In addition, a "Needs to Improve" rating could have an impact on the Company's relationships with certain states, counties, municipalities or other public agencies to the extent applicable law, regulation or policy limits, restricts or influences whether such entity may do business with a company that has a below "Satisfactory" rating.

In addition, we are subject to consent orders with certain of our regulators, including a February 2018 consent order with the FRB regarding the Board's governance and oversight of the Company, and the Company's compliance and operational risk management program. The consent order limits the Company's total consolidated assets to the level as of December 31, 2017, until certain conditions are met. This limitation could adversely affect our results of operations or financial condition. We are also subject to April 2018 consent orders with the CFPB and OCC regarding the Company's compliance risk management program and past practices involving certain automobile collateral protection insurance policies and certain mortgage interest rate lock extensions.

Under the April 2018 consent order with the OCC, Wells Fargo Bank, N.A., remains subject to requirements that were originally imposed in November 2016 to provide prior written notice to, and obtain non-objection from, the OCC with respect to changes in directors and senior executive officers, and remains subject to certain regulatory limitations on post-termination payments to certain individuals and employees.

The Company may be subject to further actions, including the imposition of consent orders or similar regulatory agreements or civil money penalties, by other federal regulators regarding similar issues, including the Company's risk management policies and procedures. Compliance with the February 2018 FRB consent order, the April 2018 CFPB and OCC consent orders, and any other consent orders or regulatory actions, as well as the implementation of their requirements, may continue to increase the Company's costs, require the Company to reallocate resources away from growing its existing businesses, and require the Company to undergo significant changes to its business, products and services. For more information on the February 2018 FRB consent order and the April 2018 CFPB and OCC consent orders, refer to the "Regulatory Matters" section in this Report.

Other future regulatory initiatives that could significantly affect our business include proposals to reform the housing finance market in the United States. These proposals, among other things, consider ending the conservatorships of the GSEs and reducing or eliminating over time the role of the GSEs in buying mortgage loans or guaranteeing mortgage-backed securities (MBS), as well as the implementation of reforms relating to borrowers, lenders, and investors in the mortgage market. Regulatory changes to limit certain products, phase in a minimum down payment requirement for borrowers, tighten underwriting standards, or change the loan types and MBS pools included in the securitization process are also possible. Congress also may consider legislation to reform the mortgage finance market in an effort to assist borrowers experiencing difficulty making mortgage payments or refinancing their mortgages. The extent and timing of any regulatory reform or the adoption of any legislation regarding the GSEs and/or the home mortgage market, as well as any effect on the Company's business and financial results, are uncertain.

Any other future legislation and/or regulation, if adopted, also could significantly change our regulatory environment and increase our cost of doing business, limit the activities we may pursue or affect the competitive balance among banks, savings associations, credit unions, and other financial services companies, and have a material adverse effect on our financial results and condition.

For more information on the significant regulations and regulatory oversight initiatives that have affected or may affect our business, refer to the "Regulatory Matters" section in this Report and the "Regulation and Supervision" section in our 2019 Form 10-K.

We could be subject to more stringent capital, leverage or liquidity requirements or restrictions on our growth, activities or operations if regulators determine that our resolution or recovery plan is deficient. Pursuant to rules adopted by the FRB and the FDIC, Wells Fargo has prepared and submitted a resolution plan, also known as a "living will," that is designed to facilitate our rapid and orderly resolution in the event of material financial distress or failure. There can be no assurance that the FRB or FDIC will respond favorably to the Company's resolution plans. If the FRB and/or FDIC determine that our resolution plan has deficiencies, they may impose more stringent capital, leverage or liquidity requirements on us or restrict our growth, activities or operations until we adequately remedy the deficiencies. If the FRB and/or FDIC ultimately determine that we have been unable to remedy any deficiencies, they could require us to divest certain assets or operations. On December 17, 2019, the FRB and FDIC announced that the Company's 2019 resolution plan did not have any deficiencies, but they identified a specific shortcoming that would need to be addressed.

In addition to our resolution plans, we must also prepare and submit to the FRB a recovery plan that identifies a range of options that we may consider during times of idiosyncratic or systemic economic stress to remedy any financial weaknesses and restore market confidence without extraordinary government support. Our insured national bank subsidiary, Wells Fargo Bank, N.A. (the "Bank"), must also prepare and submit to the OCC a recovery plan. If either the FRB or the OCC determines that our recovery plan is deficient, they may impose fines, restrictions on our business or ultimately require us to divest assets.

Our security holders may suffer losses in a resolution of Wells Fargo, whether in a bankruptcy proceeding or under the orderly liquidation authority of the FDIC, even if creditors of our subsidiaries are paid in full. If Wells Fargo were to fail, it may be resolved in a bankruptcy proceeding or, if certain conditions are met, under the resolution regime created by the Dodd-Frank Act known as the "orderly liquidation authority." The orderly liquidation authority allows for the appointment of the FDIC as receiver for a systemically important financial institution that is in default or in danger of default if, among other things, the resolution of the institution under the U.S. Bankruptcy Code would have serious adverse effects on financial stability in the United States. If the FDIC is appointed as receiver for the Parent, then the orderly liquidation authority, rather than the U.S. Bankruptcy Code, would determine the powers of the receiver and the rights and obligations of our security holders. The FDIC's orderly liquidation authority requires that security holders of a company in receivership bear all losses before U.S. taxpayers are exposed to any losses, and allows the FDIC to disregard the strict priority of creditor claims under the U.S. Bankruptcy Code in certain circumstances.

The strategy described in our most recent resolution plan is a single point of entry strategy, in which the Parent would likely be the only material legal entity to enter resolution proceedings. However, we are not obligated to maintain a single point of entry strategy, and the strategy described in our resolution plan is not binding in the event of an actual resolution of Wells Fargo, whether conducted under the U.S. Bankruptcy Code or by the FDIC under the orderly liquidation authority. The FDIC has announced that a single point of entry strategy may be a desirable strategy under its implementation of the orderly liquidation authority, but not all aspects of how the FDIC might exercise this authority are known and additional rulemaking is possible.

To facilitate the orderly resolution of systemically important financial institutions in case of material distress or failure, federal banking regulations require that institutions, such as Wells Fargo, maintain a minimum amount of equity and unsecured debt to absorb losses and recapitalize operating subsidiaries. Federal banking regulators have also required measures to facilitate the continued operation of operating subsidiaries notwithstanding the failure of their parent companies, such as limitations on parent guarantees, and have issued guidance encouraging institutions to take legally binding measures to provide capital and liquidity resources to certain subsidiaries in order to facilitate an orderly resolution. In response to the regulators' guidance and to facilitate the orderly resolution of the Company, on June 28, 2017, the Parent entered into a support agreement, as amended and restated on June 26, 2019 (the "Support Agreement"), with WFC Holdings, LLC, an intermediate holding company and subsidiary of the Parent (the "IHC"), the Bank, Wells Fargo Securities, LLC ("WFS"), Wells Fargo Clearing Services, LLC ("WFCS"), and certain other direct and indirect subsidiaries of the Parent designated as material entities for resolution planning purposes (the "Covered Entities") or identified as related support entities in our resolution plan. Pursuant to the Support Agreement, the Parent transferred a significant amount of its assets, including the majority of its cash, deposits, liquid securities and intercompany loans (but excluding its equity interests in its subsidiaries and certain other assets), to the IHC and will continue to transfer those types of assets to the IHC from time to time. In the event of our material financial distress or failure, the IHC will be obligated to use the transferred assets to provide capital and/or liquidity to the Bank, WFS, WFCS, and the Covered Entities pursuant to the Support Agreement. Under the Support Agreement, the IHC will also provide funding and liquidity to the Parent through subordinated notes and a committed line of credit, which, together with the issuance of dividends, is expected to provide the Parent, during business as usual operating conditions, with the same access to cash necessary to service its debts, pay dividends, repurchase its shares, and perform its other obligations as it would have had if it had not entered into these arrangements and transferred any assets. If certain liquidity and/or capital metrics fall below defined triggers, or if the Parent's board of directors authorizes it to file a case under the U.S. Bankruptcy Code, the subordinated notes would be forgiven, the committed line of credit would terminate, and the IHC's ability to pay dividends to the Parent would be restricted, any of which could materially and adversely impact the Parent's liquidity and its ability to satisfy its debts and other obligations, and could result in the commencement of bankruptcy proceedings by the Parent at an earlier time than might have otherwise occurred if the Support Agreement were not implemented.

Any resolution of the Company will likely impose losses on shareholders, unsecured debt holders and other creditors of the Parent, while the Parent's subsidiaries may continue to operate. Creditors of some or all of our subsidiaries may receive significant or full recoveries on their claims, while the Parent's security holders could face significant or complete losses. This outcome may arise whether the Company is resolved under the U.S. Bankruptcy Code or by the FDIC under the orderly liquidation authority, and whether the resolution is conducted using a single point of entry strategy or using a multiple point of entry strategy, in which the Parent and one or more of its subsidiaries would each undergo separate resolution proceedings. Furthermore, in a single point of entry or multiple point of entry strategy, losses at some or all of our subsidiaries could be transferred to the Parent and borne by the Parent's security holders. Moreover, if either resolution strategy proved to be unsuccessful, our security holders could face greater losses than if the strategy had not been implemented.

For more information, refer to the "Regulatory Matters - 'Living Will' Requirements and Related Matters" section in this Report.

Bank regulations, including Basel capital and liquidity standards and FRB guidelines and rules, may require higher capital and liquidity levels, limiting our ability to pay common stock dividends, repurchase our common stock, invest in our business, or provide loans or other products and services to our customers. The Company and each of our insured depository institutions are subject to various regulatory capital adequacy requirements administered by federal banking regulators. In particular, the Company is subject to rules issued by federal banking regulators to implement Basel III capital requirements for U.S. banking organizations. These capital rules, among other things, establish required minimum ratios relating capital to different categories of assets and exposures. Federal banking regulators have also finalized rules to impose a supplementary leverage ratio on large BHCs like Wells Fargo and our insured depository institutions. The FRB has also finalized rules to address the amount of equity and unsecured long-term debt a U.S. G-SIB must hold to improve its resolvability and resiliency, often referred to as total loss absorbing capacity (TLAC). Similarly, federal banking regulators have issued a final rule that implements a liquidity coverage ratio.

In addition, as part of its obligation to impose enhanced capital and risk-management standards on large financial firms pursuant to the Dodd-Frank Act, the FRB issued a final capital plan rule that requires large BHCs, including the Company, to submit annual capital plans for review and to obtain regulatory approval before making capital distributions. There can be no assurance that the FRB would respond favorably to the Company's future capital plans. The FRB has also finalized a number of regulations implementing enhanced prudential requirements for large BHCs like Wells Fargo regarding risk-based capital and leverage, risk and liquidity management, and imposing debt-to-equity limits on any BHC that regulators determine poses a grave threat to the financial stability of the United States. The FRB and OCC have also finalized rules implementing stress testing requirements for large BHCs and national banks. The FRB has also finalized enhanced prudential standards that implement single counterparty credit limits, and has proposed a rule to establish remediation requirements for large BHCs experiencing financial distress. The OCC, under separate authority, has also established heightened governance and risk management standards for large national banks, such as Wells Fargo Bank, N.A.

The Basel standards and federal regulatory capital and liquidity requirements may limit or otherwise restrict how we utilize our capital, including common stock dividends and stock repurchases, and may require us to increase our capital and/or liquidity. Any requirement that we increase our regulatory capital, regulatory capital ratios or liquidity, including as a result of business growth, acquisitions or a change in our risk profile, could require us to liquidate assets or otherwise change our business, product offerings and/or investment plans, which may negatively affect our financial results. Although not currently anticipated, proposed capital requirements and/or our regulators may require us to raise additional capital in the future. Issuing additional common stock may dilute the ownership of existing stockholders. In addition, federal banking regulations may continue to increase our compliance costs as well as limit our ability to invest in our business or provide loans or other products and services to our customers.

For more information, refer to the "Capital Management," "Risk Management – Asset/Liability Management – Liquidity and Funding – Liquidity Standards," and "Regulatory Matters" sections in this Report and the "Regulation and Supervision" section in our 2019 Form 10-K.

FRB policies, including policies on interest rates, can significantly affect business and economic conditions and our financial results and condition. The FRB regulates the supply of money in the United States. Its policies determine in large part our cost of funds for lending and investing and the return we earn on those loans and investments, both of which affect our net interest income and net interest margin. The FRB's interest rate policies also can materially affect the value of financial instruments we hold, such as debt securities and MSRs. In addition, its policies can affect our borrowers, potentially increasing the risk that they may fail to repay their loans. Changes in FRB policies, including its target range for the federal funds rate or actions taken to increase or decrease the size of its balance sheet, are beyond our control and can be hard to predict. The FRB has stated that in determining the timing and size of any adjustments to the target range for the federal funds rate, the FRB will assess realized and expected economic conditions relative to its objectives of maximum employment and 2% inflation. As noted above, a declining or low interest rate environment and a flattening yield curve which may result from the FRB's actions could negatively affect our net interest income and net interest margin as it may result in us holding lower yielding loans and debt securities on our balance sheet.

CREDIT RISK

As one of the largest lenders in the U.S., increased credit risk, including as a result of a deterioration in economic conditions or changes in market conditions, could require us to increase our provision for credit losses and allowance for credit losses and could have a material adverse effect on our results of operations and financial condition. When we loan money or commit to loan money we incur credit risk, or the risk of losses if our borrowers do not repay their loans. As one of the largest lenders in the U.S., the credit performance of our loan portfolios significantly affects our financial results and condition. As noted above, if the current economic environment were to deteriorate, more of our customers may have difficulty in repaying their loans or other obligations which could result in a higher level of credit losses and provision for credit losses. We reserve for credit losses by establishing an allowance through a charge to earnings. The amount of this allowance is based on our assessment of credit losses inherent in our loan portfolio (including unfunded credit commitments). The process for determining the amount of the allowance is critical to our financial results and condition. It requires difficult, subjective and complex judgments about the future, including forecasts of economic or market conditions that might impair the ability of our borrowers to repay their loans. We might increase the allowance because of changing economic conditions, including falling home prices and higher unemployment, significant loan growth, changes in consumer behavior or other market conditions that adversely affect borrowers, or other factors. Additionally, the regulatory environment or external factors, such as natural disasters, disease pandemics, or political or social matters, also can influence recognition of credit losses in our loan portfolios and impact our allowance for credit losses.

Future allowance levels may increase or decrease based on a variety of factors, including loan growth, portfolio performance and general economic conditions. While we believe that our allowance for credit losses was appropriate at December 31, 2019, there is no assurance that it will be sufficient to cover future credit losses, especially if housing and employment conditions worsen. In the event of significant deterioration in economic conditions or if we experience significant loan growth, we may be required to build reserves in future periods, which would reduce our earnings.

For more information, refer to the "Risk Management – Credit Risk Management" and "Critical Accounting Policies – Allowance for Credit Losses" sections in this Report.

We may have more credit risk and higher credit losses to the extent our loans are concentrated by loan type, industry segment, borrower type, or location of the borrower or collateral. Our credit risk and credit losses can increase if our loans are concentrated to borrowers engaged in the same or similar activities or to borrowers who individually or as a group may be uniquely or disproportionately affected by economic or market conditions. Similarly, challenging economic or market conditions, or trade policies, affecting a particular industry or geography may also impact related or dependent industries or the ability of borrowers living in such affected areas or working in such industries to meet their financial obligations. We experienced the effect of concentration risk in 2009 and 2010 when we incurred greater than expected losses in our residential real estate loan portfolio due to a housing slowdown and greater than expected deterioration in residential real estate values in many markets, including the Central Valley California market and several Southern California metropolitan statistical areas. As California is our largest banking state in terms of loans and deposits, deterioration in real estate values and underlying economic conditions in those markets or elsewhere in California could result in materially higher credit losses. In addition, changes in consumer behavior or other market conditions, such as in response to climate change and other environmental and sustainability concerns, may adversely affect borrowers in certain industries or sectors, which may increase our credit risk and reduce the demand by these borrowers for our products and services. Moreover, deterioration in macro-economic conditions generally across the country could result in materially higher credit losses, including for our residential real estate loan portfolio, which includes nonconforming mortgage loans we retain on our balance sheet. We may experience higher delinquencies and higher loss rates as our consumer real estate secured lines of credit reach their contractual end of draw period and begin to amortize.

We are currently one of the largest CRE lenders in the U.S. A deterioration in economic conditions that negatively affects the business performance of our CRE borrowers, including increases in interest rates, declines in commercial property values, and/or changes in consumer behavior or other market conditions, could result in materially higher credit losses and have a material adverse effect on our financial results and condition.

Challenges and/or changes in non-U.S. economic conditions may increase our non-U.S. credit risk. Our non-U.S. loan exposure represented approximately 8% of our total consolidated outstanding loans and 4% of our total assets at December 31, 2019. Economic difficulties in non-U.S. jurisdictions could also indirectly have a material adverse effect on our credit performance and results of operations and financial condition to the extent they negatively affect the U.S. economy and/or our borrowers who have non-U.S. operations.

Due to regulatory requirements, we must clear certain derivative transactions through central counterparty clearinghouses (CCPs), which results in credit exposure to these CCPs. Similarly, because we are a member of various CCPs, we may be required to pay a portion of any losses incurred by the CCP in the event that one or more members of the CCP defaults on its obligations. In addition, we are exposed to the risk of non-performance by our clients for which we clear transactions through CCPs to the extent such non-performance is not sufficiently covered by available collateral.

In order to reduce credit risk and obtain additional funding, from time to time we may securitize or sell similar types or categories of loans that we originate, such as mortgage loans and automobile loans. The agreements under which we do this generally contain various representations and warranties regarding the origination and characteristics of the loans. We may be required to repurchase the loans, reimburse investors and others, or incur other losses, including regulatory fines and penalties, as a result of any breaches in these contractual representations and warranties. For more information about our repurchase obligations with respect to mortgage loans, refer to the "Risk Factors – Risks Related to Our Mortgage Business" section in this Report.

For more information regarding credit risk, refer to the "Risk Management – Credit Risk Management" section and Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

OPERATIONAL AND LEGAL RISK

A failure in or breach of our operational or security systems, controls or infrastructure, or those of our third-party vendors and other service providers, could disrupt our businesses, damage our reputation, increase our costs and cause losses. As a large financial institution that serves customers through numerous physical locations, ATMs, the internet, mobile banking and other distribution channels across the U.S. and internationally, we depend on our ability to process, record and monitor a large number of customer transactions on a continuous basis. As our customer base and locations have expanded throughout the U.S. and internationally, as we have increasingly used the internet and mobile banking to provide products and services to our customers, and as customer, public, legislative and regulatory expectations regarding operational and information security have increased, our operational systems, controls and infrastructure must continue to be safeguarded and monitored for potential failures, disruptions and breakdowns. Our business, financial, accounting, data processing systems or other operating systems and facilities may stop operating properly, become insufficient based on our evolving business needs, or become disabled or damaged as a result of a number of factors including events that are wholly or partially beyond our control. For example, there could be sudden increases in customer transaction volume; electrical or telecommunications outages; degradation or loss of internet, website or mobile banking availability; climate change related impacts and natural disasters such as earthquakes, tornados, and hurricanes; disease pandemics; events arising from local or larger scale political or social matters, including terrorist acts; and, as described below, cyber attacks or other information security breaches. Furthermore, enhancements and upgrades to our infrastructure or operating systems may be time-consuming, entail significant costs, and create risks associated with implementing new systems and integrating them with existing ones. Due to the complexity and interconnectedness of our systems, the process of enhancing our infrastructure and operating systems, including their security measures and controls, can itself create a risk of system disruptions and security issues. Similarly, we may not be able to timely recover critical business processes or operations that have been disrupted, which may further increase any associated costs and consequences of such disruptions. Although we have business continuity plans and other safeguards in place to help provide operational resiliency, our business operations may be adversely affected by significant and widespread disruption to our physical infrastructure or operating systems that support our businesses and customers. For example, on February 7, 2019, we experienced system issues caused by an automatic power shutdown at one of our main data center facilities. Although applications and related workloads were systematically re-routed to back-up data centers throughout the day, certain of our services, including our online and mobile banking systems, certain mortgage origination systems, and certain ATM functions, experienced disruptions that delayed service to our customers.

As a result of financial institutions and technology systems becoming more interconnected and complex, any operational incident at a third party may increase the risk of loss or material impact to us or the financial industry as a whole. Furthermore, third parties on which we rely, including those that facilitate our business activities or to which we outsource operations, such as exchanges, clearing houses, financial intermediaries or vendors that provide services or security solutions for our operations, could also be sources of operational risk to us, including from information breaches or loss, breakdowns, disruptions or failures of their own systems or infrastructure, or any deficiencies in the performance of their responsibilities. We are also exposed to the risk that a disruption or other operational incident at a common service provider to those third parties could impede their ability to provide services or perform their responsibilities for us. In addition, we must meet regulatory requirements and expectations regarding our use of third-party service providers, and any failure by our third-party service providers to meet their obligations to us or to comply with applicable laws, rules, regulations, or Wells Fargo policies could result in fines, penalties, restrictions on our business, or other negative consequences.

Disruptions or failures in the physical infrastructure, controls or operating systems that support our businesses and customers, failures of the third parties on which we rely to adequately or appropriately provide their services or perform their responsibilities, or our failure to effectively manage or oversee our third-party relationships, could result in business disruptions, loss of revenue or customers, legal or regulatory proceedings, compliance and other costs, violations of applicable privacy and other laws, reputational damage, or other adverse consequences, any of which could materially adversely affect our results of operations or financial condition.

A cyber attack or other information security breach of our technologies, computer systems or networks, or those of our third-party vendors and other service providers, could disrupt our businesses, result in the disclosure or misuse of confidential or proprietary information, damage our reputation, increase our costs and cause losses. Information security risks for large financial institutions such as Wells Fargo have generally increased in recent years in part because of the proliferation of new technologies, the use of the internet, mobile devices, and cloud technologies to conduct financial transactions, and the increased sophistication and activities of organized crime, hackers, terrorists, activists, and other external parties, including foreign state-sponsored parties. Those parties also may continue to attempt to misrepresent personal or financial information to obtain loans or other financial products from us or attempt to fraudulently induce employees, customers, or other users of our systems to disclose confidential information in order to gain access to our data or that of our customers. As noted above, our operations rely on the secure processing, transmission and storage of confidential information in our computer systems and networks. Our banking, brokerage, investment advisory, and capital markets businesses rely on our digital technologies, computer and email systems, software, hardware, and networks to conduct their operations. In addition, to access our products and services, our customers may use personal smartphones, tablets, and other mobile devices that are beyond our control systems. Although we believe we have robust information security procedures and controls, our technologies, systems, networks, and our customers' devices may become the target of cyber attacks or other information security breaches that could result in the unauthorized release, gathering, monitoring, misuse, loss or destruction of Wells Fargo's or our customers' confidential, proprietary and other information, or otherwise disrupt Wells Fargo's or its customers' or other third parties' business operations. For example, various retailers have reported they were victims of cyber attacks in which large amounts of their customers' data, including debit and credit card information, was obtained. In these situations, we generally incur costs to replace compromised cards and address fraudulent transaction activity affecting our customers. We are also exposed to the risk that a team member or other person acting on behalf of the Company fails to comply with applicable policies and procedures and inappropriately circumvents controls for personal gain or other improper purposes.

Due to the increasing interconnectedness and complexity of financial institutions and technology systems, an information security incident at a third party may increase the risk of loss or material impact to us or the financial industry as a whole. In addition, third parties on which we rely, including those that facilitate our business activities or to which we outsource operations, such as internet, mobile technology and cloud service providers, could be sources of information security risk to us. If those third parties fail to adequately or appropriately safeguard their technologies, systems, and networks, we may suffer material harm, including business disruptions, losses or remediation costs, reputational damage, legal or regulatory proceedings, or other adverse consequences.

To date we have not experienced any material losses relating to cyber attacks or other information security breaches, but there can be no assurance that we will not suffer such losses in the future. Our risk and exposure to these matters remains heightened because of, among other things, the evolving nature of these threats, the prominent size and scale of Wells Fargo and its role in the financial services industry, our plans to continue to implement our digital and mobile banking channel strategies and develop additional remote connectivity solutions to serve our customers when and how they want to be served, our expanded geographic footprint and international presence, the outsourcing of some of our business operations, and the current global economic and political environment. For example, Wells Fargo and other financial institutions continue to be the target of various evolving and adaptive cyber attacks, including malware and denial-of-service, as part of an effort to disrupt the operations of financial institutions, potentially test their cybersecurity capabilities, commit fraud, or obtain confidential, proprietary or other information. Cyber attacks have also focused on targeting online applications and services, such as online banking, as well as cloud-based services provided by third parties, and have targeted the infrastructure of the internet, causing the widespread unavailability of websites and degrading website performance. As a result, information security and the continued development and enhancement of our controls, processes and systems designed to protect our networks, computers, software and data from attack, damage or unauthorized access remain a priority for Wells Fargo. We are also proactively involved in industry cybersecurity efforts and working with other parties, including our third-party service providers and governmental agencies, to continue to enhance defenses and improve resiliency to cybersecurity and other information security threats. As these threats continue to evolve, we may continue to be required to expend significant additional resources to continue to modify or enhance our protective measures or to investigate and remediate any information security vulnerabilities or incidents. Because the investigation of any information security breach is inherently unpredictable and would require time to complete, we may not be able to immediately address the consequences of a breach, which may further increase any associated costs and consequences. Moreover, to the extent our insurance covers aspects of information security risk, such insurance may not be sufficient to cover all losses associated with an information security breach.

Cyber attacks or other information security breaches affecting us or third parties on which we rely, including those that facilitate our business activities or to which we outsource operations, or security breaches of the networks, systems or devices that our customers use to access our products and services, could result in business disruptions, loss of revenue or customers, legal or regulatory proceedings, compliance and other costs, violations of applicable privacy and other laws, reputational damage, or other adverse consequences, any of which could materially adversely affect our results of operations or financial condition.

Our framework for managing risks may not be fully effective in mitigating risk and loss to us. Our risk management framework seeks to mitigate risk and loss to us. We have established processes and procedures intended to identify, measure, monitor, report and analyze the types of risk to which we are subject, including liquidity risk, credit risk, market risk, interest rate risk, operational risk, legal and compliance risk, and reputational risk, among others. However, as with any risk management framework, there are inherent limitations to our risk management strategies as there may exist, or develop in the future, risks that we have not appropriately anticipated, identified or managed. Our risk management framework is also dependent on ensuring that effective operational controls and a sound culture exist throughout the Company. The inability to develop effective operational controls or to foster the appropriate culture in each of our lines of business, including the inability to align performance management and compensation to achieve the desired culture, could adversely impact the effectiveness of our risk management framework. Similarly, if we are unable to effectively manage our business or operations, we may be exposed to increased risks or unexpected losses. We are also exposed to risks if we do not accurately or completely execute a process or transaction, whether due to human error or otherwise, or if a team member fails to comply with applicable policies and procedures or inappropriately circumvents controls. In certain instances, we rely on models to measure, monitor and predict risks, such as market and interest rate risks, as well as to help inform business decisions; however, there is no assurance that these models will appropriately or sufficiently capture all relevant risks or accurately predict future events or exposures. Furthermore, certain of our models are subject to regulatory review and approval, and any failure to meet regulatory standards or expectations could result in fines, penalties, restrictions on our ability to engage in certain business activities, or other adverse consequences, and any required modifications or changes to these models can impact our capital ratios and requirements and result in increased operational and compliance costs. In addition, we rely on data to aggregate and assess our various risk exposures and business activities, and any issues with the quality or effectiveness of our data, including our aggregation, management, and validation procedures, could result in ineffective risk management practices, business decisions or customer service, inefficient use of resources, or inaccurate regulatory or other risk reporting. We also use artificial intelligence to help further inform our business decisions and risk management practices, but there is no assurance that artificial intelligence will appropriately or sufficiently replicate certain outcomes or accurately predict future events or exposures. The recent financial and credit crisis and resulting regulatory reform highlighted both the importance and some of the limitations of managing unanticipated risks, and our regulators remain focused on ensuring that financial institutions build and maintain robust risk management policies and practices. If our risk management framework proves ineffective, we could suffer unexpected losses which could materially adversely affect our results of operations or financial condition.

Risks related to sales practices and other instances where customers may have experienced financial harm. Various government entities and offices have undertaken formal or informal inquiries, investigations or examinations arising out of certain sales practices of the Company that were the subject of settlements with the CFPB, the Office of the Comptroller of the Currency, and the Office of the Los Angeles City Attorney announced by the Company on September 8, 2016. In addition to imposing monetary penalties and other sanctions, regulatory authorities may require admissions of wrongdoing and compliance with other conditions in connection with such matters, which can lead to restrictions on our ability to engage in certain business activities or offer certain products or services, limitations on our ability to access capital markets, limitations on capital distributions, the loss of customers, and/or other direct and indirect adverse consequences. A number of lawsuits have also been filed by non-governmental parties seeking damages or other remedies related to these sales practices. The ultimate resolution of any of these pending legal proceedings or government investigations, depending on the sanctions and remedy sought and granted, could materially adversely affect our results of operations and financial condition. We may continue to incur additional costs and expenses in order to address and defend these pending legal proceedings and government investigations, and we may continue to have increased compliance and other costs related to these matters. Furthermore, negative publicity or public opinion resulting from these matters may increase the risk of reputational harm to our business, which can impact our ability to keep and attract customers, affect our ability to attract and retain qualified team members, result in the loss of revenue, or have other material adverse effects on our results of operations and financial condition.

Furthermore, our priority of rebuilding trust has included an ongoing effort to identify other areas or instances where customers may have experienced financial harm. For example, we have identified certain issues related to past practices involving certain automobile collateral protection insurance policies and certain issues related to the unused portion of guaranteed automobile protection waiver or insurance agreements. The identification of such other areas or instances where customers may have experienced financial harm could lead to, and in some cases has already resulted in, additional remediation costs, loss of revenue or customers, legal or regulatory proceedings, compliance and other costs, reputational damage, or other adverse consequences.

For more information, refer to the "Overview – Retail Sales Practices Matters" and "– Other Customer Remediation Activities" sections and Note 17 (Legal Actions) to Financial Statements in this Report.

We may incur fines, penalties and other negative consequences from regulatory violations, possibly even inadvertent or unintentional violations, or from any failure to meet regulatory standards or expectations. We maintain systems and procedures designed to ensure that we comply with applicable laws and regulations. However, we are subject to heightened compliance and regulatory oversight and expectations, particularly due to the evolving and increasing regulatory landscape we operate in. We are also subject to consent orders with regulators that subject us to various conditions and restrictions. In addition, a single event or issue may give rise to numerous and overlapping investigations and proceedings, either by multiple federal and state agencies in the U.S. or by multiple regulators and other governmental entities in different jurisdictions. Also, the laws and regulations in jurisdictions in which we operate may be different or even conflict with each other, such as differences between U.S. federal and state law or differences between U.S. and non-U.S. laws as to the products and services we may offer or other business activities we may engage in, which can lead to compliance difficulties or issues. Furthermore, many legal and regulatory regimes require us to report transactions and other information to regulators and other governmental authorities, self-regulatory organizations, exchanges, clearing houses and customers. We may be subject to fines, penalties, restrictions on our business, or other negative consequences if we do not timely, completely, or accurately provide regulatory reports, customer notices or disclosures. Moreover, some legal/regulatory frameworks provide for the imposition of fines or penalties for noncompliance even though the noncompliance was inadvertent or unintentional and even though there was in place at the time systems and procedures designed to ensure compliance. For example, we are subject to regulations issued by the Office of Foreign Assets Control (OFAC) that prohibit financial institutions from participating in the transfer of property belonging to the governments of certain non-U.S. countries and designated nationals of those countries. OFAC may impose penalties or restrictions on certain activities for inadvertent or unintentional violations even if reasonable processes are in place to prevent the violations. Any violation of these or other applicable laws or regulatory requirements, even if inadvertent or unintentional, or any failure to meet regulatory standards or expectations, including any failure to satisfy the conditions of any consent orders, could result in fees, penalties, restrictions on our ability to engage in certain business activities, reputational harm, loss of customers or other negative consequences.

Reputational harm, including as a result of our actual or alleged conduct or public opinion of the financial services industry generally, could adversely affect our business, results of operations, and financial condition. Reputation risk, or the risk to our business, earnings and capital from negative public opinion, is inherent in our business and has increased substantially because of the financial crisis, our size and profile in the financial services industry, and sales practices related matters and other instances where customers may have experienced financial harm. Negative public opinion about the financial services industry generally or Wells Fargo specifically could adversely affect our reputation and our ability to keep and attract customers. Negative public opinion could result from our actual or alleged conduct in any number of activities, including sales practices; mortgage, automobile or other consumer lending practices; loan origination or servicing activities; mortgage foreclosure actions; management of client accounts or investments; lending, investing or other business relationships; identification and management of potential conflicts of interest from transactions, obligations and interests with and among our customers; corporate governance; regulatory compliance; risk management; incentive compensation practices; and disclosure, sharing or inadequate protection or improper use of customer information, and from actions taken by government regulators and community or other organizations in response to that conduct. Although we have policies and procedures in place intended to detect and prevent conduct by team members and third-party service providers that could potentially harm customers or our reputation, there is no assurance that such policies and procedures will be fully effective in preventing such conduct. Furthermore, our actual or perceived failure to address or prevent any such conduct or otherwise to effectively manage our business or operations could result in significant reputational harm. In addition, because we conduct most of our businesses under the "Wells Fargo" brand, negative public opinion about one business also could affect our other businesses. Moreover, actions by the financial services industry generally or by certain members or individuals in the industry also can adversely affect our reputation. The proliferation of social media websites utilized by Wells Fargo and other third parties, as well as the personal use of social media by our team members and others, including personal blogs and social network profiles, also may increase the risk that negative, inappropriate or unauthorized information may be posted or released publicly that could harm our reputation or have other negative consequences, including as a result of our team members interacting with our customers in an unauthorized manner in various social media outlets.

Wells Fargo and other financial institutions have been targeted from time to time by protests and demonstrations, which have included disrupting the operation of our retail banking locations and have resulted in negative public commentary about financial institutions, including the fees charged for various products and services. Wells Fargo and other financial institutions have also been subject to negative publicity as a result of providing financial services to or making investments in industries or organizations subject to stakeholder concerns. There can be no assurance that continued protests or negative public opinion of the Company specifically or large financial institutions generally will not harm our reputation and adversely affect our business, results of operations, and financial condition.

Risks related to legal actions. Wells Fargo and some of its subsidiaries are involved in judicial, regulatory, governmental, arbitration, and other proceedings or investigations concerning matters arising from the conduct of our business activities, and many of those proceedings and investigations expose Wells Fargo to potential financial loss. Although we believe we have a meritorious defense in all significant legal actions pending against us, there can be no assurance as to the ultimate outcome. We establish accruals for legal actions when potential losses associated with the actions become probable and the costs can be reasonably estimated. We may still incur costs for a legal action even if we have not established an accrual. In addition, the actual cost of resolving a legal action may be substantially higher than any amounts accrued for that action. The ultimate resolution of a pending legal proceeding or investigation, depending on the remedy sought and granted, could materially adversely affect our results of operations and financial condition.

As noted above, we are subject to heightened regulatory oversight and scrutiny, which may lead to regulatory investigations, proceedings or enforcement actions. In addition to imposing monetary penalties and other sanctions, regulatory authorities may require criminal pleas or other admissions of wrongdoing and compliance with other conditions in connection with settling such matters, which can lead to reputational harm, loss of customers, restrictions on the ability to access capital markets, limitations on capital distributions, the inability to engage in certain business activities or offer certain products or services, and/or other direct and indirect adverse effects.

For more information, refer to Note 17 (Legal Actions) to Financial Statements in this Report.

RISKS RELATED TO OUR MORTGAGE BUSINESS

Our mortgage banking revenue can be volatile from quarter to quarter, including from the impact of changes in interest rates on our origination activity and on the value of our MSRs, MLHFS and associated economic hedges, and we rely on the GSEs to purchase our conforming loans to reduce our credit risk and provide liquidity to fund new mortgage loans. We are one of the largest mortgage originators and residential mortgage servicers in the U.S., and we earn revenue from fees we receive for originating mortgage loans and for servicing mortgage loans. As a result of our mortgage servicing business, we have a sizable portfolio of MSRs, which we initially measure and carry using the fair value measurement method. Fair value is the present value of estimated future net servicing income, calculated based on a number of variables, including assumptions about the likelihood of prepayment by borrowers. Changes in interest rates can affect prepayment assumptions and thus fair value. When interest rates fall, borrowers are usually more likely to prepay their mortgage loans by refinancing them at a lower rate. As the likelihood of prepayment increases, the fair value of our MSRs can decrease. Each quarter we evaluate the fair value of our MSRs, and any decrease in fair value reduces earnings in the period in which the decrease occurs. We also measure at fair value MLHFS for which an active secondary market and readily available market prices exist. In addition, we measure at fair value certain other interests we hold related to residential loan sales and securitizations. Similar to other interest-bearing securities, the value of these MLHFS and other interests may be negatively affected by changes in interest rates. For example, if market interest rates increase relative to the yield on these MLHFS and other interests, their fair value may fall.

When rates rise, the demand for mortgage loans usually tends to fall, reducing the revenue we receive from loan originations. Under the same conditions, revenue from our MSRs can increase through increases in fair value. When rates fall, mortgage originations usually tend to increase and the value of our MSRs usually tends to decline, also with some offsetting revenue effect. Even though they can act as a "natural hedge," the hedge is not perfect, either in amount or timing. For example, the negative effect on revenue from a decrease in the fair value of residential MSRs is generally immediate, but any offsetting revenue benefit from more originations and the MSRs relating to the new loans would generally accrue over time. It is also possible that, because of economic conditions and/or a weak or deteriorating housing market, even if interest rates were to fall or remain low, mortgage originations may also fall or any increase in mortgage originations may not be enough to offset the decrease in the MSRs value caused by the lower rates.

We typically use derivatives and other instruments to hedge our mortgage banking interest rate risk. We may not hedge all of our risk, and we may not be successful in hedging any of the risk. Hedging is a complex process, requiring sophisticated models and constant monitoring, and is not a perfect science. We may use hedging instruments that may not perfectly correlate with the value or income being hedged. We could incur significant losses from our hedging activities. There may be periods where we elect not to use derivatives and other instruments to hedge mortgage banking interest rate risk.

We rely on the GSEs to purchase mortgage loans that meet their conforming loan requirements and on the Federal Housing Authority (FHA) to insure loans that meet their policy requirements. In order to meet customer needs, we also originate loans that do not conform to either the GSEs or FHA standards, which are referred to as "nonconforming" loans. We generally retain these nonconforming loans on our balance sheet. When we retain a loan on our balance sheet not only do we keep the credit risk of the loan but we also do not receive any sale proceeds that could be used to generate new loans. If we were unable or unwilling to retain nonconforming loans on our balance sheet, whether due to regulatory, business or other reasons, our ability to originate new nonconforming loans may be reduced, thereby reducing the interest income we could earn from these loans. Similarly, if the GSEs or FHA were to limit or reduce their purchases or insuring of loans, our ability to fund, and thus originate new mortgage loans, could also be reduced. We cannot assure that the GSEs or FHA will not materially limit their purchases or insuring of conforming loans or change their criteria for what constitutes a conforming loan (e.g., maximum loan amount or borrower eligibility). Each of the GSEs is currently in conservatorship, with its primary regulator, the Federal Housing Finance Agency (FHFA) acting as conservator. While the FHFA has stated that it intends to end the conservatorship, we cannot predict if, when or precisely how the conservatorship will end, or any associated changes to the GSEs business structure and operations that could result. As noted above, there are various proposals to reform the housing finance market in the U.S., including the role of the GSEs in the housing finance market. The impact of any such regulatory reform regarding the housing finance market and the GSEs, including any changes to the GSE's structure, capital requirements, or market presence, as well as any effect on the Company's business and financial results, are uncertain.

For more information, refer to the "Risk Management – Asset/Liability Management – Mortgage Banking Interest Rate and Market Risk," "Critical Accounting Policies – Valuation of Residential Mortgage Servicing Rights" and "Critical Accounting Policies - Fair Value of Financial Instruments" sections in this Report.

We may be required to repurchase mortgage loans or reimburse investors and others as a result of breaches in contractual representations and warranties, and we may incur other losses as a result of real or alleged violations of statutes or regulations applicable to the origination of our residential mortgage loans. We often sell residential mortgage loans that we originate to various parties, including GSEs, SPEs that issue private label MBS, and other financial institutions that purchase mortgage loans for investment or private label securitization. We may also pool FHA-insured and VA-guaranteed mortgage loans which back securities guaranteed by GNMA. The agreements under which we sell mortgage loans and the insurance or guaranty agreements with the FHA and VA contain various representations and warranties regarding the origination and characteristics of the mortgage loans. We may be required to repurchase mortgage loans, indemnify the securitization trust, investor or insurer, or reimburse the securitization trust, investor or insurer for credit losses incurred on loans in the event of a breach of contractual representations or warranties that is not remedied within a period (usually 90 days or less) after we receive notice of the breach. We establish a mortgage repurchase liability related to the various representations and warranties that reflect management's estimate of losses for loans which we have a repurchase obligation. Because the level of mortgage loan repurchase losses depends upon economic factors, investor demand strategies and other external conditions that may change over the life of the underlying loans, the level of the liability for mortgage loan repurchase losses is difficult to estimate, requires considerable management judgment, and is subject to change. If economic conditions or the housing market worsen or future investor repurchase demand and our success at appealing repurchase requests differ from past experience, we could have increased repurchase obligations and increased loss severity on repurchases, requiring significant additions to the repurchase liability.

Additionally, for residential mortgage loans that we originate, borrowers may allege that the origination of the loans did not comply with applicable laws or regulations in one or more respects and assert such violation as an affirmative defense to payment or to the exercise by us of our remedies, including foreclosure proceedings, or in an action seeking statutory and other damages in connection with such violation. If we are not successful in demonstrating that the loans in dispute were originated in accordance with applicable statutes and regulations, we could become subject to monetary damages and other civil penalties, including the loss of certain contractual payments or the inability to exercise certain remedies under the loans.

For more information, refer to the "Risk Management – Credit Risk Management – Liability for Mortgage Loan Repurchase Losses" section in this Report.

We may be terminated as a servicer or master servicer, be required to repurchase a mortgage loan or reimburse investors for credit losses on a mortgage loan, or incur costs, liabilities, fines and other sanctions if we fail to satisfy our servicing obligations, including our obligations with respect to mortgage loan foreclosure actions. We act as servicer and/or master servicer for mortgage loans included in securitizations and for unsecuritized mortgage loans owned by investors. As a servicer or master servicer for those loans we have certain contractual obligations to the securitization trusts, investors or other third parties, including certain foreclosure obligations or, if applicable, considering alternatives to foreclosure such as loan modifications or short-sales, as well as certain servicing obligations for properties that fall within a flood zone. If we fail to satisfy our servicing obligations, we may face a number of consequences, including termination as servicer or master servicer, requirements to indemnify the securitization trustee against losses from any failure by us to perform our servicing obligations, and/or contractual obligations to repurchase a mortgage loan or reimburse investors for credit losses, any of which could significantly reduce our net servicing income.

We may incur costs, liabilities to borrowers, title insurers and/or securitization investors, legal proceedings, or other adverse consequences if we fail to meet our obligations with respect to mortgage foreclosure actions or we experience delays in the foreclosure process. Our net servicing income and the fair value of our MSRs may be negatively affected to the extent our servicing costs increase because of higher foreclosure or other servicing related costs. We may be subject to fines and other sanctions imposed by federal or state regulators as a result of actual or perceived deficiencies in our mortgage servicing practices, including with respect to our foreclosure practices or our servicing of flood zone properties. Any of these actions may harm our reputation, negatively affect our residential mortgage origination or servicing business, or result in material fines, penalties, equitable remedies, or other enforcement actions.

For more information, refer to the "Risk Management – Credit Risk Management – Liability for Mortgage Loan Repurchase Losses" and "– Risks Relating to Servicing Activities," and "Critical Accounting Policies – Valuation of Residential Mortgage Servicing Rights" sections and Note 16 (Guarantees, Pledged Assets and Collateral, and Other Commitments) and Note 17 (Legal Actions) to Financial Statements in this Report.

RISKS RELATED TO OUR INDUSTRY'S COMPETITIVE OPERATING ENVIRONMENT

We face significant and increasing competition in the rapidly evolving financial services industry. We compete with other financial institutions in a highly competitive industry that is undergoing significant changes as a result of financial regulatory reform, technological advances, increased public scrutiny stemming from the financial crisis, and current economic conditions. Our success depends on our ability to develop and maintain deep and enduring relationships with our customers based on the quality of our customer service, the wide variety of products and services that we can offer our customers and the ability of those products and services to satisfy our customers' needs and preferences, the pricing of our products and services, the extensive distribution channels available for our customers, our innovation, and our reputation. Continued or increased competition in any one or all of these areas may negatively affect our customer relationships, market share and results of operations and/or cause us to increase our capital investment in our businesses in order to remain competitive. In addition, our ability to reposition or reprice our products and services from time to time may be limited and could be influenced significantly by the current economic, regulatory and political environment for large financial institutions as well as by the actions of our competitors. Furthermore, any changes in the types of products and services that we offer our customers and/or the pricing for those products and services could result in a loss of customer relationships and market share and could materially adversely affect our results of operations.

Continued technological advances and the growth of e-commerce have made it possible for non-depository institutions to offer products and services that traditionally were banking products, and for financial institutions and other companies to provide electronic and internet-based financial solutions, including electronic securities trading, lending and payment solutions. In addition, technological advances, including digital currencies, may diminish the importance of depository institutions and other financial intermediaries in the transfer of funds between parties. We may not respond effectively to these and other competitive threats from existing and new competitors and may be forced to sell products at lower prices, increase our investment in our business to modify or adapt our existing products and services, and/or develop new products and services to respond to our customers' needs and preferences. To the extent we are not successful in developing and introducing new products and services or responding or adapting to the competitive landscape or to changes in customer preferences, we may lose customer relationships and our revenue growth and results of operations may be materially adversely affected.

Our ability to attract and retain qualified team members is critical to the success of our business and failure to do so could adversely affect our business performance, competitive position and future prospects. The success of Wells Fargo is heavily dependent on the talents and efforts of our team members, including our senior leaders, and in many areas of our business, including commercial banking, brokerage, investment advisory, capital markets, risk management and technology, the competition for highly qualified personnel is intense. We also seek to retain a pipeline of team members to provide continuity of succession for our senior leadership positions. In order to attract and retain highly qualified team members, we must provide competitive compensation and effectively manage team member performance and development. As a large financial institution and additionally to the extent we remain subject to consent orders we may be subject to limitations on compensation by our regulators that may adversely affect our ability to attract and retain these qualified team members, especially if some of our competitors may not be subject to these same compensation limitations. If we are unable to continue to attract and retain qualified team members, including successors for senior leadership positions, our business performance, competitive position and future prospects may be adversely affected.

RISKS RELATED TO OUR FINANCIAL STATEMENTS

Changes in accounting policies or accounting standards, and changes in how accounting standards are interpreted or applied, could materially affect how we report our financial results and condition. Our accounting policies are fundamental to determining and understanding our financial results and condition. As described below, some of these policies require use of estimates and assumptions that may affect the value of our assets or liabilities and financial results. Any changes in our accounting policies could materially affect our financial statements.

From time to time the FASB and the SEC change the financial accounting and reporting standards that govern the preparation of our external financial statements. For example, on January 1, 2020, we adopted Accounting Standards Update 2016-13 – *Financial Instruments-Credit Losses* (Topic 326), which replaced the previous “incurred loss” model for the allowance for credit losses with an “expected loss” model referred to as the Current Expected Credit Loss model, or CECL.

In addition, accounting standard setters and those who interpret the accounting standards (such as the FASB, SEC, banking regulators and our outside auditors) may change or even reverse their previous interpretations or positions on how these standards should be applied. Changes in financial accounting and reporting standards and changes in current interpretations may be beyond our control, can be hard to predict and could materially affect how we report our financial results and condition. We may be required to apply a new or revised standard retroactively or apply an existing standard differently, also retroactively, in each case potentially resulting in our restating prior period financial statements in material amounts.

For more information, including information on our adoption of CECL, refer to the “Current Accounting Developments” section in this Report.

Our financial statements are based in part on assumptions and estimates which, if wrong, could cause unexpected losses in the future, and our financial statements depend on our internal controls over financial reporting. Pursuant to U.S. GAAP, we are required to use certain assumptions and estimates in preparing our financial statements, including in determining credit loss reserves, reserves for mortgage repurchases, reserves related to litigation and the fair value of certain assets and liabilities, among other items. Several of our accounting policies are critical because they require management to make difficult, subjective and complex judgments about matters that are inherently uncertain and because it is likely that materially different amounts would be reported under different conditions or using different assumptions. For a description of these policies, refer to the “Critical Accounting Policies” section in this Report. If assumptions or estimates underlying our financial statements are incorrect, we may experience material losses.

Certain of our financial instruments, including derivative assets and liabilities, debt securities, certain loans, MSRs, private equity investments, structured notes and certain repurchase and resale agreements, among other items, require a determination of their fair value in order to prepare our financial statements. Where quoted market prices are not available, we may make fair value determinations based on internally developed models or other means which ultimately rely to some degree on management judgment, and there is no assurance that our models will capture or appropriately reflect all relevant inputs required to accurately determine fair value. Some of these and other assets and liabilities may have no direct observable price levels, making their valuation particularly subjective, being based on significant estimation and judgment. In addition, sudden illiquidity in markets or declines in prices of certain loans and securities may make it more difficult to value certain balance sheet items, which may lead to the possibility that such valuations will be subject to further change or adjustment and could lead to declines in our earnings.

The Sarbanes-Oxley Act of 2002 (Sarbanes-Oxley) requires our management to evaluate the Company’s disclosure controls and procedures and its internal control over financial reporting and requires our auditors to issue a report on our internal control over financial reporting. We are required to disclose, in our annual report on Form 10-K, the existence of any “material weaknesses” in our internal controls. We cannot assure that we will not identify one or more material weaknesses as of the end of any given quarter or year, nor can we predict the effect on our stock price of disclosure of a material weakness. In addition, our customers may rely on the effectiveness of our internal controls as a service provider, and any deficiency in those controls could affect our customers and damage our reputation or business. Sarbanes-Oxley also limits the types of non-audit services our outside auditors may provide to us in order to preserve their independence from us. If our auditors were found not to be “independent” of us under SEC rules, we could be required to engage new auditors and re-file financial statements and audit reports with the SEC. We could be out of compliance with SEC rules until new financial statements and audit reports were filed, limiting our ability to raise capital and resulting in other adverse consequences.

RISKS RELATED TO STRATEGIC DECISIONS

If we are unable to develop and execute effective business plans or strategies or manage change effectively, our competitive standing and results of operations could suffer. We are subject to rapid changes in technology, regulation, and product innovation, face intense competition for customers, sources of revenue, capital, services, qualified team members, and other essential business resources, and are subject to heightened regulatory expectations particularly with respect to compliance and risk management. In order to meet these challenges, we may undertake business plans or strategies related to, among other things, our organizational structure, our compliance and risk management framework, our expenses and efficiency, the types of products and services we offer, the types of businesses we engage in, the geographies in which we operate, the manner in which we serve our clients and customers, the third parties with which we do business, and the methods and distribution channels by which we offer our products and services. Accomplishing these business plans or strategies may be complex, time intensive, require significant financial, technological, management and other resources, and may divert management attention and resources away from other areas of the Company, and there is no guarantee that any business plans or strategies will ultimately be successful. To the extent we are unable to develop or execute effective business plans or strategies or manage change effectively, our competitive position, reputation, prospects for growth, and results of operations may be adversely affected.

In addition, we regularly explore opportunities to expand our products, services, and assets through strategic acquisitions of companies or businesses in the financial services industry. We generally must receive federal regulatory approvals before we can acquire a bank, bank holding company, or certain other financial services businesses. We cannot be certain when or if, or on what terms and conditions, any required regulatory approvals will be granted. We might be required to sell banks, branches and/or business units or assets or issue additional equity as a condition to receiving regulatory approval for an acquisition. When we do announce an acquisition, our stock price may fall depending on the size of the acquisition, the type of business to be acquired, the purchase price, and the potential dilution to existing stockholders or our earnings per share if we issue common stock in connection with the acquisition. Furthermore, difficulty in integrating an acquired company or business may cause us not to realize expected revenue increases, cost savings, increases in geographic or product presence, and other projected benefits from the acquisition. The integration could result in higher than expected deposit attrition, loss of key team members, an increase in our compliance costs or risk profile, disruption of our business or the acquired business, or otherwise harm our ability to retain customers and team members or achieve the anticipated benefits of the acquisition. Time and resources spent on integration may also impair our ability to grow our existing businesses. Many of the foregoing risks may be increased if the acquired company or business operates internationally or in a geographic location where we do not already have significant business operations and/or team members. Similarly, from time to time, we may decide to divest certain businesses or assets. Difficulties in executing a divestiture may cause us not to realize any expected cost savings or other benefits from the divestiture, or may result in higher than expected losses of team members or harm our ability to retain customers.

* * *

Any factor described in this Report or in any of our other SEC filings could by itself, or together with other factors, adversely affect our financial results and condition. Refer to our quarterly reports on Form 10-Q filed with the SEC in 2020 for material changes to the above discussion of risk factors. There are factors not discussed above or elsewhere in this Report that could adversely affect our financial results and condition.

Controls and Procedures

Disclosure Controls and Procedures

The Company's management evaluated the effectiveness, as of December 31, 2019, of the Company's disclosure controls and procedures. The Company's chief executive officer and chief financial officer participated in the evaluation. Based on this evaluation, the Company's chief executive officer and chief financial officer concluded that the Company's disclosure controls and procedures were effective as of December 31, 2019.

Internal Control Over Financial Reporting

Internal control over financial reporting is defined in Rule 13a-15(f) promulgated under the Securities Exchange Act of 1934 as a process designed by, or under the supervision of, the Company's principal executive and principal financial officers and effected by the Company's Board, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. generally accepted accounting principles (GAAP) and includes those policies and procedures that:

- pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of assets of the Company;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. No change occurred during any quarter in 2019 that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting. Management's report on internal control over financial reporting is set forth below and should be read with these limitations in mind.

Management's Report on Internal Control over Financial Reporting

The Company's management is responsible for establishing and maintaining adequate internal control over financial reporting for the Company. Management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2019, using the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control – Integrated Framework (2013)*. Based on this assessment, management concluded that as of December 31, 2019, the Company's internal control over financial reporting was effective.

KPMG LLP, the independent registered public accounting firm that audited the Company's financial statements included in this Annual Report, issued an audit report on the Company's internal control over financial reporting. KPMG's audit report appears on the following page.

Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
Wells Fargo & Company:

Opinion on Internal Control Over Financial Reporting

We have audited Wells Fargo & Company and subsidiaries' (the Company) internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2019 and 2018, the related consolidated statements of income, comprehensive income, changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes (collectively, the consolidated financial statements), and our report dated February 26, 2020 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

KPMG LLP

San Francisco, California
February 26, 2020

Financial Statements

Wells Fargo & Company and Subsidiaries

Consolidated Statement of Income

			Year ended December 31,
(in millions, except per share amounts)	**2019**	2018	2017
Interest income			
Debt securities	$ **14,955**	14,406	12,946
Mortgage loans held for sale	**813**	777	786
Loans held for sale	**79**	140	50
Loans	**44,146**	43,974	41,388
Equity securities	**962**	992	799
Other interest income	**5,128**	4,358	2,940
Total interest income	**66,083**	64,647	58,909
Interest expense			
Deposits	**8,635**	5,622	3,013
Short-term borrowings	**2,316**	1,717	758
Long-term debt	**7,350**	6,703	5,157
Other interest expense	**551**	610	424
Total interest expense	**18,852**	14,652	9,352
Net interest income	**47,231**	49,995	49,557
Provision for credit losses	**2,687**	1,744	2,528
Net interest income after provision for credit losses	**44,544**	48,251	47,029
Noninterest income			
Service charges on deposit accounts	**4,798**	4,716	5,111
Trust and investment fees	**14,072**	14,509	14,495
Card fees	**4,016**	3,907	3,960
Other fees	**3,084**	3,384	3,557
Mortgage banking	**2,715**	3,017	4,350
Insurance	**378**	429	1,049
Net gains from trading activities	**993**	602	542
Net gains on debt securities (1)	**140**	108	479
Net gains from equity securities (2)	**2,843**	1,515	1,779
Lease income	**1,612**	1,753	1,907
Other	**3,181**	2,473	1,603
Total noninterest income	**37,832**	36,413	38,832
Noninterest expense			
Salaries	**18,382**	17,834	17,363
Commission and incentive compensation	**10,828**	10,264	10,442
Employee benefits	**5,874**	4,926	5,566
Technology and equipment	**2,763**	2,444	2,237
Net occupancy	**2,945**	2,888	2,849
Core deposit and other intangibles	**108**	1,058	1,152
FDIC and other deposit assessments	**526**	1,110	1,287
Other	**16,752**	15,602	17,588
Total noninterest expense	**58,178**	56,126	58,484
Income before income tax expense	**24,198**	28,538	27,377
Income tax expense	**4,157**	5,662	4,917
Net income before noncontrolling interests	**20,041**	22,876	22,460
Less: Net income from noncontrolling interests	**492**	483	277
Wells Fargo net income	$ **19,549**	22,393	22,183
Less: Preferred stock dividends and other	**1,611**	1,704	1,629
Wells Fargo net income applicable to common stock	$ **17,938**	20,689	20,554
Per share information			
Earnings per common share	$ **4.08**	4.31	4.14
Diluted earnings per common share	**4.05**	4.28	4.10
Average common shares outstanding	**4,393.1**	4,799.7	4,964.6
Diluted average common shares outstanding	**4,425.4**	4,838.4	5,017.3

(1) Total other-than-temporary impairment (OTTI) losses were $64 million, $17 million and $205 million for the years ended December 31, 2019, 2018 and 2017, respectively. Of total OTTI, losses of $63 million, $28 million and $262 million were recognized in earnings, and losses (reversal of losses) of $1 million, $(11) million and $(57) million were recognized as non-credit-related OTTI in other comprehensive income for the years ended December 31, 2019, 2018 and 2017, respectively.

(2) Includes OTTI losses of $245 million, $352 million and $344 million for the years ended December 31, 2019, 2018 and 2017, respectively.

The accompanying notes are an integral part of these statements.

Wells Fargo & Company and Subsidiaries

Consolidated Statement of Comprehensive Income

		Year ended December 31,	
(in millions)	**2019**	2018	2017
Wells Fargo net income	$ **19,549**	22,393	22,183
Other comprehensive income (loss), before tax:			
Debt securities (1):			
Net unrealized gains (losses) arising during the period	**5,439**	(4,493)	2,719
Reclassification of net (gains) losses to net income	**122**	248	(737)
Derivatives and hedging activities:			
Net unrealized losses arising during the period	**(24)**	(532)	(540)
Reclassification of net (gains) losses on cash flow hedges to net income	**299**	294	(543)
Defined benefit plans adjustments:			
Net actuarial and prior service gains (losses) arising during the period	**(40)**	(434)	49
Amortization of net actuarial loss, settlements and other to net income	**133**	253	153
Foreign currency translation adjustments:			
Net unrealized gains (losses) arising during the period	**73**	(156)	96
Other comprehensive income (loss), before tax	**6,002**	(4,820)	1,197
Income tax benefit (expense) related to other comprehensive income	**(1,458)**	1,144	(434)
Other comprehensive income (loss), net of tax	**4,544**	(3,676)	763
Less: Other comprehensive loss from noncontrolling interests	**—**	(2)	(62)
Wells Fargo other comprehensive income (loss), net of tax	**4,544**	(3,674)	825
Wells Fargo comprehensive income	**24,093**	18,719	23,008
Comprehensive income from noncontrolling interests	**492**	481	215
Total comprehensive income	$ **24,585**	19,200	23,223

(1) The year ended December 31, 2017, includes net unrealized gains (losses) arising during the period from equity securities of $81 million and reclassification of net (gains) losses to net income related to equity securities of $(456) million. In connection with our adoption in first quarter 2018 of Accounting Standards Update (ASU) 2016-01, the years ended December 31, 2018, and December 31, 2019, reflect net unrealized gains (losses) arising during the period and reclassification of net (gains) losses to net income from only debt securities.

The accompanying notes are an integral part of these statements.

Wells Fargo & Company and Subsidiaries

Consolidated Balance Sheet

(in millions, except shares)		Dec 31, 2019	Dec 31, 2018
Assets			
Cash and due from banks	$	**21,757**	23,551
Interest-earning deposits with banks		**119,493**	149,736
Total cash, cash equivalents, and restricted cash		**141,250**	173,287
Federal funds sold and securities purchased under resale agreements		**102,140**	80,207
Debt securities:			
Trading, at fair value		**79,733**	69,989
Available-for-sale, at fair value		**263,459**	269,912
Held-to-maturity, at cost (fair value $156,860 and $142,115)		**153,933**	144,788
Mortgage loans held for sale (includes $16,606 and $11,771 carried at fair value) (1)		**23,342**	15,126
Loans held for sale (includes $972 and $1,469 carried at fair value) (1)		**977**	2,041
Loans (includes $171 and $244 carried at fair value) (1)		**962,265**	953,110
Allowance for loan losses		**(9,551)**	(9,775)
Net loans		**952,714**	943,335
Mortgage servicing rights:			
Measured at fair value		**11,517**	14,649
Amortized		**1,430**	1,443
Premises and equipment, net		**9,309**	8,920
Goodwill		**26,390**	26,418
Derivative assets		**14,203**	10,770
Equity securities (includes $41,936 and $29,556 carried at fair value) (1)		**68,241**	55,148
Other assets		**78,917**	79,850
Total assets (2)	$	**1,927,555**	1,895,883
Liabilities			
Noninterest-bearing deposits	$	**344,496**	349,534
Interest-bearing deposits		**978,130**	936,636
Total deposits		**1,322,626**	1,286,170
Short-term borrowings		**104,512**	105,787
Derivative liabilities		**9,079**	8,499
Accrued expenses and other liabilities		**75,163**	69,317
Long-term debt		**228,191**	229,044
Total liabilities (3)		**1,739,571**	1,698,817
Equity			
Wells Fargo stockholders' equity:			
Preferred stock		**21,549**	23,214
Common stock – $1-2/3 par value, authorized 9,000,000,000 shares; issued 5,481,811,474 shares		**9,136**	9,136
Additional paid-in capital		**61,049**	60,685
Retained earnings		**166,697**	158,163
Cumulative other comprehensive income (loss)		**(1,311)**	(6,336)
Treasury stock – 1,347,385,537 shares and 900,557,866 shares		**(68,831)**	(47,194)
Unearned ESOP shares		**(1,143)**	(1,502)
Total Wells Fargo stockholders' equity		**187,146**	196,166
Noncontrolling interests		**838**	900
Total equity		**187,984**	197,066
Total liabilities and equity	$	**1,927,555**	1,895,883

(1) Parenthetical amounts represent assets and liabilities that we are required to carry at fair value or have elected the fair value option.

(2) Our consolidated assets at December 31, 2019 and 2018, include the following assets of certain variable interest entities (VIEs) that can only be used to settle the liabilities of those VIEs: Cash and due from banks, $16 million and $139 million; Interest-bearing deposits with banks, $284 million and $8 million; Debt securities, $540 million and $562 million; Net loans, $13.2 billion and $13.6 billion; Derivative assets, $1 million and $0 million; Equity securities, $118 million and $85 million; Other assets, $239 million and $227 million; and Total assets, $14.4 billion and $14.6 billion, respectively. Prior period balances have been conformed to current period presentation.

(3) Our consolidated liabilities at December 31, 2019 and 2018, include the following VIE liabilities for which the VIE creditors do not have recourse to Wells Fargo: Short-term borrowings, $401 million and $493 million; Derivative liabilities, $3 million and $0 million; Accrued expenses and other liabilities, $235 million and $199 million; Long-term debt, $587 million and $816 million; and Total liabilities, $1.2 billion and $1.5 billion, respectively. Prior period balances have been conformed to current period presentation.

The accompanying notes are an integral part of these statements.

Wells Fargo & Company and Subsidiaries

Consolidated Statement of Changes in Equity

	Preferred stock		Common stock	
(in millions, except shares)	*Shares*	Amount	*Shares*	Amount
Balance December 31, 2016	*11,532,712*	$ 24,551	*5,016,109,326*	$ 9,136
Cumulative effect from change in hedge accounting (1)				
Balance January 1, 2017	*11,532,712*	24,551	*5,016,109,326*	9,136
Net income				
Other comprehensive income (loss), net of tax				
Noncontrolling interests				
Common stock issued			*57,257,564*	
Common stock repurchased			*(196,519,707)*	
Preferred stock issued to ESOP	*950,000*	950		
Preferred stock released by ESOP				
Preferred stock converted to common shares	*(833,077)*	(833)	*14,769,445*	
Common stock warrants repurchased/exercised				
Preferred stock issued	*27,600*	690		
Common stock dividends				
Preferred stock dividends				
Stock incentive compensation expense				
Net change in deferred compensation and related plans				
Net change	*144,523*	807	*(124,492,698)*	—
Balance December 31, 2017	*11,677,235*	$ 25,358	*4,891,616,628*	$ 9,136
Cumulative effect from change in accounting policies (2)				
Balance January 1, 2018	*11,677,235*	$ 25,358	*4,891,616,628*	$ 9,136
Adoption of accounting standard related to certain tax effects stranded in accumulated other comprehensive income (loss)(3)				
Net income				
Other comprehensive income (loss), net of tax				
Noncontrolling interests				
Common stock issued			*41,082,047*	
Common stock repurchased			*(375,477,998)*	
Preferred stock redeemed (4)	*(2,150,375)*	(1,995)		
Preferred stock issued to ESOP	*1,100,000*	1,100		
Preferred stock released by ESOP				
Preferred stock converted to common shares	*(1,249,644)*	(1,249)	*24,032,931*	
Common stock warrants repurchased/exercised				
Preferred stock issued	—	—		
Common stock dividends				
Preferred stock dividends				
Stock incentive compensation expense				
Net change in deferred compensation and related plans				
Net change	*(2,300,019)*	(2,144)	*(310,363,020)*	—
Balance December 31, 2018	*9,377,216*	$ 23,214	*4,581,253,608*	$ 9,136

(1) Effective January 1, 2017, we adopted changes in hedge accounting pursuant to ASU 2017-12 – Derivatives and Hedging (Topic 815): *Targeted Improvements to Accounting for Hedging Activities.*
(2) Effective January 1, 2018, we adopted ASU 2016-04 – Liabilities – Extinguishments of Liabilities (Subtopic 405-20): *Recognition of Breakage for Certain Prepaid Stored-Value Products,* ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities*, and ASU 2014-09 – *Revenue from Contracts With Customers* (Topic 606) and subsequent related Updates.
(3) Represents the reclassification from other comprehensive income to retained earnings as a result of our adoption of ASU 2018-02 – *Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income,* in third quarter 2018.
(4) Represents the impact of the redemption of preferred stock, series J, in third quarter 2018.

The accompanying notes are an integral part of these statements.

(continued on following pages)

Wells Fargo stockholders' equity							
Additional paid-in capital	Retained earnings	Cumulative other comprehensive income (loss)	Treasury stock	Unearned ESOP shares	Total Wells Fargo stockholders' equity	Noncontrolling interests	Total equity
60,234	133,075	(3,137)	(22,713)	(1,565)	199,581	916	200,497
	(381)	168			(213)		(213)
60,234	132,694	(2,969)	(22,713)	(1,565)	199,368	916	200,284
	22,183				22,183	277	22,460
		825			825	(62)	763
—					—	12	12
(133)	(277)		2,758		2,348		2,348
750			(10,658)		(9,908)		(9,908)
31				(981)	—		—
(35)				868	833		833
97			736		—		—
(133)					(133)		(133)
(13)					677		677
50	(7,708)				(7,658)		(7,658)
	(1,629)				(1,629)		(1,629)
875					875		875
(830)			(15)		(845)		(845)
659	12,569	825	(7,179)	(113)	7,568	227	7,795
60,893	145,263	(2,144)	(29,892)	(1,678)	206,936	1,143	208,079
	94	(118)			(24)		(24)
60,893	145,357	(2,262)	(29,892)	(1,678)	206,912	1,143	208,055
	400	(400)			—		—
	22,393				22,393	483	22,876
		(3,674)			(3,674)	(2)	(3,676)
7					7	(724)	(717)
(76)	(321)		2,073		1,676		1,676
—			(20,633)		(20,633)		(20,633)
	(155)				(2,150)		(2,150)
43				(1,143)	—		—
(70)				1,319	1,249		1,249
6			1,243		—		—
(325)					(325)		(325)
—					—		—
66	(7,955)				(7,889)		(7,889)
	(1,556)				(1,556)		(1,556)
1,041					1,041		1,041
(900)			15		(885)		(885)
(208)	12,806	(4,074)	(17,302)	176	(10,746)	(243)	(10,989)
60,685	158,163	(6,336)	(47,194)	(1,502)	196,166	900	197,066

(continued from previous pages)

Wells Fargo & Company and Subsidiaries

Consolidated Statement of Changes in Equity

	Preferred stock		Common stock	
(in millions, except shares)	*Shares*	Amount	*Shares*	Amount
Balance December 31, 2018	***9,377,216***	**$ 23,214**	***4,581,253,608***	**$ 9,136**
Cumulative effect from change in accounting policies (1)				
Balance January 1, 2019	***9,377,216***	**23,214**	***4,581,253,608***	**9,136**
Net income				
Other comprehensive income (loss), net of tax				
Noncontrolling interests				
Common stock issued			***48,771,064***	
Common stock repurchased			***(502,418,179)***	
Preferred stock redeemed (2)	***(1,550,000)***	**(1,330)**		
Preferred stock issued to ESOP	**—**	**—**		
Preferred stock released by ESOP				
Preferred stock converted to common shares	***(335,047)***	**(335)**	***6,819,444***	
Common stock warrants repurchased/exercised				
Preferred stock issued	**—**	**—**		
Common stock dividends				
Preferred stock dividends				
Stock incentive compensation expense				
Net change in deferred compensation and related plans				
Net change	***(1,885,047)***	**(1,665)**	***(446,827,671)***	**—**
Balance December 31, 2019	***7,492,169***	**$ 21,549**	***4,134,425,937***	**$ 9,136**

(1) Effective January 1, 2019, we adopted ASU 2016-02 – Leases (Topic 842) and subsequent related Updates, ASU 2017-08 – Receivables – Nonrefundable Fees and Other Costs (Subtopic 310-20): *Premium Amortization on Purchased Callable Debt Securities.* See Note 1 (Summary of Significant Accounting Policies) in this Report for more information.

(2) Represents the impact of the partial redemption of preferred stock, series K, in third quarter 2019.

The accompanying notes are an integral part of these statements.

					Wells Fargo stockholders' equity		
Additional paid-in capital	Retained earnings	Cumulative other comprehensive income (loss)	Treasury stock	Unearned ESOP shares	Total Wells Fargo stockholders' equity	Noncontrolling interests	Total equity
60,685	**158,163**	**(6,336)**	**(47,194)**	**(1,502)**	**196,166**	**900**	**197,066**
	(492)	**481**			**(11)**		**(11)**
60,685	**157,671**	**(5,855)**	**(47,194)**	**(1,502)**	**196,155**	**900**	**197,055**
	19,549				**19,549**	**492**	**20,041**
		4,544			**4,544**	**—**	**4,544**
—					**—**	**(554)**	**(554)**
9	**(382)**		**2,530**		**2,157**		**2,157**
—			**(24,533)**		**(24,533)**		**(24,533)**
	(220)				**(1,550)**		**(1,550)**
—				**—**	**—**		**—**
(24)				**359**	**335**		**335**
(16)			**351**		**—**		**—**
—					**—**		**—**
—					**—**		**—**
86	**(8,530)**				**(8,444)**		**(8,444)**
	(1,391)				**(1,391)**		**(1,391)**
1,234					**1,234**		**1,234**
(925)			**15**		**(910)**		**(910)**
364	**9,026**	**4,544**	**(21,637)**	**359**	**(9,009)**	**(62)**	**(9,071)**
61,049	**166,697**	**(1,311)**	**(68,831)**	**(1,143)**	**187,146**	**838**	**187,984**

Consolidated Statement of Cash Flows

			Year ended December 31,
(in millions)	**2019**	2018	2017
Cash flows from operating activities:			
Net income before noncontrolling interests	$ **20,041**	22,876	22,460
Adjustments to reconcile net income to net cash provided by operating activities:			
Provision for credit losses	**2,687**	1,744	2,528
Changes in fair value of MSRs, MLHFS and LHFS carried at fair value	**3,702**	453	886
Depreciation, amortization and accretion	**7,075**	5,593	5,406
Other net gains	**(5,500)**	(7,630)	(1,518)
Stock-based compensation	**2,274**	2,255	2,046
Originations and purchases of mortgage loans held for sale	**(158,673)**	(152,832)	(181,269)
Proceeds from sales of and paydowns on mortgage loans held for sale	**112,718**	119,097	134,984
Net change in:			
Debt and equity securities, held for trading	**22,066**	35,054	33,505
Loans held for sale	**788**	(960)	327
Deferred income taxes	**(3,246)**	1,970	666
Derivative assets and liabilities	**(2,665)**	1,513	(5,025)
Other assets	**3,034**	7,805	(1,214)
Other accrued expenses and liabilities	**2,429**	(865)	4,837
Net cash provided by operating activities	**6,730**	36,073	18,619
Cash flows from investing activities:			
Net change in:			
Federal funds sold and securities purchased under resale agreements	**(21,933)**	(1,184)	(21,497)
Available-for-sale debt securities:			
Proceeds from sales	**9,386**	7,320	42,067
Prepayments and maturities	**46,542**	36,725	45,688
Purchases	**(57,015)**	(60,067)	(103,656)
Held-to-maturity securities:			
Paydowns and maturities	**13,684**	10,934	10,673
Purchases	**(8,649)**	—	—
Equity securities, not held for trading:			
Proceeds from sales and capital returns	**6,143**	6,242	5,451
Purchases	**(6,865)**	(6,433)	(3,735)
Loans:			
Loans originated by banking subsidiaries, net of principal collected	**(23,698)**	(18,619)	317
Proceeds from sales (including participations) of loans held for investment	**12,038**	16,294	10,439
Purchases (including participations) of loans	**(2,033)**	(2,088)	(3,702)
Principal collected on nonbank entities' loans	**3,912**	6,791	7,448
Loans originated by nonbank entities	**(5,274)**	(6,482)	(6,814)
Proceeds from sales of foreclosed assets and short sales	**2,666**	3,592	5,198
Other, net (1)	**1,465**	(779)	(1,029)
Net cash used by investing activities	**(29,631)**	(7,754)	(13,152)
Cash flows from financing activities:			
Net change in:			
Deposits	**36,137**	(48,034)	29,912
Short-term borrowings	**(1,275)**	2,531	14,020
Long-term debt:			
Proceeds from issuance	**53,381**	47,595	43,575
Repayment	**(60,996)**	(40,565)	(80,802)
Preferred stock:			
Proceeds from issuance	**—**	—	677
Redeemed	**(1,550)**	(2,150)	—
Cash dividends paid	**(1,391)**	(1,622)	(1,629)
Common stock:			
Proceeds from issuance	**380**	632	1,211
Stock tendered for payment of withholding taxes	**(302)**	(331)	(393)
Repurchased	**(24,533)**	(20,633)	(9,908)
Cash dividends paid	**(8,198)**	(7,692)	(7,480)
Net change in noncontrolling interests	**(513)**	(462)	30
Other, net	**(276)**	(248)	(133)
Net cash used by financing activities	**(9,136)**	(70,979)	(10,920)
Net change in cash, cash equivalents, and restricted cash	**(32,037)**	(42,660)	(5,453)
Cash, cash equivalents, and restricted cash at beginning of year	**173,287**	215,947	221,400
Cash, cash equivalents, and restricted cash at end of year	$ **141,250**	173,287	215,947
Supplemental cash flow disclosures:			
Cash paid for interest	$ **18,834**	14,366	9,103
Cash paid for income taxes	**7,557**	1,977	6,592

(1) Prior periods have been revised to conform to the current period presentation.

The accompanying notes are an integral part of these statements. See Note 1 (Summary of Significant Accounting Policies) for noncash activities.

Notes to Financial Statements

See the Glossary of Acronyms at the end of this Report for terms used throughout the Financial Statements and related Notes.

Note 1: Summary of Significant Accounting Policies

Wells Fargo & Company is a diversified financial services company. We provide banking, investment and mortgage products and services, as well as consumer and commercial finance, through banking locations and offices, the internet and other distribution channels to individuals, businesses and institutions in all 50 states, the District of Columbia, and in countries outside the U.S. When we refer to "Wells Fargo," "the Company," "we," "our" or "us," we mean Wells Fargo & Company and Subsidiaries (consolidated). Wells Fargo & Company (the Parent) is a financial holding company and a bank holding company.

Our accounting and reporting policies conform with U.S. generally accepted accounting principles (GAAP) and practices in the financial services industry. To prepare the financial statements in conformity with GAAP, management must make estimates based on assumptions about future economic and market conditions (for example, unemployment, market liquidity, real estate prices, etc.) that affect the reported amounts of assets and liabilities at the date of the financial statements, income and expenses during the reporting period and the related disclosures. Although our estimates contemplate current conditions and how we expect them to change in the future, it is reasonably possible that actual conditions could be worse than anticipated in those estimates, which could materially affect our results of operations and financial condition. Management has made significant estimates in several areas, including:

- allowance for credit losses (Note 6 (Loans and Allowance for Credit Losses));
- valuations of residential mortgage servicing rights (MSRs) (Note 10 (Securitizations and Variable Interest Entities) and Note 11 (Mortgage Banking Activities));
- valuations of financial instruments (Note 18 (Derivatives) and Note 19 (Fair Values of Assets and Liabilities));
- liabilities for contingent litigation losses (Note 17 (Legal Actions)); and
- income taxes (Note 24 (Income Taxes)).

Actual results could differ from those estimates.

Accounting Standards Adopted in 2019

In 2019, we adopted the following new accounting guidance:

- Accounting Standards Update (ASU or Update) 2018-16 – Derivatives and Hedging (Topic 815): *Inclusion of the Secured Overnight Financing Rate (SOFR) Overnight Index Swap (OIS) Rate as a Benchmark Interest Rate for Hedge Accounting Purposes*
- ASU 2017-08 – Receivables – Nonrefundable Fees and Other Costs (Subtopic 310-20): *Premium Amortization on Purchased Callable Debt Securities*
- ASU 2016-02 – Leases (Topic 842) and subsequent related Updates, including early adoption of ASU 2019-01 – Leases (Topic 842): *Codification Improvements*

ASU 2018-16 expands the list of U.S. benchmark interest rates permitted in the application of hedge accounting. The Update adds the OIS rate based on SOFR as a U.S. benchmark interest rate to facilitate the London Interbank Offered Rate (LIBOR) to SOFR transition and provide sufficient lead time for entities to prepare for changes to interest rate risk hedging strategies for both risk management and hedge accounting purposes. The Update is applied prospectively for qualifying new or re-designated hedging relationships entered into on or after adoption date.

We adopted the guidance in first quarter 2019. The Update has not had an impact as we have not designated SOFR OIS as a benchmark interest rate in any hedging relationships.

ASU 2017-08 changes the interest income recognition model for purchased callable debt securities carried at a premium, as the premium will be amortized to the earliest call date rather than to the contractual maturity date. Accounting for purchased callable debt securities held at a discount does not change, as the discount will continue to accrete to the contractual maturity date. The Update impacted our investments in purchased callable debt securities classified as available-for-sale (AFS) and held-to-maturity (HTM), which predominantly consist of debt securities of U.S. states and political subdivisions.

We adopted the Update in first quarter 2019 and recorded a cumulative-effect adjustment as of January 1, 2019, that decreased total stockholders' equity by $111 million. Retained earnings was reduced by $592 million which reflects both the incremental premium amortization under the new guidance from the acquisition date of our impacted AFS and HTM debt securities through the date of adoption and the fact that the incremental premium amortization is not deductible for federal income tax purposes. Other comprehensive income (OCI) was increased by $481 million which reflects the corresponding adjustment to the adoption date unrealized gain or loss of impacted AFS debt securities. Going forward, interest income recognized prior to the call date will be reduced because the premium will be amortized over a shorter period.

ASU 2016-02 modifies the guidance used by lessors and lessees to account for leasing transactions. For our transition to the new guidance, we elected several available practical expedients, including to not reassess the classification of our existing leases, any initial direct costs associated with our leases, or whether any existing contracts are or contain leases. In addition, we elected not to provide a comparative presentation for 2018 and 2017 financial statements.

We adopted the Update in first quarter 2019 and recorded a cumulative-effect adjustment that increased retained earnings by $100 million related to deferred gains on our prior sale-leaseback transactions. We also recognized operating lease right-of-use (ROU) assets and liabilities, substantially all of which relate to our leasing of real estate as a lessee, of $4.9 billion and $5.6 billion, respectively.

Table 1.1 summarizes financial assets and liabilities by form and measurement accounting model.

Table 1.1: Accounting Model for Financial Assets and Financial Liabilities

Balance sheet caption	Measurement model(s)	Financial statement Note reference
Cash and due from banks	Amortized cost	Note 3: Cash, Loan and Dividend Restrictions
Interest-earning deposits with banks	Amortized cost	Note 3: Cash, Loan and Dividend Restrictions
Federal funds sold and securities purchased under resale agreements	Amortized cost	N/A
Debt securities:		
Trading	FV-NI (1)	Note 4: Trading Activities Note 19: Fair Values of Assets and Liabilities
Available-for-sale	FV-OCI (2)	Note 5: Available-for-Sale and Held-to-Maturity Debt Securities Note 19: Fair Values of Assets and Liabilities
Held-to-maturity	Amortized cost	Note 5: Available-for-Sale and Held-to-Maturity Debt Securities
Mortgage loans held for sale	FV-NI (1) LOCOM (3)	Note 19: Fair Values of Assets and Liabilities
Loans held for sale	FV-NI (1) LOCOM (3)	Note 19: Fair Values of Assets and Liabilities
Loans	Amortized cost FV-NI (1)	Note 6: Loans and Allowance for Credit Losses Note 19: Fair Values of Assets and Liabilities
Derivative assets and liabilities	FV-NI (1) FV-OCI (2)	Note 4: Trading Activities Note 18: Derivatives Note 19: Fair Values of Assets and Liabilities
Equity securities:		
Marketable	FV-NI (1)	Note 4: Trading Activities Note 8: Equity Securities Note 19: Fair Values of Assets and Liabilities
Nonmarketable	FV-NI (1) Cost method Equity method MA (4)	Note 4: Trading Activities Note 8: Equity Securities Note 19: Fair Values of Assets and Liabilities
Other assets	Amortized cost (5)	Note 9: Premises, Equipment, and Other Assets
Deposits	Amortized cost	Note 13: Deposits
Short-term borrowings	Amortized cost	Note 14: Short-Term Borrowings
Accrued expenses and other liabilities	Amortized cost (6)	Note 4: Trading Activities Note 7: Leasing Activity Note 19: Fair Values of Assets and Liabilities
Long-term debt	Amortized cost	Note 15: Long-Term Debt

(1) FV-NI represents the fair value through net income accounting model.
(2) FV-OCI represents the fair value through other comprehensive income accounting model.
(3) LOCOM represents the lower of cost or fair value accounting model.
(4) MA represents the measurement alternative accounting model.
(5) Other assets are generally measured at amortized cost, except for bank-owned life insurance which is measured at cash surrender value.
(6) Accrued expenses and other liabilities are generally measured at amortized cost, except for trading short-sale liabilities which are measured at FV-NI.

Consolidation

Our consolidated financial statements include the accounts of the Parent and our subsidiaries in which we have a controlling financial interest. When our consolidated subsidiaries follow specialized industry accounting, that accounting is retained in consolidation.

We are also a variable interest holder in certain entities in which equity investors do not have the characteristics of a controlling financial interest or where the entity does not have enough equity at risk to finance its activities without additional subordinated financial support from other parties (collectively referred to as variable interest entities (VIEs)). Our variable interest arises from contractual, ownership or other monetary interests in the entity, which change with fluctuations in the fair value of the entity's net assets. We consolidate a VIE if we are the primary beneficiary, which is when we have both the power to direct the activities that most significantly impact the VIE and a variable interest that could potentially be significant to the VIE. To determine whether or not a variable interest we hold could potentially be significant to the VIE, we consider both qualitative and quantitative factors regarding the nature, size and form of our involvement with the VIE. We assess whether or not we are the primary beneficiary of a VIE on an ongoing basis.

Significant intercompany accounts and transactions are eliminated in consolidation. When we have significant influence over operating and financing decisions for a company but do not own a majority of the voting equity interests, we account for the investment using the equity method of accounting, which requires us to recognize our proportionate share of the company's earnings. If we do not have significant influence, we account for the equity security under the fair value method, cost method or measurement alternative.

Cash, Cash Equivalents and Restricted Cash

Cash, cash equivalents and restricted cash include cash on hand, cash items in transit, and amounts due from or held with other depository institutions. See Note 3 (Cash, Loan and Dividend Restrictions) for the nature of our restrictions on cash and cash equivalents.

Trading Activities

We engage in trading activities to accommodate the investment and risk management activities of our customers. These activities predominantly occur in our Wholesale Banking businesses and, to a lesser extent, other divisions of the Company. Trading assets and liabilities include debt securities, equity securities, loans, derivatives and short sales, which are reported within the balance sheet based on the accounting classification of the instrument. In addition, debt securities that are held for investment purposes that we have elected to account for under the fair value method, are classified as trading.

Our trading assets and liabilities are carried on the balance sheet at fair value with changes in fair value recognized in net gains from trading activities and interest income and interest expense recognized in net interest income.

Customer accommodation trading activities include our actions as an intermediary to buy and sell financial instruments and market-making activities. We also take positions to manage our exposure to customer accommodation activities. We hold financial instruments for trading in long positions, as well as short positions, to facilitate our trading activities. As an intermediary, we interact with market buyers and sellers to facilitate the purchase and sale of financial instruments to meet the anticipated or current needs of our customers. For example, we may purchase or sell a derivative to a customer who wants to manage interest rate risk exposure. We typically enter into an offsetting derivative or security position to manage our exposure to the customer transaction. We earn income based on the transaction price difference between the customer transaction and the offsetting position, which is reflected in earnings where the fair value changes and related interest income and expense of the positions are recorded.

Our market-making activities include taking long and short trading positions to facilitate customer order flow. These activities are typically executed on a short-term basis. As a market-maker we earn income due to: (1) the difference between the price paid or received for the purchase and sale of the security (bid-ask spread), (2) the net interest income of the positions, and (3) the changes in fair value of the trading positions held on our balance sheet. Additionally, we may enter into separate derivative or security positions to manage our exposure related to our long and short trading positions taken in our market-making activities. Income earned on these market-making activities are reflected in earnings where the fair value changes and related interest income and expense of the positions are recorded.

Debt Securities

Our investments in debt securities that are not held for trading purposes are classified as either debt securities available-for-sale (AFS) or held-to-maturity (HTM).

AVAILABLE-FOR-SALE DEBT SECURITIES

Investments in debt securities for which the Company does not have the positive intent and ability to hold to maturity are classified as AFS. AFS debt securities are measured at fair value with unrealized gains and losses reported in cumulative OCI, net of applicable income taxes.

We conduct other-than-temporary impairment (OTTI) analysis on a quarterly basis or more often if a potential loss-triggering event occurs. The initial indicator of OTTI is a decline in fair value below the amortized cost of the debt security. We recognize OTTI in earnings as a reduction to the amortized cost of the security. OTTI related to AFS debt securities is classified as net gains (losses) from debt securities within noninterest income.

We recognize OTTI for an AFS debt security that has a decline in fair value below amortized cost if we: (1) have the intent to sell the security, (2) it is more likely than not that we will be required to sell the security before recovery of its amortized cost basis, or (3) we do not expect to recover the entire amortized cost basis of the security.

Estimating recovery of the amortized cost basis of an AFS debt security is based upon an assessment of the cash flows expected to be collected. If the present value of cash flows expected to be collected discounted at the security's effective yield is less than amortized cost, an OTTI has occurred. In performing an assessment of the cash flows expected to be collected, we consider all relevant information, including:

- the length of time and the extent to which the fair value has been less than the amortized cost basis;
- the historical and implied volatility of the fair value of the security;
- the cause of the price decline, such as the general level of interest rates or adverse conditions specifically related to the security, an industry or a geographic area;
- the issuer's financial condition, near-term prospects and ability to service the debt;
- the payment structure of the debt security and the likelihood of the issuer being able to make payments that increase in the future;
- for asset-backed securities, the credit performance of the underlying collateral, including delinquency rates, level of non-performing assets, cumulative losses to date, collateral value and the remaining credit enhancement compared with expected credit losses;
- any change in rating agencies' credit ratings and any likely imminent action;
- independent analyst reports and forecasts, sector credit ratings and other independent market data; and
- recoveries or additional declines in fair value subsequent to the balance sheet date.

If we intend to sell the security, or if it is more likely than not we will be required to sell the security before recovery of amortized cost basis, OTTI is recognized in earnings equal to the entire difference between the amortized cost basis and fair value of the security. For a debt security that is considered other-than-temporarily impaired that we do not intend to sell or it is more likely than not that we will not be required to sell before recovery, OTTI is separated into an amount representing the credit loss, which is recognized in earnings, and the amount related to all other factors, which is recognized in OCI. The measurement of the credit loss component is equal to the difference between the debt security's amortized cost basis and the present value of its expected future cash flows discounted at the security's effective yield. The remaining difference between the security's fair value and the present value of expected future cash flows is due to all other factors. We believe that we will fully collect the carrying value of securities on which we have recorded a non-credit-related impairment in OCI.

Following the recognition of OTTI, the security's new amortized cost basis is the previous basis less any OTTI recognized in earnings.

We recognize realized gains and losses on the sale of AFS debt securities in net gains (losses) on debt securities using the specific identification method.

Unamortized premiums and discounts are recognized in interest income over the contractual life of the security using the effective interest method, except for purchased callable debt securities carried at a premium. For purchased callable debt securities carried at a premium, the premium is amortized into interest income to the earliest call date using the effective interest method. As principal repayments are received on securities (e.g., mortgage-backed securities (MBS)) a proportionate amount of the related premium or discount is recognized in income so that the effective interest rate on the remaining portion of the security continues unchanged.

HELD-TO-MATURITY DEBT SECURITIES Investments in debt securities for which the Company has the positive intent and ability to hold to maturity are classified as HTM. HTM debt securities are measured at historical cost adjusted for amortization of premiums and accretion of discounts under the same methods described for AFS debt securities. We recognize OTTI when there is a decline in fair value below amortized cost and we do not expect to recover the entire amortized cost basis of the debt security. The amortized cost is written-down to fair value with the credit loss component recorded to earnings and the remaining component recognized in OCI. The OTTI assessment related to intent to sell, required to sell, whether we expect recovery of the amortized cost basis and determination of any credit loss component recognized in earnings for HTM debt securities is the same as described for AFS debt securities. OTTI related to HTM debt securities is classified as net gains (losses) from debt securities within noninterest income. AFS debt securities transferred to the HTM classification are recorded at fair value and the unrealized gains or losses resulting from the transfer of these securities continue to be reported in cumulative OCI. The cumulative OCI balance is amortized into earnings over the same period as the unamortized premiums and discounts using the effective interest method. The HTM amortized cost basis used in the OTTI analysis includes the unamortized OCI balances related to previous security transfers from AFS to HTM.

Securities Purchased and Sold Agreements

Securities purchased under resale agreements and securities sold under repurchase agreements are accounted for as collateralized financing transactions and are recorded at the acquisition or sale price plus accrued interest. We monitor the fair value of securities purchased and sold as well as the collateral pledged and received. Additional collateral is pledged or returned to maintain the appropriate collateral position for the transactions. These financing transactions do not create material credit risk given the collateral provided and the related monitoring process.

Mortgage Loans and Loans Held for Sale

Mortgage loans held for sale (MLHFS) include commercial and residential mortgages originated for sale in the securitization or whole loan market. We have elected the fair value option for substantially all residential MLHFS (see Note 19 (Fair Values of Assets and Liabilities)). The remaining residential MLHFS are held at the lower of cost or fair value (LOCOM) and are measured on an aggregate portfolio basis. Commercial MLHFS are held at LOCOM and are measured on an individual loan basis.

Loans held for sale (LHFS) include commercial loans originated for sale and purchased loans used in market-making activities in our trading business. The loans held for trading purposes are carried at fair value, with the remainder of LHFS recorded at LOCOM. LHFS are measured on an individual loan basis.

Gains and losses on MLHFS are generally recorded in mortgage banking noninterest income. Gains and losses on LHFS used in trading activities are recognized in net gains from trading activities. Gains and losses on LHFS not used in trading activities are recognized in other noninterest income. Direct loan origination costs and fees for MLHFS and LHFS under the fair value option are recognized in earnings at origination. For MLHFS and LHFS recorded at LOCOM, loan costs and fees are deferred at origination and are recognized in earnings at time of sale. Interest income on MLHFS and LHFS is calculated based upon the note rate of the loan and is recorded in interest income.

Our lines of business are authorized to originate held-for-investment loans that meet or exceed established loan product profitability criteria, including minimum positive net interest margin spreads in excess of funding costs. When a determination is made at the time of commitment to originate loans as held for investment, it is our intent to hold these loans to maturity or for the "foreseeable future," subject to periodic review under our management evaluation processes, including corporate asset/liability management. In determining the "foreseeable future" for loans, management considers (1) the current economic environment and market conditions, (2) our business strategy and current business plans, (3) the nature and type of the loan receivable, including its expected life, and (4) our current financial condition and liquidity demands. If subsequent changes, including changes in interest rates, significantly impact the ongoing profitability of certain loan products, we may subsequently change our intent to hold these loans, and we would take actions to sell such loans. Upon such management determination, we immediately transfer these loans to the MLHFS or LHFS portfolio at LOCOM.

Loans

Loans are reported at their outstanding principal balances net of any unearned income, cumulative charge-offs, unamortized deferred fees and costs on originated loans and unamortized premiums or discounts on purchased loans. Purchased credit-impaired (PCI) loans are reported net of any remaining purchase accounting adjustments. See the "Purchased Credit-Impaired Loans" section in this Note for our accounting policy for PCI loans.

Unearned income, deferred fees and costs, and discounts and premiums are amortized to interest income over the contractual life of the loan using the effective interest method. Loan commitment fees are generally deferred and amortized into noninterest income on a straight-line basis over the commitment period.

Loans also include financing leases where we are the lessor. See the "Leasing Activity" section in this Note for our accounting policy for leases.

NONACCRUAL AND PAST DUE LOANS We generally place loans on nonaccrual status when:

- the full and timely collection of interest or principal becomes uncertain (generally based on an assessment of the borrower's financial condition and the adequacy of collateral, if any), such as in bankruptcy or other circumstances;
- they are 90 days (120 days with respect to real estate 1-4 family mortgages) past due for interest or principal, unless both well-secured and in the process of collection;
- part of the principal balance has been charged off; or
- for junior lien mortgages, we have evidence that the related first lien mortgage may be 120 days past due or in the process of foreclosure regardless of the junior lien delinquency status.

Credit card loans are not placed on nonaccrual status, but are generally fully charged off when the loan reaches 180 days past due.

PCI loans are written down at acquisition to fair value using an estimate of cash flows deemed to be collectible and an accretable yield is established. Accordingly, such loans are not classified as nonaccrual because they continue to earn interest from accretable yield, independent of performance in accordance of their contractual terms, and we expect to fully collect the new carrying values of such loans (that is, the new cost basis arising out of purchase accounting).

When we place a loan on nonaccrual status, we reverse the accrued unpaid interest receivable against interest income and suspend amortization of any net deferred fees. If the ultimate collectability of the recorded loan balance is in doubt on a nonaccrual loan, the cost recovery method is used and cash collected is applied to first reduce the carrying value of the loan. Otherwise, interest income may be recognized to the extent cash is received. Generally, we return a loan to accrual status when all delinquent interest and principal become current under the terms of the loan agreement and collectability of remaining principal and interest is no longer doubtful.

We typically re-underwrite modified loans at the time of a restructuring to determine if there is sufficient evidence of sustained repayment capacity based on the borrower's financial strength, including documented income, debt to income ratios and other factors. If the borrower has demonstrated performance under the previous terms and the underwriting process shows the capacity to continue to perform under the restructured terms, the loan will generally remain in accruing status. When a loan classified as a troubled debt restructuring (TDR) performs in accordance with its modified terms, the loan either continues to accrue interest (for performing loans) or will return to accrual status after the borrower demonstrates a sustained period of performance (generally six consecutive months of payments, or equivalent, inclusive of consecutive payments made prior to the modification). Loans will be placed on nonaccrual status and a corresponding charge-off is recorded if we believe it is probable that principal and interest contractually due under the modified terms of the agreement will not be collectible.

Our loans are considered past due when contractually required principal or interest payments have not been made on the due dates.

LOAN CHARGE-OFF POLICIES For commercial loans, we generally fully charge off or charge down to net realizable value (fair value of collateral, less estimated costs to sell) for loans secured by collateral when:

- management judges the loan to be uncollectible;
- repayment is deemed to be protracted beyond reasonable time frames;
- the loan has been classified as a loss by either our internal loan review process or our banking regulatory agencies;
- the customer has filed bankruptcy and the loss becomes evident owing to a lack of assets; or
- the loan is 180 days past due unless both well-secured and in the process of collection.

For consumer loans, we fully charge off or charge down to net realizable value when deemed uncollectible due to bankruptcy or other factors, or no later than reaching a defined number of days past due, as follows:

- Real estate 1-4 family mortgages – We generally charge down to net realizable value when the loan is 180 days past due.
- Automobile loans – We generally fully charge off when the loan is 120 days past due.
- Credit card loans – We generally fully charge off when the loan is 180 days past due.
- Unsecured loans (closed end) – We generally fully charge off when the loan is 120 days past due.
- Unsecured loans (open end) – We generally fully charge off when the loan is 180 days past due.
- Other secured loans – We generally fully or partially charge down to net realizable value when the loan is 120 days past due.

IMPAIRED LOANS We consider a loan to be impaired when, based on current information and events, we determine that we will not be able to collect all amounts due according to the loan contract, including scheduled interest payments. This evaluation is generally based on delinquency information, an assessment of the borrower's financial condition and the adequacy of collateral, if any. Our impaired loans predominantly include loans on nonaccrual status in the commercial portfolio segment and loans modified in a TDR, whether on accrual or nonaccrual status.

When we identify a loan as impaired, we generally measure the impairment, if any, based on the difference between the recorded investment in the loan (net of previous charge-offs, deferred loan fees or costs and unamortized premium or discount) and the present value of expected future cash flows, discounted at the loan's pre-modification effective interest rate. When the value of an impaired loan is calculated by discounting expected cash flows, interest income is recognized using the loan's pre-modification effective interest rate over the remaining life of the loan. When collateral is the sole source of repayment for the impaired loan, rather than the borrower's income or other sources of repayment, we charge down to net realizable value.

TROUBLED DEBT RESTRUCTURINGS In situations where, for economic or legal reasons related to a borrower's financial difficulties, we grant a concession for other than an insignificant period of time to the borrower that we would not otherwise consider, the related loan is classified as a TDR. These modified terms may include interest rate reductions, principal forgiveness, term extensions, payment forbearance and other actions intended to minimize our economic loss and to avoid foreclosure or repossession of the collateral, if applicable. For modifications where we forgive principal, the entire amount of such principal forgiveness is immediately charged off. Loans classified as TDRs, including loans in trial payment periods (trial modifications), are considered impaired loans. Other than resolutions such as foreclosures, sales and transfers to held-for-sale, we may remove loans held for investment from TDR classification, but only if they have been refinanced or restructured at market terms and qualify as a new loan.

PURCHASED CREDIT-IMPAIRED LOANS Loans acquired with evidence of credit deterioration since their origination and where it is probable that we will not collect all contractually required principal and interest payments are PCI loans. PCI loans are recorded at fair value at the date of acquisition, and the historical allowance for credit losses related to these loans is not carried over. Fair value at date of acquisition is generally determined using a discounted cash flow method and any excess cash flow expected to be collected over the carrying value (estimated fair value at acquisition date) is referred to as the accretable yield and is recognized in interest income using an effective yield method over the remaining life of the loan, or pool of loans if aggregated based on common risk characteristics. The difference between contractually required payments and the cash flows expected to be collected at acquisition, considering the impact of prepayments, is referred to as the nonaccretable difference. Based on quarterly evaluations of remaining cash flows expected to be collected, expected decreases may result in recording a provision for loss and expected increases may result in a prospective yield adjustment after first reversing any allowance for losses related to the loan, or pool of loans.

Resolutions of loans may include sales of loans to third parties, receipt of payments in settlement with the borrower, or foreclosure of the collateral. For individual PCI loans, gains or losses on sales to third parties are included in other noninterest income, and gains or losses as a result of a settlement with the borrower are included in interest income. Our policy is to remove an individual loan from a pool based on comparing the amount received from its resolution with its contractual amount. Any difference between these amounts is absorbed by the nonaccretable difference for the entire pool, which assumes that the amount received from resolution approximates pool performance expectations. Any material change in remaining effective yield caused by this removal method is addressed by our quarterly cash flow evaluation process for each pool. We may also sell groups of loans from a pool and include any gains or losses on sales to third parties in other noninterest income. Any difference between the amount received from the buyer and the contractual amount due from the customer is absorbed by the nonaccretable difference for the entire pool. We maintain the effective yield for the remaining loans in the pool consistent with the yield immediately prior to the sale.

Modified PCI loans are not removed from a pool even if those loans would otherwise be deemed TDRs. Modified PCI loans that are accounted for individually are considered TDRs and removed from PCI accounting if there has been a concession granted in excess of the original nonaccretable difference. We include these TDRs in our impaired loans.

FORECLOSED ASSETS Foreclosed assets obtained through our lending activities primarily include real estate. Generally, loans have been written down to their net realizable value prior to foreclosure. Any further reduction to their net realizable value is recorded with a charge to the allowance for credit losses at foreclosure. We allow up to 90 days after foreclosure to finalize determination of net realizable value. Thereafter, changes in net realizable value are recorded to noninterest expense. The net realizable value of these assets is reviewed and updated periodically depending on the type of property. Certain government-guaranteed mortgage loans upon foreclosure are included in accounts receivable, not foreclosed assets. These receivables were loans insured by the FHA or guaranteed by the VA and are measured based on the balance expected to be recovered from the FHA or VA.

ALLOWANCE FOR CREDIT LOSSES The allowance for credit losses (ACL) is management's estimate of credit losses inherent in the loan portfolio, including unfunded credit commitments, at the balance sheet date. We have an established process to determine the appropriateness of the ACL that assesses the losses inherent in our portfolio and related unfunded credit commitments. We develop and document our ACL methodology at the portfolio segment level – commercial loan portfolio and consumer loan portfolio. While we attribute portions of the ACL to our respective commercial and consumer portfolio segments, the entire ACL is available to absorb credit losses inherent in the total loan portfolio and unfunded credit commitments.

Our process involves procedures to appropriately consider the unique risk characteristics of our commercial and consumer loan portfolio segments. For each portfolio segment, losses are estimated collectively for groups of loans with similar characteristics, individually or pooled for impaired loans or, for PCI loans, based on the changes in cash flows expected to be collected.

Our ACL amounts are influenced by loan volumes, loan grade migration or delinquency status, historic loss experience and other conditions influencing loss expectations, such as economic conditions.

Commercial Portfolio Segment ACL Methodology Generally, commercial loans are assessed for estimated losses by grading each loan using various risk factors as identified through periodic reviews. Our estimation approach for the commercial portfolio reflects the estimated probability of default in accordance with the borrower's financial strength and the severity of loss in the event of default, considering the quality of any underlying collateral. Probability of default and severity at the time of default are statistically derived through historical observations of default and losses after default within each credit risk rating. These estimates are adjusted as appropriate based on additional analysis of long-term average loss experience compared to previously forecasted losses, external loss data or other risks identified from current economic conditions and credit quality trends. The estimated probability of default and severity at the time of default are applied to loan equivalent exposures to estimate losses for unfunded credit commitments.

The ACL also includes an amount for the estimated impairment on nonaccrual commercial loans and commercial loans modified in a TDR, whether on accrual or nonaccrual status.

Consumer Portfolio Segment ACL Methodology For consumer loans that are not identified as a TDR, we generally determine the ACL on a collective basis utilizing forecasted losses to represent our best estimate of inherent loss. We pool loans, generally by product types with similar risk characteristics, such as residential real estate mortgages and credit cards. As appropriate and to achieve greater accuracy, we may further stratify selected portfolios by sub-product, origination channel, vintage, loss type, geographic location and other predictive characteristics. Models designed for each pool are utilized to develop the loss estimates. We use assumptions for these pools in our forecast models, such as historic delinquency and default, loss severity, home price trends, unemployment trends, and other key economic variables that may influence the frequency and severity of losses in the pool.

We separately estimate impairment for consumer loans that have been modified in a TDR (including trial modifications), whether on accrual or nonaccrual status.

Other ACL Matters The ACL for both portfolio segments includes an amount for imprecision or uncertainty that may change from period to period. This amount represents management's judgment of risks inherent in the processes and assumptions used in establishing the ACL. This imprecision considers economic environmental factors, modeling assumptions and performance, process risk, and other subjective factors, including industry trends and emerging risk assessments.

Leasing Activity

AS LESSOR We lease equipment to our customers under financing or operating leases. Financing leases are presented in loans and are recorded at the discounted amounts of lease payments receivable plus the estimated residual value of the leased asset. Leveraged leases, which are a form of financing leases, are reduced by related non-recourse debt from third-party investors. Lease payments receivable reflect contractual lease payments adjusted for renewal or termination options that we believe the customer is reasonably certain to exercise. The residual value reflects our best estimate of the expected sales price for the equipment at lease termination based on sales history adjusted for recent trends in the expected exit markets. Many of our leases allow the customer to extend the lease at prevailing market terms or purchase the asset for fair value at lease termination.

Our allowance for loan losses for financing leases considers both the collectability of the lease payments receivable as well as the estimated residual value of the leased asset. We typically purchase residual value insurance on our financing leases so that our risk of loss at lease termination will be less than 10% of the initial value of the lease. In addition, we have several channels for re-leasing or marketing those assets.

In connection with a lease, we may finance the customer's purchase of other products or services from the equipment vendor and allocate the contract consideration between the use of the asset and the purchase of those products or services based on information obtained from the vendor. Amounts allocated to financing of vendor products or services are reported in loans as commercial and industrial loans, rather than as lease financing.

Our primary income from financing leases is interest income recognized using the effective interest method. Variable lease revenues, such as reimbursement for property taxes associated with the leased asset, are included in lease income within noninterest income.

Operating lease assets are presented in other assets, net of accumulated depreciation. Periodic depreciation expense is recorded on a straight-line basis to the estimated residual value over the estimated useful life of the leased asset. On a periodic basis, operating lease assets are reviewed for impairment and impairment loss is recognized if the carrying amount of operating lease assets exceeds fair value and is not recoverable. The carrying amount of leased assets is deemed not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the lease payments and the estimated residual value upon the eventual disposition of the equipment. Depreciation of leased assets and impairment loss are presented in operating leases expense within other noninterest expense.

Operating lease rental income for leased assets is recognized in lease income within noninterest income on a straight-line basis over the lease term. Variable revenues on operating leases include reimbursements of costs, including property taxes, which fluctuate over time, as well as rental revenue based on usage. For leases of railcars, revenue for maintenance services provided under the lease is recognized in lease income.

We elected to exclude from revenues and expenses any sales tax incurred on lease payments which are reimbursed by the lessee. Substantially all of our leased assets are protected against casualty loss through third-party insurance.

AS LESSEE We enter into lease agreements to obtain the right to use assets for our business operations, substantially all of which are real estate. Lease liabilities and ROU assets are recognized when we enter into operating or financing leases and represent our obligations and rights to use these assets over the period of the leases and may be re-measured for certain modifications, resolution of certain contingencies involving variable consideration, or our exercise of options (renewal, extension, or termination) under the lease.

Operating lease liabilities include fixed and in-substance fixed payments for the contractual duration of the lease, adjusted for renewals or terminations which were considered probable of exercise when measured. The lease payments are discounted using a rate determined when the lease is recognized. As we typically do not know the discount rate implicit in the lease, we estimate a discount rate that we believe approximates a collateralized borrowing rate for the estimated duration of the lease. The discount rate is updated when re-measurement events occur. The related operating lease ROU assets may differ from operating lease liabilities due to initial direct costs, deferred or prepaid lease payments and lease incentives.

We present operating lease liabilities in accrued expenses and other liabilities and the related operating lease ROU assets in other assets. The amortization of operating lease ROU assets and the accretion of operating lease liabilities are reported together as fixed lease expense and are included in net occupancy expense within noninterest expense. The fixed lease expense is recognized on a straight-line basis over the life of the lease.

Some of our operating leases include variable lease payments which are periodic adjustments of our payments for the use of the asset based on changes in factors such as consumer price indices, fair market value rents, tax rates imposed by taxing authorities, or lessor cost of insurance. To the extent not included in operating lease liabilities and operating lease ROU assets, these variable lease payments are recognized as incurred in net occupancy expense within noninterest expense.

For substantially all of our leased assets, we account for consideration paid under the contract for maintenance or other services as lease payments. In addition, for certain asset classes, we have elected to exclude leases with original terms of less than one year from the operating lease ROU assets and lease liabilities. The related short-term lease expense is included in net occupancy expense.

Finance lease (formerly capital lease) liabilities are presented in long-term debt and the associated finance ROU assets are presented in premises and equipment.

Securitizations and Beneficial Interests

Securitizations are transactions in which financial assets are sold to a Special Purpose Entity (SPE), which then issues beneficial interests in the form of senior and subordinated interests collateralized by the transferred financial assets. In some cases, we may obtain beneficial interests issued by the SPE. Additionally, from time to time, we may re-securitize certain financial assets in a new securitization transaction.

The assets and liabilities transferred to an SPE are excluded from our consolidated balance sheet if the transfer qualifies as a sale and we are not required to consolidate the SPE.

For transfers of financial assets recorded as sales, we recognize and initially measure at fair value all assets obtained (including beneficial interests or mortgage servicing rights) and all liabilities incurred. We record a gain or loss in noninterest income for the difference between assets obtained (net of liabilities incurred) and the carrying amount of the assets sold. Interests obtained from, and liabilities incurred in, securitizations with off-balance sheet entities may include debt and equity securities, loans, MSRs, derivative assets and liabilities, other assets, and other obligations such as liabilities for mortgage repurchase losses or long-term debt and are accounted for as described within this Note.

Mortgage Servicing Rights

We recognize the rights to service mortgage loans for others, or mortgage servicing rights (MSRs), as assets whether we purchase the MSRs or the MSRs result from a sale or securitization of loans we originate (asset transfers). We initially record all of our MSRs at fair value. Subsequently, residential loan MSRs are carried at fair value. All of our MSRs related to our commercial mortgage loans are subsequently measured at LOCOM. The valuation and sensitivity of MSRs is discussed further in Note 10 (Securitizations and Variable Interest Entities), Note 11 (Mortgage Banking Activities) and Note 19 (Fair Values of Assets and Liabilities).

For MSRs carried at fair value, changes in fair value are reported in mortgage banking noninterest income in the period in which the change occurs. MSRs subsequently measured at LOCOM are amortized in proportion to, and over the period of, estimated net servicing income. The amortization of MSRs is reported in mortgage banking noninterest income, analyzed monthly and adjusted to reflect changes in prepayment speeds, as well as other factors.

MSRs accounted for at LOCOM are periodically evaluated for impairment based on the fair value of those assets. For purposes of impairment evaluation and measurement, we stratify MSRs based on the predominant risk characteristics of the underlying loans, including investor and product type. If, by individual stratum, the carrying amount of these MSRs exceeds fair value, a valuation allowance is established. The valuation allowance is adjusted as the fair value changes.

Premises and Equipment

Premises and equipment are carried at cost less accumulated depreciation and amortization. We use the straight-line method of depreciation and amortization. Estimated useful lives range up to 40 years for buildings, up to 10 years for furniture and equipment, and the shorter of the estimated useful life (up to 8 years) or the lease term for leasehold improvements.

Goodwill and Identifiable Intangible Assets

Goodwill is recorded in business combinations under the purchase method of accounting when the purchase price is higher than the fair value of net assets, including identifiable intangible assets.

We assess goodwill for impairment at a reporting unit level on an annual basis or more frequently in certain circumstances. We have determined that our reporting units are one level below the operating segments and distinguish these reporting units based on how the segments and reporting units are managed, taking into consideration the economic characteristics, nature of the products, and customers of the segments and reporting units. At the time we acquire a business, we allocate goodwill to applicable reporting units based on their relative fair value, and if we have a significant business reorganization, we may reallocate the goodwill. If we sell a business, a portion of goodwill is included with the carrying amount of the divested business.

We have the option of performing a qualitative assessment of goodwill. We may also elect to bypass the qualitative test and proceed directly to a quantitative test. If we perform a qualitative assessment of goodwill to test for impairment and conclude it is more likely than not that a reporting unit's fair value is greater than its carrying amount, quantitative tests are not required. However, if we determine it is more likely than not that a reporting unit's fair value is less than its carrying amount, we complete a quantitative assessment to determine if there is goodwill impairment. We apply various quantitative valuation methodologies, including discounted cash flow and earnings multiple approaches, to determine the estimated fair value, which is compared to the carrying value of each reporting unit. If the fair value is less than the carrying amount, an additional test is required to measure the amount of impairment. We recognize impairment losses as a charge to other noninterest expense (unless related to discontinued operations) and an adjustment to the carrying value of the goodwill asset. Subsequent reversals of goodwill impairment are prohibited.

We amortize customer relationship intangible assets on an accelerated basis over useful lives not exceeding 10 years. We review intangible assets for impairment whenever events or changes in circumstances indicate that their carrying amounts may not be recoverable. Impairment is indicated if the sum of undiscounted estimated future net cash flows is less than the carrying value of the asset. Impairment is permanently recognized by writing down the asset to the extent that the carrying value exceeds the estimated fair value.

Derivatives and Hedging Activities

DERIVATIVES We recognize all derivatives on the balance sheet at fair value. On the date we enter into a derivative contract, we categorize the derivative as either an accounting hedge, economic hedge or part of our customer accommodation trading and other portfolio.

Accounting hedges are either fair value or cash flow hedges. Fair value hedges represent the hedge of the fair value of a recognized asset or liability or an unrecognized firm commitment, including hedges of foreign currency exposure. Cash flow hedges represent the hedge of a forecasted transaction or the variability of cash flows to be paid or received related to a recognized asset or liability.

Economic hedges and customer accommodation trading and other derivatives do not qualify for, or we have elected not to apply, hedge accounting. Economic hedges are derivatives we use to manage interest rate, foreign currency and certain other risks associated with our non-trading activities. Customer accommodation trading and other derivatives primarily represents derivatives related to our trading business activities. We report changes in the fair values of these derivatives in noninterest income.

FAIR VALUE HEDGES We record changes in the fair value of the derivative in income, except for certain derivatives in which a portion is recorded to OCI. We record basis adjustments to the amortized cost of the hedged asset or liability due to the changes in fair value related to the hedged risk with the offset recorded in earnings. We present derivative gains or losses in the same income statement category as the hedged asset or liability, as follows:

- For fair value hedges of interest rate risk, amounts are reflected in net interest income;
- For hedges of foreign currency risk, amounts representing the fair value changes less the accrual for periodic cash flow settlements are reflected in noninterest income. The periodic cash flow settlements are reflected in net interest income;
- For hedges of both interest rate risk and foreign currency risk, amounts representing the fair value change less the accrual for periodic cash flow settlements is attributed to both net interest income and noninterest income. The

periodic cash flow settlements are reflected in net interest income.

The entire derivative gain or loss is included in the assessment of hedge effectiveness for all fair value hedge relationships, except for hedges of foreign-currency denominated AFS debt securities and long-term debt liabilities hedged with cross-currency swaps. The change in fair value of these swaps attributable to cross-currency basis spread changes is excluded from the assessment of hedge effectiveness. The initial fair value of the excluded component is amortized to net interest income and the difference between changes in fair value of the excluded component and the amount recorded in earnings is recorded in OCI.

CASH FLOW HEDGES We record changes in the fair value of the derivative in OCI. We subsequently reclassify gains and losses from these changes in fair value from OCI to earnings in the same period(s) that the hedged transaction affects earnings and in the same income statement category as the hedged item. For cash flow hedges of interest rate risk associated with floating-rate commercial loans and long-term debt, these amounts are reflected in net interest income. For cash flow hedges of foreign currency risk associated with fixed-rate long-term debt, these amounts are reflected in net interest income. The entire gain or loss on these derivatives is included in the assessment of hedge effectiveness.

DOCUMENTATION AND EFFECTIVENESS ASSESSMENT FOR ACCOUNTING HEDGES For fair value and cash flow hedges qualifying for hedge accounting, we formally document at inception the relationship between hedging instruments and hedged items, our risk management objective, strategy and our evaluation of effectiveness for our hedge transactions. This process includes linking all derivatives designated as fair value or cash flow hedges to specific assets and liabilities on the balance sheet or to specific forecasted transactions. We assess hedge effectiveness using regression analysis, both at inception of the hedging relationship and on an ongoing basis. For fair value hedges, the regression analysis involves regressing the periodic change in fair value of the hedging instrument against the periodic changes in fair value of the asset or liability being hedged due to changes in the hedged risk(s). For cash flow hedges, the regression analysis involves regressing the periodic changes in fair value of the hedging instrument against the periodic changes in fair value of a hypothetical derivative. The hypothetical derivative has terms that identically match and offset the cash flows of the forecasted transaction being hedged due to changes in the hedged risk(s). The initial assessment for fair value and cash flow hedges includes an evaluation of the quantitative measures of the regression results used to validate the conclusion of high effectiveness. Periodically, as required, we also formally assess whether the derivative we designated in each hedging relationship is expected to be and has been highly effective in offsetting changes in fair values or cash flows of the hedged item using the regression analysis method.

DISCONTINUING HEDGE ACCOUNTING We discontinue hedge accounting prospectively when (1) a derivative is no longer highly effective in offsetting changes in the fair value or cash flows of a hedged item, (2) a derivative expires or is sold, terminated or exercised, (3) we elect to discontinue the designation of a derivative as a hedge, or (4) in a cash flow hedge, a derivative is de-designated because it is no longer probable that a forecasted transaction will occur.

When we discontinue fair value hedge accounting, we no longer adjust the previously hedged asset or liability for changes in fair value. The remaining cumulative adjustments to the hedged item and accumulated amounts reported in OCI are accounted for in the same manner as other components of the carrying amount of the asset or liability. For example, for financial debt instruments such as AFS debt securities, loans or long-term debt, these amounts are amortized into net interest income over the remaining life of the asset or liability similar to other amortized cost basis adjustments. If the hedged item is derecognized, the accumulated amounts reported in OCI are immediately reclassified to net interest income. If the derivative continues to be held after fair value hedge accounting ceases, we carry the derivative on the balance sheet at its fair value with changes in fair value included in noninterest income.

When we discontinue cash flow hedge accounting and it is probable that the forecasted transaction will occur, the accumulated amount reported in OCI at the de-designation date continues to be reported in OCI until the forecasted transaction affects earnings at which point the related OCI amount is reclassified to net interest income. If cash flow hedge accounting is discontinued and it is probable the forecasted transaction will no longer occur, the accumulated gains and losses reported in OCI at the de-designation date is immediately reclassified to noninterest income. If the derivative continues to be held after cash flow hedge accounting ceases, we carry the derivative on the balance sheet at its fair value with changes in fair value included in noninterest income.

EMBEDDED DERIVATIVES We may purchase or originate financial instruments that contain an embedded derivative. At inception of the financial instrument, we assess (1) if the economic characteristics of the embedded derivative are not clearly and closely related to the economic characteristics of the host contract, (2) if the financial instrument that embodies both the embedded derivative and the host contract is not measured at fair value with changes in fair value reported in earnings, and (3) if a separate instrument with the same terms as the embedded instrument would meet the definition of a derivative. If the embedded derivative meets all of these conditions, we separate it from the hybrid contract by recording the bifurcated derivative at fair value and the remaining host contract at the difference between the basis of the hybrid instrument and the fair value of the bifurcated derivative. The bifurcated derivative is carried at fair value with changes recorded in noninterest income and reported within the balance sheet as a derivative asset or liability. The accounting for the remaining host contract is the same as other assets and liabilities of a similar type and reported within the balance sheet based upon the accounting classification of the instrument.

COUNTERPARTY CREDIT RISK AND NETTING By using derivatives, we are exposed to counterparty credit risk, which is the risk that counterparties to the derivative contracts do not perform as expected. If a counterparty fails to perform, our counterparty credit risk is equal to the amount reported as a derivative asset on our balance sheet. The amounts reported as a derivative asset are derivative contracts in a gain position, and to the extent subject to legally enforceable master netting arrangements, net of derivatives in a loss position with the same counterparty and cash collateral received. We minimize counterparty credit risk through credit approvals, limits, monitoring procedures, executing master netting arrangements and obtaining collateral, where appropriate. Counterparty credit risk related to derivatives is considered in determining fair value and our assessment of hedge effectiveness. To the extent derivatives subject to master netting arrangements meet the applicable requirements, including determining the legal enforceability of the arrangement, it is our policy to present derivative balances and related cash collateral amounts net on the balance sheet. We incorporate adjustments to reflect counterparty credit risk (credit valuation adjustments (CVA)) in determining the fair value of our derivatives. CVA, which considers the effects of enforceable master netting agreements and collateral arrangements, reflects market-based views of the credit quality of each counterparty. We estimate CVA based on observed credit spreads in the credit default swap market and indices indicative of the credit quality of the counterparties to our derivatives.

Cash collateral exchanged related to our interest rate derivatives, and certain commodity and equity derivatives, with centrally cleared counterparties is recorded as a reduction of the derivative fair value asset and liability balances, as opposed to separate non-derivative receivables or payables. This cash collateral, also referred to as variation margin, is exchanged based upon derivative fair value changes, typically on a one-day lag. For additional information on our derivatives and hedging activities, see Note 18 (Derivatives).

Equity Securities

Equity securities exclude investments that represent a controlling interest in the investee. Marketable equity securities have readily determinable fair values and include, but are not limited to securities used in our trading activities. Marketable equity securities are recorded at fair value with unrealized gains and losses, due to changes in fair value, reflected in net gains (losses) on equity securities within noninterest income. Realized and unrealized gains and losses from marketable equity securities related to our trading activity are recognized in net gains from trading activities. The remaining marketable equity securities realized and unrealized gains and losses are recognized in net gains from equity securities. Dividend income from marketable equity securities is recognized in interest income.

Nonmarketable equity securities do not have readily determinable fair values. These securities are accounted for under one of the following accounting methods:

- Fair value: This method is an election. The securities are recorded at fair value with unrealized gains or losses reflected in noninterest income;
- Equity method: This method is applied when we have the ability to exert significant influence over the investee. These securities are carried at cost and adjusted for our share of the investee's earnings or losses, less any dividends received and/or impairments;
- Cost method: This method is required for specific securities, such as Federal Reserve Bank stock and Federal Home Loan Bank stock. These investments are held at amortized cost less any impairments. If impaired, the carrying value is written down to the fair value of the security;
- Measurement alternative: This method is followed by all remaining nonmarketable equity securities. These securities are initially carried at amortized cost and are remeasured to fair value as of the date of an orderly observable transaction of the same or similar security of the same issuer. These securities are also adjusted for any impairments.

Equity method adjustments for our share of the investee's earnings or losses are recognized in other noninterest income. All other realized and unrealized gains and losses, including impairment losses, from nonmarketable equity securities are recognized in net gains from equity securities. Dividends from equity method securities are recognized as a reduction of the investment carrying value. Dividend income from all other nonmarketable equity securities is recognized in interest income.

Our review for impairment for equity method, cost method and measurement alternative securities includes an analysis of the facts and circumstances of each security, the intent or requirement to sell the security, the expectations of cash flows, capital needs and the viability of its business model. For equity method and cost method investments, we reduce the asset's carrying value when we consider declines in value to be other than temporary. For securities accounted for under the measurement alternative, we reduce the asset value when the fair value is less than carrying value, without the consideration of recovery.

Pension Accounting

We sponsor a frozen noncontributory qualified defined benefit retirement plan, the Wells Fargo & Company Cash Balance Plan (Cash Balance Plan), which covers eligible employees of Wells Fargo. We also sponsor nonqualified defined benefit plans that provide supplemental defined benefit pension benefits to certain eligible employees. We account for our defined benefit pension plans using an actuarial model. Two principal assumptions in determining net periodic pension cost are the discount rate and the expected long-term rate of return on plan assets.

A discount rate is used to estimate the present value of our future pension benefit obligations. We use a consistent methodology to determine the discount rate using a yield curve with maturity dates that closely match the estimated timing of the expected benefit payments for our plans. The yield curve is derived from a broad-based universe of high-quality corporate bonds as of the measurement date.

Our determination of the reasonableness of our expected long-term rate of return on plan assets is highly quantitative by nature. We evaluate the current asset allocations and expected returns under two sets of conditions: (1) projected returns using several forward-looking capital market assumptions, and (2) historical returns for the main asset classes dating back to 1970 or the earliest period for which historical data was readily available for the asset classes included. Using long-term historical data allows us to capture multiple economic environments, which we believe is relevant when using historical returns. We place greater emphasis on the forward-looking return and risk assumptions than on historical results. We use the resulting projections to derive a base line expected rate of return and risk level for the Cash Balance Plan's prescribed asset mix. We evaluate the portfolio based on: (1) the established target asset allocations over short term (one-year) and longer term (ten-year) investment horizons, and (2) the range of potential outcomes over these horizons within specific standard deviations. We perform the above analyses to assess the reasonableness of our expected long-term rate of return on plan assets. We consider the expected rate of return to be a long-term average view of expected returns.

At year end, we re-measure our defined benefit plan liabilities and related plan assets and recognize any resulting actuarial gain or loss in other comprehensive income. We generally amortize net actuarial gain or loss in excess of a 5% corridor from accumulated OCI into net periodic pension cost over the estimated average remaining participation period, which at December 31, 2019, is 19 years. See Note 23 (Employee Benefits and Other Expenses) for additional information on our pension accounting.

Income Taxes

We file consolidated and separate company U.S. federal income tax returns, non-U.S. tax returns and various combined and separate company state tax returns.

We evaluate two components of income tax expense: current and deferred income tax expense. Current income tax expense represents our estimated taxes to be paid or refunded for the current period and includes income tax expense related to our uncertain tax positions. Uncertain tax positions that meet the more likely than not recognition threshold are measured to determine the amount of benefit to recognize. An uncertain tax position is measured at the largest amount of benefit that management believes has a greater than 50% likelihood of realization upon settlement. Tax benefits not meeting our realization criteria represent unrecognized tax benefits.

Deferred income tax expense results from changes in deferred tax assets and liabilities between periods. We determine deferred income taxes using the balance sheet method. Under this method, the net deferred tax asset or liability is based on the tax effects of the differences between the book and tax basis of assets and liabilities, and enacted changes in tax rates and laws are recognized in the period in which they occur. Deferred tax assets are recognized subject to management's judgment that realization is more likely than not.

See Note 24 (Income Taxes) to Financial Statements in this Report for a further description of our provision for income taxes and related income tax assets and liabilities.

Stock-Based Compensation

We have stock-based employee compensation plans as more fully discussed in Note 21 (Common Stock and Stock Plans). Our Long-Term Incentive Compensation Plan provides for awards of incentive and nonqualified stock options, stock appreciation rights, restricted shares, restricted share rights (RSRs), performance share awards (PSAs) and stock awards without restrictions. We measure the cost of employee services received in exchange for an award of equity instruments, such as stock options, RSRs or PSAs, based on the fair value of the award on the grant date. The cost is recognized in commission and incentive compensation in our income statement normally over the vesting period of the award; awards with graded vesting are expensed on a straight-line method. Awards to team members who are retirement eligible at the grant date are subject to immediate expensing upon grant. Awards to team members who become retirement eligible before the final vesting date are expensed between the grant date and the date the team member becomes retirement eligible. Except for retirement and other limited circumstances, RSRs are canceled when employment ends.

Beginning in 2013, certain RSRs and all PSAs granted include discretionary conditions that can result in forfeiture and are measured at fair value initially and subsequently until the discretionary conditions end. For these awards, the associated compensation expense fluctuates with changes in our stock price. For PSAs, compensation expense also fluctuates based on the estimated outcome of meeting the performance conditions. The total expense that will be recognized on these awards cannot be finalized until the determination of the awards that will vest.

Earnings Per Common Share

We compute earnings per common share by dividing net income applicable to common stock (net income less dividends on preferred stock and the excess of consideration transferred over carrying value of preferred stock redeemed, if any) by the average number of common shares outstanding during the period. We compute diluted earnings per common share using net income applicable to common stock and adding the effect of common stock equivalents (e.g., stock options, restricted share rights, convertible debentures and warrants) that are dilutive to the average number of common shares outstanding during the period.

Fair Value of Assets and Liabilities

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Fair value is based on the exit price notion while maximizing the use of observable inputs and minimizing the use of unobservable inputs.

We measure our assets and liabilities at fair value when we are required to record them at fair value, when we have elected the fair value option, and to fulfill fair value disclosure requirements. Assets and liabilities are recorded at fair value on a recurring or nonrecurring basis. Assets and liabilities that are recorded at fair value on a recurring basis require a fair value measurement at each reporting period. Those that are recorded at fair value on a nonrecurring basis are adjusted to fair value only as required through the application of an accounting method such as LOCOM, the measurement alternative, or write-downs of individual assets. Measurements of fair value prioritize observable inputs, where available.

We classify our assets and liabilities measured at fair value based upon a three-level hierarchy that assigns the highest priority to unadjusted quoted prices in active markets and the lowest priority to unobservable inputs. The three levels are as follows:

- Level 1 - Valuation is based upon quoted prices for identical instruments traded in active markets.
- Level 2 - Valuation is based upon quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-based valuation techniques for which all significant assumptions are observable in the market.
- Level 3 - Valuation is generated from techniques that use significant assumptions that are not observable in the market. These unobservable assumptions reflect estimates of assumptions that market participants would use in pricing the asset or liability. Valuation techniques include use of option pricing models, discounted cash flow models and similar techniques.

For valuations that use several inputs, the determination of whether that measurement is Level 2 or Level 3 is based on the significance of the unobservable inputs to the entire fair value measurement. See Note 19 (Fair Values of Assets and Liabilities) for a more detailed discussion of the valuation methodologies that we apply to our assets and liabilities.

Share Repurchases

From time to time we may enter into written repurchase plans pursuant to Rule 10b5-1 of the Securities Exchange Act of 1934, private forward repurchase contracts, or a combination of the two to complement our open-market common stock repurchase strategies. The stock repurchase transactions allow us to manage our share repurchases in a manner consistent with our capital plans submitted annually under the Comprehensive Capital Analysis and Review (CCAR) and to provide an economic benefit to the Company.

Under a Rule 10b5-1 repurchase plan, payments and receipt of repurchased shares settle on the same day. Shares repurchased reduce the total number of outstanding shares of common stock upon the settlement of each trade under the plan. During 2019 and 2018, we repurchased approximately 204 million and 12 million shares of our common stock, respectively, under Rule 10b5-1 repurchase plans. We had no shares repurchased under a Rule 10b5-1 repurchase plan during 2017.

We had no shares repurchased under private forward repurchase contracts in 2019. During 2018 and 2017, we repurchased approximately 82 million and 89 million shares of our common stock, respectively, under these contracts. We had no unsettled private forward repurchase contracts at December 31, 2019, December 31, 2018, or December 31, 2017. Under private forward repurchase contract transactions, our payments to counterparties are recognized in permanent equity in the quarter paid and are not subject to re-measurement. The classification of the up-front payments as permanent equity assures that we have appropriate repurchase timing consistent with our capital plans, which contemplate a fixed dollar amount available per quarter for share repurchases pursuant to the Board of Governors of the Federal Reserve System (FRB) supervisory guidance. In return, the counterparty agrees to deliver a variable number of shares based on a per share discount to the volume-weighted average stock price over the contract period. There are no scenarios where the contracts would not either physically settle in shares or allow us to choose the settlement method. Our total number of outstanding shares of common stock is not reduced until settlement of the contract.

Supplemental Cash Flow Information

Significant noncash activities are presented in Table 1.2.

Table 1.2: Supplemental Cash Flow Information

			Year ended December 31,
(in millions)	2019	2018	2017
Trading debt securities retained from securitization of MLHFS	$ **40,650**	37,265	52,435
Transfers from loans to MLHFS	**6,330**	5,366	5,500
Transfers from available-for-sale debt securities to held-to-maturity debt securities	**13,833**	16,479	50,405
Operating lease ROU assets acquired with operating lease liabilities (1)	**5,804**	—	—

(1) The year ended December 31, 2019, balance includes $4.9 billion from adoption of ASU 2016-02 – Leases (Topic 842) and $904 million attributable to new leases and changes from modified leases.

Subsequent Events

We have evaluated the effects of events that have occurred subsequent to December 31, 2019, and, except as disclosed in Note 17 (Legal Actions), Note 20 (Preferred Stock) and Note 27 (Operating Segments), there have been no material events that would require recognition in our 2019 consolidated financial statements or disclosure in the Notes to the consolidated financial statements.

Note 2: Business Combinations

There were no acquisitions during 2019 or 2018. As of December 31, 2019, we had no pending acquisitions.

During 2019, we completed the sale of our Institutional Retirement and Trust (IRT) business in July and the sale of our Eastdil Secured (Eastdil) business in October, recognizing pre-tax gains within other noninterest income of $1.1 billion and $362 million, respectively.

For the IRT business, we will continue to administer client assets at the direction of the buyer for up to 24 months from the closing date pursuant to a transition services agreement. The buyer will receive post-closing revenue from the client assets and will pay us a fee for certain costs that we incur to administer the client assets during the transition period. The transition services fee will be recognized as other noninterest income, and the expenses we incur will be recognized in the same manner as they were prior to the close of the sale. Transition period revenue is expected to approximate transition period expenses and is subject to downward adjustment as client assets transition to the buyer's platform. No IRT client assets were transitioned to the buyer's platform as of December 31, 2019. At December 31, 2019, we had assets under management (AUM) and assets under administration (AUA) associated with the IRT business of $21 billion and $915 billion, respectively.

During 2018, we completed the sale of Wells Fargo Shareowner Services in February, the sale of the automobile lending business of Reliable Financial Services, Inc., and Reliable Finance Holding Company in August, and the sale of 52 branches in Indiana, Ohio, Michigan and part of Wisconsin in November. Included with the branches sale were approximately $2.0 billion of deposits.

Note 3: Cash, Loan and Dividend Restrictions

Cash and cash equivalents may be restricted as to usage or withdrawal. FRB regulations require that each of our subsidiary banks maintain reserve balances on deposit with the Federal Reserve Banks. Table 3.1 provides a summary of restrictions on cash equivalents in addition to the FRB reserve cash balance requirements.

Table 3.1: Nature of Restrictions on Cash Equivalents

(in millions)		Dec 31, 2019	Dec 31, 2018
Average required reserve balance for FRB (1)	$	**11,374**	12,428
Reserve balance for non-U.S. central banks		**460**	517
Segregated for benefit of brokerage customers under federal and other brokerage regulations		**733**	1,135
Related to consolidated variable interest entities (VIEs) that can only be used to settle liabilities of VIEs		**300**	147

(1) FRB required reserve balance represents average for the years ended December 31, 2019, and December 31, 2018.

Federal law restricts the amount and the terms of both credit and non-credit transactions between a bank and its nonbank affiliates. These covered transactions may not exceed 10% of the bank's capital and surplus (which for this purpose represents Tier 1 and Tier 2 capital, as calculated under the risk-based capital (RBC) guidelines, plus the balance of the ACL excluded from Tier 2 capital) with any single nonbank affiliate and 20% of the bank's capital and surplus with all its nonbank affiliates. Transactions that are extensions of credit may require collateral to be held to provide added security to the bank. For further discussion of RBC, see Note 29 (Regulatory and Agency Capital Requirements) in this Report.

Dividends paid by our subsidiary banks are subject to various federal and state regulatory limitations. Dividends that may be paid by a national bank without the express approval of the Office of the Comptroller of the Currency (OCC) are limited to that bank's retained net profits for the preceding two calendar years plus retained net profits up to the date of any dividend declaration in the current calendar year. Retained net profits, as defined by the OCC, consist of net income less dividends declared during the period.

We have a state-chartered subsidiary bank that is subject to state regulations that limit dividends. Under these provisions and regulatory limitations, our national and state-chartered subsidiary banks could have declared additional dividends of $5.4 billion at December 31, 2019, without obtaining prior regulatory approval. We have elected to retain higher capital at our national and state-chartered subsidiary banks in order to meet internal capital policy minimums and regulatory requirements. Our nonbank subsidiaries are also limited by certain federal and state statutory provisions and regulations covering the amount of dividends that may be paid in any given year. In addition, under a Support Agreement dated June 28, 2017, as amended and restated on June 26, 2019, among Wells Fargo & Company, the parent holding company (the "Parent"), WFC Holdings, LLC, an intermediate holding company and subsidiary of the Parent (the "IHC"), Wells Fargo Bank, N.A., Wells Fargo Securities, LLC, Wells Fargo Clearing Services, LLC, and certain other direct and indirect subsidiaries of the Parent designated as material entities for resolution planning purposes or identified as related support entities in our resolution plan, the IHC may be restricted from making dividend payments to the Parent if certain liquidity and/or capital metrics fall below defined triggers, or if the Parent's board of directors authorizes it to file a case under the U.S. Bankruptcy Code. Based on retained earnings at December 31, 2019, our nonbank subsidiaries could have declared additional dividends of $25.9 billion at December 31, 2019, without obtaining prior regulatory approval.

The FRB's Capital Plan Rule (codified at 12 CFR 225.8 of Regulation Y) establishes capital planning and prior notice and approval requirements for capital distributions including dividends by certain large bank holding companies. The FRB has also published guidance regarding its supervisory expectations for capital planning, including capital policies regarding the process relating to common stock dividend and repurchase decisions in the FRB's SR Letter 15-18. The effect of this guidance is to require the approval of the FRB (or specifically under the Capital Plan Rule, a notice of non-objection) for the repurchase or redemption of common or perpetual preferred stock as well as to raise the per share quarterly dividend from its current level of $0.51 per share as declared by the Company's Board of Directors (Board) on January 28, 2020, payable on March 1, 2020.

Note 4: Trading Activities

Table 4.1 presents a summary of our trading assets and liabilities measured at fair value through earnings.

Table 4.1: Trading Assets and Liabilities

(in millions)		Dec 31, 2019	Dec 31, 2018
Trading assets:			
Debt securities	$	**79,733**	69,989
Equity securities		**27,440**	19,449
Loans held for sale		**972**	1,469
Gross trading derivative assets		**34,825**	29,216
Netting (1)		**(21,463)**	(19,807)
Total trading derivative assets		**13,362**	9,409
Total trading assets		**121,507**	100,316
Trading liabilities:			
Short sale		**17,430**	19,720
Gross trading derivative liabilities		**33,861**	28,717
Netting (1)		**(26,074)**	(21,178)
Total trading derivative liabilities		**7,787**	7,539
Total trading liabilities	$	**25,217**	27,259

(1) Represents balance sheet netting for trading derivative asset and liability balances, and trading portfolio level counterparty valuation adjustments.

Table 4.2 provides a summary of the net interest income earned from trading securities, and net gains and losses due to the realized and unrealized gains and losses from trading activities. Net interest income also includes dividend income on trading securities and dividend expense on trading securities we have sold, but not yet purchased.

Table 4.2: Net Interest Income and Net Gains (Losses) on Trading Activities

		Year ended December 31,		
(in millions)		**2019**	2018	2017
Interest income:				
Debt securities	$	**3,130**	2,831	2,313
Equity securities		**579**	587	515
Loans held for sale		**78**	62	38
Total interest income		**3,787**	3,480	2,866
Less: Interest expense		**525**	587	416
Net interest income		**3,262**	2,893	2,450
Net gains (losses) from trading activities (1):				
Debt securities		**1,053**	(824)	125
Equity securities		**4,795**	(4,240)	3,394
Loans held for sale		**12**	(1)	45
Derivatives (2)		**(4,867)**	5,667	(3,022)
Total net gains from trading activities		**993**	602	542
Total trading-related net interest and noninterest income	$	**4,255**	3,495	2,992

(1) Represents realized gains (losses) from our trading activities and unrealized gains (losses) due to changes in fair value of our trading positions.
(2) Excludes economic hedging of mortgage banking and asset/liability management activities, for which hedge results (realized and unrealized) are reported with the respective hedged activities.

Note 5: Available-for-Sale and Held-to-Maturity Debt Securities

Table 5.1 provides the amortized cost and fair value by major categories of available-for-sale debt securities, which are carried at fair value, and held-to-maturity debt securities, which are carried at amortized cost. The net unrealized gains (losses) for available-for-sale debt securities are reported on an after-tax basis as a component of cumulative OCI. Information on debt securities held for trading is included in Note 4 (Trading Activities).

Table 5.1: Amortized Cost and Fair Value

(in millions)		Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value
December 31, 2019					
Available-for-sale debt securities:					
Securities of U.S. Treasury and federal agencies	**$**	**14,948**	**13**	**(1)**	**14,960**
Securities of U.S. states and political subdivisions (1)		**39,381**	**992**	**(36)**	**40,337**
Mortgage-backed securities:					
Federal agencies		**160,318**	**2,299**	**(164)**	**162,453**
Residential		**814**	**14**	**(1)**	**827**
Commercial		**3,899**	**41**	**(6)**	**3,934**
Total mortgage-backed securities		**165,031**	**2,354**	**(171)**	**167,214**
Corporate debt securities		**6,343**	**252**	**(32)**	**6,563**
Collateralized loan and other debt obligations		**29,693**	**125**	**(123)**	**29,695**
Other (2)		**4,664**	**50**	**(24)**	**4,690**
Total available-for-sale debt securities		**260,060**	**3,786**	**(387)**	**263,459**
Held-to-maturity debt securities:					
Securities of U.S. Treasury and federal agencies		**45,541**	**617**	**(19)**	**46,139**
Securities of U.S. states and political subdivisions		**13,486**	**286**	**(13)**	**13,759**
Federal agency and other mortgage-backed securities (3)		**94,869**	**2,093**	**(37)**	**96,925**
Other debt securities		**37**	**—**	**—**	**37**
Total held-to-maturity debt securities		**153,933**	**2,996**	**(69)**	**156,860**
Total (4)	**$**	**413,993**	**6,782**	**(456)**	**420,319**
December 31, 2018					
Available-for-sale debt securities:					
Securities of U.S. Treasury and federal agencies	$	13,451	3	(106)	13,348
Securities of U.S. states and political subdivisions (1)		48,994	716	(446)	49,264
Mortgage-backed securities:					
Federal agencies		155,974	369	(3,140)	153,203
Residential		2,638	142	(5)	2,775
Commercial		4,207	40	(22)	4,225
Total mortgage-backed securities		162,819	551	(3,167)	160,203
Corporate debt securities		6,230	131	(90)	6,271
Collateralized loan and other debt obligations		35,581	158	(396)	35,343
Other (2)		5,396	100	(13)	5,483
Total available-for-sale debt securities		272,471	1,659	(4,218)	269,912
Held-to-maturity debt securities:					
Securities of U.S. Treasury and federal agencies		44,751	4	(415)	44,340
Securities of U.S. states and political subdivisions		6,286	30	(116)	6,200
Federal agency and other mortgage-backed securities (3)		93,685	112	(2,288)	91,509
Other debt securities		66	—	—	66
Total held-to-maturity debt securities		144,788	146	(2,819)	142,115
Total (4)	$	417,259	1,805	(7,037)	412,027

(1) Includes investments in tax-exempt preferred debt securities issued by investment funds or trusts that predominantly invest in tax-exempt municipal securities. The amortized cost and fair value of these types of securities was $5.8 billion each at December 31, 2019, and $6.3 billion each at December 31, 2018.
(2) Largely includes asset-backed securities collateralized by student loans.
(3) Predominantly consists of federal agency mortgage-backed securities at both December 31, 2019, and December 31, 2018.
(4) We held debt securities from Federal National Mortgage Association (FNMA) and Federal Home Loan Mortgage Corporation (FHLMC) that each exceeded 10% of shareholders' equity, with an amortized cost of $112.1 billion and $89.9 billion and a fair value of $114.0 billion and $91.4 billion at December 31, 2019, and an amortized cost of $99.0 billion and $95.0 billion and a fair value of $97.6 billion and $93.0 billion at December 31, 2018, respectively.

Gross Unrealized Losses and Fair Value

Table 5.2 shows the gross unrealized losses and fair value of available-for-sale and held-to-maturity debt securities by length of time those individual securities in each category have been in a continuous loss position. Debt securities on which we have taken credit-related OTTI write-downs are categorized as being "less than 12 months" or "12 months or more" in a continuous loss position based on the point in time that the fair value declined to below the cost basis and not the period of time since the credit-related OTTI write-down.

Table 5.2: Gross Unrealized Losses and Fair Value

		Less than 12 months		12 months or more		Total	
(in millions)		Gross unrealized losses	Fair value	Gross unrealized losses	Fair value	Gross unrealized losses	Fair value
December 31, 2019							
Available-for-sale debt securities:							
Securities of U.S. Treasury and federal agencies	**$**	**—**	**—**	**(1)**	**2,423**	**(1)**	**2,423**
Securities of U.S. states and political subdivisions		**(10)**	**2,776**	**(26)**	**2,418**	**(36)**	**5,194**
Mortgage-backed securities:							
Federal agencies		**(50)**	**16,807**	**(114)**	**10,641**	**(164)**	**27,448**
Residential		**(1)**	**149**	**—**	**—**	**(1)**	**149**
Commercial		**(3)**	**998**	**(3)**	**244**	**(6)**	**1,242**
Total mortgage-backed securities		**(54)**	**17,954**	**(117)**	**10,885**	**(171)**	**28,839**
Corporate debt securities		**(9)**	**303**	**(23)**	**216**	**(32)**	**519**
Collateralized loan and other debt obligations		**(13)**	**5,070**	**(110)**	**16,789**	**(123)**	**21,859**
Other		**(12)**	**1,587**	**(12)**	**492**	**(24)**	**2,079**
Total available-for-sale debt securities		**(98)**	**27,690**	**(289)**	**33,223**	**(387)**	**60,913**
Held-to-maturity debt securities:							
Securities of U.S. Treasury and federal agencies		**(19)**	**989**	**—**	**—**	**(19)**	**989**
Securities of U.S. states and political subdivisions		**(9)**	**613**	**(4)**	**57**	**(13)**	**670**
Federal agency and other mortgage-backed securities		**(35)**	**5,825**	**(2)**	**31**	**(37)**	**5,856**
Total held-to-maturity debt securities		**(63)**	**7,427**	**(6)**	**88**	**(69)**	**7,515**
Total	**$**	**(161)**	**35,117**	**(295)**	**33,311**	**(456)**	**68,428**
December 31, 2018							
Available-for-sale debt securities:							
Securities of U.S. Treasury and federal agencies	$	(1)	498	(105)	6,204	(106)	6,702
Securities of U.S. states and political subdivisions		(73)	9,746	(373)	9,017	(446)	18,763
Mortgage-backed securities:							
Federal agencies		(42)	10,979	(3,098)	112,252	(3,140)	123,231
Residential		(3)	398	(2)	69	(5)	467
Commercial		(20)	1,972	(2)	79	(22)	2,051
Total mortgage-backed securities		(65)	13,349	(3,102)	112,400	(3,167)	125,749
Corporate debt securities		(64)	1,965	(26)	298	(90)	2,263
Collateralized loan and other debt obligations		(388)	28,306	(8)	553	(396)	28,859
Other		(7)	819	(6)	159	(13)	978
Total available-for-sale debt securities		(598)	54,683	(3,620)	128,631	(4,218)	183,314
Held-to-maturity debt securities:							
Securities of U.S. Treasury and federal agencies		(3)	895	(412)	41,083	(415)	41,978
Securities of U.S. states and political subdivisions		(4)	598	(112)	3,992	(116)	4,590
Federal agency and other mortgage-backed securities		(5)	4,635	(2,283)	77,741	(2,288)	82,376
Total held-to-maturity debt securities		(12)	6,128	(2,807)	122,816	(2,819)	128,944
Total	$	(610)	60,811	(6,427)	251,447	(7,037)	312,258

We have assessed each debt security with gross unrealized losses included in the previous table for credit impairment. As part of that assessment we evaluated and concluded that we do not intend to sell any of the debt securities, and that it is more likely than not that we will not be required to sell, prior to recovery of the amortized cost basis. We evaluate, where necessary, whether credit impairment exists by comparing the present value of the expected cash flows to the debt securities' amortized cost basis.

For descriptions of the factors we consider when analyzing debt securities for impairment, see Note 1 (Summary of Significant Accounting Policies) and below.

SECURITIES OF U.S. TREASURY AND FEDERAL AGENCIES AND FEDERAL AGENCY MORTGAGE-BACKED SECURITIES (MBS) The unrealized losses associated with U.S. Treasury and federal agency securities and federal agency MBS are generally driven by changes in interest rates and not due to credit losses given the explicit or implicit guarantees provided by the U.S. government.

SECURITIES OF U.S. STATES AND POLITICAL SUBDIVISIONS The unrealized losses associated with securities of U.S. states and political subdivisions are usually driven by changes in the relationship between municipal and term funding credit curves rather than by changes to the credit quality of the underlying securities. Substantially all of these investments with unrealized losses are investment grade. The securities were generally underwritten in accordance with our own investment standards prior to the decision to purchase. Some of these securities are guaranteed by a bond insurer, but we did not rely on this guarantee when making our investment decision. These investments will continue to be monitored as part of our ongoing impairment analysis but are expected to perform, even if the rating agencies reduce the credit rating of the bond insurers. As a result, we expect to recover the entire amortized cost basis of these securities.

RESIDENTIAL AND COMMERCIAL MBS The unrealized losses associated with private residential MBS and commercial MBS are generally driven by changes in projected collateral losses, credit spreads and interest rates. We assess for credit impairment by estimating the present value of expected cash flows. The key assumptions for determining expected cash flows include default rates, loss severities and/or prepayment rates. We estimate security losses by forecasting the underlying mortgage loans in each transaction. We use forecasted loan performance to project cash flows to the various tranches in the structure. We also consider cash flow forecasts and, as applicable, independent industry analyst reports and forecasts, sector credit ratings, and other independent market data. Based upon our assessment of the expected credit losses and the credit enhancement level of the securities, we expect to recover the entire amortized cost basis of these securities.

CORPORATE DEBT SECURITIES The unrealized losses associated with corporate debt securities are predominantly related to unsecured debt obligations issued by various corporations. We evaluate the financial performance of each issuer on a quarterly basis to determine if the issuer can make all contractual principal and interest payments. Based upon this assessment, we expect to recover the entire amortized cost basis of these securities.

COLLATERALIZED LOAN AND OTHER DEBT OBLIGATIONS The unrealized losses associated with collateralized loan and other debt obligations relate to securities predominantly backed by commercial collateral. The unrealized losses are typically driven by changes in projected collateral losses, credit spreads and interest rates. We assess for credit impairment by estimating the present value of expected cash flows. The key assumptions for determining expected cash flows include default rates, loss severities and prepayment rates. We also consider cash flow forecasts and, as applicable, independent industry analyst reports and forecasts, sector credit ratings, and other independent market data. Based upon our assessment of the expected credit losses and the credit enhancement level of the securities, we expect to recover the entire amortized cost basis of these securities.

OTHER DEBT SECURITIES The unrealized losses associated with other debt securities predominantly relate to other asset-backed securities. The losses are usually driven by changes in projected collateral losses, credit spreads and interest rates. We assess for credit impairment by estimating the present value of expected cash flows. The key assumptions for determining expected cash flows include default rates, loss severities and prepayment rates. Based upon our assessment of the expected credit losses and the credit enhancement level of the securities, we expect to recover the entire amortized cost basis of these securities.

OTHER DEBT SECURITIES MATTERS The fair values of our debt securities could decline in the future if the underlying performance of the collateral for the residential and commercial MBS or other securities deteriorate, and our credit enhancement levels do not provide sufficient protection to our contractual principal and interest. As a result, there is a risk that significant OTTI may occur in the future.

Table 5.3 shows the gross unrealized losses and fair value of the available-for-sale and held-to-maturity debt securities by those rated investment grade and those rated less than investment grade, according to their lowest credit rating by Standard & Poor's Rating Services (S&P) or Moody's Investors Service (Moody's). Credit ratings express opinions about the credit quality of a debt security. Debt securities rated investment grade, that is those rated BBB- or higher by S&P or Baa3 or higher by Moody's, are generally considered by the rating agencies and market participants to be low credit risk. Conversely, debt securities rated below investment grade, labeled as "speculative grade" by the rating agencies, are considered to be distinctively higher credit risk than investment grade debt securities. We have also included debt securities not rated by S&P or Moody's in the table below based on our internal credit grade of the debt securities (used for credit risk management purposes) equivalent to the credit rating assigned by major credit agencies. The unrealized losses and fair value of unrated debt securities categorized as investment grade based on internal credit grades were $7 million and $2.2 billion, respectively, at December 31, 2019, and $20 million and $5.2 billion, respectively, at December 31, 2018. If an internal credit grade was not assigned, we categorized the debt security as non-investment grade.

Table 5.3: Gross Unrealized Losses and Fair Value by Investment Grade

	Investment grade		Non-investment grade	
(in millions)	Gross unrealized losses	Fair value	Gross unrealized losses	Fair value
December 31, 2019				
Available-for-sale debt securities:				
Securities of U.S. Treasury and federal agencies	**$ (1)**	**2,423**	**—**	**—**
Securities of U.S. states and political subdivisions	**(32)**	**5,019**	**(4)**	**175**
Mortgage-backed securities:				
Federal agencies	**(164)**	**27,448**	**—**	**—**
Residential	**(1)**	**149**	**—**	**—**
Commercial	**(3)**	**1,158**	**(3)**	**84**
Total mortgage-backed securities	**(168)**	**28,755**	**(3)**	**84**
Corporate debt securities	**(3)**	**155**	**(29)**	**364**
Collateralized loan and other debt obligations	**(123)**	**21,859**	**—**	**—**
Other	**(13)**	**1,499**	**(11)**	**580**
Total available-for-sale debt securities	**(340)**	**59,710**	**(47)**	**1,203**
Held-to-maturity debt securities:				
Securities of U.S. Treasury and federal agencies	**(19)**	**989**	**—**	**—**
Securities of U.S. states and political subdivisions	**(13)**	**670**	**—**	**—**
Federal agency and other mortgage-backed securities	**(25)**	**5,428**	**(12)**	**428**
Total held-to-maturity debt securities	**(57)**	**7,087**	**(12)**	**428**
Total	**$ (397)**	**66,797**	**(59)**	**1,631**
December 31, 2018				
Available-for-sale debt securities:				
Securities of U.S. Treasury and federal agencies	$ (106)	6,702	—	—
Securities of U.S. states and political subdivisions	(425)	18,447	(21)	316
Mortgage-backed securities:				
Federal agencies	(3,140)	123,231	—	—
Residential	(2)	295	(3)	172
Commercial	(20)	1,999	(2)	52
Total mortgage-backed securities	(3,162)	125,525	(5)	224
Corporate debt securities	(17)	791	(73)	1,472
Collateralized loan and other debt obligations	(396)	28,859	—	—
Other	(7)	726	(6)	252
Total available-for-sale debt securities	(4,113)	181,050	(105)	2,264
Held-to-maturity debt securities:				
Securities of U.S. Treasury and federal agencies	(415)	41,978	—	—
Securities of U.S. states and political subdivisions	(116)	4,590	—	—
Federal agency and other mortgage-backed securities	(2,278)	81,977	(10)	399
Total held-to-maturity debt securities	(2,809)	128,545	(10)	399
Total	$ (6,922)	309,595	(115)	2,663

Contractual Maturities

Table 5.4 shows the remaining contractual maturities and contractual weighted-average yields (taxable-equivalent basis) of available-for-sale debt securities. The remaining contractual principal maturities for MBS do not consider prepayments. Remaining expected maturities will differ from contractual maturities because borrowers may have the right to prepay obligations before the underlying mortgages mature.

Table 5.4: Available-for-Sale Debt Securities – Fair Value by Contractual Maturity

			Remaining contractual maturity							
	Total		Within one year		After one year through five years		After five years through ten years		After ten years	
(in millions)	amount	Yield	Amount	Yield	Amount	Yield	Amount	Yield	Amount	Yield
December 31, 2019										
Available-for-sale debt securities (1):										
Fair value:										
Securities of U.S. Treasury and federal agencies	$ 14,960	1.96%	$ 9,980	1.88%	$ 4,674	2.12%	$ 46	1.83%	$ 260	2.25%
Securities of U.S. states and political subdivisions	40,337	4.82	2,687	2.91	3,208	3.31	4,245	3.21	30,197	5.38
Mortgage-backed securities:										
Federal agencies	162,453	3.43	—	—	152	3.40	1,326	2.52	160,975	3.44
Residential	827	2.78	—	—	—	—	—	—	827	2.78
Commercial	3,934	3.44	—	—	31	4.03	235	3.22	3,668	3.45
Total mortgage-backed securities	167,214	3.43	—	—	183	3.51	1,561	2.62	165,470	3.43
Corporate debt securities	6,563	4.83	460	5.37	2,251	4.93	3,070	4.64	782	4.98
Collateralized loan and other debt obligations	29,695	3.33	—	—	—	—	12,137	3.43	17,558	3.27
Other	4,690	2.57	35	4.16	687	3.15	1,408	1.80	2,560	2.81
Total available-for-sale debt securities at fair value	$ 263,459	3.57%	$ 13,162	2.22%	$ 11,003	3.12%	$ 22,467	3.39%	$ 216,827	3.69%

(1) Weighted-average yields displayed by maturity bucket are weighted based on fair value and predominantly represent contractual coupon rates without effect for any related hedging derivatives.

Table 5.5 shows the amortized cost and weighted-average yields of held-to-maturity debt securities by contractual maturity.

Table 5.5: Held-to-Maturity Debt Securities – Amortized Cost by Contractual Maturity

			Remaining contractual maturity							
	Total		Within one year		After one year through five years		After five years through ten years		After ten years	
(in millions)	amount	Yield	Amount	Yield	Amount	Yield	Amount	Yield	Amount	Yield
December 31, 2019										
Held-to-maturity debt securities (1):										
Amortized cost:										
Securities of U.S. Treasury and federal agencies	$ 45,541	2.12%	$ 1,296	1.75%	$ 42,242	2.13%	$ 1,244	2.00%	$ 759	2.33%
Securities of U.S. states and political subdivisions	13,486	4.89	—	—	87	5.95	1,866	4.80	11,533	4.90
Federal agency and other mortgage-backed securities	94,869	3.08	—	—	15	3.10	—	—	94,854	3.08
Other debt securities	37	3.18	—	—	—	—	37	3.18	—	—
Total held-to-maturity debt securities at amortized cost	$ 153,933	2.95%	$ 1,296	1.75%	$ 42,344	2.14%	$ 3,147	3.68%	$ 107,146	3.27%

(1) Weighted-average yields displayed by maturity bucket are weighted based on amortized cost and predominantly represent contractual coupon rates.

Table 5.6 shows the fair value of held-to-maturity debt securities by contractual maturity.

Table 5.6: Held-to-Maturity Debt Securities – Fair Value by Contractual Maturity

			Remaining contractual maturity			
		Total	Within one year	After one year through five years	After five years through ten years	After ten years
(in millions)		amount	Amount	Amount	Amount	Amount
December 31, 2019						
Held-to-maturity debt securities:						
Fair value:						
Securities of U.S. Treasury and federal agencies	$	46,139	1,301	42,830	1,268	740
Securities of U.S. states and political subdivisions		13,759	—	87	1,940	11,732
Federal agency and other mortgage-backed securities		96,925	—	15	—	96,910
Other debt securities		37	—	—	37	—
Total held-to-maturity debt securities at fair value	$	156,860	1,301	42,932	3,245	109,382

Realized Gains and Losses

Table 5.7 shows the gross realized gains and losses on sales and OTTI write-downs related to available-for-sale debt securities.

Table 5.7: Realized Gains and Losses

		Year ended December 31,		
(in millions)		**2019**	2018	2017
Gross realized gains	**$**	**227**	155	948
Gross realized losses		**(24)**	(19)	(207)
OTTI write-downs		**(63)**	(28)	(262)
Net realized gains from available-for-sale debt securities	**$**	**140**	108	479

Other-Than-Temporary Impaired Debt Securities

Table 5.8 shows the detail of total OTTI write-downs included in earnings for available-for-sale debt securities. There were no OTTI write-downs on held-to-maturity debt securities during the years ended December 31, 2019, 2018 or 2017.

Table 5.8: Detail of OTTI Write-downs

		Year ended December 31,		
(in millions)		**2019**	2018	2017
Debt securities OTTI write-downs included in earnings:				
Securities of U.S. states and political subdivisions	**$**	**33**	2	150
Mortgage-backed securities:				
Residential		**—**	4	11
Commercial		**17**	18	80
Corporate debt securities		**13**	—	21
Other debt securities		**—**	4	—
Total debt securities OTTI write-downs included in earnings	**$**	**63**	28	262

Table 5.9 shows the detail of OTTI write-downs on available-for-sale debt securities included in earnings and the related changes in OCI for the same securities.

Table 5.9: OTTI Write-downs Included in Earnings and the Related Changes in OCI

	Year ended December 31,		
(in millions)	**2019**	2018	2017
OTTI on debt securities			
Recorded as part of gross realized losses:			
Credit-related OTTI	$ **27**	27	119
Intent-to-sell OTTI	**36**	1	143
Total recorded as part of gross realized losses	**63**	28	262
Changes to OCI for losses (reversal of losses) in non-credit-related OTTI (1):			
Securities of U.S. states and political subdivisions	**(1)**	(2)	(5)
Residential mortgage-backed securities	**(1)**	2	(1)
Commercial mortgage-backed securities	**2**	(11)	(51)
Other debt securities	**1**	—	—
Total changes to OCI for non-credit-related OTTI	**1**	(11)	(57)
Total OTTI losses recorded on debt securities	$ **64**	17	205

(1) Represents amounts recorded to OCI for impairment of debt securities, due to factors other than credit that have also had credit-related OTTI write-downs during the period. Increases represent initial or subsequent non-credit-related OTTI on debt securities. Decreases represent partial to full reversal of impairment due to recoveries in the fair value of debt securities due to non-credit factors.

Table 5.10 presents a rollforward of the OTTI credit loss that has been recognized in earnings as a write-down of available-for-sale debt securities we still own (referred to as "credit-impaired" debt securities) and do not intend to sell. We have not recognized OTTI on held-to-maturity debt securities we still own. Recognized credit loss represents the difference between the present value of expected future cash flows discounted using the security's current effective interest rate and the amortized cost basis of the security prior to considering credit loss.

Table 5.10: Rollforward of OTTI Credit Loss

	Year ended December 31,		
(in millions)	**2019**	2018	2017
Credit loss recognized, beginning of year	$ **562**	742	1,043
Additions:			
For securities with initial credit impairments	**6**	1	9
For securities with previous credit impairments	**21**	26	110
Total additions	**27**	27	119
Reductions:			
For securities sold, matured, or intended/required to be sold	**(390)**	(204)	(414)
For recoveries of previous credit impairments (1)	**—**	(3)	(6)
Total reductions	**(390)**	(207)	(420)
Credit loss recognized, end of year	$ **199**	562	742

(1) Recoveries of previous credit impairments result from increases in expected cash flows subsequent to credit loss recognition. Such recoveries are reflected prospectively as interest yield adjustments using the effective interest method.

Note 6: Loans and Allowance for Credit Losses

Table 6.1 presents total loans outstanding by portfolio segment and class of financing receivable. Outstanding balances include unearned income, net deferred loan fees or costs, and unamortized discounts and premiums. These amounts were less than 1% of our total loans outstanding at December 31, 2019, and December 31, 2018.

Table 6.1: Loans Outstanding

					December 31,
(in millions)	**2019**	2018	2017	2016	2015
Commercial:					
Commercial and industrial	**$ 354,125**	350,199	333,125	330,840	299,892
Real estate mortgage	**121,824**	121,014	126,599	132,491	122,160
Real estate construction	**19,939**	22,496	24,279	23,916	22,164
Lease financing	**19,831**	19,696	19,385	19,289	12,367
Total commercial	**515,719**	513,405	503,388	506,536	456,583
Consumer:					
Real estate 1-4 family first mortgage	**293,847**	285,065	284,054	275,579	273,869
Real estate 1-4 family junior lien mortgage	**29,509**	34,398	39,713	46,237	53,004
Credit card	**41,013**	39,025	37,976	36,700	34,039
Automobile	**47,873**	45,069	53,371	62,286	59,966
Other revolving credit and installment	**34,304**	36,148	38,268	40,266	39,098
Total consumer	**446,546**	439,705	453,382	461,068	459,976
Total loans	**$ 962,265**	953,110	956,770	967,604	916,559

Our non-U.S. loans are reported by respective class of financing receivable in the table above. Substantially all of our non-U.S. loan portfolio is commercial loans. Table 6.2 presents total non-U.S. commercial loans outstanding by class of financing receivable.

Table 6.2: Non-U.S. Commercial Loans Outstanding

					December 31,
(in millions)	**2019**	2018	2017	2016	2015
Non-U.S. commercial loans:					
Commercial and industrial	**$ 70,494**	62,564	60,106	55,396	49,049
Real estate mortgage	**7,004**	6,731	8,033	8,541	8,350
Real estate construction	**1,434**	1,011	655	375	444
Lease financing	**1,220**	1,159	1,126	972	274
Total non-U.S. commercial loans	**$ 80,152**	71,465	69,920	65,284	58,117

Loan Concentrations

Loan concentrations may exist when there are amounts loaned to borrowers engaged in similar activities or similar types of loans extended to a diverse group of borrowers that would cause them to be similarly impacted by economic or other conditions. Commercial and industrial loans and lease financing to borrowers in the financial institutions except banks industry represented 12% and 11% of total loans at December 31, 2019 and 2018, respectively. At December 31, 2019 and 2018, we did not have concentrations representing 10% or more of our total loan portfolio in the commercial real estate (CRE) portfolios (real estate mortgage and real estate construction) by state or property type. Real estate 1-4 family non-PCI mortgage loans to borrowers in the state of California represented 13% and 12% of total loans at December 31, 2019 and 2018, respectively, and PCI loans were under 1% in both years. These California loans are generally diversified among the larger metropolitan areas in California, with no single area consisting of more than 5% of total loans. We continuously monitor changes in real estate values and underlying economic or market conditions for all geographic areas of our real estate 1-4 family mortgage portfolio as part of our credit risk management process.

Some of our real estate 1-4 family mortgage loans include an interest-only feature as part of the loan terms. These interest-only loans were approximately 3% and 4% of total loans at December 31, 2019 and 2018, respectively. Substantially all of these interest-only loans at origination were considered to be prime or near prime. We do not offer option adjustable-rate mortgage (ARM) products, nor do we offer variable-rate mortgage products with fixed payment amounts, commonly referred to within the financial services industry as negative amortizing mortgage loans. We acquired an option payment loan portfolio (Pick-a-Pay) from Wachovia with a majority of the portfolio identified as PCI loans. Since the acquisition, we have reduced our exposure to the option payment portion of the portfolio through our modification efforts and loss mitigation actions. At December 31, 2019, these option payment loans were less than 1% of total loans.

Our first and junior lien lines of credit products generally have draw periods of 10, 15 or 20 years, with variable interest rate and payment options during the draw period of (1) interest only or (2) 1.5% of total outstanding balance plus accrued interest. During the draw period, the borrower has the option of converting all or a portion of the line from a variable interest rate to a fixed rate with terms including interest-only payments for a fixed period between three to seven years or a fully amortizing payment with a fixed period between five to 30 years. At the end of the draw period, a line of credit generally converts to an amortizing payment schedule with repayment terms of up to 30 years based on the balance at time of conversion. At December 31, 2019, our lines of credit portfolio had an outstanding balance of $37.9 billion, of which $9.1 billion, or 24%, is in its amortization period, another $1.6 billion, or 4%, of our total outstanding balance, will reach their end of draw period during 2020 through 2021, $11.1 billion, or 29%, during 2022 through 2024, and $16.1 billion, or 43%, will convert in subsequent years. This portfolio had unfunded credit commitments of $58.9 billion at December 31, 2019. The lines that enter their amortization period may experience higher delinquencies and higher loss rates than the lines in their draw period. At December 31, 2019, $399 million, or 4%, of outstanding lines of credit that are in their amortization period were 30 or more days past due, compared with $488 million, or 2%, for lines in their draw period. We have considered this increased inherent risk in our ACL estimate. In anticipation of our borrowers reaching the end of their contractual commitment, we have created a program to inform, educate and help these borrowers transition from interest-only to fully-amortizing payments or full repayment. We monitor the performance of the borrowers moving through the program in an effort to refine our ongoing program strategy.

Loan Purchases, Sales, and Transfers

Table 6.3 summarizes the proceeds paid or received for purchases and sales of loans and transfers from loans held for investment to mortgages/loans held for sale at lower of cost or fair value. This loan activity primarily includes loans purchased and sales of whole loan or participating interests, whereby we receive or transfer a portion of a loan. The table excludes PCI loans, loans for which we have elected the fair value option, and government insured/guaranteed real estate 1-4 family first mortgage loans because their loan activity normally does not impact the ACL.

Table 6.3: Loan Purchases, Sales, and Transfers

						Year ended December 31,
			2019			2018
(in millions)	**Commercial**	**Consumer**	**Total**	Commercial	Consumer	Total
Purchases	**$ 2,028**	**3,126**	**5,154**	2,065	16	2,081
Sales	**(1,797)**	**(530)**	**(2,327)**	(1,905)	(261)	(2,166)
Transfers to MLHFS/LHFS	**(123)**	**(1,889)**	**(2,012)**	(617)	(1,995)	(2,612)

Commitments to Lend

A commitment to lend is a legally binding agreement to lend to a customer, usually at a stated interest rate, if funded, and for specific purposes and time periods. We generally require a fee to extend such commitments. Certain commitments are subject to loan agreements with covenants regarding the financial performance of the customer or borrowing base formulas on an ongoing basis that must be met before we are required to fund the commitment. We may reduce or cancel consumer commitments, including home equity lines and credit card lines, in accordance with the contracts and applicable law.

We may, as a representative for other lenders, advance funds or provide for the issuance of letters of credit under syndicated loan or letter of credit agreements. Any advances are generally repaid in less than a week and would normally require default of both the customer and another lender to expose us to loss. The unfunded amount of these temporary advance arrangements totaled approximately $75.4 billion at December 31, 2019.

We issue commercial letters of credit to assist customers in purchasing goods or services, typically for international trade. At December 31, 2019 and 2018, we had $862 million and $919 million, respectively, of outstanding issued commercial letters of credit. We also originate multipurpose lending commitments under which borrowers have the option to draw on the facility for different purposes in one of several forms, including a standby letter of credit. See Note 16 (Guarantees, Pledged Assets and Collateral, and Other Commitments) for additional information on standby letters of credit.

When we enter into commitments, we are exposed to credit risk. The maximum credit risk for these commitments will generally be lower than the contractual amount because a significant portion of these commitments are not funded. We manage the potential risk in commitments to lend by limiting the total amount of commitments, both by individual customer and in total, by monitoring the size and maturity structure of these commitments and by applying the same credit standards for these commitments as for all of our credit activities.

For loans and commitments to lend, we generally require collateral or a guarantee. We may require various types of collateral, including commercial and consumer real estate, automobiles, other short-term liquid assets such as accounts receivable or inventory and long-lived assets, such as equipment and other business assets. Collateral requirements for each loan or commitment may vary based on the loan product and our assessment of a customer's credit risk according to the specific credit underwriting, including credit terms and structure.

The contractual amount of our unfunded credit commitments, including unissued standby and commercial letters of credit, is summarized by portfolio segment and class of financing receivable in Table 6.4. The table excludes the issued standby and commercial letters of credit and temporary advance arrangements described above.

Table 6.4: Unfunded Credit Commitments

(in millions)	Dec 31, 2019	Dec 31, 2018
Commercial:		
Commercial and industrial	$ **346,991**	330,492
Real estate mortgage	**8,206**	6,984
Real estate construction	**17,729**	16,400
Total commercial	**372,926**	353,876
Consumer:		
Real estate 1-4 family first mortgage	**34,391**	29,736
Real estate 1-4 family junior lien mortgage	**36,916**	37,719
Credit card	**114,933**	109,840
Other revolving credit and installment	**25,898**	27,530
Total consumer	**212,138**	204,825
Total unfunded credit commitments	$ **585,064**	558,701

Allowance for Credit Losses

Table 6.5 presents the ACL, which consists of the allowance for loan losses and the allowance for unfunded credit commitments.

Table 6.5: Allowance for Credit Losses

					Year ended December 31,
(in millions)	**2019**	2018	2017	2016	2015
Balance, beginning of year	**$ 10,707**	11,960	12,540	12,512	13,169
Provision for credit losses	**2,687**	1,744	2,528	3,770	2,442
Interest income on certain impaired loans (1)	**(147)**	(166)	(186)	(205)	(198)
Loan charge-offs:					
Commercial:					
Commercial and industrial	**(802)**	(727)	(789)	(1,419)	(734)
Real estate mortgage	**(38)**	(42)	(38)	(27)	(59)
Real estate construction	**(1)**	—	—	(1)	(4)
Lease financing	**(70)**	(70)	(45)	(41)	(14)
Total commercial	**(911)**	(839)	(872)	(1,488)	(811)
Consumer:					
Real estate 1-4 family first mortgage	**(129)**	(179)	(240)	(452)	(507)
Real estate 1-4 family junior lien mortgage	**(118)**	(179)	(279)	(495)	(635)
Credit card	**(1,714)**	(1,599)	(1,481)	(1,259)	(1,116)
Automobile	**(647)**	(947)	(1,002)	(845)	(742)
Other revolving credit and installment	**(674)**	(685)	(713)	(708)	(643)
Total consumer	**(3,282)**	(3,589)	(3,715)	(3,759)	(3,643)
Total loan charge-offs	**(4,193)**	(4,428)	(4,587)	(5,247)	(4,454)
Loan recoveries:					
Commercial:					
Commercial and industrial	**195**	304	297	263	252
Real estate mortgage	**32**	70	82	116	127
Real estate construction	**13**	13	30	38	37
Lease financing	**19**	23	17	11	8
Total commercial	**259**	410	426	428	424
Consumer:					
Real estate 1-4 family first mortgage	**179**	267	288	373	245
Real estate 1-4 family junior lien mortgage	**184**	219	266	266	259
Credit card	**344**	307	239	207	175
Automobile	**341**	363	319	325	325
Other revolving credit and installment	**124**	118	121	128	134
Total consumer	**1,172**	1,274	1,233	1,299	1,138
Total loan recoveries	**1,431**	1,684	1,659	1,727	1,562
Net loan charge-offs	**(2,762)**	(2,744)	(2,928)	(3,520)	(2,892)
Other	**(29)**	(87)	6	(17)	(9)
Balance, end of year	**$ 10,456**	10,707	11,960	12,540	12,512
Components:					
Allowance for loan losses	**$ 9,551**	9,775	11,004	11,419	11,545
Allowance for unfunded credit commitments	**905**	932	956	1,121	967
Allowance for credit losses	**$ 10,456**	10,707	11,960	12,540	12,512
Net loan charge-offs as a percentage of average total loans	**0.29%**	0.29	0.31	0.37	0.33
Allowance for loan losses as a percentage of total loans	**0.99**	1.03	1.15	1.18	1.26
Allowance for credit losses as a percentage of total loans	**1.09**	1.12	1.25	1.30	1.37

(1) Certain impaired loans with an allowance calculated by discounting expected cash flows using the loan's effective interest rate over the remaining life of the loan recognize changes in allowance attributable to the passage of time as interest income.

Table 6.6 summarizes the activity in the ACL by our commercial and consumer portfolio segments.

Table 6.6: Allowance for Credit Losses Activity by Portfolio Segment

				Year ended December 31,		
			2019			2018
(in millions)	**Commercial**	**Consumer**	**Total**	Commercial	Consumer	Total
Balance, beginning of year	**$ 6,417**	**4,290**	**10,707**	6,632	5,328	11,960
Provision for credit losses	**518**	**2,169**	**2,687**	281	1,463	1,744
Interest income on certain impaired loans	**(46)**	**(101)**	**(147)**	(47)	(119)	(166)
Loan charge-offs	**(911)**	**(3,282)**	**(4,193)**	(839)	(3,589)	(4,428)
Loan recoveries	**259**	**1,172**	**1,431**	410	1,274	1,684
Net loan charge-offs	**(652)**	**(2,110)**	**(2,762)**	(429)	(2,315)	(2,744)
Other	**8**	**(37)**	**(29)**	(20)	(67)	(87)
Balance, end of year	**$ 6,245**	**4,211**	**10,456**	6,417	4,290	10,707

Table 6.7 disaggregates our ACL and recorded investment in loans by impairment methodology.

Table 6.7: Allowance for Credit Losses by Impairment Methodology

		Allowance for credit losses			Recorded investment in loans	
(in millions)	Commercial	Consumer	Total	Commercial	Consumer	Total
December 31, 2019						
Collectively evaluated (1)	**$ 5,778**	**3,364**	**9,142**	**512,586**	**436,081**	**948,667**
Individually evaluated (2)	**467**	**847**	**1,314**	**3,133**	**9,897**	**13,030**
PCI (3)	**—**	**—**	**—**	**—**	**568**	**568**
Total	**$ 6,245**	**4,211**	**10,456**	**515,719**	**446,546**	**962,265**
December 31, 2018						
Collectively evaluated (1)	$ 5,903	3,361	9,264	510,180	421,574	931,754
Individually evaluated (2)	514	929	1,443	3,221	13,126	16,347
PCI (3)	—	—	—	4	5,005	5,009
Total	$ 6,417	4,290	10,707	513,405	439,705	953,110

(1) Represents non-impaired loans evaluated collectively for impairment.
(2) Represents impaired loans evaluated individually for impairment.
(3) Represents the allowance for loan losses and related loan carrying value for PCI loans.

Credit Quality

We monitor credit quality by evaluating various attributes and utilize such information in our evaluation of the appropriateness of the ACL. The following sections provide the credit quality indicators we most closely monitor. The credit quality indicators are generally based on information as of our financial statement date, with the exception of updated Fair Isaac Corporation (FICO) scores and updated loan-to-value (LTV)/combined LTV (CLTV). We obtain FICO scores at loan origination and the scores are generally updated at least quarterly, except in limited circumstances, including compliance with the Fair Credit Reporting Act (FCRA). Generally, the LTV and CLTV indicators are updated in the second month of each quarter, with updates no older than September 30, 2019. See the "Purchased Credit-Impaired Loans" section in this Note for credit quality information on our PCI portfolio.

COMMERCIAL CREDIT QUALITY INDICATORS In addition to monitoring commercial loan concentration risk, we manage a consistent process for assessing commercial loan credit quality. Generally, commercial loans are subject to individual risk assessment using our internal borrower and collateral quality ratings. Our ratings are aligned to Pass and Criticized categories. The Criticized category includes Special Mention, Substandard, and Doubtful categories which are defined by bank regulatory agencies.

Table 6.8 provides a breakdown of outstanding commercial loans by risk category.

Table 6.8: Commercial Loans by Risk Category

(in millions)		Commercial and industrial	Real estate mortgage	Real estate construction	Lease financing	Total
December 31, 2019						
By risk category:						
Pass	**$**	**338,740**	**118,054**	**19,752**	**18,655**	**495,201**
Criticized		**15,385**	**3,770**	**187**	**1,176**	**20,518**
Total commercial loans (excluding PCI)		**354,125**	**121,824**	**19,939**	**19,831**	**515,719**
Total commercial PCI loans (carrying value)		**—**	**—**	**—**	**—**	**—**
Total commercial loans	**$**	**354,125**	**121,824**	**19,939**	**19,831**	**515,719**
December 31, 2018						
By risk category:						
Pass	$	335,412	116,514	22,207	18,671	492,804
Criticized		14,783	4,500	289	1,025	20,597
Total commercial loans (excluding PCI)		350,195	121,014	22,496	19,696	513,401
Total commercial PCI loans (carrying value)		4	—	—	—	4
Total commercial loans	$	350,199	121,014	22,496	19,696	513,405

Table 6.9 provides past due information for commercial loans, which we monitor as part of our credit risk management practices.

Table 6.9: Commercial Loans by Delinquency Status

(in millions)		Commercial and industrial	Real estate mortgage	Real estate construction	Lease financing	Total
December 31, 2019						
By delinquency status:						
Current-29 days past due (DPD) and still accruing	**$**	**352,110**	**120,967**	**19,845**	**19,484**	**512,406**
30-89 DPD and still accruing		**423**	**253**	**53**	**252**	**981**
90+ DPD and still accruing		**47**	**31**	**—**	**—**	**78**
Nonaccrual loans		**1,545**	**573**	**41**	**95**	**2,254**
Total commercial loans (excluding PCI)		**354,125**	**121,824**	**19,939**	**19,831**	**515,719**
Total commercial PCI loans (carrying value)		**—**	**—**	**—**	**—**	**—**
Total commercial loans	**$**	**354,125**	**121,824**	**19,939**	**19,831**	**515,719**
December 31, 2018						
By delinquency status:						
Current-29 DPD and still accruing	$	348,158	120,176	22,411	19,443	510,188
30-89 DPD and still accruing		508	207	53	163	931
90+ DPD and still accruing		43	51	—	—	94
Nonaccrual loans		1,486	580	32	90	2,188
Total commercial loans (excluding PCI)		350,195	121,014	22,496	19,696	513,401
Total commercial PCI loans (carrying value)		4	—	—	—	4
Total commercial loans	$	350,199	121,014	22,496	19,696	513,405

CONSUMER CREDIT QUALITY INDICATORS We have various classes of consumer loans that present unique risks. Loan delinquency, FICO credit scores and LTV for loan types are common credit quality indicators that we monitor and utilize in our evaluation of the appropriateness of the ACL for the consumer portfolio segment.

Many of our loss estimation techniques used for the ACL rely on delinquency-based models; therefore, delinquency is an important indicator of credit quality and the establishment of our ACL. Table 6.10 provides the outstanding balances of our consumer portfolio by delinquency status.

Table 6.10: Consumer Loans by Delinquency Status

(in millions)		Real estate 1-4 family first mortgage	Real estate 1-4 family junior lien mortgage	Credit card	Automobile	Other revolving credit and installment	Total
December 31, 2019							
By delinquency status:							
Current-29 DPD	**$**	**279,722**	**28,870**	**39,935**	**46,650**	**33,981**	**429,158**
30-59 DPD		**1,136**	**216**	**311**	**882**	**140**	**2,685**
60-89 DPD		**404**	**115**	**221**	**263**	**81**	**1,084**
90-119 DPD		**197**	**69**	**202**	**77**	**74**	**619**
120-179 DPD		**160**	**71**	**343**	**1**	**18**	**593**
180+ DPD		**503**	**155**	**1**	**—**	**10**	**669**
Government insured/guaranteed loans (1)		**10,999**	**—**	**—**	**—**	**—**	**10,999**
Loans held at fair value		**171**	**—**	**—**	**—**	**—**	**171**
Total consumer loans (excluding PCI)		**293,292**	**29,496**	**41,013**	**47,873**	**34,304**	**445,978**
Total consumer PCI loans (carrying value) (2)		**555**	**13**	**—**	**—**	**—**	**568**
Total consumer loans	**$**	**293,847**	**29,509**	**41,013**	**47,873**	**34,304**	**446,546**
December 31, 2018							
By delinquency status:							
Current-29 DPD	$	263,881	33,644	38,008	43,604	35,794	414,931
30-59 DPD		1,411	247	292	1,040	140	3,130
60-89 DPD		549	126	212	314	87	1,288
90-119 DPD		257	74	192	109	80	712
120-179 DPD		225	77	320	2	27	651
180+ DPD		822	213	1	—	20	1,056
Government insured/guaranteed loans (1)		12,688	—	—	—	—	12,688
Loans held at fair value		244	—	—	—	—	244
Total consumer loans (excluding PCI)		280,077	34,381	39,025	45,069	36,148	434,700
Total consumer PCI loans (carrying value) (2)		4,988	17	—	—	—	5,005
Total consumer loans	$	285,065	34,398	39,025	45,069	36,148	439,705

(1) Represents loans whose repayments are predominantly insured by the Federal Housing Administration (FHA) or guaranteed by the Department of Veterans Affairs (VA). Loans insured/guaranteed by the FHA/VA and 90+ DPD totaled $6.4 billion at December 31, 2019, compared with $7.7 billion at December 31, 2018.
(2) 26% of the adjusted unpaid principal balance for consumer PCI loans are 30+ DPD at December 31, 2019, compared with 18% at December 31, 2018.

Of the $1.9 billion of consumer loans not government insured/guaranteed that are 90 days or more past due at December 31, 2019, $855 million was accruing, compared with $2.4 billion past due and $885 million accruing at December 31, 2018.

Table 6.11 provides a breakdown of our consumer portfolio by FICO. Substantially all of the scored consumer portfolio has an updated FICO of 680 and above, reflecting a strong current borrower credit profile. FICO is not available for certain loan types, or may not be required if we deem it unnecessary due to strong collateral and other borrower attributes. Substantially all loans not requiring a FICO score are securities-based loans originated through retail brokerage, and totaled $9.1 billion at December 31, 2019, and $8.9 billion at December 31, 2018.

Table 6.11: Consumer Loans by FICO

(in millions)	Real estate 1-4 family first mortgage	Real estate 1-4 family junior lien mortgage	Credit card	Automobile	Other revolving credit and installment	Total
December 31, 2019						
By FICO:						
< 600	**$ 3,264**	**1,164**	**3,373**	**6,041**	**704**	**14,546**
600-639	**2,392**	**782**	**2,853**	**4,230**	**670**	**10,927**
640-679	**5,068**	**1,499**	**6,626**	**6,324**	**1,730**	**21,247**
680-719	**12,844**	**3,192**	**9,732**	**7,871**	**3,212**	**36,851**
720-759	**27,879**	**4,407**	**8,376**	**7,839**	**4,097**	**52,598**
760-799	**61,559**	**5,483**	**5,648**	**7,624**	**4,915**	**85,229**
800+	**165,460**	**11,851**	**4,037**	**7,900**	**7,585**	**196,833**
No FICO available	**3,656**	**1,118**	**368**	**44**	**2,316**	**7,502**
FICO not required	**—**	**—**	**—**	**—**	**9,075**	**9,075**
Government insured/guaranteed loans (1)	**11,170**	**—**	**—**	**—**	**—**	**11,170**
Total consumer loans (excluding PCI)	**293,292**	**29,496**	**41,013**	**47,873**	**34,304**	**445,978**
Total consumer PCI loans (carrying value) (2)	**555**	**13**	**—**	**—**	**—**	**568**
Total consumer loans	**$ 293,847**	**29,509**	**41,013**	**47,873**	**34,304**	**446,546**
December 31, 2018						
By FICO:						
< 600	$ 4,273	1,454	3,292	7,071	697	16,787
600-639	2,974	994	2,777	4,431	725	11,901
640-679	5,810	1,898	6,464	6,225	1,822	22,219
680-719	13,568	3,908	9,445	7,354	3,384	37,659
720-759	27,258	5,323	7,949	6,853	4,395	51,778
760-799	57,193	6,315	5,227	5,947	5,322	80,004
800+	151,465	13,190	3,794	7,099	8,411	183,959
No FICO available	4,604	1,299	77	89	2,507	8,576
FICO not required	—	—	—	—	8,885	8,885
Government insured/guaranteed loans (1)	12,932	—	—	—	—	12,932
Total consumer loans (excluding PCI)	280,077	34,381	39,025	45,069	36,148	434,700
Total consumer PCI loans (carrying value) (2)	4,988	17	—	—	—	5,005
Total consumer loans	$ 285,065	34,398	39,025	45,069	36,148	439,705

(1) Represents loans whose repayments are predominantly insured by the FHA or guaranteed by the VA.
(2) 41% of the adjusted unpaid principal balance for consumer PCI loans have FICO scores less than 680 and 19% where no FICO is available to us at December 31, 2019, compared with 45% and 15%, respectively, at December 31, 2018.

LTV refers to the ratio comparing the loan's unpaid principal balance to the property's collateral value. CLTV refers to the combination of first mortgage and junior lien mortgage (including unused line amounts for credit line products) ratios. LTVs and CLTVs are updated quarterly using a cascade approach which first uses values provided by automated valuation models (AVMs) for the property. If an AVM is not available, then the value is estimated using the original appraised value adjusted by the change in Home Price Index (HPI) for the property location. If an HPI is not available, the original appraised value is used. The HPI value is normally the only method considered for high value properties, generally with an original value of $1 million or more, as the AVM values have proven less accurate for these properties.

Table 6.12 shows the most updated LTV and CLTV distribution of the real estate 1-4 family mortgage loan portfolios. We consider the trends in residential real estate markets as we monitor credit risk and establish our ACL. In the event of a default, any loss should be limited to the portion of the loan amount in excess of the net realizable value of the underlying real estate collateral value. Certain loans do not have an LTV or CLTV due to industry data availability and portfolios acquired from or serviced by other institutions.

Table 6.12: Consumer Loans by LTV/CLTV

	December 31, 2019			December 31, 2018		
(in millions)	Real estate 1-4 family first mortgage by LTV	Real estate 1-4 family junior lien mortgage by CLTV	Total	Real estate 1-4 family first mortgage by LTV	Real estate 1-4 family junior lien mortgage by CLTV	Total
By LTV/CLTV:						
0-60%	$ 151,478	14,603	166,081	147,666	15,753	163,419
60.01-80%	114,795	9,663	124,458	104,477	11,183	115,660
80.01-100%	13,867	3,574	17,441	12,372	4,874	17,246
100.01-120% (1)	860	978	1,838	1,211	1,596	2,807
> 120% (1)	338	336	674	484	578	1,062
No LTV/CLTV available	784	342	1,126	935	397	1,332
Government insured/guaranteed loans (2)	11,170	—	11,170	12,932	—	12,932
Total consumer loans (excluding PCI)	293,292	29,496	322,788	280,077	34,381	314,458
Total consumer PCI loans (carrying value) (3)	555	13	568	4,988	17	5,005
Total consumer loans	$ 293,847	29,509	323,356	285,065	34,398	319,463

(1) Reflects total loan balances with LTV/CLTV amounts in excess of 100%. In the event of default, the loss content would generally be limited to only the amount in excess of 100% LTV/CLTV.
(2) Represents loans whose repayments are predominantly insured by the FHA or guaranteed by the VA.
(3) 9% of the adjusted unpaid principal balance for consumer PCI loans have LTV/CLTV amounts greater than 80% at December 31, 2019, compared with 10% at December 31, 2018.

NONACCRUAL LOANS Table 6.13 provides loans on nonaccrual status. PCI loans are excluded from this table because they continue to earn interest from accretable yield, independent of performance in accordance with their contractual terms.

Table 6.13: Nonaccrual Loans

(in millions)	Dec 31, 2019	Dec 31, 2018
Commercial:		
Commercial and industrial	$ 1,545	1,486
Real estate mortgage	573	580
Real estate construction	41	32
Lease financing	95	90
Total commercial	2,254	2,188
Consumer:		
Real estate 1-4 family first mortgage	2,150	3,183
Real estate 1-4 family junior lien mortgage	796	945
Automobile	106	130
Other revolving credit and installment	40	50
Total consumer	3,092	4,308
Total nonaccrual loans (excluding PCI)	$ 5,346	6,496

LOANS IN PROCESS OF FORECLOSURE Our recorded investment in consumer mortgage loans collateralized by residential real estate property that are in process of foreclosure was $3.5 billion and $4.6 billion at December 31, 2019 and 2018, respectively, which included $2.8 billion and $3.2 billion, respectively, of loans that are government insured/guaranteed. Under the Consumer Financial Protection Bureau guidelines, we do not commence the foreclosure process on real estate 1-4 family mortgage loans until after the loan is 120 days delinquent. Foreclosure procedures and timelines vary depending on whether the property address resides in a judicial or non-judicial state. Judicial states require the foreclosure to be processed through the state's courts while non-judicial states are processed without court intervention. Foreclosure timelines vary according to state law.

LOANS 90 DAYS OR MORE PAST DUE AND STILL ACCRUING Certain loans 90 days or more past due are still accruing, because they are (1) well-secured and in the process of collection or (2) real estate 1-4 family mortgage loans or consumer loans exempt under regulatory rules from being classified as nonaccrual until later delinquency, usually 120 days past due. PCI loans of $102 million at December 31, 2019, and $370 million at December 31, 2018, are not included in these past due and still accruing loans even when they are 90 days or more contractually past due. PCI loans are considered to be accruing because they continue to earn interest from accretable yield, independent of performance in accordance with their contractual terms.

Table 6.14 shows non-PCI loans 90 days or more past due and still accruing by class for loans not government insured/ guaranteed.

Table 6.14: Loans 90 Days or More Past Due and Still Accruing

(in millions)		**Dec 31, 2019**	Dec 31, 2018
Total (excluding PCI):	**$**	**7,285**	8,704
Less: FHA insured/VA guaranteed (1)		**6,352**	7,725
Total, not government insured/ guaranteed	**$**	**933**	979
By segment and class, not government insured/ guaranteed:			
Commercial:			
Commercial and industrial	**$**	**47**	43
Real estate mortgage		**31**	51
Total commercial		**78**	94
Consumer:			
Real estate 1-4 family first mortgage		**112**	124
Real estate 1-4 family junior lien mortgage		**32**	32
Credit card		**546**	513
Automobile		**78**	114
Other revolving credit and installment		**87**	102
Total consumer		**855**	885
Total, not government insured/ guaranteed	**$**	**933**	979

(1) Represents loans whose repayments are predominantly insured by the FHA or guaranteed by the VA.

IMPAIRED LOANS Table 6.15 summarizes key information for impaired loans. Our impaired loans predominantly include loans on nonaccrual status in the commercial portfolio segment and loans modified in a TDR, whether on accrual or nonaccrual status. Impaired loans generally have estimated losses which are included in the ACL. We do have impaired loans with no ACL when the loss content has been previously recognized through charge-offs, such as collateral dependent loans, or when loans are currently performing in accordance with their terms and no loss has been estimated. Impaired loans exclude PCI loans and loans that have been fully charged off or otherwise have zero recorded investment. Table 6.15 includes trial modifications that totaled $115 million at December 31, 2019, and $149 million at December 31, 2018.

For additional information on our impaired loans and ACL, see Note 1 (Summary of Significant Accounting Policies).

Table 6.15: Impaired Loans Summary

			Recorded investment		
(in millions)		Unpaid principal balance	Impaired loans	Impaired loans with related allowance for credit losses	Related allowance for credit losses
December 31, 2019					
Commercial:					
Commercial and industrial	**$**	**2,792**	**2,003**	**1,903**	**311**
Real estate mortgage		**1,137**	**974**	**803**	**110**
Real estate construction		**81**	**51**	**41**	**11**
Lease financing		**131**	**105**	**105**	**35**
Total commercial		**4,141**	**3,133**	**2,852**	**467**
Consumer:					
Real estate 1-4 family first mortgage (1)		**8,107**	**7,674**	**4,433**	**437**
Real estate 1-4 family junior lien mortgage		**1,586**	**1,451**	**925**	**144**
Credit card		**520**	**520**	**520**	**209**
Automobile		**138**	**81**	**42**	**8**
Other revolving credit and installment		**178**	**171**	**155**	**49**
Total consumer (2)		**10,529**	**9,897**	**6,075**	**847**
Total impaired loans (excluding PCI)	**$**	**14,670**	**13,030**	**8,927**	**1,314**
December 31, 2018					
Commercial:					
Commercial and industrial	$	3,057	2,030	1,730	319
Real estate mortgage		1,228	1,032	1,009	154
Real estate construction		74	47	46	9
Lease financing		146	112	112	32
Total commercial		4,505	3,221	2,897	514
Consumer:					
Real estate 1-4 family first mortgage		12,309	10,738	4,420	525
Real estate 1-4 family junior lien mortgage		1,886	1,694	1,133	183
Credit card		449	449	449	172
Automobile		153	89	43	8
Other revolving credit and installment		162	156	136	41
Total consumer (2)		14,959	13,126	6,181	929
Total impaired loans (excluding PCI)	$	19,464	16,347	9,078	1,443

(1) Impaired loans includes reduction of $1.7 billion reclassified to MLHFS during 2019.
(2) Includes the recorded investment of $1.2 billion and $1.3 billion at December 31, 2019 and 2018, respectively, of government insured/guaranteed loans that are predominantly insured by the FHA or guaranteed by the VA and generally do not have an ACL. Impaired loans may also have limited, if any, ACL when the recorded investment of the loan approximates estimated net realizable value as a result of charge-offs prior to a TDR modification.

Commitments to lend additional funds on loans whose terms have been modified in a TDR amounted to $500 million and $513 million at December 31, 2019 and 2018, respectively.

Table 6.16 provides the average recorded investment in impaired loans and the amount of interest income recognized on impaired loans by portfolio segment and class.

Table 6.16: Average Recorded Investment in Impaired Loans

						Year ended December 31,
		2019		2018		2017
(in millions)	**Average recorded investment**	**Recognized interest income**	Average recorded investment	Recognized interest income	Average recorded investment	Recognized interest income
Commercial:						
Commercial and industrial	**$ 2,150**	**129**	2,287	173	3,241	118
Real estate mortgage	**1,067**	**59**	1,193	89	1,328	91
Real estate construction	**52**	**6**	60	7	66	14
Lease financing	**93**	**1**	125	1	105	1
Total commercial	**3,362**	**195**	3,665	270	4,740	224
Consumer:						
Real estate 1-4 family first mortgage	**9,031**	**506**	11,522	664	13,326	730
Real estate 1-4 family junior lien mortgage	**1,586**	**99**	1,804	116	2,041	121
Credit card	**488**	**64**	407	50	323	36
Automobile	**84**	**12**	86	11	86	11
Other revolving credit and installment	**162**	**13**	142	10	117	8
Total consumer	**11,351**	**694**	13,961	851	15,893	906
Total impaired loans (excluding PCI)	**$ 14,713**	**889**	17,626	1,121	20,633	1,130
Interest income:						
Cash basis of accounting		**$ 241**		338		299
Other (1)		**648**		783		831
Total interest income		**$ 889**		1,121		1,130

(1) Includes interest recognized on accruing TDRs, interest recognized related to certain impaired loans which have an ACL calculated using discounting, and amortization of purchase accounting adjustments related to certain impaired loans.

TROUBLED DEBT RESTRUCTURINGS (TDRs) When, for economic or legal reasons related to a borrower's financial difficulties, we grant a concession for other than an insignificant period of time to a borrower that we would not otherwise consider, the related loan is classified as a TDR, the balance of which totaled $11.8 billion and $15.5 billion at December 31, 2019 and 2018, respectively. The majority of the decline in consumer TDRs was due to a reclassification of $1.7 billion in real estate 1-4 family first mortgage TDR loans to MLHFS. We do not consider loan resolutions such as foreclosure or short sale to be a TDR.

We may require some consumer borrowers experiencing financial difficulty to make trial payments generally for a period of three to four months, according to the terms of a planned permanent modification, to determine if they can perform according to those terms. These arrangements represent trial modifications, which we classify and account for as TDRs. While loans are in trial payment programs, their original terms are not considered modified and they continue to advance through delinquency status and accrue interest according to their original terms.

Table 6.17 summarizes our TDR modifications for the periods presented by primary modification type and includes the financial effects of these modifications. For those loans that modify more than once, the table reflects each modification that occurred during the period. Loans that both modify and are paid off or written-off within the period, as well as changes in recorded investment during the period for loans modified in prior periods, are not included in the table.

Table 6.17: TDR Modifications

	Primary modification type (1)				Financial effects of modifications		
(in millions)	Principal (2)	Interest rate reduction	Other concessions (3)	Total	Charge-offs (4)	Weighted average interest rate reduction	Recorded investment related to interest rate reduction (5)
Year ended December 31, 2019							
Commercial:							
Commercial and industrial	**$ 13**	**90**	**1,286**	**1,389**	**104**	**0.40%**	**$ 90**
Real estate mortgage	**—**	**38**	**417**	**455**	**—**	**0.69**	**38**
Real estate construction	**13**	**1**	**32**	**46**	**—**	**1.00**	**1**
Lease financing	**—**	**—**	**2**	**2**	**—**	**—**	**—**
Total commercial	**26**	**129**	**1,737**	**1,892**	**104**	**0.49**	**129**
Consumer:							
Real estate 1-4 family first mortgage	**110**	**13**	**868**	**991**	**2**	**2.04**	**68**
Real estate 1-4 family junior lien mortgage	**5**	**37**	**82**	**124**	**3**	**2.35**	**39**
Credit card	**—**	**376**	**—**	**376**	**—**	**12.91**	**376**
Automobile	**8**	**9**	**51**	**68**	**29**	**4.86**	**9**
Other revolving credit and installment	**1**	**51**	**7**	**59**	**—**	**8.07**	**52**
Trial modifications (6)	**—**	**—**	**13**	**13**	**—**	**—**	**—**
Total consumer	**124**	**486**	**1,021**	**1,631**	**34**	**10.19**	**544**
Total	**$ 150**	**615**	**2,758**	**3,523**	**138**	**8.33%**	**$ 673**
Year ended December 31, 2018							
Commercial:							
Commercial and industrial	$ 13	29	2,310	2,352	58	1.18%	$ 29
Real estate mortgage	—	44	375	419	—	0.88	44
Real estate construction	—	—	25	25	—	—	—
Lease financing	—	—	63	63	—	—	—
Total commercial	13	73	2,773	2,859	58	1.00	73
Consumer:							
Real estate 1-4 family first mortgage	209	26	1,042	1,277	4	2.25	119
Real estate 1-4 family junior lien mortgage	7	41	113	161	5	2.14	45
Credit card	—	336	—	336	—	12.54	336
Automobile	13	16	55	84	30	6.21	16
Other revolving credit and installment	—	49	12	61	—	7.95	49
Trial modifications (6)	—	—	8	8	—	—	—
Total consumer	229	468	1,230	1,927	39	8.96	565
Total	$ 242	541	4,003	4,786	97	8.06%	$ 638
Year ended December 31, 2017							
Commercial:							
Commercial and industrial	$ 24	45	2,912	2,981	173	0.64%	$ 45
Real estate mortgage	5	59	507	571	20	1.28	59
Real estate construction	—	1	26	27	—	0.69	1
Lease financing	—	—	37	37	—	—	—
Total commercial	29	105	3,482	3,616	193	1.00	105
Consumer:							
Real estate 1-4 family first mortgage	231	140	1,035	1,406	15	2.57	257
Real estate 1-4 family junior lien mortgage	25	82	81	188	14	3.26	93
Credit card	—	257	—	257	—	11.98	257
Automobile	2	15	67	84	39	5.89	15
Other revolving credit and installment	—	47	8	55	1	7.47	47
Trial modifications (6)	—	—	(28)	(28)	—	—	—
Total consumer	258	541	1,163	1,962	69	6.70	669
Total	$ 287	646	4,645	5,578	262	5.92%	$ 774

(1) Amounts represent the recorded investment in loans after recognizing the effects of the TDR, if any. TDRs may have multiple types of concessions, but are presented only once in the first modification type based on the order presented in the table above. The reported amounts include loans remodified of $1.1 billion, $1.9 billion and $2.1 billion, for the years ended December 31, 2019, 2018 and 2017, respectively.

(2) Principal modifications include principal forgiveness at the time of the modification, contingent principal forgiveness granted over the life of the loan based on borrower performance, and principal that has been legally separated and deferred to the end of the loan, with a zero percent contractual interest rate.

(3) Other concessions include loans discharged in bankruptcy, loan renewals, term extensions and other interest and noninterest adjustments, but exclude modifications that also forgive principal and/or reduce the contractual interest rate.

(4) Charge-offs include write-downs of the investment in the loan in the period it is contractually modified. The amount of charge-off will differ from the modification terms if the loan has been charged down prior to the modification based on our policies. In addition, there may be cases where we have a charge-off/down with no legal principal modification. Modifications resulted in deferring or legally forgiving principal (actual or contingent) of $24 million, $28 million and $32 million for the years ended December 31, 2019, 2018 and 2017, respectively.

(5) Recorded investment related to interest rate reduction reflects the effect of reduced interest rates on loans with an interest rate concession as one of their concession types, which includes loans reported as a principal primary modification type that also have an interest rate concession.

(6) Trial modifications are granted a delay in payments due under the original terms during the trial payment period. However, these loans continue to advance through delinquency status and accrue interest according to their original terms. Any subsequent permanent modification generally includes interest rate related concessions; however, the exact concession type and resulting financial effect are usually not known until the loan is permanently modified. Trial modifications for the period are presented net of previously reported trial modifications that became permanent in the current period.

Table 6.18 summarizes permanent modification TDRs that have defaulted in the current period within 12 months of their permanent modification date. We are reporting these defaulted TDRs based on a payment default definition of 90 days past due for the commercial portfolio segment and 60 days past due for the consumer portfolio segment.

Table 6.18: Defaulted TDRs

	Recorded investment of defaults		
	Year ended December 31,		
(in millions)	**2019**	2018	2017
Commercial:			
Commercial and industrial	**$ 111**	198	173
Real estate mortgage	**48**	76	61
Real estate construction	**17**	36	4
Lease financing	**—**	—	1
Total commercial	**176**	310	239
Consumer:			
Real estate 1-4 family first mortgage	**41**	60	114
Real estate 1-4 family junior lien mortgage	**13**	14	19
Credit card	**88**	79	74
Automobile	**12**	14	15
Other revolving credit and installment	**8**	6	5
Total consumer	**162**	173	227
Total	**$ 338**	483	466

Purchased Credit-Impaired Loans

Table 6.19 presents PCI loans net of any remaining purchase accounting adjustments. Total consumer loans are predominantly Pick-a-Pay loans (real estate 1-4 family mortgage).

Table 6.19: PCI Loans

(in millions)	**Dec 31, 2019**	Dec 31, 2018
Total commercial	**$ —**	4
Total consumer	**568**	5,005
Total PCI loans (carrying value)	**$ 568**	5,009
Total PCI loans (unpaid principal balance)	**$ 990**	7,348

For the years ended December 31, 2019 and 2018, we sold $4.0 billion and $6.2 billion of PCI loans, respectively, that resulted in gains within other noninterest income of $1.6 billion and $2.4 billion, respectively.

Note 7: Leasing Activity

The information below provides a summary of our leasing activities as a lessor and lessee.

As a Lessor

Table 7.1 presents the composition of our leasing revenue and Table 7.2 provides the components of our investment in lease financing.

Table 7.1: Leasing Revenue

(in millions)		Year ended December 31, 2019
Interest income on lease financing	$	869
Other lease revenues:		
Variable revenues on lease financing		96
Fixed revenues on operating leases		1,393
Variable revenues on operating leases		66
Other lease-related revenues (1)		57
Lease income		1,612
Total leasing revenue	$	2,481

(1) Predominantly includes net gains on disposition of assets leased under operating leases or lease financings.

Table 7.2: Investment in Lease Financing

(in millions)		Dec 31, 2019
Lease receivables	$	18,114
Residual asset values		4,208
Unearned income		(2,491)
Lease financing	$	19,831

Our net investment in financing and sales-type leases includes $1.9 billion of leveraged leases at December 31, 2019.

As shown in Table 9.2, included in Note 9 (Premises, Equipment and Other Assets), we had $8.2 billion in operating lease assets at December 31, 2019, which was net of $3.1 billion of accumulated depreciation. Depreciation expense for the operating lease assets was $848 million in 2019.

Table 7.3 presents future lease payments owed by our lessees.

Table 7.3: Maturities of Lease Receivables

	December 31, 2019		
(in millions)		Direct financing and sales- type leases	Operating leases
2020	$	5,953	883
2021		4,997	614
2022		2,951	434
2023		1,634	298
2024		862	199
Thereafter		1,717	447
Total lease receivables	$	18,114	2,875

As a Lessee

Substantially all of our leases are operating leases. Table 7.4 presents balances for our operating leases.

Table 7.4: Operating Lease Right of Use (ROU) Assets and Lease Liabilities

(in millions)		Dec 31, 2019
ROU assets	$	4,724
Lease liabilities		5,297

Table 7.5 provides the composition of our lease costs, which are predominantly included in net occupancy expense.

Table 7.5: Lease Costs

(in millions)		Year ended December 31, 2019
Fixed lease expense - operating leases	$	1,212
Variable lease expense		314
Other (1)		(68)
Total lease costs	$	1,458

(1) Predominantly includes gains recognized from sale leaseback transactions and sublease rental income.

Net operating lease rental expense was $1.3 billion for the years 2018 and 2017 and is predominantly included in net occupancy expense.

Tables Table 7.6 and 7.7 provide the future lease payments under operating leases as of December 31, 2018, and December 31, 2019, respectively. Table 7.7 also includes information on the remaining average lease term and discount rate.

Table 7.6: Lease Payments on Operating Leases Prior to Adoption of ASU 2016-02 – Leases

(in millions)		December 31, 2018
2019	$	1,174
2020		1,056
2021		880
2022		713
2023		577
Thereafter		1,654
Total lease payments	$	6,054

Table 7.7: Lease Payments on Operating Leases Subsequent to Adoption of ASU 2016-02 – Leases

(in millions, except for weighted averages)		**December 31, 2019**
2020	**$**	**1,006**
2021		**1,045**
2022		**897**
2023		**750**
2024		**597**
Thereafter		**1,672**
Total lease payments		**5,967**
Less: imputed interest		**670**
Total operating lease liabilities	**$**	**5,297**
Weighted average remaining lease term (in years)		**7.1**
Weighted average discount rate		**3.1%**

Our operating leases predominantly expire within the next 15 years, with the longest lease expiring in 2105. We do not include renewal or termination options in the establishment of the lease term when we are not reasonably certain that we will exercise them. As of December 31, 2019, we had additional operating leases commitments of $159 million, predominantly for real estate, which leases had not yet commenced. These leases are expected to commence during 2020 and have lease terms of 2 years to 17 years.

Note 8: Equity Securities

Table 8.1 provides a summary of our equity securities by business purpose and accounting method, including equity securities with readily determinable fair values (marketable) and those without readily determinable fair values (nonmarketable).

Table 8.1: Equity Securities

(in millions)	Dec 31, 2019	Dec 31, 2018
Held for trading at fair value:		
Marketable equity securities	**$ 27,440**	19,449
Not held for trading:		
Fair value:		
Marketable equity securities (1)	**6,481**	4,513
Nonmarketable equity securities	**8,015**	5,594
Total equity securities at fair value	**14,496**	10,107
Equity method:		
Low-income housing tax credit investments	**11,343**	10,999
Private equity	**3,459**	3,832
Tax-advantaged renewable energy	**3,811**	3,073
New market tax credit and other	**387**	311
Total equity method	**19,000**	18,215
Other:		
Federal Reserve Bank stock and other at cost (2)	**4,790**	5,643
Private equity (3)	**2,515**	1,734
Total equity securities not held for trading	**40,801**	35,699
Total equity securities	**$ 68,241**	55,148

(1) Includes $3.8 billion and $3.2 billion at December 31, 2019 and 2018, respectively, related to securities held as economic hedges of our deferred compensation plan obligations.
(2) Includes $4.8 billion and $5.6 billion at December 31, 2019 and 2018, respectively, related to investments in Federal Reserve Bank and Federal Home Loan Bank stock.
(3) Represents nonmarketable equity securities accounted for under the measurement alternative.

Equity Securities Held for Trading

Equity securities held for trading purposes are marketable equity securities traded on organized exchanges. These securities are held as part of our customer accommodation trading activities. For more information on these activities, see Note 4 (Trading Activities).

Equity Securities Not Held for Trading

We also hold equity securities unrelated to trading activities. These securities include private equity and tax credit investments, securities held as economic hedges or to meet regulatory requirements (for example, Federal Reserve Bank and Federal Home Loan Bank stock).

FAIR VALUE Marketable equity securities held for purposes other than trading primarily consist of exchange-traded equity funds held to economically hedge obligations related to our deferred compensation plans and, to a lesser extent, other holdings of publicly traded equity securities held for investment purposes. We account for certain nonmarketable equity securities under the fair value method, and substantially all of these securities are economically hedged with equity derivatives.

EQUITY METHOD Our equity method investments consist of tax credit and private equity investments, the majority of which are our low-income housing tax credit (LIHTC) investments.

We invest in affordable housing projects that qualify for the LIHTC, which are designed to promote private development of low-income housing. These investments generate a return mostly through realization of federal tax credit and other tax benefits. We recognized pre-tax losses of $1.3 billion for 2019 and $1.2 billion for both 2018 and 2017, related to our LIHTC investments. These losses were recognized in other noninterest income. We also recognized total tax benefits of $1.5 billion for 2019, 2018 and 2017, which included tax credits recorded to income taxes of $1.2 billion for 2019 and 2018, and $1.1 billion for 2017. We are periodically required to provide additional financial support during the investment period. A liability is recognized for unfunded commitments that are both legally binding and probable of funding. These commitments are predominantly funded within three years of initial investment. Our liability for unfunded commitments was $4.3 billion and $3.9 billion at December 31, 2019 and 2018, respectively. This liability for unfunded commitments is included in long-term debt.

OTHER The remaining portion of our nonmarketable equity securities portfolio consists of securities accounted for using the cost or measurement alternative method.

Realized Gains and Losses Not Held for Trading

Table 8.2 provides a summary of the net gains and losses for equity securities not held for trading. Gains and losses for securities held for trading are reported in net gains from trading activities.

Table 8.2: Net Gains (Losses) from Equity Securities Not Held for Trading

	Year ended December 31,		
(in millions)	**2019**	2018	2017
Net gains (losses) from equity securities carried at fair value:			
Marketable equity securities	$ **1,067**	(389)	967
Nonmarketable equity securities	**2,413**	709	1,557
Total equity securities carried at fair value	**3,480**	320	2,524
Net gains (losses) from nonmarketable equity securities not carried at fair value:			
Impairment write-downs	**(245)**	(352)	(339)
Net unrealized gains related to measurement alternative observable transactions	**567**	418	—
Net realized gains on sale	**1,161**	1,504	980
All other	**—**	33	97
Total nonmarketable equity securities not carried at fair value	**1,483**	1,603	738
Net losses from economic hedge derivatives (1)	**(2,120)**	(408)	(1,483)
Total net gains from equity securities not held for trading	$ **2,843**	1,515	1,779

(1) Includes net gains (losses) on derivatives not designated as hedging instruments.

Measurement Alternative

Table 8.3 provides additional information about the impairment write-downs and observable price adjustments related to nonmarketable equity securities accounted for under the measurement alternative. Gains and losses related to these adjustments are also included in Table 8.2.

Table 8.3: Net Gains (Losses) from Measurement Alternative Equity Securities

	Year ended December 31,	
(in millions)	**2019**	2018
Net gains (losses) recognized in earnings during the period:		
Gross unrealized gains due to observable price changes	$ **584**	443
Gross unrealized losses due to observable price changes	**(17)**	(25)
Impairment write-downs	**(116)**	(33)
Realized net gains from sale	**163**	274
Total net gains recognized during the period	$ **614**	659

Table 8.4 presents cumulative carrying value adjustments to nonmarketable equity securities accounted for under the measurement alternative that were still held as of December 31, 2019 and 2018.

Table 8.4: Measurement Alternative Cumulative Gains (Losses)

	Year ended December 31,	
(in millions)	**2019**	2018
Cumulative gains (losses):		
Gross unrealized gains due to observable price changes	$ **973**	415
Gross unrealized losses due to observable price changes	**(42)**	(25)
Impairment write-downs	**(134)**	(33)

Note 9: Premises, Equipment and Other Assets

Table 9.1: Premises and Equipment

(in millions)		Dec 31, 2019	Dec 31, 2018
Land	$	1,857	1,757
Buildings		9,499	8,974
Furniture and equipment		7,189	6,896
Leasehold improvements		2,597	2,387
Finance lease ROU assets		33	75
Total premises and equipment		21,175	20,089
Less: Accumulated depreciation and amortization		11,866	11,169
Net book value, premises and equipment	$	9,309	8,920

Depreciation and amortization expense for premises and equipment was $1.4 billion, $1.3 billion and $1.2 billion in 2019, 2018 and 2017, respectively.

Dispositions of premises and equipment resulted in net gains of $82 million, $32 million and $128 million in 2019, 2018 and 2017, respectively, included in other noninterest expense.

Table 9.2 presents the components of other assets.

Table 9.2: Other Assets

(in millions)		Dec 31, 2019	Dec 31, 2018
Corporate/bank-owned life insurance	$	20,070	19,751
Accounts receivable (1)		29,137	34,281
Interest receivable		5,586	6,084
Customer relationship and other amortized intangibles		423	545
Foreclosed assets:			
Residential real estate:			
Government insured/guaranteed (1)		50	88
Non-government insured/guaranteed		172	229
Other		81	134
Operating lease assets (lessor)		8,221	9,036
Operating lease ROU assets (lessee) (2)		4,724	—
Due from customers on acceptances		253	258
Other		10,200	9,444
Total other assets	$	78,917	79,850

(1) Certain government-guaranteed residential real estate mortgage loans upon foreclosure are included in Accounts receivable. For more information, see Note 1 (Summary of Significant Accounting Policies).

(2) We recognized operating lease right of use (ROU) assets effective January 1, 2019, in connection with the adoption of ASU 2016-02 – Leases. For more information, see Note 1 (Summary of Significant Accounting Policies).

Note 10: Securitizations and Variable Interest Entities

Involvement with Special Purpose Entities (SPEs)

In the normal course of business, we enter into various types of on- and off-balance sheet transactions with SPEs, which are corporations, trusts, limited liability companies or partnerships that are established for a limited purpose. SPEs are often formed in connection with securitization transactions in which assets are transferred to an SPE. The SPE may alter the risk profile of the asset by entering into derivative transactions or obtaining credit support, and issues various forms of interests in those assets to investors. In a securitization transaction where we transferred assets from our balance sheet, we typically receive cash and sometimes other interests in an SPE as proceeds for the assets we transfer. In certain transactions we may retain the right to service the transferred receivables and to repurchase those receivables from the SPE if the outstanding balance of the receivables falls to a level where the cost exceeds the benefits of servicing such receivables. In addition, we may purchase the right to service loans in an SPE that were transferred to the SPE by a third party.

In connection with our securitization activities, we have various forms of ongoing involvement with SPEs, which may include:

- underwriting securities issued by SPEs and subsequently making markets in those securities;
- providing liquidity facilities to support short-term obligations of SPEs issued to third-party investors;
- providing credit enhancement on securities issued by SPEs or market value guarantees of assets held by SPEs through the use of letters of credit, financial guarantees, credit default swaps and total return swaps;
- entering into other derivative contracts with SPEs;
- holding senior or subordinated interests in SPEs;
- acting as servicer or investment manager for SPEs; and
- providing administrative or trustee services to SPEs.

SPEs formed in connection with securitization transactions are generally considered variable interest entities (VIEs). SPEs formed for other corporate purposes may be VIEs as well. A VIE is an entity whose total equity is insufficient to finance its activities without additional subordinated financial support, or whose equity investors lack the ability to control the entity's activities or lack the ability to receive expected benefits or absorb obligations in a manner consistent with their investment in the entity. A VIE is consolidated by its primary beneficiary which is the party that has both the power to direct the activities that most significantly impact the VIE and a variable interest that could potentially be significant to the VIE. A variable interest is a contractual, ownership or other interest whose value changes with changes in the fair value of the VIE's net assets. To determine whether or not a variable interest we hold could potentially be significant to the VIE, we consider both qualitative and quantitative factors regarding the nature, size and form of our involvement with the VIE. We assess whether or not we are the primary beneficiary of a VIE on an on-going basis.

Secured borrowings are transactions involving transfers of our financial assets to unconsolidated third parties that are accounted for as financings with the assets pledged as collateral. Accordingly, the transferred assets remain recognized on our balance sheet. See also Repurchase and Securities Lending Agreements in Note 16 (Guarantees, Pledged Assets and Collateral, and Other Commitments) for additional transactions accounted for as secured borrowings.

Table 10.1 provides the classifications of assets and liabilities in our balance sheet for our transactions with VIEs.

Table 10.1: Balance Sheet Transactions with VIEs

(in millions)	VIEs that we do not consolidate	VIEs that we consolidate (2)	Transfers that we account for as secured borrowings (2)	Total
December 31, 2019				
Cash and due from banks	**$ —**	**16**	**—**	**16**
Interest-earning deposits with banks	**—**	**284**	**—**	**284**
Debt securities (1):				
Trading debt securities	**792**	**339**	**—**	**1,131**
Available-for-sale debt securities	**1,696**	**201**	**—**	**1,897**
Held-to-maturity debt securities	**791**	**—**	**—**	**791**
Loans	**2,127**	**13,170**	**80**	**15,377**
Mortgage servicing rights	**11,884**	**—**	**—**	**11,884**
Derivative assets	**142**	**1**	**—**	**143**
Equity securities	**11,401**	**118**	**—**	**11,519**
Other assets	**1,268**	**239**	**—**	**1,507**
Total assets	**30,101**	**14,368**	**80**	**44,549**
Short-term borrowings	**—**	**401**	**—**	**401**
Derivative liabilities	**1**	**3**	**—**	**4**
Accrued expenses and other liabilities	**189**	**235**	**—**	**424**
Long-term debt	**4,817**	**587**	**79**	**5,483**
Total liabilities	**5,007**	**1,226**	**79**	**6,312**
Noncontrolling interests	**—**	**43**	**—**	**43**
Net assets	**$ 25,094**	**13,099**	**1**	**38,194**
December 31, 2018				
Cash and due from banks	$ —	139	—	139
Interest-earning deposits with banks	—	8	—	8
Debt securities (1):				
Trading debt securities	2,110	245	—	2,355
Available-for-sale debt securities	2,686	317	—	3,003
Held-to-maturity debt securities	510	—	—	510
Loans	2,657	13,564	94	16,315
Mortgage servicing rights	14,761	—	—	14,761
Derivative assets	53	—	—	53
Equity securities	11,041	85	—	11,126
Other assets	—	227	—	227
Total assets	33,818	14,585	94	48,497
Short-term borrowings	—	493	—	493
Derivative liabilities	26	—	—	26
Accrued expenses and other liabilities	231	199	—	430
Long-term debt	5,094	816	93	6,003
Total liabilities	5,351	1,508	93	6,952
Noncontrolling interests	—	34	—	34
Net assets	$ 28,467	13,043	1	41,511

(1) Excludes certain debt securities related to loans serviced for the Federal National Mortgage Association (FNMA), Federal Home Loan Mortgage Corporation (FHLMC) and Government National Mortgage Association (GNMA).
(2) Certain structures included in transfers that we account for as secured borrowings at December 31, 2018 were presented in VIEs that we consolidate to conform with the current period presentation.

Transactions with Unconsolidated VIEs

Our transactions with unconsolidated VIEs include predominantly securitizations of residential and commercial mortgage loans and investments in tax credit structures. We have various forms of involvement with VIEs, including servicing, holding senior or subordinated interests, and entering into liquidity arrangements and derivative contracts. Involvements with these unconsolidated VIEs are recorded on our balance sheet in debt and equity securities, loans, MSRs, derivative assets and liabilities, other assets, other liabilities, and long-term debt, as appropriate.

Table 10.2 provides a summary of our exposure to unconsolidated VIEs with which we have significant continuing involvement but for which we are not the primary beneficiary.

We include transactions where we were the sponsor or servicer and also have other significant forms of continuing involvement. Sponsorship includes transactions where we solely or materially participated in the initial design or structuring of the VIE or marketed the transaction to investors. We consider investments in securities, loans, guarantees, liquidity agreements, commitments and certain derivatives to be other forms of continuing involvement that may be significant. We also include transactions where we transferred assets to a VIE, account for the transfer as a sale, and service the VIE collateral or have other forms of continuing involvement that may be significant (as described above). We exclude certain transactions with unconsolidated VIEs when our continuing involvement is temporary in nature or insignificant in size. We also exclude secured borrowing transactions with unconsolidated VIEs (for information on these transactions, see the Transactions with Consolidated VIEs and Secured Borrowings section in this Note).

Table 10.2: Unconsolidated VIEs

		Carrying value – asset (liability)				
(in millions)	Total VIE assets	Debt and equity interests (1)	Servicing assets and advances	Derivatives	Debt, guarantees and other commitments	Net assets
December 31, 2019						
Residential mortgage loan securitizations:						
Conforming (2)	$ 1,098,103	1,528	11,931	—	(683)	12,776
Other/nonconforming	5,178	6	152	—	—	158
Commercial mortgage loan securitizations	169,736	2,239	1,069	80	(43)	3,345
Tax credit structures	39,091	12,826	—	—	(4,260)	8,566
Other asset-based finance structures	1,355	157	—	61	(20)	198
Other	1,167	51	—	—	—	51
Total	$ 1,314,630	16,807	13,152	141	(5,006)	25,094

	Maximum exposure to loss				
	Debt and equity interests (1)	Servicing assets and advances	Derivatives	Guarantees and other commitments	Total exposure
Residential mortgage loan securitizations:					
Conforming (2)	$ 972	11,931	—	937	13,840
Other/nonconforming	6	152	—	—	158
Commercial mortgage loan securitizations	2,239	1,069	80	11,667	15,055
Tax credit structures	12,826	—	—	1,701	14,527
Other asset-based finance structures	157	—	63	91	311
Other	51	—	—	157	208
Total	$ 16,251	13,152	143	14,553	44,099

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(in millions)	Total VIE assets	Carrying value - asset (liability): Debt and equity interests (1)	Servicing assets	Derivatives	Debt, guarantees and other commitments	Net assets
December 31, 2018						
Residential mortgage loan securitizations:						
Conforming (2)	$ 1,172,833	3,601	13,811	—	(1,395)	16,017
Other/nonconforming	10,596	453	57	—	—	510
Commercial mortgage loan securitizations	153,350	2,409	893	(22)	(40)	3,240
Tax credit structures	35,185	12,087	—	—	(3,870)	8,217
Other asset-based finance structures	1,520	271	—	49	(20)	300
Other	1,318	183	—	—	—	183
Total	$ 1,374,802	19,004	14,761	27	(5,325)	28,467

	Maximum exposure to loss: Debt and equity interests (1)	Servicing assets	Derivatives	Guarantees and other commitments	Total exposure
Residential mortgage loan securitizations:					
Conforming (2)	$ 2,377	13,811	—	1,183	17,371
Other/nonconforming	453	57	—	—	510
Commercial mortgage loan securitizations	2,409	893	28	11,563	14,893
Tax credit structures	12,087	—	—	1,420	13,507
Other asset-based finance structures	271	—	50	91	412
Other	183	—	—	158	341
Total	$ 17,780	14,761	78	14,415	47,034

(1) Includes total equity interests of $11.4 billion and $11.0 billion at December 31, 2019 and 2018, respectively. Also includes debt interests in the form of both loans and securities. Excludes certain debt securities held related to loans serviced for FNMA, FHLMC and GNMA.
(2) Carrying values include assets and related liabilities of $556 million and $1.2 billion at December 31, 2019 and 2018, respectively, related to certain unexercised unconditional repurchase options. These amounts represent the carrying value of the loans and associated debt that would be payable if the option was exercised to repurchase eligible loans from GNMA loan securitizations. These amounts are excluded from maximum exposure to loss as we are not obligated to exercise the options.

In Table 10.2, "Total VIE assets" represents the remaining principal balance of assets held by unconsolidated VIEs using the most current information available. For VIEs that obtain exposure to assets synthetically through derivative instruments, the remaining notional amount of the derivative is included in the asset balance. "Carrying value" is the amount in our consolidated balance sheet related to our involvement with the unconsolidated VIEs. "Maximum exposure to loss" is determined as the carrying value of our investment in the VIEs excluding the unconditional repurchase options that have not been exercised, plus the remaining undrawn liquidity and lending commitments, the notional amount of net written derivative contracts, and generally the notional amount of, or stressed loss estimate for, other commitments and guarantees. It represents estimated loss that would be incurred under severe, hypothetical circumstances, for which we believe the possibility is extremely remote, such as where the value of our interests and any associated collateral declines to zero, without any consideration of recovery or offset from any economic hedges. Accordingly, this disclosure is not an indication of expected loss.

RESIDENTIAL MORTGAGE LOAN SECURITIZATIONS Residential mortgage loan securitizations are financed through the issuance of fixed-rate or floating-rate asset-backed securities, which are collateralized by the loans transferred to a VIE. We typically transfer loans we originated to these VIEs, account for the transfers as sales, retain the right to service the loans and may hold other beneficial interests issued by the VIEs. In certain instances, we may service residential mortgage loan securitizations structured by third parties whose loans we did not originate or transfer. Our residential mortgage loan securitizations include conforming and nonconforming securitizations.

Conforming residential mortgage loan securitizations are those that are guaranteed by the government-sponsored entities (GSEs), such as FNMA and FHLMC, and GNMA. We do not consolidate these securitizations because the GSEs or GNMA hold the power over the VIEs.

The loans sold to the VIEs in nonconforming residential mortgage loan securitizations are those that do not qualify for a GSE guarantee and are not GNMA guaranteed mortgage securitizations of FHA-insured or VA-guaranteed mortgages. We may hold variable interests issued by the VIEs, including senior securities. The nonconforming residential mortgage loan securitizations included in the table are not consolidated because we do not hold any variable interests, or hold variable interests that we do not consider potentially significant, or we are not the primary servicer for a majority of the VIE assets.

Guarantees and other commitments include amounts related to loans sold that we may be required to repurchase, or otherwise indemnify or reimburse the investor or insurer for losses incurred, due to material breach of contractual representations and warranties as well as other retained recourse arrangements. The maximum exposure to loss for material breach of contractual representations and warranties represents a stressed case estimate we utilize for determining stressed case regulatory capital needs and is considered to be a remote scenario.

COMMERCIAL MORTGAGE LOAN SECURITIZATIONS Commercial mortgage loan securitizations are financed through the issuance of fixed or floating-rate asset-backed securities, which are collateralized by the loans transferred to the VIE. In a typical securitization, we may transfer loans we originate to these VIEs, account for the transfers as sales, retain the right to service the loans and may hold other beneficial interests issued by the VIEs. In certain instances, we may service commercial mortgage loan securitizations structured by third parties whose loans we did not originate or transfer. We typically serve as primary or master servicer of these VIEs. In commercial mortgage loan securitizations, the most significant decisions impacting the performance of the VIE are generally made by the special servicer and the primary and master servicer do not have power over the VIE. We do not consolidate the commercial mortgage loan securitizations included in the disclosure because we do not have power over the majority of the SPE's assets or we do not have a variable interest that could potentially be significant to the VIE.

TAX CREDIT STRUCTURES We co-sponsor and make investments in affordable housing and sustainable energy projects that are designed to generate a return primarily through the realization of federal tax credits. The projects are typically managed by project sponsors who have the power over the VIE's assets. In some instances, our investments in these structures may require that we fund future capital commitments at the discretion of the project sponsors. While the size of our investment in a single entity may at times exceed 50% of the outstanding equity interests, we do not consolidate these structures because we are not the project sponsors.

OTHER ASSET-BASED FINANCE STRUCTURES We engage in various forms of structured finance arrangements with other VIEs, including collateralized loan obligations (CLOs), collateralized debt obligations, and other securitizations collateralized by asset classes other than mortgages. Collateral may include asset-backed securities, automobile and other transportation loans and leases, student loans and general corporate credit. Generally, a third party sponsors the VIE and also selects and manages the assets. We may participate in structuring or marketing the arrangements, provide financing to the VIE, service one or more of the underlying VIE assets, or enter into derivatives with the VIEs and receive fees for those services. We are not the primary beneficiary of these structures because we neither select nor manage the assets of the VIE.

Loan Sales and Securitization Activity

We periodically transfer consumer and commercial loans and other types of financial assets in securitization and whole loan sale transactions. We typically retain the servicing rights from these sales and may continue to hold other beneficial interests in the transferred financial assets. We may also provide liquidity to investors in the beneficial interests and credit enhancements. Through these transfers we may be exposed to liability under limited amounts of recourse as well as standard representations and warranties we make to purchasers and issuers.

Table 10.3 presents information about transfers during the period of assets to unconsolidated VIEs or third-party investors for which we recorded the transfers as sales and have continuing involvement with the transferred assets. In connection with these transfers, we recorded servicing assets, securities, and a liability for repurchase losses which reflects management's estimate of probable losses related to various representations and warranties for the loans transferred. Each of these interests are initially measured at fair value. Servicing rights are classified as Level 3 measurements, and securities are initially predominantly classified as Level 2.

Sales with continuing involvement include securitizations of conforming residential mortgages that are sold to the GSEs or GNMA. Substantially all transfers to these entities resulted in no gain or loss because the loans were already measured at fair value on a recurring basis.

Table 10.3: Transfers With Continuing Involvement

	Year ended December 31,					
	2019		2018		2017	
(in millions)	**Residential mortgages**	**Commercial mortgages**	Residential mortgages	Commercial mortgages	Residential mortgages	Commercial mortgages
Net gains (losses) on sale	**$ 89**	**330**	(10)	280	342	359
Asset balances sold	**170,384**	**18,191**	177,805	17,882	213,562	16,696
Servicing rights recognized	**1,896**	**161**	1,903	158	2,122	166
Securities recognized	**2,747**	**51**	5,030	81	1,414	65
Liability for repurchase losses recognized	**18**	**—**	17	—	24	—

Table 10.4 presents the key weighted-average assumptions we used to measure residential MSRs at the date of securitization.

Table 10.4: Residential Mortgage Servicing Rights

	Residential mortgage servicing rights		
	Year ended December 31,		
	2019	2018	2017
Prepayment speed (1)	**12.8%**	10.6	11.5
Discount rate	**7.5**	7.4	7.0
Cost to service ($ per loan) (2)	$ **101**	128	132

(1) The prepayment speed assumption for residential MSRs includes a blend of prepayment speeds and default rates. Prepayment speed assumptions are influenced by mortgage interest rate inputs as well as our estimation of drivers of borrower behavior.
(2) Includes costs to service and unreimbursed foreclosure costs, which can vary period to period due to changes in model assumptions and the mix of modified government-guaranteed loans sold to GNMA.

Table 10.5 presents the proceeds related to transfers accounted for as sales in which we have continuing involvement with the transferred financial assets as well as current period cash flows from continuing involvement with previous transfers accounted for as sales. Cash flows from other interests held predominantly include principal and interest payments received on retained bonds and excess cash flows received on interest-only strips. Repurchases of assets represents cash paid to repurchase loans from investors under representation and warranty obligations or in connection with the exercise of cleanup calls on securitizations. Loss reimbursements is cash paid to reimburse investors for losses on individual loans that are already liquidated. Government insured loans are delinquent loans that we service and have exercised our option to purchase out of GNMA pools. These loans are insured by the FHA or guaranteed by the VA.

Table 10.5: Cash Inflows (Outflows) From Sales and Securitization Activity

	Mortgage loans		
	Year ended December 31,		
(in millions)	**2019**	2018	2017
Proceeds from securitizations and whole loan sales	$ **186,615**	193,721	228,282
Fees from servicing rights retained	**3,149**	3,337	3,352
Cash flows from other interests held	**468**	698	2,218
Repurchases of assets/loss reimbursements:			
Non-agency securitizations and whole loan transactions	**(4,441)**	(3)	(12)
Government insured loans	**(6,168)**	(7,775)	(8,600)
Agency securitizations	**(95)**	(96)	(92)
Servicing advances, net of recoveries (1)	**187**	154	269

(1) Cash flows from servicing advances includes principal and interest payments to investors required by servicing agreements.

Retained Interests from Unconsolidated VIEs

Table 10.6 provides key economic assumptions and the sensitivity of the current fair value of residential MSRs, and other interests held related to unconsolidated VIEs, to immediate adverse changes in those assumptions. Amounts for residential MSRs include purchased servicing rights as well as servicing rights resulting from the transfer of loans. See Note 19 (Fair Values of Assets and Liabilities) for additional information on key economic assumptions for residential MSRs. "Other interests held" were obtained when we securitized residential and commercial mortgage loans. Residential mortgage-backed securities retained in securitizations issued through GSEs or GNMA are excluded from the table because these securities have a remote risk of credit loss due to the GSE or government guarantee. These securities also have economic characteristics similar to GSE or GNMA mortgage-backed securities that we purchase, which are not included in the table. Subordinated interests include only those bonds whose credit rating was below AAA by a major rating agency at issuance. Senior interests include only those bonds whose credit rating was AAA by a major rating agency at issuance. The information presented excludes trading positions held in inventory.

Table 10.6: Retained Interests from Unconsolidated VIEs

			Other interests held		
				Commercial	
($ in millions, except cost to service amounts)		Residential mortgage servicing rights	Interest-only strips	Subordinated bonds	Senior bonds
Fair value of interests held at December 31, 2019	**$**	**11,517**	**2**	**909**	**352**
Expected weighted-average life (in years)		**5.3**	**3.1**	**7.3**	**5.5**
Key economic assumptions:					
Prepayment speed assumption		**11.9%**	**19.5**		
Decrease in fair value from:					
10% adverse change	**$**	**537**	**—**		
25% adverse change		**1,261**	**—**		
Discount rate assumption		**7.2%**	**12.8**	**4.0**	**2.9**
Decrease in fair value from:					
100 basis point increase	**$**	**464**	**—**	**53**	**16**
200 basis point increase		**889**	**—**	**103**	**32**
Cost to service assumption ($ per loan)		**102**			
Decrease in fair value from:					
10% adverse change		**253**			
25% adverse change		**632**			
Credit loss assumption				**3.1%**	**—**
Decrease in fair value from:					
10% higher losses				**$ 1**	**—**
25% higher losses				**4**	**—**
Fair value of interests held at December 31, 2018	$	14,649	16	668	309
Expected weighted-average life (in years)		6.5	3.6	7.0	5.7
Key economic assumptions:					
Prepayment speed assumption		9.9%	17.7		
Decrease in fair value from:					
10% adverse change	$	530	1		
25% adverse change		1,301	1		
Discount rate assumption		8.1%	14.5	4.3	3.7
Decrease in fair value from:					
100 basis point increase	$	615	—	37	14
200 basis point increase		1,176	1	72	28
Cost to service assumption ($ per loan)		106			
Decrease in fair value from:					
10% adverse change		316			
25% adverse change		787			
Credit loss assumption				5.1%	—
Decrease in fair value from:					
10% higher losses				$ 2	—
25% higher losses				5	—

In addition to residential MSRs included in the previous table, we have a small portfolio of commercial MSRs which are carried at LOCOM with a fair value of $1.9 billion and $2.3 billion at December 31, 2019 and 2018, respectively. Prepayment assumptions do not significantly impact values of commercial MSRs and commercial mortgage bonds as most commercial loans include contractual restrictions on prepayment. Servicing costs are not a driver of our MSR value as we are typically primary or master servicer; the higher costs of servicing delinquent and foreclosed loans is generally born by the special servicer. The primary economic driver impacting the fair value of our commercial MSRs is forward interest rates, which are derived from market observable yield curves used to price capital markets instruments. Market interest rates significantly affect interest earned on custodial deposit balances. The sensitivity of the current fair value to an immediate adverse 25% change in the assumption about interest earned on deposit balances at December 31, 2019 and 2018, results in a decrease in fair value of $205 million and $320 million, respectively. See Note 11 (Mortgage Banking Activities) for further information on our commercial MSRs.

The sensitivities in the preceding paragraph and table are hypothetical and caution should be exercised when relying on this data. Changes in value based on variations in assumptions generally cannot be extrapolated because the relationship of the change in the assumption to the change in value may not be linear. Also, the effect of a variation in a particular assumption on the value of the other interests held is calculated independently without changing any other assumptions. In reality, changes in one factor may result in changes in others (for example, changes in prepayment speed estimates could result in changes in the credit losses), which might magnify or counteract the sensitivities.

Off-Balance Sheet Loans

Table 10.7 presents information about the principal balances of off-balance sheet loans that were sold or securitized, including residential mortgage loans sold to FNMA, FHLMC, GNMA and other investors, for which we have some form of continuing involvement (including servicer). Delinquent loans include loans 90 days or more past due and loans in bankruptcy, regardless of delinquency status. For loans sold or securitized where servicing is our only form of continuing involvement, we would only experience a loss if we were required to repurchase a delinquent loan or foreclosed asset due to a breach in representations and warranties associated with our loan sale or servicing contracts.

Table 10.7: Off-Balance Sheet Loans Sold or Securitized

					Net charge-offs (3)	
	Total loans		Delinquent loans and foreclosed assets (1)		Year ended	
	December 31,		December 31,		December 31,	
(in millions)	**2019**	2018	**2019**	2018	**2019**	2018
Commercial:						
Real estate mortgage	$ **112,507**	105,173	**776**	1,008	**179**	739
Total commercial	**112,507**	105,173	**776**	1,008	**179**	739
Consumer:						
Real estate 1-4 family first mortgage	**1,008,446**	1,097,128	**6,664**	8,947	**229**	466
Real estate 1-4 family junior lien mortgage	**13**	—	**2**	—	**—**	—
Total consumer	**1,008,459**	1,097,128	**6,666**	8,947	**229**	466
Total off-balance sheet sold or securitized loans (2)	$ **1,120,966**	1,202,301	**7,442**	9,955	**408**	1,205

(1) Includes $492 million and $675 million of commercial foreclosed assets and $356 million and $582 million of consumer foreclosed assets at December 31, 2019 and 2018, respectively.
(2) At December 31, 2019 and 2018, the table includes total loans of $1.0 trillion and $1.1 trillion, delinquent loans of $5.2 billion and $6.4 billion, and foreclosed assets of $251 million and $442 million, respectively, for FNMA, FHLMC and GNMA.
(3) Net charge-offs exclude loans sold to FNMA, FHLMC and GNMA as we do not service or manage the underlying real estate upon foreclosure and, as such, do not have access to net charge-off information.

Transactions with Consolidated VIEs and Secured Borrowings

Table 10.8 presents a summary of financial assets and liabilities for asset transfers accounted for as secured borrowings and involvements with consolidated VIEs. Carrying values of "Assets" are presented using GAAP measurement methods, which may include fair value, credit impairment or other adjustments, and therefore in some instances will differ from "Total VIE assets." For VIEs that obtain exposure synthetically through derivative instruments, the remaining notional amount of the derivative is included in "Total VIE assets." On the consolidated balance sheet, we separately disclose the consolidated assets of certain VIEs that can only be used to settle the liabilities of those VIEs.

Table 10.8: Transactions with Consolidated VIEs and Secured Borrowings

			Carrying value			
(in millions)		Total VIE assets	Assets	Liabilities	Noncontrolling interests	Net assets
December 31, 2019						
Secured borrowings:						
Residential mortgage securitizations	**$**	**81**	**80**	**(79)**	**—**	**1**
Total secured borrowings		**81**	**80**	**(79)**	**—**	**1**
Consolidated VIEs:						
Commercial and industrial loans and leases		**8,054**	**8,042**	**(529)**	**(16)**	**7,497**
Nonconforming residential mortgage loan securitizations		**935**	**809**	**(290)**	**—**	**519**
Commercial real estate loans		**4,836**	**4,836**	**—**	**—**	**4,836**
Municipal tender option bond securitizations		**401**	**402**	**(401)**	**—**	**1**
Other		**279**	**279**	**(6)**	**(27)**	**246**
Total consolidated VIEs		**14,505**	**14,368**	**(1,226)**	**(43)**	**13,099**
Total secured borrowings and consolidated VIEs	**$**	**14,586**	**14,448**	**(1,305)**	**(43)**	**13,100**
December 31, 2018						
Secured borrowings:						
Residential mortgage securitizations	$	95	94	(93)	—	1
Total secured borrowings		95	94	(93)	—	1
Consolidated VIEs:						
Commercial and industrial loans and leases		8,215	8,204	(477)	(14)	7,713
Nonconforming residential mortgage loan securitizations		1,947	1,732	(521)	—	1,211
Commercial real estate loans		3,957	3,957	—	—	3,957
Municipal tender option bond securitizations (1)		627	523	(501)	—	22
Other		169	169	(9)	(20)	140
Total consolidated VIEs		14,915	14,585	(1,508)	(34)	13,043
Total secured borrowings and consolidated VIEs	$	15,010	14,679	(1,601)	(34)	13,044

(1) Municipal tender option bond securitizations were reported as secured borrowings at December 31, 2018. These structures were reported as consolidated VIEs at December 31, 2019 to conform with our presentation of other transactions where we transfer assets to a consolidated VIE and use secured borrowing accounting.

We have raised financing through the securitization of certain financial assets in transactions with VIEs accounted for as secured borrowings. We also consolidate VIEs where we are the primary beneficiary. In certain transactions, we provide contractual support in the form of limited recourse and liquidity to facilitate the remarketing of short-term securities issued to third-party investors. Other than this limited contractual support, the assets of the VIEs are the sole source of repayment of the securities held by third parties.

COMMERCIAL AND INDUSTRIAL LOANS AND LEASES We securitize dealer floor plan loans and leases in a revolving master trust entity and retain the subordinated notes and residual equity interests. At December 31, 2019 and 2018, total assets held by the master trust were $6.5 billion and $6.7 billion, respectively, and the outstanding senior notes were $300 million and $299 million, respectively. As servicer and residual interest holder, we control the key decisions of the trust. We also provide the majority of debt and equity financing to an SPE that engages in lending and leasing to specific vendors and service the underlying collateral. We control the key decisions of the entity and consolidate the entity as primary beneficiary.

NONCONFORMING RESIDENTIAL MORTGAGE LOAN SECURITIZATIONS We have determined we are the primary beneficiary of these securitizations because we have the power to direct the most significant activities of the entity through our role as primary servicer and we also hold variable interests that we have determined to be significant. The nature of our variable interests in these entities may include senior or subordinated beneficial interests issued by the VIE, MSRs and recourse or repurchase reserve liabilities.

COMMERCIAL REAL ESTATE LOANS We purchase local industrial development bonds and credit enhancement from GSEs, which bonds and credit enhancement are placed with a custodian who issues beneficial interests. We own all of the beneficial interests and may also service the underlying mortgages. Through our ownership of the beneficial interests we control the key decisions of the trust including the decision to invest in or divest of a bond and whether to purchase or retain credit support.

MUNICIPAL TENDER OPTION BOND SECURITIZATIONS As part of our normal investment portfolio activities, we consolidate municipal bond trusts that hold highly rated, long-term, fixed-rate municipal bonds, the majority of which are rated AA or better. Our residual interests in these trusts generally allow us to capture the economics of owning the securities outright, and constructively make decisions that significantly impact the economic performance of the municipal bond vehicle, primarily by directing the sale of the municipal bonds owned by the vehicle. We may also serve as remarketing agent or liquidity provider for the trusts should the investors exercise their right to tender the certificates at specified dates. If we cannot remarket the tendered certificates, we are generally obligated to purchase them at par under standby liquidity facilities unless the bond's credit rating has declined below investment grade or there has been an event of default or bankruptcy of the issuer and insurer.

Other Transactions

In addition to the transactions included in the previous tables, we have used wholly-owned trust preferred security VIEs to issue debt securities or preferred equity exclusively to third-party investors. As the sole assets of the VIEs are receivables from us, we do not consolidate the VIEs even though we own all of the voting equity shares of the VIEs, have fully guaranteed the obligations of the VIEs, and may have the right to redeem the third-party securities under certain circumstances. See Note 15 (Long-Term Debt) and Note 20 (Preferred Stock) for additional information about trust preferred securities.

Certain money market funds are also excluded from the previous tables because they are exempt from the consolidation analysis. We voluntarily waived a portion of our management fees for these money market funds to maintain a minimum level of daily net investment income. The amount of fees waived in 2019, 2018 and 2017 was $40 million, $45 million, and $53 million, respectively.

Note 11: Mortgage Banking Activities

Mortgage banking activities, included in the Community Banking and Wholesale Banking operating segments, consist of residential and commercial mortgage originations, sale activity and servicing.

We apply the amortization method to commercial MSRs and apply the fair value method to residential MSRs. Table 11.1 presents the changes in MSRs measured using the fair value method.

Table 11.1: Analysis of Changes in Fair Value MSRs

		Year ended December 31,	
(in millions)	**2019**	2018	2017
Fair value, beginning of year	$ **14,649**	13,625	12,959
Purchases	**—**	—	541
Servicing from securitizations or asset transfers (1)	**1,933**	2,010	2,263
Sales and other (2)	**(286)**	(71)	(23)
Net additions	**1,647**	1,939	2,781
Changes in fair value:			
Due to changes in valuation model inputs or assumptions:			
Mortgage interest rates (3)	**(2,406)**	1,337	(103)
Servicing and foreclosure costs (4)	**48**	818	96
Discount rates (5)	**145**	(830)	13
Prepayment estimates and other (6)	**(356)**	(365)	(132)
Net changes in valuation model inputs or assumptions	**(2,569)**	960	(126)
Changes due to collection/realization of expected cash flows over time (7)	**(2,210)**	(1,875)	(1,989)
Total changes in fair value	**(4,779)**	(915)	(2,115)
Fair value, end of year	$ **11,517**	14,649	13,625

(1) Includes impacts associated with exercising cleanup calls on securitizations as well as our right to repurchase delinquent loans from Government National Mortgage Association (GNMA) loan securitization pools. Total reported MSRs may increase upon repurchase due to servicing liabilities associated with these delinquent GNMA loans.
(2) Includes sales and transfers of MSRs, which can result in an increase of total reported MSRs if the sales or transfers are related to nonperforming loan portfolios or portfolios with servicing liabilities.
(3) Includes prepayment speed changes as well as other valuation changes due to changes in mortgage interest rates (such as changes in estimated interest earned on custodial deposit balances).
(4) Includes costs to service and unreimbursed foreclosure costs.
(5) Reflects discount rate assumption change, excluding portion attributable to changes in mortgage interest rates.
(6) Represents changes driven by other valuation model inputs or assumptions including prepayment speed estimation changes and other assumption updates. Prepayment speed estimation changes are influenced by observed changes in borrower behavior and other external factors that occur independent of interest rate changes.
(7) Represents the reduction in the MSR fair value for the cash flows expected to be collected during the period, net of income accreted due to the passage of time

Table 11.2 presents the changes in amortized MSRs.

Table 11.2: Analysis of Changes in Amortized MSRs

		Year ended December 31,	
(in millions)	**2019**	2018	2017
Balance, beginning of year	$ **1,443**	1,424	1,406
Purchases	**100**	127	115
Servicing from securitizations or asset transfers	**161**	158	166
Amortization	**(274)**	(266)	(263)
Balance, end of year (1)	$ **1,430**	1,443	1,424
Fair value of amortized MSRs:			
Beginning of year	$ **2,288**	2,025	1,956
End of year	**1,872**	2,288	2,025

(1) Commercial amortized MSRs are evaluated for impairment purposes by the following risk strata: agency (GSEs) for multi-family properties and non-agency. There was no valuation allowance recorded for the periods presented on the commercial amortized MSRs.

We present the components of our managed servicing portfolio in Table 11.3 at unpaid principal balance for loans serviced and subserviced for others and at book value for owned loans serviced.

Table 11.3: Managed Servicing Portfolio

(in billions)		Dec 31, 2019	Dec 31, 2018
Residential mortgage servicing:			
Serviced for others	$	**1,063**	1,164
Owned loans serviced (1)		**343**	334
Subserviced for others		**2**	4
Total residential servicing		**1,408**	1,502
Commercial mortgage servicing:			
Serviced for others		**566**	543
Owned loans serviced		**124**	121
Subserviced for others		**9**	9
Total commercial servicing		**699**	673
Total managed servicing portfolio	$	**2,107**	2,175
Total serviced for others	$	**1,629**	1,707
Ratio of MSRs to related loans serviced for others		**0.79%**	0.94

(1) Excludes loans serviced by third parties.

Table 11.4 presents the components of mortgage banking noninterest income.

Table 11.4: Mortgage Banking Noninterest Income

			Year ended December 31,		
(in millions)			2019	2018	2017
Servicing income, net:					
Servicing fees:					
Contractually specified servicing fees		$	**3,388**	3,613	3,603
Late charges			**129**	162	172
Ancillary fees			**143**	182	199
Unreimbursed direct servicing costs (1)			**(403)**	(331)	(582)
Net servicing fees			**3,257**	3,626	3,392
Changes in fair value of MSRs carried at fair value:					
Due to changes in valuation model inputs or assumptions (2)	(A)		**(2,569)**	960	(126)
Changes due to collection/realization of expected cash flows over time (3)			**(2,210)**	(1,875)	(1,989)
Total changes in fair value of MSRs carried at fair value			**(4,779)**	(915)	(2,115)
Amortization			**(274)**	(266)	(263)
Net derivative gains (losses) from economic hedges (4)	(B)		**2,318**	(1,072)	413
Total servicing income, net			**522**	1,373	1,427
Net gains on mortgage loan origination/sales activities (5)			**2,193**	1,644	2,923
Total mortgage banking noninterest income		$	**2,715**	3,017	4,350
Market-related valuation changes to MSRs, net of hedge results (2)(4)	(A)+(B)	$	**(251)**	(112)	287

(1) Includes costs associated with foreclosures, unreimbursed interest advances to investors, and other interest costs.
(2) Refer to the analysis of changes in fair value MSRs presented in Table 11.1 in this Note for more detail.
(3) Represents the reduction in the MSR fair value for the cash flows expected to be collected during the period, net of income accreted due to the passage of time.
(4) Represents results from economic hedges used to hedge the risk of changes in fair value of MSRs. See Note 18 (Derivatives) for additional discussion and detail.
(5) Includes net gains (losses) of $(141) million, $857 million and $35 million at December 31, 2019, 2018 and 2017, respectively, related to derivatives used as economic hedges of mortgage loans held for sale and derivative loan commitments.

Note 12: Intangible Assets

Table 12.1 presents the gross carrying value of intangible assets and accumulated amortization.

Table 12.1: Intangible Assets

		December 31, 2019			December 31, 2018	
(in millions)	**Gross carrying value**	**Accumulated amortization**	**Net carrying value**	Gross carrying value	Accumulated amortization	Net carrying value
Amortized intangible assets (1):						
MSRs (2)	**$ 4,422**	**(2,992)**	**1,430**	4,161	(2,718)	1,443
Core deposit intangibles	**—**	**—**	**—**	12,834	(12,834)	—
Customer relationship and other intangibles	**947**	**(524)**	**423**	3,994	(3,449)	545
Total amortized intangible assets	**$ 5,369**	**(3,516)**	**1,853**	20,989	(19,001)	1,988
Unamortized intangible assets:						
MSRs (carried at fair value) (2)	**$ 11,517**			14,649		
Goodwill	**26,390**			26,418		
Trademark	**14**			14		

(1) Balances are excluded commencing in the period following full amortization.
(2) See Note 11 (Mortgage Banking Activities) for additional information on MSRs.

Table 12.2 provides the current year and estimated future amortization expense for amortized intangible assets. We based our projections of amortization expense shown below on existing asset balances at December 31, 2019. Future amortization expense may vary from these projections.

Table 12.2: Amortization Expense for Intangible Assets

(in millions)	Amortized MSRs	Customer relationship and other intangibles	Total
Year ended December 31, 2019 (actual)	**$ 274**	**114**	**388**
Estimate for year ended December 31,			
2020	$ 263	95	358
2021	227	81	308
2022	203	68	271
2023	176	59	235
2024	152	48	200

Table 12.3 shows the allocation of goodwill to our reportable operating segments.

Table 12.3: Goodwill

(in millions)	Community Banking	Wholesale Banking	Wealth and Investment Management	Consolidated Company
December 31, 2017 (1)	$ 16,849	8,455	1,283	26,587
Reduction in goodwill related to divested businesses and foreign currency translation	(164)	(5)	—	(169)
December 31, 2018 (1)	**$ 16,685**	**8,450**	**1,283**	**26,418**
Reduction in goodwill related to divested businesses and foreign currency translation	—	(21)	(7)	(28)
December 31, 2019 (1)	**$ 16,685**	**8,429**	**1,276**	**26,390**

(1) At December 31, 2017, other assets included Goodwill classified as held-for-sale of $13 million related to the sales agreement for Wells Fargo Shareowner Services, which closed in February 2018. At December 31, 2019, and December 31, 2018, there was no Goodwill classified as held-for-sale in other assets.

We assess goodwill for impairment at a reporting unit level, which is one level below the operating segments. Our goodwill was not impaired at December 31, 2019 and 2018. The fair values exceeded the carrying amount of our respective reporting units by approximately 6% to 425% at December 31, 2019. See Note 27 (Operating Segments) for further information on management reporting.

Note 13: Deposits

Table 13.1 presents a summary of the time certificates of deposit (CDs) and other time deposits issued by domestic and non-U.S. offices.

Table 13.1: Time Certificates of Deposits and Other Time Deposits

		December 31,	
(in billions)		**2019**	2018
Total domestic and Non-U.S.	**$**	**118.8**	130.6
Domestic:			
$100,000 or more		**43.7**	42.5
$250,000 or more		**34.6**	37.1
Non-U.S.			
$100,000 or more		**4.0**	4.6
$250,000 or more		**4.0**	4.6

Substantially all CDs and other time deposits issued by domestic and non-U.S. offices were interest bearing. The contractual maturities of these deposits are presented in Table 13.2.

Table 13.2: Contractual Maturities of CDs and Other Time Deposits

(in millions)		December 31, 2019
2020	$	88,259
2021		15,429
2022		6,055
2023		4,130
2024		1,906
Thereafter		3,070
Total	$	118,849

The contractual maturities of the domestic time deposits with a denomination of $100,000 or more are presented in Table 13.3.

Table 13.3: Contractual Maturities of Domestic Time Deposits

(in millions)		December 31, 2019
Three months or less	$	18,759
After three months through six months		10,583
After six months through twelve months		11,766
After twelve months		2,624
Total	$	43,732

Demand deposit overdrafts of $542 million and $624 million were included as loan balances at December 31, 2019 and 2018, respectively.

Note 14: Short-Term Borrowings

Table 14.1 shows selected information for short-term borrowings, which generally mature in less than 30 days. We pledge certain financial instruments that we own to collateralize repurchase agreements and other securities financings. For additional information, see the "Pledged Assets" section of Note 16 (Guarantees, Pledged Assets and Collateral, and Other Commitments).

Table 14.1: Short-Term Borrowings

		2019			2018			2017
(in millions)		**Amount**	**Rate**		Amount	Rate		Amount	Rate
As of December 31,								
Federal funds purchased and securities sold under agreements to repurchase	$	**92,403**	**1.54%**	$	92,430	2.65%	$	88,684	1.30%
Commercial paper		**—**	**—**		—	—		—	—
Other short-term borrowings		**12,109**	**0.60**		13,357	1.63		14,572	0.72
Total	$	**104,512**	**1.43**	$	105,787	2.52	$	103,256	1.22
Year ended December 31,									
Average daily balance									
Federal funds purchased and securities sold under agreements to repurchase	$	**102,888**	**2.11**	$	90,348	1.78	$	82,507	0.90
Commercial paper		**—**	**—**		—	—		16	0.95
Other short-term borrowings		**12,449**	**1.20**		13,919	0.79		16,399	0.13
Total	$	**115,337**	**2.01**	$	104,267	1.65	$	98,922	0.77
Maximum month-end balance									
Federal funds purchased and securities sold under agreements to repurchase (1)	$	**111,726**	**N/A**	$	93,918	N/A	$	91,604	N/A
Commercial paper (2)		**—**	**N/A**		—	N/A		78	N/A
Other short-term borrowings (3)		**14,129**	**N/A**		16,924	N/A		19,439	N/A

N/A- Not applicable
(1) Highest month-end balance in each of the last three years was October 2019, November 2018 and November 2017.
(2) There were no month-end balances in 2019 and 2018; highest month-end balance in 2017 was January.
(3) Highest month-end balance in each of the last three years was February 2019, January 2018 and February 2017.

Note 15: Long-Term Debt

We issue long-term debt denominated in multiple currencies, largely in U.S. dollars. Our issuances have both fixed and floating interest rates. As a part of our overall interest rate risk management strategy, we often use derivatives to manage our exposure to interest rate risk. We also use derivatives to manage our exposure to foreign currency risk. As a result, approximately half of the long-term debt presented below is hedged in a fair value or cash flow hedge relationship. See Note 18 (Derivatives) for further information on qualifying hedge contracts.

Table 15.1 presents a summary of our long-term debt carrying values, reflecting unamortized debt discounts and premiums, and purchase accounting adjustments, where applicable. The interest rates displayed represent the range of contractual rates in effect at December 31, 2019. These interest rates do not include the effects of any associated derivatives designated in a hedge accounting relationship.

Table 15.1: Long-Term Debt

			December 31,	
			2019	2018
(in millions)	Maturity date(s)	Stated interest rate(s)		
Wells Fargo & Company (Parent only)				
Senior				
Fixed-rate notes (1)	2020-2047	0.38 - 6.75%	$ **86,618**	77,742
Floating-rate notes	2020-2048	0.02-3.24%	**16,800**	19,553
FixFloat notes	2025-2030	2.41-3.58%	**12,030**	2,901
Structured notes (2)			**8,390**	7,984
Total senior debt - Parent			**123,838**	108,180
Subordinated				
Fixed-rate notes (3)	2023-2046	3.45-7.57%	**27,195**	25,428
Total subordinated debt - Parent			**27,195**	25,428
Junior subordinated				
Fixed-rate notes - trust securities	2029-2036	5.95-7.95%	**1,428**	1,308
Floating-rate notes	2027	2.50-3.00%	**318**	308
Total junior subordinated debt - Parent (4)			**1,746**	1,616
Total long-term debt - Parent (3)			**152,779**	135,224
Wells Fargo Bank, N.A., and other bank entities (Bank)				
Senior				
Fixed-rate notes	2020-2023	2.40-3.63%	**9,364**	14,222
Floating-rate notes	2020-2053	1.64-2.55%	**10,617**	6,617
FixFloat notes	2021-2022	2.08-3.33%	**5,097**	1,998
Fixed-rate advances - Federal Home Loan Bank (FHLB)	2020-2031	3.83-7.50%	**41**	51
Floating-rate advances - FHLB	2020-2022	1.83-2.31%	**32,950**	53,825
Structured notes (2)			**1,914**	1,646
Finance leases	2020-2029	1.69-17.78%	**32**	36
Total senior debt - Bank			**60,015**	78,395
Subordinated				
Fixed-rate notes	2023-2038	5.25-7.74%	**5,374**	5,199
Total subordinated debt - Bank			**5,374**	5,199
Junior subordinated				
Floating-rate notes	2027	2.48-2.65%	**363**	352
Total junior subordinated debt - Bank (4)			**363**	352
Long-term debt issued by VIE - Fixed rate	2037	6.00%	**17**	160
Long-term debt issued by VIE - Floating rate	2020-2038	2.38-4.62%	**570**	656
Mortgage notes and other debt (5)	2020-2057	9.20%	**6,185**	6,637
Total long-term debt - Bank			**72,524**	91,399

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(in millions)	Maturity date(s)	Stated interest rate(s)		December 31, 2019	2018
Other consolidated subsidiaries					
Senior					
Fixed-rate notes	2021-2023	3.04-3.46%		**1,352**	2,383
Structured notes (2)				**1,503**	6
Finance leases	2020	3.71%		**1**	—
Total senior debt - Other consolidated subsidiaries				**2,856**	2,389
Mortgage notes and other	2026	3.27%		**32**	32
Total long-term debt - Other consolidated subsidiaries				**2,888**	2,421
Total long-term debt			$	**228,191**	229,044

(1) Includes $66 million of outstanding zero coupon callable notes at December 31, 2019.
(2) Included in the table are certain structured notes that have coupon or repayment terms linked to the performance of debt or equity securities, an embedded equity, commodity, or currency index, or basket of indices accounted for separately from the note as a free-standing derivative, and the maturity may be accelerated based on the value of a referenced index or security. For information on embedded derivatives, see the "Derivatives Not Designated as Hedging Instruments" section in Note 18 (Derivatives). In addition, a major portion consists of zero coupon callable notes where interest is paid as part of the final redemption amount.
(3) Includes fixed-rate subordinated notes issued by the Parent at a discount of $128 million and $131 million in 2019 and 2018, respectively, and debt issuance costs of $2 million in both 2019 and 2018, to effect a modification of Wells Fargo Bank, N.A., notes. These subordinated notes are carried at their par amount on the balance sheet of the Parent presented in Note 28 (Parent-Only Financial Statements). In addition, Parent long-term debt presented in Note 28 also includes affiliate related issuance costs of $281 million and $278 million in 2019 and 2018, respectively.
(4) Represents junior subordinated debentures held by unconsolidated wholly-owned trusts formed for the sole purpose of issuing trust preferred securities. See Note 10 (Securitizations and Variable Interest Entities) for additional information.
(5) Largely relates to unfunded commitments for LIHTC investments. For additional information, see Note 8 (Equity Securities).

We issue long-term debt in a variety of maturities and currencies to achieve cost-efficient funding and to maintain an appropriate maturity profile. Long-term debt of $228.2 billion at December 31, 2019, decreased $853 million from December 31, 2018. We issued $53.4 billion of long-term debt in 2019.

The aggregate carrying value of long-term debt that matures (based on contractual payment dates) as of December 31, 2019, in each of the following five years and thereafter is presented in Table 15.2.

Table 15.2: Maturity of Long-Term Debt

(in millions)		2020	2021	2022	2023	2024	Thereafter	Total (December 31, 2019)
Wells Fargo & Company (Parent Only)								
Senior notes	$	13,429	18,163	18,091	11,104	9,387	53,664	123,838
Subordinated notes		—	—	—	3,653	737	22,805	27,195
Junior subordinated notes		—	—	—	—	—	1,746	1,746
Total long-term debt - Parent		13,429	18,163	18,091	14,757	10,124	78,215	152,779
Wells Fargo Bank, N.A., and other bank entities (Bank)								
Senior notes		23,415	27,865	5,585	2,884	6	260	60,015
Subordinated notes		—	—	—	1,071	—	4,303	5,374
Junior subordinated notes		—	—	—	—	—	363	363
Securitizations and other bank debt		2,658	1,138	633	224	157	1,962	6,772
Total long-term debt - Bank		26,073	29,003	6,218	4,179	163	6,888	72,524
Other consolidated subsidiaries								
Senior notes		144	1,761	93	435	118	305	2,856
Securitizations and other bank debt		—	—	—	—	—	32	32
Total long-term debt - Other consolidated subsidiaries		144	1,761	93	435	118	337	2,888
Total long-term debt	$	39,646	48,927	24,402	19,371	10,405	85,440	228,191

As part of our long-term and short-term borrowing arrangements, we are subject to various financial and operational covenants. Some of the agreements under which debt has been issued have provisions that may limit the merger or sale of certain subsidiary banks and the issuance of capital stock or convertible securities by certain subsidiary banks. At December 31, 2019, we were in compliance with all the covenants.

Note 16: Guarantees, Pledged Assets and Collateral, and Other Commitments

Guarantees are contracts that contingently require us to make payments to a guaranteed party based on an event or a change in an underlying asset, liability, rate or index. Guarantees are generally in the form of standby letters of credit, securities lending and other indemnifications, written options, recourse obligations, and other types of similar arrangements. Table 16.1 shows carrying value, maximum exposure to loss on our guarantees and the related non-investment grade amounts.

Table 16.1: Guarantees – Carrying Value and Maximum Exposure to Loss

							Maximum exposure to loss	
(in millions)		Carrying value of obligation (asset)	Expires in one year or less	Expires after one year through three years	Expires after three years through five years	Expires after five years	Total	Non-investment grade
December 31, 2019								
Standby letters of credit	**$**	**36**	**11,569**	**4,460**	**2,812**	**467**	**19,308**	**7,104**
Direct pay letters of credit		**—**	**1,861**	**3,815**	**824**	**105**	**6,605**	**1,184**
Written options (1)		**(345)**	**17,088**	**10,869**	**2,341**	**273**	**30,571**	**18,113**
Loans and MLHFS sold with recourse (2)		**52**	**114**	**576**	**1,356**	**10,050**	**12,096**	**9,835**
Exchange and clearing house guarantees		**—**	**—**	**—**	**—**	**4,817**	**4,817**	**—**
Other guarantees and indemnifications (3)		**1**	**785**	**1**	**3**	**809**	**1,598**	**698**
Total guarantees	**$**	**(256)**	**31,417**	**19,721**	**7,336**	**16,521**	**74,995**	**36,934**
December 31, 2018								
Standby letters of credit (4)	$	40	10,947	4,649	2,872	461	18,929	7,017
Direct pay letters of credit (4)		—	3,689	3,248	526	36	7,499	1,010
Written options (1)		(185)	17,243	10,502	3,066	400	31,211	21,732
Loans and MLHFS sold with recourse (2)		54	104	653	1,207	10,163	12,127	9,079
Exchange and clearing house guarantees (4)		—	—	—	—	2,922	2,922	—
Other guarantees and indemnifications (3), (4)		1	889	1	3	1,081	1,974	753
Total guarantees	$	(90)	32,872	19,053	7,674	15,063	74,662	39,591

(1) Written options, which are in the form of derivatives, are also included in the derivative disclosures in Note 18 (Derivatives). Carrying value net asset position is a result of certain deferred premium option trades.
(2) Represent recourse provided, predominantly to the GSEs, on loans sold under various programs and arrangements.
(3) Includes indemnifications provided to certain third-party clearing agents. Outstanding customer obligations under these arrangements were $80 million and $70 million with related collateral of $696 million and $974 million at December 31, 2019 and 2018, respectively.
(4) Prior period amounts have been revised to conform with the current period presentation.

"Maximum exposure to loss" and "Non-investment grade" are required disclosures under GAAP. Maximum exposure to loss represents the estimated loss that would be incurred under an assumed hypothetical circumstance, despite what we believe is a remote possibility, where the value of our interests and any associated collateral declines to zero. Maximum exposure to loss estimates in Table 16.1 do not reflect economic hedges or collateral we could use to offset or recover losses we may incur under our guarantee agreements. Accordingly, this required disclosure is not an indication of expected loss. We believe the carrying value, which is either fair value, or the allowance for lending-related commitments, is more representative of our exposure to loss.

Non-investment grade represents those guarantees on which we have a higher risk of performance under the terms of the guarantee. If the underlying assets under the guarantee are non-investment grade (that is, an external rating that is below investment grade or an internal credit default grade that is equivalent to a below investment grade external rating), we consider the risk of performance to be high. Internal credit default grades are determined based upon the same credit policies that we use to evaluate the risk of payment or performance when making loans and other extensions of credit. Credit quality indicators we usually consider in evaluating risk of payments or performance are described in Note 6 (Loans and Allowance for Credit Losses).

STANDBY LETTERS OF CREDIT We issue standby letters of credit, which include performance and financial guarantees, for customers in connection with contracts between our customers and third parties. We also originate multipurpose lending commitments under which borrowers have the option to draw on the facility in one of several forms, including as a standby letter of credit. Standby letters of credit are conditional lending commitments where we are obligated to make payment to a third party on behalf of a customer if the customer fails to meet their contractual obligations. Total maximum exposure to loss includes the portion of multipurpose lending facilities for which we have issued standby letters of credit under the commitments. We consider the credit risk in standby letters of credit and commercial and similar letters of credit in determining the ACL.

DIRECT PAY LETTERS OF CREDIT We issue direct pay letters of credit to serve as credit enhancements for certain bond issuances. Beneficiaries (bond trustees) may draw upon these instruments to make scheduled principal and interest payments, redeem all outstanding bonds because a default event has occurred, or for other reasons as permitted by the agreement. We consider the credit risk in direct pay letters of credit in determining the ACL.

WRITTEN OPTIONS We enter into certain derivative contracts that have the characteristics of a guarantee. These contracts include written put options that give the counterparty the right to sell to us an underlying instrument held by the counterparty at a specified price by a specified date. They also include certain written options that require us to make a payment for increases in fair value of assets held by the counterparty. These written option contracts generally permit or require net settlement. While these derivative transactions expose us to risk if the option is exercised, we manage this risk by entering into offsetting trades or by taking short positions in the underlying instrument. We offset market risk related to options written to customers with cash securities or other offsetting derivative transactions. Additionally, for certain of these contracts, we require the counterparty to pledge the underlying instrument as collateral for the transaction. Our ultimate obligation under written options is based on future market conditions and is only quantifiable at settlement. See Note 18 (Derivatives) for additional information regarding written derivative contracts.

LOANS AND MLHFS SOLD WITH RECOURSE In certain sales and securitizations of loans, including mortgage loans, we provide recourse to the buyer whereby we are required to indemnify the buyer for any loss on the loan up to par value plus accrued interest. We provide recourse, predominantly to GSEs, on loans sold under various programs and arrangements. Substantially all of these programs and arrangements require that we share in the loans' credit exposure for their remaining life by providing recourse to the GSE, up to 33.33% of actual losses incurred on a pro-rata basis in the event of borrower default. Under the remaining recourse programs and arrangements, if certain events occur within a specified period of time from transfer date, we have to provide limited recourse to the buyer to indemnify them for losses incurred for the remaining life of the loans. The maximum exposure to loss reported in Table 16.1 represents the outstanding principal balance of the loans sold or securitized that are subject to recourse provisions or the maximum losses per the contractual agreements. However, we believe the likelihood of loss of the entire balance due to these recourse agreements is remote, and amounts paid can be recovered in whole or in part from the sale of collateral. We also provide representation and warranty guarantees on loans sold under the various recourse programs and arrangements. Our loss exposure relative to these guarantees is separately considered and provided for, as necessary, in determination of our liability for loan repurchases due to breaches of representation and warranties.

EXCHANGE AND CLEARING HOUSE GUARANTEES We are members of several securities and derivatives exchanges and clearing houses, both in the U.S. and in countries outside the U.S., that we use to clear our trades and those of our customers. It is common that all members in these organizations are required to collectively guarantee the performance of other members and of the organization. Our obligations under the guarantees are generally a pro-rata share based on either a fixed amount or a multiple of the guarantee fund we are required to maintain with these organizations. Some membership rules require members to assume a pro-rata share of losses resulting from another member's default or from non-member default losses after applying the guarantee fund. We have not recorded a liability for these arrangements as of the dates presented in Table 16.1 because we believe the likelihood of loss is remote.

OTHER GUARANTEES AND INDEMNIFICATIONS We have contingent performance arrangements related to various customer relationships and lease transactions. We are required to pay the counterparties to these agreements if third parties default on certain obligations.

Under certain factoring arrangements, we may be required to purchase trade receivables from third parties, if receivable debtors default on their payment obligations.

We use certain third-party clearing agents to clear and settle transactions on behalf of some of our institutional brokerage customers. We indemnify the clearing agents against loss that could occur for non-performance by our customers on transactions that are not sufficiently collateralized. Transactions subject to the indemnifications may include customer obligations related to the settlement of margin accounts and short positions, such as written call options and securities borrowing transactions.

We enter into other types of indemnification agreements in the ordinary course of business under which we agree to indemnify third parties against any damages, losses and expenses incurred in connection with legal and other proceedings arising from relationships or transactions with us. These relationships or transactions include those arising from service as a director or officer of the Company, underwriting agreements relating to our securities, acquisition agreements and various other business transactions or arrangements. Because the extent of our obligations under these agreements depends entirely upon the occurrence of future events, we are unable to determine our potential future liability under these agreements. We do, however, record a liability for residential mortgage loans that we expect to repurchase pursuant to various representations and warranties.

GUARANTEES OF SUBSIDIARIES In the normal course of business, the Parent may provide counterparties with guarantees related to its subsidiaries' obligations. These obligations are included in the Company's consolidated balance sheets or are reflected as off-balance sheet commitments, and therefore, the Parent has not recognized a separate liability for these guarantees.

The Parent fully and unconditionally guarantees the payment of principal, interest, and any other amounts that may be due on securities that its 100% owned finance subsidiary, Wells Fargo Finance LLC, may issue. These guaranteed liabilities were $1.6 billion and $5 million at December 31, 2019 and 2018, respectively. These guarantees rank on parity with all of the Parent's other unsecured and unsubordinated indebtedness.

Pledged Assets

Table 16.2 provides the carrying amount of on-balance sheet pledged assets and the fair value of off-balance sheet pledged assets.

TRADING RELATED ACTIVITY Our trading businesses may pledge debt and equity securities in connection with securities sold under agreements to repurchase (repurchase agreements) and securities lending arrangements. Substantially all of the trading activity pledged collateral is eligible to be repledged or sold by the secured party. The collateral that we pledge related to our trading activities may include our own collateral as well as collateral that we have received from third parties and have the right to repledge.

NON-TRADING RELATED ACTIVITY As part of our liquidity management strategy, we may pledge loans, debt securities, and other assets to secure trust and public deposits, borrowings and letters of credit from the Federal Home Loan Bank (FHLB) and FRB and for other purposes as required or permitted by law or insurance statutory requirements. Substantially all of the non-trading activity pledged collateral is not eligible to be repledged or sold by the secured party.

Table 16.2 excludes:

- Pledged assets of consolidated VIEs of $14.4 billion and $14.6 billion at December 31, 2019 and 2018, respectively, which can only be used to settle the liabilities of those entities;
- Assets pledged in transactions with VIEs accounted for as secured borrowings of $80 million and $94 million at December 31, 2019 and 2018, respectively; and
- Pledged loans recorded on our balance sheet of $568 million and $1.2 billion at December 31, 2019 and 2018, respectively, representing certain delinquent loans that are eligible for repurchase from GNMA loan securitizations.

See Note 10 (Securitizations and Variable Interest Entities) for additional information on consolidated VIE assets and secured borrowings.

Table 16.2: Pledged Assets

(in millions)		Dec 31, 2019	Dec 31, 2018
Related to trading activities:			
Debt securities	$	**106,105**	96,616
Equity securities		**6,204**	9,695
Total pledged assets related to trading activities (1)		**112,309**	106,311
Related to non-trading activities:			
Debt securities and other		**65,047**	62,438
Mortgage loans held for sale (2)		**2,266**	7,439
Loans (2)		**406,106**	446,455
Total pledged assets related to non-trading activities		**473,419**	516,332
Total pledged assets	$	**585,728**	622,643

(1) Includes securities collateral received from third parties that we have repledged of $60.1 billion and $60.8 billion as of December 31, 2019 and 2018, respectively.
(2) Prior period amounts have been revised to conform with the current period presentation.

Securities Financing Activities

We enter into resale and repurchase agreements and securities borrowing and lending agreements (collectively, “securities financing activities”) typically to finance trading positions (including securities and derivatives), acquire securities to cover short trading positions, accommodate customers’ financing needs, and settle other securities obligations. These activities are conducted through our broker-dealer subsidiaries and, to a lesser extent, through other bank entities. Most of our securities financing activities involve high-quality, liquid securities such as U.S. Treasury securities and government agency securities and, to a lesser extent, less liquid securities, including equity securities, corporate bonds and asset-backed securities. We account for these transactions as collateralized financings in which we typically receive or pledge securities as collateral. We believe these financing transactions generally do not have material credit risk given the collateral provided and the related monitoring processes.

OFFSETTING OF SECURITIES FINANCING ACTIVITIES Table 16.3 presents resale and repurchase agreements subject to master repurchase agreements (MRA) and securities borrowing and lending agreements subject to master securities lending agreements (MSLA). We account for transactions subject to these agreements as collateralized financings, and those with a single counterparty are presented net on our balance sheet, provided certain criteria are met that permit balance sheet netting. Most transactions subject to these agreements do not meet those criteria and thus are not eligible for balance sheet netting.

Collateral we pledged consists of non-cash instruments, such as securities or loans, and is not netted on the balance sheet against the related liability. Collateral we received includes securities or loans and is not recognized on our balance sheet. Collateral pledged or received may be increased or decreased over time to maintain certain contractual thresholds, as the assets underlying each arrangement fluctuate in value. Generally, these agreements require collateral to exceed the asset or liability recognized on the balance sheet. The following table includes the amount of collateral pledged or received related to exposures subject to enforceable MRAs or MSLAs. While these agreements are typically over-collateralized, U.S. GAAP requires disclosure in this table to limit the reported amount of such collateral to the amount of the related recognized asset or liability for each counterparty.

In addition to the amounts included in Table 16.3, we also have balance sheet netting related to derivatives that is disclosed in Note 18 (Derivatives).

Table 16.3: Offsetting – Securities Financing Activities

(in millions)		Dec 31, 2019	Dec 31, 2018
Assets:			
Resale and securities borrowing agreements			
Gross amounts recognized	$	**140,773**	112,662
Gross amounts offset in consolidated balance sheet (1)		**(19,180)**	(15,258)
Net amounts in consolidated balance sheet (2)		**121,593**	97,404
Collateral not recognized in consolidated balance sheet (3)		**(120,786)**	(96,734)
Net amount (4)	$	**807**	670
Liabilities:			
Repurchase and securities lending agreements			
Gross amounts recognized (5)	$	**111,038**	106,248
Gross amounts offset in consolidated balance sheet (1)		**(19,180)**	(15,258)
Net amounts in consolidated balance sheet (6)		**91,858**	90,990
Collateral pledged but not netted in consolidated balance sheet (7)		**(91,709)**	(90,798)
Net amount (8)	$	**149**	192

(1) Represents recognized amount of resale and repurchase agreements with counterparties subject to enforceable MRAs that have been offset in the consolidated balance sheet.
(2) Includes $102.1 billion and $80.1 billion, respectively, classified on our consolidated balance sheet in federal funds sold and securities purchased under resale agreements at December 31, 2019 and 2018. Also includes securities purchased under long-term resale agreements (generally one year or more) classified in loans, which totaled $19.5 billion and $17.3 billion, at December 31, 2019 and 2018, respectively.
(3) Represents the fair value of collateral we have received under enforceable MRAs or MSLAs, limited in the table above to the amount of the recognized asset due from each counterparty. At December 31, 2019 and 2018, we have received total collateral with a fair value of $150.9 billion and $123.1 billion, respectively, all of which we have the right to sell or repledge. These amounts include securities we have sold or repledged to others with a fair value of $59.1 billion at December 31, 2019, and $60.8 billion at December 31, 2018.
(4) Represents the amount of our exposure that is not collateralized and/or is not subject to an enforceable MRA or MSLA.
(5) For additional information on underlying collateral and contractual maturities, see the "Repurchase and Securities Lending Agreements" section in this Note.
(6) Amount is classified in short-term borrowings on our consolidated balance sheet.
(7) Represents the fair value of collateral we have pledged, related to enforceable MRAs or MSLAs, limited in the table above to the amount of the recognized liability owed to each counterparty. At December 31, 2019 and 2018, we have pledged total collateral with a fair value of $113.3 billion and $108.8 billion, respectively, substantially all of which may be sold or repledged by the counterparty.
(8) Represents the amount of our obligation that is not covered by pledged collateral and/or is not subject to an enforceable MRA or MSLA.

REPURCHASE AND SECURITIES LENDING AGREEMENTS Securities sold under repurchase agreements and securities lending arrangements are effectively short-term collateralized borrowings. In these transactions, we receive cash in exchange for transferring securities as collateral and recognize an obligation to reacquire the securities for cash at the transaction's maturity. These types of transactions create risks, including (1) the counterparty may fail to return the securities at maturity, (2) the fair value of the securities transferred may decline below the amount of our obligation to reacquire the securities, and therefore create an obligation for us to pledge additional amounts, and (3) the counterparty may accelerate the maturity on demand, requiring us to reacquire the security prior to contractual maturity. We attempt to mitigate these risks in various ways. Most of our collateral consists of highly liquid securities. In addition, we underwrite and monitor the financial strength of our counterparties, monitor the fair value of collateral pledged relative to contractually required repurchase amounts, and monitor that our collateral is properly returned through the clearing and settlement process in advance of our cash repayment. Table 16.4 provides the gross amounts recognized on the balance sheet (before the effects of offsetting) of our liabilities for repurchase and securities lending agreements disaggregated by underlying collateral type.

Table 16.4: Gross Obligations by Underlying Collateral Type

(in millions)		Dec 31, 2019	Dec 31, 2018
Repurchase agreements:			
Securities of U.S. Treasury and federal agencies	$	**48,161**	38,408
Securities of U.S. States and political subdivisions		**104**	159
Federal agency mortgage-backed securities		**44,737**	47,241
Non-agency mortgage-backed securities		**1,818**	1,875
Corporate debt securities		**7,126**	6,191
Asset-backed securities		**1,844**	2,074
Equity securities		**1,674**	992
Other		**705**	340
Total repurchases		**106,169**	97,280
Securities lending arrangements:			
Securities of U.S. Treasury and federal agencies		**163**	222
Federal agency mortgage-backed securities		**—**	2
Corporate debt securities		**223**	389
Equity securities (1)		**4,481**	8,349
Other		**2**	6
Total securities lending		**4,869**	8,968
Total repurchases and securities lending	$	**111,038**	106,248

(1) Equity securities are generally exchange traded and represent collateral received from third parties that has been repledged. We received the collateral through either margin lending agreements or contemporaneous securities borrowing transactions with other counterparties.

Table 16.5 provides the contractual maturities of our gross obligations under repurchase and securities lending agreements.

Table 16.5: Contractual Maturities of Gross Obligations

(in millions)		Overnight/ continuous	Up to 30 days	30-90 days	>90 days	Total gross obligation
December 31, 2019						
Repurchase agreements	**$**	**79,793**	**17,681**	**4,825**	**3,870**	**106,169**
Securities lending arrangements		**4,724**	**—**	**145**	**—**	**4,869**
Total repurchases and securities lending (1)	**$**	**84,517**	**17,681**	**4,970**	**3,870**	**111,038**
December 31, 2018						
Repurchase agreements	$	86,574	3,244	2,153	5,309	97,280
Securities lending arrangements		8,669	—	299	—	8,968
Total repurchases and securities lending (1)	$	95,243	3,244	2,452	5,309	106,248

(1) Securities lending is executed under agreements that allow either party to terminate the transaction without notice, while repurchase agreements have a term structure to them that technically matures at a point in time. The overnight/continuous repurchase agreements require election of both parties to roll the trade rather than the election to terminate the arrangement as in securities lending.

OTHER COMMITMENTS To meet the financing needs of our customers, we may enter into commitments to purchase debt and equity securities to provide capital for their funding, liquidity or other future needs. As of December 31, 2019 and 2018, we had commitments to purchase debt securities of $18 million and $335 million, respectively, and commitments to purchase equity securities of $2.7 billion and $2.5 billion, respectively.

As part of maintaining our memberships in certain clearing organizations, we are required to stand ready to provide liquidity to sustain market clearing activity in the event unforeseen events occur or are deemed likely to occur. Certain of these obligations are guarantees of other members' performance and accordingly are included in Table 16.1.

Also, we have commitments to purchase loans and securities under resale agreements from certain counterparties, including central clearing organizations. The amount of our unfunded contractual commitments was $7.5 billion and $12.4 billion as of December 31, 2019 and 2018, respectively.

Given the nature of these commitments, they are excluded from Table 6.4 (Unfunded Credit Commitments) in Note 6 (Loans and Allowance for Credit Losses).

Note 17: Legal Actions

Wells Fargo and certain of our subsidiaries are involved in a number of judicial, regulatory, governmental, arbitration, and other proceedings or investigations concerning matters arising from the conduct of our business activities, and many of those proceedings and investigations expose Wells Fargo to potential financial loss. These proceedings and investigations include actions brought against Wells Fargo and/or our subsidiaries with respect to corporate-related matters and transactions in which Wells Fargo and/or our subsidiaries were involved. In addition, Wells Fargo and our subsidiaries may be requested to provide information or otherwise cooperate with government authorities in the conduct of investigations of other persons or industry groups.

Although there can be no assurance as to the ultimate outcome, Wells Fargo and/or our subsidiaries have generally denied, or believe we have a meritorious defense and will deny, liability in all significant legal actions pending against us, including the matters described below, and we intend to defend vigorously each case, other than matters we describe as having settled. We establish accruals for legal actions when potential losses associated with the actions become probable and the costs can be reasonably estimated. For such accruals, we record the amount we consider to be the best estimate within a range of potential losses that are both probable and estimable; however, if we cannot determine a best estimate, then we record the low end of the range of those potential losses. The actual costs of resolving legal actions may be substantially higher or lower than the amounts accrued for those actions.

ATM ACCESS FEE LITIGATION In October 2011, plaintiffs filed a putative class action, *Mackmin, et al. v. Visa, Inc. et al.*, against Wells Fargo & Company, Wells Fargo Bank, N.A., Visa, MasterCard, and several other banks in the United States District Court for the District of Columbia. Plaintiffs allege that the Visa and MasterCard requirement that if an ATM operator charges an access fee on Visa and MasterCard transactions, then that fee cannot be greater than the access fee charged for transactions on other networks, violates antitrust rules. Plaintiffs seek treble damages, restitution, injunctive relief, and attorneys' fees where available under federal and state law. Two other antitrust cases that make similar allegations were filed in the same court, but these cases did not name Wells Fargo as a defendant. On February 13, 2013, the district court granted defendants' motions to dismiss the three actions. Plaintiffs appealed the dismissals and, on August 4, 2015, the United States Court of Appeals for the District of Columbia Circuit vacated the district court's decisions and remanded the three cases to the district court for further proceedings. On June 28, 2016, the United States Supreme Court granted defendants' petitions for writ of certiorari to review the decisions of the United States Court of Appeals for the District of Columbia. On November 17, 2016, the United States Supreme Court dismissed the petitions as improvidently granted, and the three cases returned to the district court for further proceedings.

AUTOMOBILE LENDING MATTERS On April 20, 2018, the Company entered into consent orders with the Office of the Comptroller of the Currency (OCC) and the Consumer Financial Protection Bureau (CFPB) to resolve, among other things, investigations by the agencies into the Company's compliance risk management program and its past practices involving certain automobile collateral protection insurance (CPI) policies and certain mortgage interest rate lock extensions. The consent orders require remediation to customers and the payment of a total of $1.0 billion in civil money penalties to the agencies. In July 2017, the Company announced a plan to remediate customers who may have been financially harmed due to issues related to automobile CPI policies purchased through a third-party vendor on their behalf. Multiple putative class action cases alleging, among other things, unfair and deceptive practices relating to these CPI policies, have been filed against the Company and consolidated into one multi-district litigation in the United States District Court for the Central District of California. The Company has reached an agreement to resolve the multi-district litigation pursuant to which the Company has agreed to pay, consistent with its remediation obligations under the consent orders, approximately $547 million in remediation to customers with CPI policies placed between October 15, 2005, and September 30, 2016. The settlement amount is not incremental to the Company's remediation obligations under the consent orders, but instead encompasses those obligations, including remediation payments to date. The settlement amount is subject to change as the Company finalizes its remediation activity under the consent orders. In addition, the Company has agreed to contribute $1 million to a common fund for the class. The district court granted final approval of the settlement on November 21, 2019. A putative class of shareholders also filed a securities fraud class action against the Company and its executive officers alleging material misstatements and omissions of CPI-related information in the Company's public disclosures. In addition, the Company is subject to a class action lawsuit in the United States District Court for the Central District of California alleging that customers are entitled to refunds related to the unused portion of guaranteed automobile protection (GAP) waiver or insurance agreements between the customer and dealer and, by assignment, the lender. Allegations related to the CPI and GAP programs are among the subjects of shareholder derivative lawsuits pending in federal and state court in California. The court dismissed the state court action in September 2018, but plaintiffs filed an amended complaint in November 2018. The parties to the state court action have entered into an agreement to resolve the action pursuant to which the Company will pay plaintiffs' attorneys' fees and undertake certain business and governance practices. The state court granted final approval of the settlement on January 15, 2020. These and other issues related to the origination, servicing, and collection of consumer automobile loans, including related insurance products, have also subjected the Company to formal or informal inquiries, investigations, or examinations from federal and state government agencies. In December 2018, the Company entered into an agreement with all 50 state Attorneys General and the District of Columbia to resolve an investigation into the Company's retail sales practices, CPI and GAP, and mortgage interest rate lock matters, pursuant to which the Company paid $575 million.

CONSUMER DEPOSIT ACCOUNT RELATED REGULATORY INVESTIGATION The CFPB is conducting an investigation into whether customers were unduly harmed by the Company's historical practices associated with the freezing (and, in many cases, closing) of consumer deposit accounts after the Company detected suspected fraudulent activity (by third parties or account holders) that affected those accounts.

FIDUCIARY AND CUSTODY ACCOUNT FEE CALCULATIONS Federal government agencies are conducting formal or informal inquiries, investigations, or examinations regarding fee calculations within certain fiduciary and custody accounts in the Company's investment and fiduciary services business, which is part of the wealth management business within the Wealth and Investment Management (WIM) operating segment. The Company has determined that there have been instances of incorrect fees being applied to certain assets and accounts, resulting in both overcharges and undercharges to customers.

FOREIGN EXCHANGE BUSINESS Federal government agencies, including the United States Department of Justice (Department of Justice), are investigating or examining certain activities in the Company's foreign exchange business, including whether customers may have received pricing inconsistent with commitments made to those customers. These matters are at varying stages. The Company has responded, and continues to respond, to requests from a number of the foregoing and has discussed the potential resolution of some of the matters.

INTERCHANGE LITIGATION Plaintiffs representing a putative class of merchants have filed putative class actions, and individual merchants have filed individual actions, against Wells Fargo Bank, N.A., Wells Fargo & Company, Wachovia Bank, N.A., and Wachovia Corporation regarding the interchange fees associated with Visa and MasterCard payment card transactions. Visa, MasterCard, and several other banks and bank holding companies are also named as defendants in these actions. These actions have been consolidated in the United States District Court for the Eastern District of New York. The amended and consolidated complaint asserts claims against defendants based on alleged violations of federal and state antitrust laws and seeks damages, as well as injunctive relief. Plaintiff merchants allege that Visa, MasterCard, and payment card issuing banks unlawfully colluded to set interchange rates. Plaintiffs also allege that enforcement of certain Visa and MasterCard rules and alleged tying and bundling of services offered to merchants are anticompetitive. Wells Fargo and Wachovia, along with other defendants and entities, are parties to Loss and Judgment Sharing Agreements, which provide that they, along with other entities, will share, based on a formula, in any losses from the Interchange Litigation. On July 13, 2012, Visa, MasterCard, and the financial institution defendants, including Wells Fargo, signed a memorandum of understanding with plaintiff merchants to resolve the consolidated class action and reached a separate settlement in principle of the consolidated individual actions. The settlement payments to be made by all defendants in the consolidated class and individual actions totaled approximately $6.6 billion before reductions applicable to certain merchants opting out of the settlement. The class settlement also provided for the distribution to class merchants of 10 basis points of default interchange across all credit rate categories for a period of eight consecutive months. The district court granted final approval of the settlement, which was appealed to the United States Court of Appeals for the Second Circuit by settlement objector merchants. Other merchants opted out of the settlement and are pursuing several individual actions. On June 30, 2016, the Second Circuit vacated the settlement agreement and reversed and remanded the consolidated action to the United States District Court for the Eastern District of New York for further proceedings. On November 23, 2016, prior class counsel filed a petition to the United States Supreme Court, seeking review of the reversal of the settlement by the Second Circuit, and the Supreme Court denied the petition on March 27, 2017. On November 30, 2016, the district court appointed lead class counsel for a damages class and an equitable relief class. The parties have entered into a settlement agreement to resolve the money damages class claims pursuant to which defendants will pay a total of approximately $6.2 billion, which includes approximately $5.3 billion of funds remaining from the 2012 settlement and $900 million in additional funding. The Company's allocated responsibility for the additional funding is approximately $94.5 million. The court granted final approval of the settlement on December 13, 2019, which was appealed to the United States Court of Appeals for the Second Circuit by settlement objector merchants. Several of the opt-out and direct action litigations have been settled while others remain pending. Discovery is proceeding in the opt-out litigations and the equitable relief class case.

LOW INCOME HOUSING TAX CREDITS Federal government agencies have undertaken formal or informal inquiries or investigations regarding the manner in which the Company purchased, and negotiated the purchase of, certain federal low income housing tax credits in connection with the financing of low income housing developments.

MOBILE DEPOSIT PATENT LITIGATION The Company is a defendant in two separate cases brought by United Services Automobile Association (USAA) in the United States District Court for the Eastern District of Texas alleging claims of patent infringement regarding mobile deposit capture technology patents held by USAA. Trial in the first case commenced on October 30, 2019, and resulted in a $200 million verdict against the Company. Trial in the second case commenced on January 6, 2020, and resulted in a $102.7 million verdict against the Company. The Company has filed post-trial motions to, among other things, vacate the verdicts, and USAA has filed post-trial motions seeking future royalty payments and damages for willful infringement.

MORTGAGE LOAN MODIFICATION LITIGATION Plaintiffs representing a putative class of mortgage borrowers have filed separate putative class actions, *Hernandez v. Wells Fargo, et al.*, *Coordes v. Wells Fargo, et al.*, *Ryder v. Wells Fargo*, *Liguori v. Wells Fargo*, and *Dore v. Wells Fargo*, against Wells Fargo Bank, N.A., in the United States District Court for the Northern District of California, the United States District Court for the District of Washington, the United States District Court for the Southern District of Ohio, the United States District Court for the Southern District of New York, and the United States District Court for the Western District of Pennsylvania, respectively. Plaintiffs allege that Wells Fargo improperly denied mortgage loan modifications or repayment plans to customers in the foreclosure process due to the overstatement of foreclosure attorneys' fees that were included for purposes of determining whether a customer in the foreclosure process qualified for a mortgage loan modification or repayment plan.

MORTGAGE-RELATED REGULATORY INVESTIGATIONS Federal and state government agencies, including the Department of Justice, have been investigating or examining certain mortgage related activities of Wells Fargo and predecessor institutions. Wells Fargo, for itself and for predecessor institutions, has responded, or continues to respond, to requests from these agencies seeking information regarding the origination, underwriting, and securitization of residential mortgages, including sub-prime mortgages. These agencies have advanced theories of purported liability with respect to certain of these activities. An agreement, pursuant to which the Company paid $2.09 billion, was reached in August 2018 to resolve the Department of Justice investigation, which related to certain 2005-2007 residential mortgage-backed securities activities. In addition, the Company reached an agreement with the Attorney General of the State of Illinois in November 2018 pursuant to which the Company paid $17 million in restitution to certain Illinois state pension funds to resolve a claim relating to certain residential mortgage-backed securities activities. Other financial institutions have entered into similar settlements with these agencies, the nature of which related to the specific activities of those financial institutions, including the imposition of significant financial penalties and remedial actions.

OFAC RELATED INVESTIGATION The Company has self-identified an issue whereby certain foreign banks utilized a Wells Fargo software-based solution to conduct import/export trade-related financing transactions with countries and entities prohibited by the Office of Foreign Assets Control (OFAC) of the United States Department of the Treasury. We do not believe any funds related to these transactions flowed through accounts at Wells Fargo as a result of the aforementioned conduct. The Company has made voluntary self-disclosures to OFAC and is cooperating with an inquiry from the Department of Justice.

ORDER OF POSTING LITIGATION Plaintiffs filed a series of putative class actions against Wachovia Bank, N.A., and Wells Fargo Bank, N.A., as well as many other banks, challenging the "high to low" order in which the banks post debit card transactions to consumer deposit accounts. Most of these actions were consolidated in multi-district litigation proceedings (MDL proceedings) in the United States District Court for the Southern District of Florida. The court in the MDL proceedings has certified a class of putative plaintiffs, and Wells Fargo moved to compel arbitration of the claims of unnamed class members. The court denied the motions to compel arbitration in October 2016, and Wells Fargo appealed this decision to the United States Court of Appeals for the Eleventh Circuit. In May 2018, the Eleventh Circuit ruled in Wells Fargo's favor and found that Wells Fargo had not waived its arbitration rights and remanded the case to the district court for further proceedings. On September 26, 2019, the district court entered an order granting Wells Fargo's motion and dismissed the claims of unnamed class members in favor of arbitration. Plaintiffs appealed this decision to the United States Court of Appeals for the Eleventh Circuit.

RETAIL SALES PRACTICES MATTERS A number of bodies or entities, including (a) federal, state, and local government agencies, including the Department of Justice, the United States Securities and Exchange Commission (SEC), and the United States Department of Labor, (b) state attorneys general, including the New York Attorney General, and (c) Congressional committees, have undertaken formal or informal inquiries, investigations, or examinations arising out of certain retail sales practices of the Company that were the subject of settlements with the CFPB, the OCC, and the Office of the Los Angeles City Attorney announced by the Company on September 8, 2016. These matters are at varying stages. The Company has responded, and continues to respond, to requests from a number of the foregoing. In October 2018, the Company entered into an agreement to resolve the New York Attorney General's investigation pursuant to which the Company paid $65 million to the State of New York. In December 2018, the Company entered into an agreement with all 50 state Attorneys General and the District of Columbia to resolve an investigation into the Company's retail sales practices, CPI and GAP, and mortgage interest rate lock matters, pursuant to which the Company paid $575 million. On February 21, 2020, the Company entered into an agreement with the Department of Justice to resolve the Department of Justice's criminal investigation into the Company's retail sales practices, as well as a separate agreement to resolve the Department of Justice's civil investigation. As part of the Department of Justice criminal settlement, no charges will be filed against the Company provided the Company abides by all the terms of the agreement. The Department of Justice criminal settlement also includes the Company's agreement that the facts set forth in the settlement document constitute sufficient facts for the finding of criminal violations of statutes regarding bank records and personal information. On February 21, 2020, the Company also entered into an order to resolve the SEC's investigation arising out of the Company's retail sales practices. The SEC order contains a finding, to which the Company consented, that the facts set forth include violations of Section 10(b) of the Securities Exchange Act of 1934 and Rule 10b-5 thereunder. As part of the resolution of the Department of Justice and SEC investigations, the Company has agreed to make payments totaling $3.0 billion. In addition, as part of the settlements and included in the $3.0 billion amount, the Company has agreed to the creation of a $500 million Fair Fund for the benefit of investors who were harmed by the conduct covered in the SEC settlement.

In addition, a number of lawsuits have been filed by non-governmental parties seeking damages or other remedies related to these retail sales practices. First, various class plaintiffs, purporting to represent consumers who allege that they received products or services without their authorization or consent, have brought separate putative class actions against the Company in the United States District Court for the Northern District of California and various other jurisdictions. In April 2017, the Company entered into a settlement agreement in the first-filed action, *Jabbari v. Wells Fargo Bank, N.A.*, pursuant to which the Company will pay $142 million to resolve claims regarding certain products or services provided without authorization or consent for the time period May 1, 2002 to April 20, 2017. The district court issued an order granting final approval of the settlement on June 14, 2018. Several appeals of the district court's order granting final approval of the settlement have been filed with the United States Court of Appeals for the Ninth Circuit. Second, Wells Fargo shareholders brought a consolidated securities fraud class action in the United States District Court for the Northern District of California alleging certain misstatements and omissions in the Company's disclosures related to sales practices matters. The Company entered into a settlement agreement to resolve this matter pursuant to which the Company paid $480 million. The district court issued an order granting final approval of the settlement on December 20, 2018. Third, Wells Fargo shareholders have brought numerous shareholder derivative lawsuits asserting breach of fiduciary duty claims against, among others, current and former directors and officers for their alleged involvement with and failure to detect and prevent sales practices issues. These actions are currently pending in the United States District Court for the Northern District of California and California state court as coordinated proceedings. An additional lawsuit, which asserts similar claims and is pending in Delaware state court, has been stayed. The parties have entered into settlement agreements to resolve the shareholder derivative lawsuits pursuant to which insurance carriers will pay the Company approximately $240 million for alleged damage to the Company, and the Company will pay plaintiffs' attorneys' fees. The federal court granted preliminary approval of the settlement for its action and held a final approval hearing on August 1, 2019. The state court granted final approval of the settlement for its action on January 15, 2020. Fourth, multiple employment litigation matters have been brought against Wells Fargo, including (a) a purported Employee Retirement Income Security Act (ERISA) class action in the United States District Court for the District of Minnesota on behalf of 401(k) plan participants; this action has been dismissed and is now on appeal; (b) a purported class action in the United States District Court for the Northern District of California on behalf of team members who allege that they protested sales practice misconduct and/or were terminated for not meeting sales goals; this action has been dismissed, and we have entered into a framework with plaintiffs' counsel to address individual claims that have been asserted; (c) various wage and hour class actions brought in federal and state court in California, New Jersey, and Pennsylvania on behalf of non-exempt branch based team members alleging that sales pressure resulted in uncompensated overtime; these actions have been settled; and (d) multiple single-plaintiff Sarbanes-Oxley Act complaints and state law whistleblower actions filed with the United States Department of Labor or in various state courts alleging adverse employment actions for raising sales practice misconduct issues.

RMBS TRUSTEE LITIGATION In November 2014, a group of institutional investors (Institutional Investor Plaintiffs), including funds affiliated with BlackRock, Inc., filed a putative class action in the United States District Court for the Southern District of New York against Wells Fargo Bank, N.A., alleging claims against the Company in its capacity as trustee for a number of residential mortgage-backed securities (RMBS) trusts (Federal Court Complaint). Similar complaints have been filed against other trustees in various courts, including in the Southern District of New York, in New York state court, and in other states, by RMBS investors. The Federal Court Complaint alleged that Wells Fargo Bank, N.A., as trustee, caused losses to investors and asserted causes of action based upon, among other things, the trustee's alleged failure to notify and enforce repurchase obligations of mortgage loan sellers for purported breaches of representations and warranties, notify investors of alleged events of default, and abide by appropriate standards of care following alleged events of default. Plaintiffs sought money damages in an unspecified amount, reimbursement of expenses, and equitable relief. In December 2014 and December 2015, certain other investors filed additional complaints alleging similar claims against Wells Fargo Bank, N.A., in the Southern District of New York (Related Federal Cases). In January 2016, the Southern District of New York entered an order in connection with the Federal Court Complaint dismissing claims related to certain of the trusts at issue (Dismissed Trusts). The Company's subsequent motion to dismiss the Federal Court Complaint and the complaints for the Related Federal Cases was granted in part and denied in part in March 2017. In May 2017, the Company filed third-party complaints against certain investment advisors affiliated with the Institutional Investor Plaintiffs seeking contribution with respect to claims alleged in the Federal Court Complaint (Third-Party Claims).

In December 2016, the Institutional Investor Plaintiffs filed a new putative class action complaint in New York state court in respect of 261 RMBS trusts, including the Dismissed Trusts, for which Wells Fargo Bank, N.A., serves or served as trustee (State Court Action). A complaint raising similar allegations to those in the Federal Court Complaint was filed in May 2016 in New York state court by IKB International and IKB Deutsche Industriebank (IKB Action).

In July 2017, certain of the plaintiffs from the State Court Action filed a civil complaint relating to Wells Fargo Bank, N.A.'s setting aside reserves for legal fees and expenses in connection with the liquidation of eleven RMBS trusts at issue in the State Court Action (Declaratory Judgment Action). The complaint sought, among other relief, declarations that the Company is not entitled to indemnification, the advancement of funds, or the taking of reserves from trust funds for legal fees and expenses it incurs in defending the claims in the State Court Action.

In May 2019, the New York state court approved a settlement agreement among the Institutional Investor Plaintiffs and the Company pursuant to which, among other terms, the Company paid $43 million to resolve the Federal Court Complaint and the State Court Action. The settlement also resolved the Third Party Claims and the Declaratory Judgment Action. The settlement did not affect the Related Federal Cases or the IKB Action, which remain pending.

SEMINOLE TRIBE TRUSTEE LITIGATION The Seminole Tribe of Florida filed a complaint in Florida state court alleging that Wells Fargo, as trustee, charged excess fees in connection with the administration of a minor's trust and failed to invest the assets of the trust prudently. The complaint was later amended to include three individual current and former beneficiaries as plaintiffs and to remove the Tribe as a party to the case. In December 2016, the Company filed a motion to dismiss the amended complaint on the grounds that the Tribe is a necessary party and that the individual beneficiaries lack standing to bring claims. The motion was denied in June 2018. Trial is scheduled for April 2020.

WHOLESALE BANKING CONSENT ORDER INVESTIGATION On November 19, 2015, the Company entered into a consent order with the OCC, pursuant to which the Wholesale Banking group was required to implement customer due diligence standards that include collection of current beneficial ownership information for certain business customers. The Company is responding to inquiries from various federal government agencies regarding potentially inappropriate conduct in connection with the collection of beneficial ownership information.

OUTLOOK As described above, the Company establishes accruals for legal actions when potential losses associated with the actions become probable and the costs can be reasonably estimated. The high end of the range of reasonably possible potential losses in excess of the Company's accrual for probable and estimable losses was approximately $2.6 billion as of December 31, 2019. The outcomes of legal actions are unpredictable and subject to significant uncertainties, and it is inherently difficult to determine whether any loss is probable or even possible. It is also inherently difficult to estimate the amount of any loss and there may be matters for which a loss is probable or reasonably possible but not currently estimable. Accordingly, actual losses may be in excess of the established accrual or the range of reasonably possible loss. Wells Fargo is unable to determine whether the ultimate resolution of the retail sales practices matters will have a material adverse effect on its consolidated financial condition. Based on information currently available, advice of counsel, available insurance coverage, and established reserves, Wells Fargo believes that the eventual outcome of other actions against Wells Fargo and/or its subsidiaries will not, individually or in the aggregate, have a material adverse effect on Wells Fargo's consolidated financial condition. However, it is possible that the ultimate resolution of a matter, if unfavorable, may be material to Wells Fargo's results of operations for any particular period.

Note 18: Derivatives

We use derivatives to manage exposure to market risk, including interest rate risk, credit risk and foreign currency risk, and to assist customers with their risk management objectives. We designate certain derivatives as hedging instruments in qualifying hedge accounting relationships (fair value or cash flow hedges). Our remaining derivatives consist of economic hedges that do not qualify for hedge accounting and derivatives held for customer accommodation trading or other purposes.

Risk management derivatives

Our asset/liability management approach to interest rate, foreign currency and certain other risks includes the use of derivatives, which are typically designated as fair value or cash flow hedges, or economic hedges. We use derivatives to help minimize significant, unplanned fluctuations in earnings, fair values of assets and liabilities, and cash flows caused by interest rate, foreign currency and other market risk volatility. This approach involves modifying the repricing characteristics of certain assets and liabilities so that changes in interest rates, foreign currency and other exposures, which may cause the hedged assets and liabilities to gain or lose fair value, do not have a significant adverse effect on the net interest margin, cash flows and earnings. In a fair value or economic hedge, the effect of change in fair value will generally be offset by the unrealized gain or loss on the derivatives linked to the hedged assets and liabilities. In a cash flow hedge, where we manage the variability of cash payments due to interest rate or foreign currency fluctuations by the effective use of derivatives linked to hedged assets and liabilities, the hedged asset or liability is not adjusted and the unrealized gain or loss on the derivative is recorded in other comprehensive income.

Customer accommodation trading

We also use various derivatives, including interest rate, commodity, equity, credit and foreign exchange contracts, as an accommodation to our customers as part of our trading businesses. These derivative transactions, which involve engaging in market-making activities or acting as an intermediary, are conducted in an effort to help customers manage their market risks. We usually offset our exposure from such derivatives by entering into other financial contracts, such as separate derivative or security transactions. These customer accommodations and any offsetting derivatives are treated as customer accommodation trading and other derivatives in our disclosures. Additionally, embedded derivatives that are required to be accounted for separately from their host contracts are included in the customer accommodation trading and other derivatives disclosures, as applicable.

We mention derivative instruments within several other Notes in this Report. For more information on Derivatives, refer to the following areas:

- Note 1 – Summary of Significant Accounting Policies
- Note 4 – Trading Activities
- Note 8 – Equity Securities
- Note 10 – Securitizations and Variable Interest Entities
- Note 11 – Mortgage Banking Activities
- Note 15 – Long-Term Debt
- Note 16 – Guarantees, Pledged Assets and Collateral, and Other Commitments
- Note 19 – Fair Values of Assets and Liabilities
- Note 24 – Income Taxes
- Note 26 – Other Comprehensive Income
- Note 28 – Parent-Only Financial Statements

Table 18.1 presents the total notional or contractual amounts and fair values for our derivatives. Derivative transactions can be measured in terms of the notional amount, but this amount is not recorded on the balance sheet and is not, when viewed in isolation, a meaningful measure of the risk profile of the instruments. The notional amount is generally not exchanged, but is used only as the basis on which interest and other payments are determined.

Table 18.1: Notional or Contractual Amounts and Fair Values of Derivatives

	December 31, 2019			December 31, 2018		
	Notional or		**Fair value**	Notional or		Fair value
(in millions)	**contractual amount**	**Derivative assets**	**Derivative liabilities**	contractual amount	Derivative assets	Derivative liabilities
Derivatives designated as hedging instruments						
Interest rate contracts	$ **182,789**	**2,595**	**1,237**	177,511	2,237	636
Foreign exchange contracts	**32,386**	**341**	**1,170**	34,176	573	1,376
Total derivatives designated as qualifying hedging instruments		**2,936**	**2,407**		2,810	2,012
Derivatives not designated as hedging instruments						
Economic hedges:						
Interest rate contracts	**235,810**	**207**	**160**	173,215	849	369
Equity contracts	**19,263**	**1,126**	**224**	13,920	1,362	79
Foreign exchange contracts	**26,595**	**118**	**286**	19,521	225	80
Credit contracts - protection purchased	**1,400**	**27**	**—**	100	27	—
Subtotal		**1,478**	**670**		2,463	528
Customer accommodation trading and other derivatives:						
Interest rate contracts	**11,117,542**	**21,245**	**17,969**	9,162,821	15,349	15,303
Commodity contracts	**79,737**	**1,421**	**1,770**	66,173	1,588	2,336
Equity contracts	**272,145**	**7,410**	**10,240**	217,890	6,183	5,931
Foreign exchange contracts	**364,469**	**4,755**	**4,791**	364,982	5,916	5,657
Credit contracts - protection sold	**12,215**	**12**	**65**	11,741	76	182
Credit contracts - protection purchased	**24,030**	**69**	**18**	20,880	175	98
Subtotal		**34,912**	**34,853**		29,287	29,507
Total derivatives not designated as hedging instruments		**36,390**	**35,523**		31,750	30,035
Total derivatives before netting		**39,326**	**37,930**		34,560	32,047
Netting		**(25,123)**	**(28,851)**		(23,790)	(23,548)
Total		$ **14,203**	**9,079**		10,770	8,499

Table 18.2 provides information on the gross fair values of derivative assets and liabilities, the balance sheet netting adjustments and the resulting net fair value amount recorded on our balance sheet, as well as the non-cash collateral associated with such arrangements. We execute substantially all of our derivative transactions under master netting arrangements and reflect all derivative balances and related cash collateral subject to enforceable master netting arrangements on a net basis within the balance sheet. The "Gross amounts recognized" column in the following table includes $33.7 billion and $33.5 billion of gross derivative assets and liabilities, respectively, at December 31, 2019, and $30.9 billion and $28.4 billion, respectively, at December 31, 2018, with counterparties subject to enforceable master netting arrangements that are eligible for balance sheet netting adjustments. The majority of these amounts are interest rate contracts executed in over-the-counter (OTC) markets. The remaining gross derivative assets and liabilities of $5.6 billion and $4.4 billion, respectively, at December 31, 2019, and $3.7 billion and $3.6 billion, respectively, at December 31, 2018, include those with counterparties subject to master netting arrangements for which we have not assessed the enforceability because they are with counterparties where we do not currently have positions to offset, those subject to master netting arrangements where we have not been able to confirm the enforceability and those not subject to master netting arrangements. As such, we do not net derivative balances or collateral within the balance sheet for these counterparties. Cash collateral receivables and payables that have not been offset against our derivatives were $6.3 billion and $1.4 billion, respectively, at December 31, 2019, and $4.8 billion and $1.4 billion, respectively, at December 31, 2018.

We determine the balance sheet netting adjustments based on the terms specified within each master netting arrangement. We disclose the balance sheet netting amounts within the column titled "Gross amounts offset in consolidated balance sheet." Balance sheet netting adjustments are determined at the counterparty level for which there may be multiple contract types. For disclosure purposes, we allocate these netting adjustments to the contract type for each counterparty proportionally based upon the "Gross amounts recognized" by counterparty. As a result, the net amounts disclosed by contract type may not represent the actual exposure upon settlement of the contracts.

We do not net non-cash collateral that we receive and pledge on the balance sheet. For disclosure purposes, we present the fair value of this non-cash collateral in the column titled "Gross amounts not offset in consolidated balance sheet (Disclosure-only netting)" within the table. We determine and allocate the Disclosure-only netting amounts in the same manner as balance sheet netting amounts.

The "Net amounts" column within Table 18.2 represents the aggregate of our net exposure to each counterparty after considering the balance sheet and Disclosure-only netting adjustments. We manage derivative exposure by monitoring the credit risk associated with each counterparty using counterparty specific credit risk limits, using master netting arrangements and obtaining collateral. Derivative contracts executed in OTC markets include bilateral contractual arrangements that are not cleared through a central clearing organization but are typically subject to enforceable master netting arrangements. Other derivative contracts that are settled through a central clearing organization whether OTC or exchange-traded, are excluded from that percentage. In addition to the netting amounts included in the table, we also have balance sheet netting related to resale and repurchase agreements that are disclosed within Note 16 (Guarantees, Pledged Assets and Collateral, and Other Commitments).

Table 18.2: Gross Fair Values of Derivative Assets and Liabilities

(in millions)		Gross amounts recognized	Gross amounts offset in consolidated balance sheet (1)	Net amounts in consolidated balance sheet	Gross amounts not offset in consolidated balance sheet (Disclosure-only netting)	Net amounts	Percent exchanged in over-the-counter market
December 31, 2019							
Derivative assets							
Interest rate contracts	**$**	**24,047**	**(14,878)**	**9,169**	**(445)**	**8,724**	**95%**
Commodity contracts		**1,421**	**(888)**	**533**	**(2)**	**531**	**80**
Equity contracts		**8,536**	**(5,570)**	**2,966**	**(69)**	**2,897**	**65**
Foreign exchange contracts		**5,214**	**(3,722)**	**1,492**	**(22)**	**1,470**	**100**
Credit contracts-protection sold		**12**	**(9)**	**3**	**—**	**3**	**84**
Credit contracts-protection purchased		**96**	**(56)**	**40**	**(1)**	**39**	**97**
Total derivative assets	**$**	**39,326**	**(25,123)**	**14,203**	**(539)**	**13,664**	
Derivative liabilities							
Interest rate contracts	**$**	**19,366**	**(16,595)**	**2,771**	**(545)**	**2,226**	**94%**
Commodity contracts		**1,770**	**(677)**	**1,093**	**(2)**	**1,091**	**82**
Equity contracts		**10,464**	**(6,647)**	**3,817**	**(319)**	**3,498**	**81**
Foreign exchange contracts		**6,247**	**(4,866)**	**1,381**	**(169)**	**1,212**	**100**
Credit contracts-protection sold		**65**	**(60)**	**5**	**(3)**	**2**	**98**
Credit contracts-protection purchased		**18**	**(6)**	**12**	**—**	**12**	**93**
Total derivative liabilities	**$**	**37,930**	**(28,851)**	**9,079**	**(1,038)**	**8,041**	
December 31, 2018							
Derivative assets							
Interest rate contracts	$	18,435	(12,029)	6,406	(80)	6,326	90%
Commodity contracts		1,588	(849)	739	(4)	735	57
Equity contracts		7,545	(5,318)	2,227	(755)	1,472	78
Foreign exchange contracts		6,714	(5,355)	1,359	(35)	1,324	100
Credit contracts-protection sold		76	(73)	3	—	3	12
Credit contracts-protection purchased		202	(166)	36	(1)	35	78
Total derivative assets	$	34,560	(23,790)	10,770	(875)	9,895	
Derivative liabilities							
Interest rate contracts	$	16,308	(13,152)	3,156	(567)	2,589	92%
Commodity contracts		2,336	(727)	1,609	(8)	1,601	85
Equity contracts		6,010	(3,877)	2,133	(110)	2,023	75
Foreign exchange contracts		7,113	(5,522)	1,591	(188)	1,403	100
Credit contracts-protection sold		182	(180)	2	(2)	—	67
Credit contracts-protection purchased		98	(90)	8	—	8	11
Total derivative liabilities	$	32,047	(23,548)	8,499	(875)	7,624	

(1) Represents amounts with counterparties subject to enforceable master netting arrangements that have been offset in the consolidated balance sheet, including related cash collateral and portfolio level counterparty valuation adjustments. Counterparty valuation adjustments related to derivative assets were $231 million and $353 million and debit valuation adjustments related to derivative liabilities were $100 million and $152 million as of December 31, 2019 and 2018, respectively. Cash collateral totaled $2.9 billion and $6.8 billion, netted against derivative assets and liabilities, respectively, at December 31, 2019, and $3.7 billion and $3.6 billion, respectively, at December 31, 2018.

Fair Value and Cash Flow Hedges

For fair value hedges, we use interest rate swaps to convert certain of our fixed-rate long-term debt and time certificates of deposit to floating rates to hedge our exposure to interest rate risk. We also enter into cross-currency swaps, cross-currency interest rate swaps and forward contracts to hedge our exposure to foreign currency risk and interest rate risk associated with the issuance of non-U.S. dollar denominated long-term debt. In addition, we use interest rate swaps, cross-currency swaps, cross-currency interest rate swaps and forward contracts to hedge against changes in fair value of certain investments in available-for-sale debt securities due to changes in interest rates, foreign currency rates, or both. We also use interest rate swaps to hedge against changes in fair value for certain mortgage loans held for sale. For certain fair value hedges of foreign currency risk, changes in fair value of cross-currency swaps attributable to changes in cross-currency basis spreads are excluded from the assessment of hedge effectiveness and recorded in other comprehensive income. See Note 26 (Other Comprehensive Income) for the amounts recognized in other comprehensive income.

For cash flow hedges, we use interest rate swaps to hedge the variability in interest payments received on certain floating-rate commercial loans and paid on certain floating-rate debt due to changes in the contractually specified interest rate. We also use cross-currency swaps to hedge variability in interest payments on fixed-rate foreign currency-denominated long-term debt due to changes in foreign exchange rates.

We estimate $221 million pre-tax of deferred net losses related to cash flow hedges in OCI at December 31, 2019, will be reclassified into net interest income during the next twelve months. The deferred losses expected to be reclassified into net interest income are predominantly related to discontinued hedges of floating rate loans. For cash flow hedges as of December 31, 2019, we are hedging our foreign currency exposure to the variability of future cash flows for all forecasted transactions for a maximum of 11 years.

Table 18.3 and Table 18.4 show the net gains (losses) related to derivatives in fair value and cash flow hedging relationships, respectively.

Table 18.3: Gains (Losses) Recognized on Fair Value Hedging Relationships

	Net interest income				Noninterest income	Total recorded in net income	Total recorded in OCI
(in millions)	Debt securities	Mortgage loans held for sale	Deposits	Long-term debt	Other	Derivative gains (losses)	Derivative gains (losses)
Year Ended December 31, 2019							
Total amounts presented in the consolidated statement of income and other comprehensive income	**$ 14,955**	**813**	**(8,635)**	**(7,350)**	**3,181**	**N/A**	**275**
Interest contracts							
Amounts related to interest settlements on derivatives	**—**	**2**	**58**	**169**	**—**	**229**	
Recognized on derivatives	**(2,082)**	**1**	**463**	**5,001**	**—**	**3,383**	**—**
Recognized on hedged items	**2,096**	**(7)**	**(442)**	**(4,910)**	**—**	**(3,263)**	
Total gains (losses) (pre-tax) on interest rate contracts	**14**	**(4)**	**79**	**260**	**—**	**349**	**—**
Foreign exchange contracts							
Amounts related to interest settlements on derivatives	**35**	**—**	**—**	**(483)**	**—**	**(448)**	
Recognized on derivatives	**(5)**	**—**	**—**	**308**	**(358)**	**(55)**	**(3)**
Recognized on hedged items	**6**	**—**	**—**	**(289)**	**350**	**67**	
Total gains (losses) (pre-tax) on foreign exchange contracts	**36**	**—**	**—**	**(464)**	**(8)**	**(436)**	**(3)**
Total gains (losses) (pre-tax) recognized on fair value hedges	**$ 50**	**(4)**	**79**	**(204)**	**(8)**	**(87)**	**(3)**

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			Net interest income		Noninterest income	Total recorded in net income	Total recorded in OCI
(in millions)	Debt securities	Mortgage loans held for sale	Deposits	Long-term debt	Other	Derivative gains (losses)	Derivative gains (losses)
Year ended December 31, 2018							
Total amounts presented in the consolidated statement of income and other comprehensive income	$ 14,406	777	(5,622)	(6,703)	2,473	N/A	(238)
Interest contracts							
Amounts related to interest settlements on derivatives	(187)	(3)	(41)	292	—	61	
Recognized on derivatives	845	15	27	(1,923)	—	(1,035)	—
Recognized on hedged items	(877)	(22)	(33)	1,843	—	910	
Total gains (losses) (pre-tax) on interest rate contracts	(219)	(10)	(47)	212	—	(64)	—
Foreign exchange contracts							
Amounts related to interest settlements on derivatives	33	—	—	(434)	—	(401)	
Recognized on derivatives	7	—	—	135	(1,204)	(1,062)	(254)
Recognized on hedged items	(1)	—	—	(82)	1,114	1,031	
Total gains (losses) (pre-tax) on foreign exchange contracts	39	—	—	(381)	(90)	(432)	(254)
Total gains (losses) (pre-tax) recognized on fair value hedges	$ (180)	(10)	(47)	(169)	(90)	(496)	(254)
Year ended December 31, 2017							
Total amounts presented in the consolidated statement of income and other comprehensive income	$ 12,946	786	(3,013)	(5,157)	1,603	N/A	(1,083)
Interest contracts							
Amounts related to interest settlements on derivatives	(469)	(5)	36	1,286	—	847	
Recognized on derivatives	(43)	(5)	(20)	(912)	—	(979)	—
Recognized on hedged items	(52)	(4)	36	938	—	917	
Total gains (losses) (pre-tax) on interest rate contracts	(564)	(14)	52	1,312	—	785	—
Foreign exchange contracts							
Amounts related to interest settlements on derivatives	14	—	—	(210)	—	(196)	
Recognized on derivatives	13	—	—	(230)	3,118	2,901	(253)
Recognized on hedged items	(10)	—	—	255	(2,855)	(2,610)	
Total gains (losses) (pre-tax) on foreign exchange contracts	17	—	—	(185)	263	95	(253)
Total gains (losses) (pre-tax) recognized on fair value hedges	$ (547)	(14)	52	1,127	263	880	(253)

Table 18.4: Gains (Losses) Recognized on Cash Flow Hedging Relationships

		Net interest income		Total recorded in net income	Total recorded in OCI
(in millions)		Loans	Long-term debt	Derivative gains (losses)	Derivative gains (losses)
Year Ended December 31, 2019					
Total amounts presented in the consolidated statement of income and other comprehensive income	**$**	**44,146**	**(7,350)**	**N/A**	**275**
Interest rate contracts:					
Realized gains (losses) (pre-tax) reclassified from OCI into net income		**(291)**	**1**	**(290)**	**290**
Net unrealized gains (losses) (pre-tax) recognized in OCI		**N/A**	**N/A**	**N/A**	**—**
Total gains (losses) (pre-tax) on interest rate contracts		**(291)**	**1**	**(290)**	**290**
Foreign exchange contracts:					
Realized gains (losses) (pre-tax) reclassified from OCI into net income		**—**	**(9)**	**(9)**	**9**
Net unrealized gains (losses) (pre-tax) recognized in OCI		**N/A**	**N/A**	**N/A**	**(21)**
Total gains (losses) (pre-tax) on foreign exchange contracts		**—**	**(9)**	**(9)**	**(12)**
Total gains (losses) (pre-tax) recognized on cash flow hedges	**$**	**(291)**	**(8)**	**(299)**	**278**
Year ended December 31, 2018					
Total amounts presented in the consolidated statement of income and other comprehensive income	$	43,974	(6,703)	N/A	(238)
Interest rate contracts:					
Realized gains (losses) (pre-tax) reclassified from OCI into net income		(292)	1	(291)	291
Net unrealized gains (losses) (pre-tax) recognized in OCI		N/A	N/A	N/A	(266)
Total gains (losses) (pre-tax) on interest rate contracts		(292)	1	(291)	25
Foreign exchange contracts:					
Realized gains (losses) (pre-tax) reclassified from OCI into net income		—	(3)	(3)	3
Net unrealized gains (losses) (pre-tax) recognized in OCI		N/A	N/A	N/A	(12)
Total gains (losses) (pre-tax) on foreign exchange contracts		—	(3)	(3)	(9)
Total gains (losses) (pre-tax) recognized on cash flow hedges	$	(292)	(2)	(294)	16
Year ended December 31, 2017					
Total amounts presented in the consolidated statement of income and other comprehensive income	$	41,388	(5,157)	N/A	(1,083)
Interest rate contracts:					
Realized gains (losses) (pre-tax) reclassified from OCI into net income		551	(8)	543	(543)
Net unrealized gains (losses) (pre-tax) recognized in OCI		N/A	N/A	N/A	(287)
Total gains (losses) (pre-tax) on interest rate contracts		551	(8)	543	(830)
Foreign exchange contracts:					
Realized gains (losses) (pre-tax) reclassified from OCI into net income		—	—	—	—
Net unrealized gains (losses) (pre-tax) recognized in OCI		N/A	N/A	N/A	—
Total gains (losses) (pre-tax) on foreign exchange contracts		—	—	—	—
Total gains (losses) (pre-tax) recognized on cash flow hedges	$	551	(8)	543	(830)

Table 18.5 shows the carrying amount and associated cumulative basis adjustment related to the application of hedge accounting that is included in the carrying amount of hedged assets and liabilities in fair value hedging relationships.

Table 18.5: Hedged Items in Fair Value Hedging Relationship

		Hedged Items Currently Designated		Hedged Items No Longer Designated (1)	
(in millions)		Carrying Amount of Assets/(Liabilities) (2)(4)	Hedge Accounting Basis Adjustment Assets/(Liabilities) (3)	Carrying Amount of Assets/(Liabilities) (4)	Hedge Accounting Basis Adjustment Assets/(Liabilities)
December 31, 2019					
Available-for-sale debt securities (5)	**$**	**36,896**	**1,110**	**9,486**	**278**
Mortgage loans held for sale		**961**	**(12)**	**—**	**—**
Deposits		**(43,716)**	**(324)**	**—**	**—**
Long-term debt		**(127,423)**	**(5,827)**	**(25,750)**	**173**
December 31, 2018					
Available-for-sale debt securities (5)	$	37,857	(157)	4,938	238
Mortgage loans held for sale		448	7	—	—
Deposits		(56,535)	115	—	—
Long-term debt		(104,341)	(742)	(25,539)	366

(1) Represents hedged items no longer designated in qualifying fair value hedging relationships for which an associated basis adjustment exists at the balance sheet date.
(2) Does not include the carrying amount of hedged items where only foreign currency risk is the designated hedged risk. The carrying amount excluded for debt securities is $1.2 billion and for long-term debt is $(5.2) billion as of December 31, 2019, and $1.6 billion for debt securities and $(6.3) billion for long-term debt as of December 31, 2018.
(3) The balance includes $790 million and $109 million of debt securities and long-term debt cumulative basis adjustments as of December 31, 2019, respectively, and $1.4 billion and $66 million of debt securities and long-term debt cumulative basis adjustments as of December 31, 2018, respectively, on terminated hedges whereby the hedged items have subsequently been re-designated into existing hedges.
(4) Represents the full carrying amount of the hedged asset or liability item as of the balance sheet date, except for circumstances in which only a portion of the asset or liability was designated as the hedged item in which case only the portion designated is presented.
(5) Carrying amount represents the amortized cost.

Derivatives Not Designated as Hedging Instruments

Derivatives not designated as hedging instruments include economic hedges and derivatives entered into for customer accommodation trading purposes.

We use economic hedge derivatives to manage our exposure to interest rate risk, equity price risk, foreign currency risk, and credit risk. We also use economic hedge derivatives to mitigate the periodic earnings volatility caused by mismatches between the changes in fair value of the hedged item and hedging instrument recognized on our fair value accounting hedges.

Mortgage Banking Activities

We use economic hedge derivatives in our mortgage banking business to hedge the risk of changes in the fair value of (1) certain residential MSRs measured at fair value, (2) residential MLHFS, (3) derivative loan commitments, and (4) other interests held. The types of derivatives used include swaps, swaptions, constant maturity mortgages, forwards, Eurodollar and Treasury futures and options contracts. Loan commitments for mortgage loans that we intend to sell are considered derivatives. Residential MSRs, derivative loan commitments, certain residential MLHFS, and our economic hedge derivatives are carried at fair value with changes in fair value included in mortgage banking noninterest income. See Note 11 (Mortgage Banking Activities) for additional information on this economic hedging activity and mortgage banking income.

Customer Accommodation Trading and Other

For customer accommodation trading purposes, we use swaps, futures, forwards, spots and options to assist our customers in managing their own risks, including interest rate, commodity, equity, foreign exchange, and credit contracts. These derivatives are not linked to specific assets and liabilities on the balance sheet or to forecasted transactions in an accounting hedge relationship and, therefore, do not qualify for hedge accounting. We also enter into derivatives for risk management that do not otherwise qualify for hedge accounting. They are carried at fair value with changes in fair value recorded in noninterest income.

Customer accommodation trading and other derivatives also include embedded derivatives that are required to be accounted for separately from their host contract. We periodically issue hybrid long-term notes and CDs where the performance of the hybrid instrument note is linked to an equity, commodity or currency index, or basket of such indices. These notes contain explicit terms that affect some or all of the cash flows or the value of the note in a manner similar to a derivative instrument and therefore are considered to contain an “embedded” derivative instrument. The indices on which the performance of the hybrid instrument is calculated are not clearly and closely related to the host debt instrument. The “embedded” derivative is separated from the host contract and accounted for as a derivative. Additionally, we may invest in hybrid instruments that contain embedded derivatives, such as credit derivatives, that are not clearly and closely related to the host contract. In such instances, we either elect fair value option for the hybrid instrument or separate the embedded derivative from the host contract and account for the host contract and derivative separately.

Table 18.6 shows the net gains (losses), recognized by income statement lines, related to derivatives not designated as hedging instruments.

Table 18.6: Gains (Losses) on Derivatives Not Designated as Hedging Instruments

		Noninterest income			
(in millions)	Mortgage banking	Net gains (losses) from equity securities	Net gains (losses) from trading activities	Other	Total
Year ended December 31, 2019					
Net gains (losses) recognized on economic hedges derivatives:					
Interest contracts (1)	$ 2,177	—	—	1	2,178
Equity contracts	—	(2,120)	—	(2)	(2,122)
Foreign exchange contracts	—	—	—	(77)	(77)
Credit contracts	—	—	—	(5)	(5)
Subtotal	2,177	(2,120)	—	(83)	(26)
Net gains (losses) recognized on customer accommodation trading and other derivatives:					
Interest contracts	418	—	(95)	—	323
Commodity contracts	—	—	164	—	164
Equity contracts	—	—	(4,863)	(484)	(5,347)
Foreign exchange contracts	—	—	47	—	47
Credit contracts	—	—	(120)	—	(120)
Subtotal	418	—	(4,867)	(484)	(4,933)
Net gains (losses) recognized related to derivatives not designated as hedging instruments	$ 2,595	(2,120)	(4,867)	(567)	(4,959)

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(in millions)	Mortgage banking	Net gains (losses) from equity securities	Net gains (losses) from trading activities	Other	Noninterest income Total
Year ended December 31, 2018					
Net gains (losses) recognized on economic hedges derivatives:					
Interest contracts (1)	$ (215)	—	—	(15)	(230)
Equity contracts	—	(408)	—	4	(404)
Foreign exchange contracts	—	—	—	669	669
Credit contracts	—	—	—	—	—
Subtotal	(215)	(408)	—	658	35
Net gains (losses) recognized on customer accommodation trading and other derivatives:					
Interest contracts	(352)	—	446	—	94
Commodity contracts	—	—	83	—	83
Equity contracts	—	—	4,499	(403)	4,096
Foreign exchange contracts	—	—	638	—	638
Credit contracts	—	—	1	—	1
Subtotal	(352)	—	5,667	(403)	4,912
Net gains (losses) recognized related to derivatives not designated as hedging instruments	$ (567)	(408)	5,667	255	4,947
Year ended December 31, 2017					
Net gains (losses) recognized on economic hedges derivatives:					
Interest contracts (1)	$ 448	—	—	(75)	373
Equity contracts	—	(1,483)	—	17	(1,466)
Foreign exchange contracts	—	—	—	(866)	(866)
Credit contracts	—	—	—	5	5
Subtotal	448	(1,483)	—	(919)	(1,954)
Net gains (losses) recognized on customer accommodation trading and other derivatives:					
Interest contracts	614	—	160	—	774
Commodity contracts	—	—	178	—	178
Equity contracts	—	—	(3,932)	1	(3,931)
Foreign exchange contracts	—	—	638	—	638
Credit contracts	—	—	(81)	—	(81)
Subtotal	614	—	(3,037)	1	(2,422)
Net gains (losses) recognized related to derivatives not designated as hedging instruments	$ 1,062	(1,483)	(3,037)	(918)	(4,376)

(1) Mortgage banking amounts for the years ended December 31, 2019, 2018 and 2017, are comprised of gains (losses) of $2.3 billion, $(1.1) billion and $413 million, respectively, related to derivatives used as economic hedges of MSRs measured at fair value offset by gains (losses) of $(141) million, $857 million and $35 million, respectively, related to derivatives used as economic hedges of mortgage loans held for sale and derivative loan commitments.

Credit Derivatives

Credit derivative contracts are arrangements whose value is derived from the transfer of credit risk of a reference asset or entity from one party (the purchaser of credit protection) to another party (the seller of credit protection). We use credit derivatives to assist customers with their risk management objectives. We may also use credit derivatives in structured product transactions or liquidity agreements written to special purpose vehicles. The maximum exposure of sold credit derivatives is managed through purchased credit derivatives and similar products in order to achieve our desired credit risk profile. This credit risk management provides an ability to recover a significant portion of any amounts that would be paid under the sold credit derivatives. We would be required to perform under the sold credit derivatives in the event of default by the referenced obligors. Events of default include events such as bankruptcy, capital restructuring or lack of principal and/or interest payment. In certain cases, other triggers may exist, such as the credit downgrade of the referenced obligors or the inability of the special purpose vehicle for which we have provided liquidity to obtain funding.

Table 18.7 provides details of sold and purchased credit derivatives.

Table 18.7: Sold and Purchased Credit Derivatives

				Notional amount					
(in millions)		Fair value asset	Fair value liability	Protection sold (A)	Protection sold - non-investment grade	Protection purchased with identical underlyings (B)	Net protection sold (A)-(B)	Other protection purchased	Range of maturities
December 31, 2019									
Credit default swaps on:									
Corporate bonds	**$**	**8**	**1**	**2,855**	**707**	**1,885**	**970**	**2,447**	**2020 - 2029**
Structured products		**—**	**25**	**74**	**69**	**63**	**11**	**111**	**2022 - 2047**
Credit protection on:									
Default swap index		**1**	**—**	**2,542**	**120**	**550**	**1,992**	**8,105**	**2020 - 2029**
Commercial mortgage-backed securities index		**3**	**26**	**322**	**67**	**296**	**26**	**50**	**2047 - 2058**
Asset-backed securities index		**—**	**8**	**41**	**41**	**41**	**—**	**1**	**2045 - 2046**
Other		**—**	**5**	**6,381**	**5,738**	**—**	**6,381**	**11,881**	**2020 - 2049**
Total credit derivatives	**$**	**12**	**65**	**12,215**	**6,742**	**2,835**	**9,380**	**22,595**	
December 31, 2018									
Credit default swaps on:									
Corporate bonds	$	38	59	2,037	441	1,374	663	1,460	2019 - 2027
Structured products		—	62	133	128	121	12	113	2022 - 2047
Credit protection on:									
Default swap index		37	1	3,618	582	1,998	1,620	2,896	2019 - 2028
Commercial mortgage-backed securities index		1	49	389	109	363	26	51	2047 - 2058
Asset-backed securities index		—	9	42	42	42	—	1	2045 - 2046
Other		—	2	5,522	5,327	—	5,522	12,561	2018 - 2048
Total credit derivatives	$	76	182	11,741	6,629	3,898	7,843	17,082	

Protection sold represents the estimated maximum exposure to loss that would be incurred under an assumed hypothetical circumstance, where the value of our interests and any associated collateral declines to zero, without any consideration of recovery or offset from any economic hedges. We believe this hypothetical circumstance to be an extremely remote possibility and accordingly, this required disclosure is not an indication of expected loss. The amounts under non-investment grade represent the notional amounts of those credit derivatives on which we have a higher risk of being required to perform under the terms of the credit derivative and are a function of the underlying assets.

We consider the risk of performance to be high if the underlying assets under the credit derivative have an external rating that is below investment grade or an internal credit default grade that is equivalent thereto. We believe the net protection sold, which is representative of the net notional amount of protection sold and purchased with identical underlyings, in combination with other protection purchased, is more representative of our exposure to loss than either non-investment grade or protection sold. Other protection purchased represents additional protection, which may offset the exposure to loss for protection sold, that was not purchased with an identical underlying of the protection sold.

Credit-Risk Contingent Features

Certain of our derivative contracts contain provisions whereby if the credit rating of our debt were to be downgraded by certain major credit rating agencies, the counterparty could demand additional collateral or require termination or replacement of derivative instruments in a net liability position. Table 18.8 illustrates our exposure to such derivatives with credit-risk contingent features, collateral we have posted, and the additional collateral we would be required to post if the credit rating of our debt was downgraded below investment grade.

Table 18.8: Credit-Risk Contingent Features

(in billions)		**Dec 31, 2019**	Dec 31, 2018
Net derivative liabilities with credit-risk contingent features	**$**	**10.4**	7.4
Collateral posted		**9.1**	5.6
Additional collateral to be posted upon a below investment grade credit rating (1)		**1.3**	1.8

(1) Any credit rating below investment grade requires us to post the maximum amount of collateral

Note 19: Fair Values of Assets and Liabilities

We use fair value measurements to record fair value adjustments to certain assets and liabilities and to determine fair value disclosures. Assets and liabilities recorded at fair value on a recurring basis are presented in Table 19.2 in this Note. From time to time, we may be required to record fair value adjustments on a nonrecurring basis. These nonrecurring fair value adjustments typically involve application of LOCOM accounting, write-downs of individual assets or application of the measurement alternative for nonmarketable equity securities. Assets recorded on a nonrecurring basis are presented in Table 19.11 in this Note. Table 19.17 includes estimates of fair value for financial instruments that are not recorded at fair value.

FAIR VALUE HIERARCHY We classify our assets and liabilities measured at fair value as either Level 1, Level 2 or Level 3 in the fair value hierarchy. The highest priority (Level 1) is assigned to valuations based on unadjusted quoted prices in active markets and the lowest priority (Level 3) is assigned to valuations based on significant unobservable inputs. See Note 1 (Summary of Significant Accounting Policies) for a detailed description of the fair value hierarchy.

In the determination of the classification of financial instruments in Level 2 or Level 3 of the fair value hierarchy, we consider all available information, including observable market data, indications of market liquidity and orderliness, and our understanding of the valuation techniques and significant inputs used. For securities in inactive markets, we use a predetermined percentage to evaluate the impact of fair value adjustments derived from weighting both external and internal indications of value to determine if the instrument is classified as Level 2 or Level 3. Otherwise, the classification of Level 2 or Level 3 is based upon the specific facts and circumstances of each instrument or instrument category and judgments are made regarding the significance of the Level 3 inputs to the instruments' fair value measurement in its entirety. If Level 3 inputs are considered significant, the instrument is classified as Level 3.

We do not classify equity securities in the fair value hierarchy if we use the non-published net asset value (NAV) per share (or its equivalent) that has been communicated to us as an investor as a practical expedient to measure fair value. We generally use NAV per share as the fair value measurement for certain nonmarketable equity fund investments. Marketable equity securities with published NAVs are classified in the fair value hierarchy.

Assets

SHORT-TERM FINANCIAL ASSETS Short-term financial assets include cash and due from banks, interest-earning deposits with banks, federal funds sold and securities purchased under resale agreements and due from customers on acceptances (classified in Other Assets). These assets are carried at historical cost. The carrying amount is a reasonable estimate of fair value because of the relatively short time between the origination of the instrument and its expected realization.

TRADING DEBT SECURITIES Trading debt securities are recorded at fair value on a recurring basis. These securities are valued using internal trader prices that are subject to price verification procedures. The fair values derived using internal valuation techniques are verified against multiple pricing sources, including prices obtained from third-party pricing services. These services compile prices from various sources and often apply matrix pricing for similar securities when no price is observable. We review pricing methodologies provided by the pricing services in order to determine if observable market information is being used versus unobservable inputs. When evaluating the appropriateness of an internal trader price compared with pricing service prices, considerations include the range and quality of pricing service prices. Pricing service prices are used to ensure the reasonableness of a trader price; however, valuing financial instruments involves judgments acquired from knowledge of a particular market. If a trader asserts that a third party pricing service price is not reflective of market value, justification for using the trader price, including recent sales activity where possible, must be provided to and approved by the appropriate levels of management.

AVAILABLE-FOR-SALE AND HELD-TO-MATURITY DEBT SECURITIES AFS debt securities are recorded at fair value on a recurring basis and HTM debt securities are recorded at amortized cost. HTM debt securities are subject to impairment and written down to fair value if fair value declines below amortized cost and we do not expect to recover the entire amortized cost basis of the security. Fair value measurement for AFS and HTM debt securities is based upon various sources of market pricing. Where available, we use quoted prices in active markets. When instruments are traded in secondary markets and quoted market prices do not exist for such securities, we predominantly use prices obtained from third-party pricing services and, to a lesser extent, may use prices obtained from independent broker-dealers (brokers), collectively vendor prices.

When vendor prices are deemed inappropriate by a trader who has knowledge of a particular market, vendor prices may be adjusted by weighting them with values from internal models. We also use internal models when no vendor prices are available. Internal models typically use discounted cash flow techniques or pricing models that make adjustments to quoted market prices for similar securities.

MORTGAGE LOANS HELD FOR SALE (MLHFS) We carry most of our residential MLHFS portfolio at fair value on a recurring basis. We carry our commercial MLHFS and certain residential MLHFS at LOCOM which may be written down to fair value on a nonrecurring basis. Fair value for both residential and commercial mortgages is based on quoted market prices, where available, or the prices for other mortgage whole loans with similar characteristics. We may use securitization prices that are adjusted for typical securitization activities including servicing value, portfolio composition, market conditions and liquidity. Where market pricing data is not available, we use a discounted cash flow model to estimate fair value.

LOANS HELD FOR SALE (LHFS) Loans used in our trading business are recorded at fair value on a recurring basis, and the fair value is based on current offerings in secondary markets for loans with similar characteristics. Loans carried at LOCOM, which are generally consumer loans, are subject to nonrecurring fair value adjustments. Fair value is determined based on pending transactions when available, or estimated using a discounted cash flow model.

LOANS Although most loans are recorded at amortized cost, reverse mortgages are recorded at fair value on a recurring basis and are valued using a discounted cash flow model. In addition, we record nonrecurring fair value adjustments to loans carried at amortized cost to reflect partial write-downs that are based on the observable market price of the loan or current appraised value of the collateral.

We also provide fair value estimates for loans that are not recorded at fair value on a recurring or nonrecurring basis. The fair value estimates of these loans are differentiated by their financial characteristics, such as product classification, loan category, pricing features and remaining maturity. Prepayment and credit loss estimates are evaluated and used in the valuation process.

DERIVATIVES All derivatives are recorded at fair value on a recurring basis. Derivative valuations include the use of available market prices for our exchange-traded derivatives, such as certain interest rate futures and option contracts. However, substantially all of our derivatives are traded in over-the-counter (OTC) markets where quoted market prices are not always readily available. Therefore we value most OTC derivatives using internal valuation techniques. Valuation techniques and inputs to internally-developed models depend on the type of derivative and nature of the underlying rate, price or index upon which the derivative's value is based. Key inputs can include yield curves, credit curves, foreign exchange rates, prepayment rates, volatility measurements and correlation of such inputs. The classification of derivatives between Level 2 and Level 3 of the fair value hierarchy can be particularly subjective. Examples of derivatives typically classified as Level 2 include generic interest rate swaps, foreign currency swaps, commodity swaps, and certain option and forward contracts. Examples of derivatives classified as Level 3 may include derivative loan commitments written for our mortgage loans that we intend to sell, long-dated equity options where volatility is not observable, credit risk participation swaps, and complex and highly structured derivatives.

MORTGAGE SERVICING RIGHTS (MSRs) Residential MSRs are carried at fair value on a recurring basis, and commercial MSRs, which are carried at LOCOM, will be written down to fair value if impaired. MSRs do not trade in an active market with readily observable prices. We determine the fair value of MSRs using a valuation model that estimates the present value of expected future net servicing income. The model incorporates assumptions that market participants use in estimating future net servicing income cash flows, including estimates of prepayment speeds (including housing price volatility for residential MSRs), discount rates, default rates, cost to service (including delinquency and foreclosure costs), escrow account earnings, contractual servicing fee income, ancillary income and late fees. Our valuation approach is validated by our internal valuation model validation group. Changes in the fair value of MSRs reflect the collection/realization of expected cash flows as well as changes in valuation inputs and assumptions. Fair value measurements of our MSRs use significant unobservable inputs and, accordingly, we classify them as Level 3.

EQUITY SECURITIES Marketable equity securities and certain nonmarketable equity securities which we have elected to account for under the fair value method are recorded at fair value on a recurring basis. Our remaining nonmarketable equity securities are accounted for using the equity method, cost method or measurement alternative and can be subject to nonrecurring fair value adjustments to record impairment. The carrying value of equity securities accounted for under the measurement alternative are also remeasured to fair value upon the occurrence of orderly observable transactions of the same or similar securities of the same issuer.

We use quoted prices to determine the fair value of marketable equity securities as the securities are publicly traded. Quoted prices are typically not available for nonmarketable equity securities. We therefore use other methods, generally market comparable pricing, to determine fair value for such securities. We use all available information in making this determination, which includes observable transaction prices for the same or similar security, third-party pricing service prices, broker quotes, trading multiples of comparable public companies and discounted cash flow models. Where appropriate we make adjustments to observed market data to reflect the comparative differences between the market data and the attributes of our equity security, such as differences with public companies and other investment-specific considerations like liquidity, marketability or differences in terms of the instruments.

Substantially all of our nonmarketable equity securities accounted for under the cost method are Federal Reserve Bank stock and Federal Home Loan Bank stock, for which carrying values approximate fair value.

FORECLOSED ASSETS Foreclosed assets are carried at net realizable value, which represents fair value less costs to sell. Fair value is generally based upon independent market prices or appraised values of the collateral.

Liabilities

DEPOSIT AND SHORT-TERM FINANCIAL LIABILITIES Deposit and short-term financial liabilities including federal funds purchased, securities sold under repurchase agreements, commercial paper and other short-term borrowings, are recorded at historical cost. Carrying value is a reasonable estimate of fair value for short-term financial liabilities because of the relatively short time between their origination and expected realization. Fair values for deposits with contractual or defined maturities are estimated using discounted cash flow models. We are not required to estimate fair values for deposits with indeterminate maturities.

OTHER LIABILITIES Other liabilities recorded at fair value on a recurring basis predominantly include short sale liabilities. We value these instruments using quoted prices in active markets, where available. When quoted prices for the same instruments are not available or markets are not active, fair values are estimated using recent trades of similar securities.

LONG-TERM DEBT Our long-term debt is largely denominated in U.S. dollars and issued with a fixed or floating rate at varying levels of seniority and maturity. The long-term debt is recorded at amortized cost. We utilize third-party pricing service prices, discounted cash flow models, or a combination of the two when estimating fair value of our long-term debt.

Level 3 Asset and Liability Valuation Processes

We generally determine fair value of our Level 3 assets and liabilities by using internally-developed models and, to a lesser extent, prices obtained from vendors, which predominantly consist of third-party vendor pricing services. Our valuation processes vary depending on which approach is utilized.

INTERNAL MODEL VALUATIONS Many of our Level 3 fair value estimates are based on internally-developed models, which typically involve use of discounted cash flow or market comparable pricing techniques. Some of the inputs used in these valuations are unobservable. Unobservable inputs are generally derived from historic performance of similar assets or determined from previous market trades in similar instruments. Unobservable inputs usually include discount rates, default rates, loss severity upon default, volatilities, correlations and prepayment rates. Such unobservable inputs can be correlated to similar portfolios with known historical experience or recent trades where particular unobservable inputs may be implied. We attempt to correlate each unobservable input to historical experience and other third-party data where available.

Internal valuation models are subject to review prescribed within our model risk management policies and procedures, which include model validation. Model validation helps ensure our models are appropriate for intended use and appropriate controls exist to help mitigate risk of invalid valuations. Model validation assesses the adequacy and appropriateness of our models, including reviewing its key components, such as inputs, processing components, logic or theory, output results and supporting model documentation. Validation also includes ensuring significant unobservable model inputs are appropriate given observable market transactions or other market data within the same or similar asset classes.

We also have ongoing monitoring procedures in place for our Level 3 assets and liabilities that use internal valuation models. These procedures, which are designed to provide reasonable assurance that models continue to perform as expected, include:

- ongoing analysis and benchmarking to market transactions and other independent market data (including pricing vendors, if available);
- back-testing of modeled fair values to actual realized transactions; and
- review of modeled valuation results against expectations, including review of significant or unusual fluctuations in value.

We update model inputs and methodologies periodically to reflect these monitoring procedures. Additionally, existing models are subject to periodic reviews and we perform full model revalidations as necessary.

All internal valuation models are subject to ongoing review by business-unit-level management, and subject to additional oversight by corporate-level risk management. Corporate oversight responsibilities include evaluating the adequacy of business unit risk management programs, maintaining company-wide model validation policies and standards and reporting the results of these activities to management and our Corporate Model Risk Committee. This committee consists of senior executive management and reports on top model risk issues to the Company's Risk Committee of the Board.

VENDOR-DEVELOPED VALUATIONS We routinely obtain pricing from third-party vendors to value our assets or liabilities. In certain limited circumstances, this includes our Level 3 assets or liabilities. We have processes in place to approve and periodically review third-party vendors to ensure information obtained and valuation techniques used are appropriate. This review may consist of, among other things, obtaining and evaluating control reports issued and pricing methodology materials distributed. We monitor and review vendor prices on an ongoing basis to ensure the fair values are reasonable and in line with market experience in similar asset classes. While the inputs used to determine fair value are not provided by the pricing vendors, and therefore unavailable for our review, we perform one or more of the following procedures to validate the pricing information and determine appropriate classification within the fair value hierarchy:

- comparison to other pricing vendors (if available);
- variance analysis of prices;
- corroboration of pricing by reference to other independent market data, such as market transactions and relevant benchmark indices;
- review of pricing by Company personnel familiar with market liquidity and other market-related conditions; and
- investigation of prices on a specific instrument-by-instrument basis.

Fair Value Measurements from Vendors

For certain assets and liabilities, we obtain fair value measurements from vendors and we record the unadjusted fair value in our financial statements. For instruments where we utilize vendor prices to record the price of an instrument, we perform the same procedures and controls as stated in the "Vendor-Developed Valuations" section.

Table 19.1 presents unadjusted fair value measurements obtained from third-party pricing services classified within the fair value hierarchy. Unadjusted fair value measurements obtained from brokers and fair value measurements obtained from brokers or third-party pricing services that we have adjusted to determine the fair value are excluded from Table 19.1.

The unadjusted fair value measurements obtained from brokers for AFS debt securities were $45 million in Level 2 assets and $126 million in Level 3 assets at December 31, 2019, and $45 million and $129 million at December 31, 2018, respectively.

Table 19.1: Fair Value Measurements obtained from Third-Party Pricing Services

		December 31, 2019			December 31, 2018	
(in millions)	**Level 1**	**Level 2**	**Level 3**	Level 1	Level 2	Level 3
Trading debt securities	**$ 634**	**329**	**—**	899	256	—
Available-for-sale debt securities:						
Securities of U.S. Treasury and federal agencies	**13,460**	**1,500**	**—**	10,399	2,949	—
Securities of U.S. states and political subdivisions	**—**	**39,868**	**34**	—	48,377	43
Mortgage-backed securities	**—**	**167,172**	**42**	—	160,162	41
Other debt securities (1)	**—**	**38,067**	**650**	—	44,292	758
Total available-for-sale debt securities	**13,460**	**246,607**	**726**	10,399	255,780	842
Equity securities:						
Marketable	**—**	**110**	**—**	—	158	—
Nonmarketable	**—**	**—**	**—**	—	1	—
Total equity securities	**—**	**110**	**—**	—	159	—
Derivative assets	**12**	**1**	**—**	17	—	—
Derivative liabilities	**(11)**	**(3)**	**—**	(12)	—	—

(1) Includes corporate debt securities, collateralized loan and other debt obligations, asset-backed securities, and other debt securities.

Assets and Liabilities Recorded at Fair Value on a Recurring Basis

Table 19.2 presents the balances of assets and liabilities recorded at fair value on a recurring basis.

Table 19.2: Fair Value on a Recurring Basis

(in millions)		Level 1	Level 2	Level 3	Netting (1)	Total
December 31, 2019						
Trading debt securities:						
Securities of U.S. Treasury and federal agencies	$	32,335	4,382	—	—	36,717
Securities of U.S. states and political subdivisions		—	2,434	—	—	2,434
Collateralized loan obligations		—	555	183	—	738
Corporate debt securities		—	11,006	38	—	11,044
Mortgage-backed securities		—	27,712	—	—	27,712
Asset-backed securities		—	1,081	—	—	1,081
Other trading debt securities		—	5	2	—	7
Total trading debt securities		32,335	47,175	223	—	79,733
Available-for-sale debt securities:						
Securities of U.S. Treasury and federal agencies		13,460	1,500	—	—	14,960
Securities of U.S. states and political subdivisions		—	39,924	413	—	40,337
Mortgage-backed securities:						
Federal agencies		—	162,453	—	—	162,453
Residential		—	827	—	—	827
Commercial		—	3,892	42	—	3,934
Total mortgage-backed securities		—	167,172	42	—	167,214
Corporate debt securities		37	6,159	367	—	6,563
Collateralized loan and other debt obligations		—	29,055	640	—	29,695
Asset-backed securities:						
Automobile loans and leases		—	951	—	—	951
Home equity loans		—	—	—	—	—
Other asset-backed securities		—	3,635	103	—	3,738
Total asset-backed securities		—	4,586	103	—	4,689
Other debt securities		—	1	—	—	1
Total available-for-sale debt securities		13,497	248,397	1,565 (2)	—	263,459
Mortgage loans held for sale		—	15,408	1,198	—	16,606
Loans held for sale		—	956	16	—	972
Loans		—	—	171	—	171
Mortgage servicing rights (residential)		—	—	11,517	—	11,517
Derivative assets:						
Interest rate contracts		26	23,792	229	—	24,047
Commodity contracts		—	1,413	8	—	1,421
Equity contracts		2,946	4,135	1,455	—	8,536
Foreign exchange contracts		12	5,197	5	—	5,214
Credit contracts		—	49	59	—	108
Netting		—	—	—	(25,123)	(25,123)
Total derivative assets		2,984	34,586	1,756	(25,123)	14,203
Equity securities - excluding securities at NAV:						
Marketable		33,702	216	3	—	33,921
Nonmarketable		—	22	7,847	—	7,869
Total equity securities		33,702	238	7,850	—	41,790
Total assets included in the fair value hierarchy	$	82,518	346,760	24,296	(25,123)	428,451
Equity securities at NAV (3)						146
Total assets recorded at fair value						428,597
Derivative liabilities:						
Interest rate contracts	$	(23)	(19,328)	(15)	—	(19,366)
Commodity contracts		—	(1,746)	(24)	—	(1,770)
Equity contracts		(2,011)	(6,729)	(1,724)	—	(10,464)
Foreign exchange contracts		(11)	(6,213)	(23)	—	(6,247)
Credit contracts		—	(53)	(30)	—	(83)
Netting		—	—	—	28,851	28,851
Total derivative liabilities		(2,045)	(34,069)	(1,816)	28,851	(9,079)
Short sale liabilities:						
Securities of U.S. Treasury and federal agencies		(9,035)	(31)	—	—	(9,066)
Mortgage-backed securities		—	(2)	—	—	(2)
Corporate debt securities		—	(5,915)	—	—	(5,915)
Equity securities		(2,447)	—	—	—	(2,447)
Other securities		—	—	—	—	—
Total short sale liabilities		(11,482)	(5,948)	—	—	(17,430)
Other liabilities		—	—	(2)	—	(2)
Total liabilities recorded at fair value	$	(13,527)	(40,017)	(1,818)	28,851	(26,511)

(1) Represents balance sheet netting of derivative asset and liability balances, related cash collateral and portfolio level counterparty valuation adjustments. See Note 18 (Derivatives) for additional information.
(2) A significant portion of the balance consists of securities that are investment grade based on ratings received from the ratings agencies or internal credit grades categorized as investment grade if external ratings are not available. The securities are classified as Level 3 due to limited market activity.
(3) Consists of certain nonmarketable equity securities that are measured at fair value using NAV per share (or its equivalent) as a practical expedient and are excluded from the fair value hierarchy.

(continued on following page)

(continued from previous page)

(in millions)	Level 1	Level 2	Level 3	Netting (1)	Total
December 31, 2018					
Trading debt securities:					
Securities of U.S. Treasury and federal agencies	$ 20,525	2,892	—	—	23,417
Securities of U.S. states and political subdivisions	—	3,272	3	—	3,275
Collateralized loan obligations	—	673	237	—	910
Corporate debt securities	—	10,723	34	—	10,757
Mortgage-backed securities	—	30,715	—	—	30,715
Asset-backed securities	—	893	—	—	893
Other trading debt securities	—	6	16	—	22
Total trading debt securities	20,525	49,174	290	—	69,989
Available-for-sale debt securities:					
Securities of U.S. Treasury and federal agencies	10,399	2,949	—	—	13,348
Securities of U.S. states and political subdivisions	—	48,820	444	—	49,264
Mortgage-backed securities:					
Federal agencies	—	153,203	—	—	153,203
Residential	—	2,775	—	—	2,775
Commercial	—	4,184	41	—	4,225
Total mortgage-backed securities	—	160,162	41	—	160,203
Corporate debt securities	34	5,867	370	—	6,271
Collateralized loan and other debt obligations	—	34,543	800	—	35,343
Asset-backed securities:					
Automobile loans and leases	—	925	—	—	925
Home equity loans	—	112	—	—	112
Other asset-backed securities	—	4,056	389	—	4,445
Total asset-backed securities	—	5,093	389	—	5,482
Other debt securities	—	1	—	—	1
Total available-for-sale debt securities	10,433	257,435	2,044 (2)	—	269,912
Mortgage loans held for sale	—	10,774	997	—	11,771
Loans held for sale	—	1,409	60	—	1,469
Loans	—	—	244	—	244
Mortgage servicing rights (residential)	—	—	14,649	—	14,649
Derivative assets:					
Interest rate contracts	46	18,294	95	—	18,435
Commodity contracts	—	1,535	53	—	1,588
Equity contracts	1,648	4,582	1,315	—	7,545
Foreign exchange contracts	17	6,689	8	—	6,714
Credit contracts	—	179	99	—	278
Netting	—	—	—	(23,790)	(23,790)
Total derivative assets	1,711	31,279	1,570	(23,790)	10,770
Equity securities - excluding securities at NAV:					
Marketable	23,205	757	—	—	23,962
Nonmarketable	—	24	5,468	—	5,492
Total equity securities	23,205	781	5,468	—	29,454
Total assets included in the fair value hierarchy	$ 55,874	350,852	25,322	(23,790)	408,258
Equity securities at NAV (3)					102
Total assets recorded at fair value					408,360
Derivative liabilities:					
Interest rate contracts	$ (21)	(16,217)	(70)	—	(16,308)
Commodity contracts	—	(2,287)	(49)	—	(2,336)
Equity contracts	(1,492)	(3,186)	(1,332)	—	(6,010)
Foreign exchange contracts	(12)	(7,067)	(34)	—	(7,113)
Credit contracts	—	(216)	(64)	—	(280)
Netting	—	—	—	23,548	23,548
Total derivative liabilities	(1,525)	(28,973)	(1,549)	23,548	(8,499)
Short sale liabilities:					
Securities of U.S. Treasury and federal agencies	(11,850)	(411)	—	—	(12,261)
Mortgage-backed securities	—	(47)	—	—	(47)
Corporate debt securities	—	(4,505)	—	—	(4,505)
Equity securities	(2,902)	(2)	—	—	(2,904)
Other securities	—	(3)	—	—	(3)
Total short sale liabilities	(14,752)	(4,968)	—	—	(19,720)
Other liabilities	—	—	(2)	—	(2)
Total liabilities recorded at fair value	$ (16,277)	(33,941)	(1,551)	23,548	(28,221)

(1) Represents balance sheet netting of derivative asset and liability balances, related cash collateral and portfolio level counterparty valuation adjustments. See Note 18 (Derivatives) for additional information.
(2) A significant portion of the balance consists of securities that are investment grade based on ratings received from the ratings agencies or internal credit grades categorized as investment grade if external ratings are not available. The securities are classified as Level 3 due to limited market activity.
(3) Consists of certain nonmarketable equity investments that are measured at fair value using NAV per share (or its equivalent) as a practical expedient and are excluded from the fair value hierarchy.

Changes in Fair Value Levels

We monitor the availability of observable market data to assess the appropriate classification of financial instruments within the fair value hierarchy and transfer between Level 1, Level 2, and Level 3 accordingly. Observable market data includes but is not limited to quoted prices and market transactions. Changes in economic conditions or market liquidity generally will drive changes in availability of observable market data. Changes in availability of observable market data, which also may result in changing the valuation technique used, are generally the cause of transfers between Level 1, Level 2, and Level 3. The amounts reported as transfers represent the fair value as of the beginning of the quarter in which the transfer occurred.

The changes in Level 3 assets and liabilities measured at fair value on a recurring basis for the year ended December 31, 2019, are presented in Table 19.3.

Table 19.3: Changes in Level 3 Fair Value Assets and Liabilities on a Recurring Basis – 2019

(in millions)	Balance, beginning of period	Total net gains (losses) included in: Net income	Total net gains (losses) included in: Other comprehensive income	Purchases, sales, issuances and settlements, net (1)	Transfers into Level 3 (2)	Transfers out of Level 3 (3)	Balance, end of period	Net unrealized gains (losses) included in income related to assets and liabilities held at period end (4)
Year ended December 31, 2019								
Trading debt securities:								
Securities of U.S. states and political subdivisions	$ 3	—	—	(2)	—	(1)	—	—
Collateralized loan obligations	237	(30)	—	(22)	—	(2)	183	(35)
Corporate debt securities	34	3	—	6	1	(6)	38	5
Other trading debt securities	16	(4)	—	(10)	—	—	2	(1)
Total trading debt securities	290	(31)	—	(28)	1	(9)	223	(31) (5)
Available-for-sale debt securities:								
Securities of U.S. states and political subdivisions	444	2	2	14	—	(49)	413	—
Mortgage-backed securities:								
Residential	—	—	—	—	—	—	—	—
Commercial	41	—	—	(5)	6	—	42	—
Total mortgage-backed securities	41	—	—	(5)	6	—	42	—
Corporate debt securities	370	3	(5)	(1)	—	—	367	(4)
Collateralized loan and other debt obligations	800	29	(37)	(152)	—	—	640	—
Asset-backed securities:								
Other asset-backed securities	389	—	—	(133)	—	(153)	103	—
Total asset-backed securities	389	—	—	(133)	—	(153)	103	—
Total available-for-sale debt securities	2,044	34	(40)	(277)	6	(202)	1,565	(4) (6)
Mortgage loans held for sale	997	58	—	(140)	299	(16)	1,198	54 (7)
Loans held for sale	60	(2)	—	(4)	55	(93)	16	(3)
Loans	244	—	—	(73)	—	—	171	(8) (7)
Mortgage servicing rights (residential) (8)	14,649	(4,779)	—	1,647	—	—	11,517	(2,569) (7)
Net derivative assets and liabilities:								
Interest rate contracts	25	585	—	(396)	—	—	214	249
Commodity contracts	4	(203)	—	158	2	23	(16)	9
Equity contracts	(17)	(571)	—	292	6	21	(269)	(186)
Foreign exchange contracts	(26)	34	—	(26)	—	—	(18)	9
Credit contracts	35	(7)	—	1	—	—	29	(6)
Total derivative contracts	21	(162)	—	29	8	44	(60)	75 (9)
Equity securities:								
Marketable	—	—	—	—	3	—	3	—
Nonmarketable	5,468	2,383	—	(1)	9	(12)	7,847	2,386
Total equity securities	5,468	2,383	—	(1)	12	(12)	7,850	2,386 (10)
Other liabilities	(2)	—	—	—	—	—	(2)	— (7)

(1) See Table 19.4 for detail.
(2) All assets and liabilities transferred into level 3 were previously classified within level 2.
(3) All assets and liabilities transferred out of level 3 are classified as level 2, except for $153 million of asset-backed securities that were transferred to loans during third quarter 2019.
(4) Represents only net gains (losses) that are due to changes in economic conditions and management's estimates of fair value and excludes changes due to the collection/realization of cash flows over time.
(5) Included in net gains (losses) from trading activities in the income statement.
(6) Included in net gains (losses) from debt securities in the income statement.
(7) Included in mortgage banking and other noninterest income in the income statement.
(8) For more information on the changes in mortgage servicing rights, see Note 11 (Mortgage Banking Activities).
(9) Included in mortgage banking income, net gains from trading activities and from equity securities, and other noninterest income.
(10) Included in net gains (losses) from equity securities in the income statement.

Table 19.4 presents gross purchases, sales, issuances and settlements related to the changes in Level 3 assets and liabilities measured at fair value on a recurring basis for the year ended December 31, 2019.

Table 19.4: Gross Purchases, Sales, Issuances and Settlements – Level 3 – 2019

(in millions)	Purchases	Sales	Issuances	Settlements	Net
Year ended December 31, 2019					
Trading debt securities:					
Securities of U.S. states and political subdivisions	$ —	—	—	(2)	(2)
Collateralized loan obligations	372	(372)	—	(22)	(22)
Corporate debt securities	19	(13)	—	—	6
Other trading debt securities	—	—	—	(10)	(10)
Total trading debt securities	391	(385)	—	(34)	(28)
Available-for-sale debt securities:					
Securities of U.S. states and political subdivisions	—	—	169	(155)	14
Mortgage-backed securities:					
Residential	—	—	—	—	—
Commercial	—	—	—	(5)	(5)
Total mortgage-backed securities	—	—	—	(5)	(5)
Corporate debt securities	18	—	—	(19)	(1)
Collateralized loan and other debt obligations	155	—	—	(307)	(152)
Asset-backed securities:					
Other asset-backed securities	—	(9)	133	(257)	(133)
Total asset-backed securities	—	(9)	133	(257)	(133)
Total available-for-sale debt securities	173	(9)	302	(743)	(277)
Mortgage loans held for sale	96	(235)	248	(249)	(140)
Loans held for sale	12	(2)	—	(14)	(4)
Loans	3	—	10	(86)	(73)
Mortgage servicing rights (residential) (1)	—	(286)	1,933	—	1,647
Net derivative assets and liabilities:					
Interest rate contracts	—	—	—	(396)	(396)
Commodity contracts	—	—	—	158	158
Equity contracts	—	—	—	292	292
Foreign exchange contracts	—	—	—	(26)	(26)
Credit contracts	13	(12)	—	—	1
Total derivative contracts	13	(12)	—	28	29
Equity securities:					
Nonmarketable	—	(1)	—	—	(1)
Total equity securities	—	(1)	—	—	(1)
Other liabilities	—	—	—	—	—

(1) For more information on the changes in mortgage servicing rights, see Note 11 (Mortgage Banking Activities).

The changes in Level 3 assets and liabilities measured at fair value on a recurring basis for the year ended December 31, 2018, are presented in Table 19.5.

Table 19.5: Changes in Level 3 Fair Value Assets and Liabilities on a Recurring Basis – 2018

(in millions)	Balance, beginning of period	Total net gains (losses) included in: Net income	Total net gains (losses) included in: Other compre-hensive income	Purchases, sales, issuances and settlements, net (1)	Transfers into Level 3 (2)	Transfers out of Level 3 (3)	Balance, end of period	Net unrealized gains (losses) included in income related to assets and liabilities held at period end	(4)
Year ended December 31, 2018									
Trading debt securities:									
Securities of U.S. states and political subdivisions	$ 3	—	—	—	—	—	3	—	
Collateralized loan obligations	354	(12)	—	(101)	—	(4)	237	(14)	
Corporate debt securities	31	(1)	—	16	—	(12)	34	(1)	
Other trading debt securities	19	(3)	—	—	—	—	16	—	
Total trading debt securities	407	(16)	—	(85)	—	(16)	290	(15)	(5)
Available-for-sale debt securities:									
Securities of U.S. states and political subdivisions	925	8	(8)	(137)	—	(344)	444	—	
Mortgage-backed securities:									
Residential	1	—	—	(1)	—	—	—	—	
Commercial	75	—	(1)	(33)	—	—	41	(1)	
Total mortgage-backed securities	76	—	(1)	(34)	—	—	41	(1)	
Corporate debt securities	407	4	(3)	(38)	—	—	370	—	
Collateralized loan and other debt obligations	1,020	72	5	(297)	—	—	800	—	
Asset-backed securities:									
Other asset-backed securities	566	5	(11)	(171)	—	—	389	(3)	
Total asset-backed securities	566	5	(11)	(171)	—	—	389	(3)	
Total available-for-sale debt securities	2,994	89	(18)	(677)	—	(344)	2,044	(4)	(6)
Mortgage loans held for sale	998	(27)	—	(36)	72	(10)	997	(22)	(7)
Loans held for sale	14	2	—	(36)	80	—	60	1	
Loans	376	(1)	—	(131)	—	—	244	(11)	(7)
Mortgage servicing rights (residential) (8)	13,625	(915)	—	1,939	—	—	14,649	960	(7)
Net derivative assets and liabilities:									
Interest rate contracts	71	(397)	—	351	—	—	25	(42)	
Commodity contracts	19	3	—	(11)	(7)	—	4	(1)	
Equity contracts	(511)	(108)	—	522	(1)	81	(17)	(169)	
Foreign exchange contracts	7	(42)	—	9	—	—	(26)	(26)	
Credit contracts	36	5	—	(6)	—	—	35	(1)	
Total derivative contracts	(378)	(539)	—	865	(8)	81	21	(239)	(9)
Equity securities:									
Marketable	—	—	—	—	—	—	—	—	
Nonmarketable (10)	5,203	703	—	(450)	16	(4)	5,468	642	
Total equity securities	5,203	703	—	(450)	16	(4)	5,468	642	(11)
Other liabilities	(3)	1	—	—	—	—	(2)	—	(7)

(1) See Table 19.6 for detail.
(2) All assets and liabilities transferred into level 3 were previously classified within level 2.
(3) All assets and liabilities transferred out of level 3 are classified as level 2.
(4) Represents only net gains (losses) that are due to changes in economic conditions and management's estimates of fair value and excludes changes due to the collection/realization of cash flows over time.
(5) Included in net gains (losses) from trading activities in the income statement.
(6) Included in net gains (losses) from debt securities in the income statement.
(7) Included in mortgage banking and other noninterest income in the income statement.
(8) For more information on the changes in mortgage servicing rights, see Note 11 (Mortgage Banking Activities)
(9) Included in mortgage banking income, net gains from trading activities and from equity securities, and other noninterest income.
(10) Beginning balance includes $382 million of auction rate securities, which changed from the cost to fair value method of accounting in connection with our adoption of ASU 2016-01 in first quarter 2018.
(11) Included in net gains (losses) from equity securities in the income statement.

Table 19.6 presents gross purchases, sales, issuances and settlements related to the changes in Level 3 assets and liabilities measured at fair value on a recurring basis for the year ended December 31, 2018.

Table 19.6: Gross Purchases, Sales, Issuances and Settlements – Level 3 – 2018

(in millions)	Purchases	Sales	Issuances	Settlements	Net
Year ended December 31, 2018					
Trading debt securities:					
Securities of U.S. states and political subdivisions	$ —	—	—	—	—
Collateralized loan obligations	408	(348)	—	(161)	(101)
Corporate debt securities	20	(4)	—	—	16
Other trading debt securities	—	—	—	—	—
Total trading debt securities	428	(352)	—	(161)	(85)
Available-for-sale debt securities:					
Securities of U.S. states and political subdivisions	—	(6)	79	(210)	(137)
Mortgage-backed securities:					
Residential	—	—	—	(1)	(1)
Commercial	—	—	—	(33)	(33)
Total mortgage-backed securities	—	—	—	(34)	(34)
Corporate debt securities	33	—	—	(71)	(38)
Collateralized loan and other debt obligations	61	(149)	—	(209)	(297)
Asset-backed securities:					
Other asset-backed securities	25	(12)	166	(350)	(171)
Total asset-backed securities	25	(12)	166	(350)	(171)
Total available-for-sale debt securities	119	(167)	245	(874)	(677)
Mortgage loans held for sale	87	(320)	353	(156)	(36)
Loans held for sale	4	(40)	—	—	(36)
Loans	8	—	17	(156)	(131)
Mortgage servicing rights (residential) (1)	—	(71)	2,010	—	1,939
Net derivative assets and liabilities:					
Interest rate contracts	—	—	—	351	351
Commodity contracts	—	—	—	(11)	(11)
Equity contracts	3	(37)	—	556	522
Foreign exchange contracts	—	—	—	9	9
Credit contracts	12	(7)	—	(11)	(6)
Total derivative contracts	15	(44)	—	894	865
Equity securities:					
Marketable	—	—	—	—	—
Nonmarketable	—	(51)	—	(399)	(450)
Total equity securities	—	(51)	—	(399)	(450)
Other liabilities	—	—	—	—	—

(1) For more information on the changes in mortgage servicing rights, see Note 11 (Mortgage Banking Activities).

The changes in Level 3 assets and liabilities measured at fair value on a recurring basis for the year ended December 31, 2017, are presented in Table 19.7.

Table 19.7: Changes in Level 3 Fair Value Assets and Liabilities on a Recurring Basis – 2017

(in millions)	Balance, beginning of period	Total net gains (losses) included in: Net income	Total net gains (losses) included in: Other compre-hensive income	Purchases, sales, issuances and settlements, net (1)	Transfers into Level 3 (2)	Transfers out of Level 3 (3)	Balance, end of period	Net unrealized gains (losses) included in income related to assets and liabilities held at period end	(4)
Year ended December 31, 2017									
Trading debt securities:									
Securities of U.S. states and political subdivisions	$ 3	—	—	—	—	—	3	—	
Collateralized loan obligations	309	3	—	42	—	—	354	(13)	
Corporate debt securities	34	2	—	(7)	6	(4)	31	2	
Other trading debt securities	28	(9)	—	—	—	—	19	(4)	
Total trading debt securities	374	(4)	—	35	6	(4)	407	(15)	(5)
Available-for-sale debt securities:									
Securities of U.S. states and political subdivisions	1,140	4	5	1,105	5	(1,334)	925	—	
Mortgage-backed securities:									
Residential	1	—	—	—	—	—	1	—	
Commercial	91	(4)	—	(12)	—	—	75	(11)	
Total mortgage-backed securities	92	(4)	—	(12)	—	—	76	(11)	
Corporate debt securities	432	(1)	23	(47)	—	—	407	—	
Collateralized loan and other debt obligations	879	22	103	16	—	—	1,020	—	
Asset-backed securities:									
Other asset-backed securities	962	1	3	(400)	—	—	566	—	
Total asset-backed securities	962	1	3	(400)	—	—	566	—	
Total available-for-sale debt securities	3,505	22	134	662	5	(1,334)	2,994	(11)	(6)
Mortgage loans held for sale	985	(36)	—	(75)	134	(10)	998	(34)	(7)
Loans held for sale	—	1	—	(3)	34	(18)	14	—	
Loans	758	(6)	—	(376)	—	—	376	(12)	(7)
Mortgage servicing rights (residential) (8)	12,959	(2,115)	—	2,781	—	—	13,625	(126)	(7)
Net derivative assets and liabilities:									
Interest rate contracts	121	604	—	(654)	—	—	71	(52)	
Commodity contracts	23	(17)	—	13	2	(2)	19	15	
Equity contracts	(267)	(199)	—	(37)	(53)	45	(511)	(259)	
Foreign exchange contracts	12	(5)	—	—	—	—	7	6	
Credit contracts	77	24	—	(65)	—	—	36	(62)	
Other derivative contracts	(47)	27	—	20	—	—	—	—	
Total derivative contracts	(81)	434	—	(723)	(51)	43	(378)	(352)	(9)
Equity securities:									
Marketable	—	—	—	—	—	—	—	—	
Nonmarketable	3,259	1,563	—	(2)	1	—	4,821	1,569	
Total equity securities	3,259	1,563	—	(2)	1	—	4,821	1,569	(10)
Short sale liabilities	—	—	—	—	—	—	—	—	(5)
Other liabilities	(4)	1	—	—	—	—	(3)	—	(7)

(1) See Table 19.8 for detail.
(2) All assets and liabilities transferred into level 3 were previously classified within level 2.
(3) All assets and liabilities transferred out of level 3 are classified as level 2.
(4) Represents only net gains (losses) that are due to changes in economic conditions and management's estimates of fair value and excludes changes due to the collection/realization of cash flows over time.
(5) Included in net gains (losses) from trading activities in the income statement.
(6) Included in net gains (losses) from debt securities in the income statement.
(7) Included in mortgage banking and other noninterest income in the income statement.
(8) For more information on the changes in mortgage servicing rights, see Note 11 (Mortgage Banking Activities).
(9) Included in mortgage banking income, net gains from trading activities and from equity securities, and other noninterest income.
(10) Included in net gains (losses) from equity securities in the income statement.

Table 19.8 presents gross purchases, sales, issuances and settlements related to the changes in Level 3 assets and liabilities measured at fair value on a recurring basis for the year ended December 31, 2017.

Table 19.8: Gross Purchases, Sales, Issuances and Settlements – Level 3 – 2017

(in millions)		Purchases	Sales	Issuances	Settlements	Net
Year ended December 31, 2017						
Trading debt securities:						
Securities of U.S. states and political subdivisions	$	37	(36)	—	(1)	—
Collateralized loan obligations		439	(250)	—	(147)	42
Corporate debt securities		25	(32)	—	—	(7)
Other trading debt securities		—	—	—	—	—
Total trading debt securities		501	(318)	—	(148)	35
Available-for-sale debt securities:						
Securities of U.S. states and political subdivisions		—	(68)	1,369	(196)	1,105
Mortgage-backed securities:						
Residential		—	—	—	—	—
Commercial		—	—	—	(12)	(12)
Total mortgage-backed securities		—	—	—	(12)	(12)
Corporate debt securities		14	(4)	—	(57)	(47)
Collateralized loan and other debt obligations		135	—	—	(119)	16
Asset-backed securities:						
Other asset-backed securities		—	—	211	(611)	(400)
Total asset-backed securities		—	—	211	(611)	(400)
Total available-for-sale debt securities		149	(72)	1,580	(995)	662
Mortgage loans held for sale		79	(485)	489	(158)	(75)
Loans held for sale		—	(2)	—	(1)	(3)
Loans		6	(129)	19	(272)	(376)
Mortgage servicing rights (residential) (1)		541	(24)	2,263	1	2,781
Net derivative assets and liabilities:						
Interest rate contracts		—	—	—	(654)	(654)
Commodity contracts		—	—	—	13	13
Equity contracts		—	(118)	—	81	(37)
Foreign exchange contracts		—	—	—	—	—
Credit contracts		6	(3)	—	(68)	(65)
Other derivative contracts		—	—	—	20	20
Total derivative contracts		6	(121)	—	(608)	(723)
Equity securities:						
Marketable		—	—	—	—	—
Nonmarketable		—	(2)	—	—	(2)
Total equity securities		—	(2)	—	—	(2)
Short sale liabilities		3	(3)	—	—	—
Other liabilities		—	—	—	—	—

(1) For more information on the changes in mortgage servicing rights, see Note 11 (Mortgage Banking Activities).

Table 19.9 and Table 19.10 provide quantitative information about the valuation techniques and significant unobservable inputs used in the valuation of substantially all of our Level 3 assets and liabilities measured at fair value on a recurring basis for which we use an internal model.

The significant unobservable inputs for Level 3 assets and liabilities inherent in the fair values obtained from third-party vendors are not included in the table, as the specific inputs applied are not provided by the vendor (see discussion in the "Level 3 Asset and Liability Valuation Processes" section within this Note regarding vendor-developed valuations).

In addition, the table excludes the valuation techniques and significant unobservable inputs for certain classes of Level 3 assets and liabilities measured using internal models that we consider, both individually and in the aggregate, insignificant relative to our overall Level 3 assets and liabilities. We made this determination based upon an evaluation of each class, which considered the magnitude of the positions, nature of the unobservable inputs and potential for significant changes in fair value due to changes in those inputs.

Weighted averages of inputs are calculated using outstanding unpaid principal balance for cash instruments, such as loans and securities, and notional amounts for derivative instruments.

Table 19.9: Valuation Techniques – Recurring Basis – December 31, 2019

($ in millions, except cost to service amounts)	Fair Value Level 3	Valuation Technique(s)	Significant Unobservable Input	Range of Inputs	Weighted Average
December 31, 2019					
Trading and available-for-sale debt securities:					
Securities of U.S. states and political subdivisions:					
Government, healthcare and other revenue bonds	$ 379	Discounted cash flow	Discount rate	1.3 - 5.4 %	2.4
	34	Vendor priced			
Collateralized loan and other debt obligations	183	Market comparable pricing	Comparability adjustment	(15.0) - 19.2	1.3
	640	Vendor priced			
Corporate debt securities	220	Discounted cash flow	Discount rate	3.2 14.9	9.2
	60	Market comparable pricing	Comparability adjustment	(19.7) 14	(4.4)
	125	Vendor priced			
Asset-backed securities:					
Diversified payment rights (1)	92	Discounted cash flow	Discount rate	2.3 - 3.1	2.8
Other commercial and consumer	11	Vendor priced			
Mortgage loans held for sale (residential)	1,183	Discounted cash flow	Default rate	0.0 - 15.5	0.7
			Discount rate	3.0 - 5.6	4.5
			Loss severity	0.0 - 43.5	21.7
			Prepayment rate	5.7 - 15.4	7.8
	15	Market comparable pricing	Comparability adjustment	(56.3) - (6.3)	(40.3)
Loans (2)	171	Discounted cash flow	Discount rate	3.9 - 4.3	4.1
			Prepayment rate	6.0 - 100.0	85.6
			Loss severity	0.0 - 36.5	14.1
Mortgage servicing rights (residential)	11,517	Discounted cash flow	Cost to service per loan (3)	$ 61 - 495	102
			Discount rate	6.0 - 13.6 %	7.2
			Prepayment rate (4)	9.6 - 24.4	11.9
Net derivative assets and (liabilities):					
Interest rate contracts	146	Discounted cash flow	Default rate	0.0 - 5.0	1.7
			Loss severity	50.0 - 50.0	50.0
			Prepayment rate	2.8 - 25.0	15.0
Interest rate contracts: derivative loan commitments	68	Discounted cash flow	Fall-out factor	1.0 - 99.0	16.7
			Initial-value servicing	(32.2) - 149.0 bps	36.4
Equity contracts	147	Discounted cash flow	Conversion factor	(8.8) - 0.0 %	(7.7)
			Weighted average life	0.5 - 3.0 yrs	1.5
	(416)	Option model	Correlation factor	(77.0) - 99.0 %	23.8
			Volatility factor	6.8 - 100.0	18.7
Credit contracts	2	Market comparable pricing	Comparability adjustment	(56.1) - 10.8	(16.0)
	27	Option model	Credit spread	0.0 - 17.8	0.8
			Loss severity	12.0 - 60.0	45.6
Nonmarketable equity securities	7,847	Market comparable pricing	Comparability adjustment	(20.2) - (4.2)	(14.6)
Insignificant Level 3 assets, net of liabilities	27				
Total level 3 assets, net of liabilities	$ 22,478 (5)				

(1) Securities backed by specified sources of current and future receivables generated from non-U.S. originators.
(2) Consists of reverse mortgage loans.
(3) The high end of the range of inputs is for servicing modified loans. For non-modified loans the range is $61 - $231.
(4) Includes a blend of prepayment speeds and expected defaults. Prepayment speeds are influenced by mortgage interest rates as well as our estimation of drivers of borrower behavior.
(5) Consists of total Level 3 assets of $24.3 billion and total Level 3 liabilities of $1.8 billion, before netting of derivative balances.

Table 19.10: Valuation Techniques – Recurring Basis – December 31, 2018

($ in millions, except cost to service amounts)	Fair Value Level 3	Valuation Technique(s)	Significant Unobservable Input	Range of Inputs	Weighted Average
December 31, 2018					
Trading and available-for-sale debt securities:					
Securities of U.S. states and political subdivisions:					
Government, healthcare and other revenue bonds	$ 404	Discounted cash flow	Discount rate	2.1 - 6.4 %	3.4
	43	Vendor priced			
Collateralized loan and other debt obligations	298	Market comparable pricing	Comparability adjustment	(13.5) - 22.1 %	3.2
	739	Vendor priced			
Corporate debt securities	220	Discounted cash flow	Discount rate	4.0 11.7	8.5
	56	Market comparable pricing	Comparability adjustment	(11.3) 16.6	(1.4)
	128	Vendor priced			
Asset-backed securities:					
Diversified payment rights (1)	171	Discounted cash flow	Discount rate	3.4 - 6.2	4.4
Other commercial and consumer	198 (2)	Discounted cash flow	Discount rate	4.6 - 5.2	4.7
			Weighted average life	1.1 - 1.5 yrs	1.1
	20	Vendor priced			
Mortgage loans held for sale (residential)	982	Discounted cash flow	Default rate	0.0 - 15.6 %	0.8
			Discount rate	1.1 - 6.6	5.5
			Loss severity	0.0 - 43.3	23.4
			Prepayment rate	3.2 - 13.4	4.6
	15	Market comparable pricing	Comparability adjustment	(56.3) - (6.3)	(36.3)
Loans (3)	244	Discounted cash flow	Discount rate	3.4 - 6.4	4.2
			Prepayment rate	2.9 - 100.0	87.2
			Loss severity	0.0 - 34.8	10.2
Mortgage servicing rights (residential)	14,649	Discounted cash flow	Cost to service per loan (4)	$ 62 - 507	106
			Discount rate	7.1 - 15.3 %	8.1
			Prepayment rate (5)	9.0 - 23.5	9.9
Net derivative assets and (liabilities):					
Interest rate contracts	(35)	Discounted cash flow	Default rate	0.0 - 5.0	2.0
			Loss severity	50.0 - 50.0	50.0
			Prepayment rate	2.8 - 25.0	13.8
Interest rate contracts: derivative loan commitments	60	Discounted cash flow	Fall-out factor	1.0 - 99.0	19.4
			Initial-value servicing	(36.6) - 91.7 bps	18.5
Equity contracts	104	Discounted cash flow	Conversion factor	(9.3) - 0.0 %	(7.8)
			Weighted average life	1.0 - 3.0 yrs	1.8
	(121)	Option model	Correlation factor	(77.0) - 99.0 %	21.6
			Volatility factor	6.5 - 100.0	21.8
Credit contracts	3	Market comparable pricing	Comparability adjustment	(15.5) - 40.0	3.5
	32	Option model	Credit spread	0.9 - 21.5	1.3
			Loss severity	13.0 - 60.0	45.2
Nonmarketable equity securities	5,468	Market comparable pricing	Comparability adjustment	(20.6) - (4.3)	(15.8)
Insignificant Level 3 assets, net of liabilities	93				
Total level 3 assets, net of liabilities	$ 23,771 (6)				

(1) Securities backed by specified sources of current and future receivables generated from non-U.S. originators.
(2) Predominantly consists of investments in asset-backed securities that are revolving in nature, for which the timing of advances and repayments of principal are uncertain.
(3) Consists of reverse mortgage loans.
(4) The high end of the range of inputs is for servicing modified loans. For non-modified loans the range is $62 - $204.
(5) Includes a blend of prepayment speeds and expected defaults. Prepayment speeds are influenced by mortgage interest rates as well as our estimation of drivers of borrower behavior.
(6) Consists of total Level 3 assets of $25.3 billion and total Level 3 liabilities of $1.6 billion, before netting of derivative balances.

The valuation techniques used for our Level 3 assets and liabilities, as presented in the previous tables, are described as follows:

- Discounted cash flow – Discounted cash flow valuation techniques generally consist of developing an estimate of future cash flows that are expected to occur over the life of an instrument and then discounting those cash flows at a rate of return that results in the fair value amount.
- Market comparable pricing – Market comparable pricing valuation techniques are used to determine the fair value of certain instruments by incorporating known inputs, such as recent transaction prices, pending transactions, or prices of other similar investments that require significant adjustment to reflect differences in instrument characteristics.
- Option model – Option model valuation techniques are generally used for instruments in which the holder has a contingent right or obligation based on the occurrence of a future event, such as the price of a referenced asset going above or below a predetermined strike price. Option models estimate the likelihood of the specified event occurring by incorporating assumptions such as volatility estimates, price of the underlying instrument and expected rate of return.
- Vendor-priced – Prices obtained from third-party pricing vendors or brokers that are used to record the fair value of the asset or liability for which the related valuation technique and significant unobservable inputs are not provided.

Significant unobservable inputs presented in the previous tables are those we consider significant to the fair value of the Level 3 asset or liability. We consider unobservable inputs to be significant if by their exclusion the fair value of the Level 3 asset or liability would be impacted by a predetermined percentage change. We also consider qualitative factors, such as nature of the instrument, type of valuation technique used, and the significance of the unobservable inputs relative to other inputs used within the valuation. Following is a description of the significant unobservable inputs provided in the table.

- Comparability adjustment – is an adjustment made to observed market data, such as a transaction price in order to reflect dissimilarities in underlying collateral, issuer, rating, or other factors used within a market valuation approach, expressed as a percentage of an observed price.
- Conversion Factor – is the risk-adjusted rate in which a particular instrument may be exchanged for another instrument upon settlement, expressed as a percentage change from a specified rate.
- Correlation factor – is the likelihood of one instrument changing in price relative to another based on an established relationship expressed as a percentage of relative change in price over a period over time.
- Cost to service – is the expected cost per loan of servicing a portfolio of loans, which includes estimates for unreimbursed expenses (including delinquency and foreclosure costs) that may occur as a result of servicing such loan portfolios.
- Credit spread – is the portion of the interest rate in excess of a benchmark interest rate, such as Overnight Index Swap (OIS), LIBOR or U.S. Treasury rates, that when applied to an investment captures changes in the obligor's creditworthiness.
- Default rate – is an estimate of the likelihood of not collecting contractual amounts owed expressed as a constant default rate (CDR).
- Discount rate – is a rate of return used to calculate the present value of the future expected cash flow to arrive at the fair value of an instrument. The discount rate consists of a benchmark rate component and a risk premium component. The benchmark rate component, for example, OIS, LIBOR or U.S. Treasury rates, is generally observable within the market and is necessary to appropriately reflect the time value of money. The risk premium component reflects the amount of compensation market participants require due to the uncertainty inherent in the instruments' cash flows resulting from risks such as credit and liquidity.
- Fall-out factor – is the expected percentage of loans associated with our interest rate lock commitment portfolio that are likely of not funding.
- Initial-value servicing – is the estimated value of the underlying loan, including the value attributable to the embedded servicing right, expressed in basis points of outstanding unpaid principal balance.
- Loss severity – is the estimated percentage of contractual cash flows lost in the event of a default.
- Prepayment rate – is the estimated rate at which forecasted prepayments of principal of the related loan or debt instrument are expected to occur, expressed as a constant prepayment rate (CPR).
- Volatility factor – is the extent of change in price an item is estimated to fluctuate over a specified period of time expressed as a percentage of relative change in price over a period over time.
- Weighted average life – is the weighted average number of years an investment is expected to remain outstanding based on its expected cash flows reflecting the estimated date the issuer will call or extend the maturity of the instrument or otherwise reflecting an estimate of the timing of an instrument's cash flows whose timing is not contractually fixed.

Significant Recurring Level 3 Fair Value Asset and Liability Input Sensitivity

We generally use discounted cash flow or similar internal modeling techniques to determine the fair value of our Level 3 assets and liabilities. Use of these techniques requires determination of relevant inputs and assumptions, some of which represent significant unobservable inputs as indicated in the preceding tables. Accordingly, changes in these unobservable inputs may have a significant impact on fair value.

Certain of these unobservable inputs will (in isolation) have a directionally consistent impact on the fair value of the instrument for a given change in that input. Alternatively, the fair value of the instrument may move in an opposite direction for a given change in another input. Where multiple inputs are used within the valuation technique of an asset or liability, a change in one input in a certain direction may be offset by an opposite change in another input having a potentially muted impact to the overall fair value of that particular instrument. Additionally, a change in one unobservable input may result in a change to another unobservable input (that is, changes in certain inputs are interrelated to one another), which may counteract or magnify the fair value impact.

SECURITIES, LOANS, MORTGAGE LOANS HELD FOR SALE and NONMARKETABLE EQUITY INVESTMENTS The fair values of predominantly all Level 3 trading securities, MLHFS, loans, other nonmarketable equity investments, and AFS securities have consistent inputs, valuation techniques and correlation to changes in underlying inputs. The internal models used to determine fair value for these Level 3 instruments use certain significant unobservable inputs within a discounted cash flow or market comparable pricing valuation technique. Such inputs include discount rate, prepayment rate, default rate, loss severity, comparability adjustment and weighted average life.

These Level 3 assets would decrease (increase) in value based upon an increase (decrease) in discount rate, default rate, loss severity, or weighted average life inputs and would generally decrease (increase) in value based upon an increase (decrease) in prepayment rate. Generally, a change in the assumption used for default rate is accompanied by a directionally similar change in the risk premium component of the discount rate (specifically, the portion related to credit risk) and a directionally opposite change in the assumption used for prepayment rates. The comparability adjustment input may have a positive or negative impact on fair value depending on the change in fair value the comparability adjustment references. Unobservable inputs for comparability adjustment, loss severity, and weighted average life do not increase or decrease based on movements in the other significant unobservable inputs for these Level 3 assets.

DERIVATIVE INSTRUMENTS Level 3 derivative instruments are valued using market comparable pricing, option pricing and discounted cash flow valuation techniques. We utilize certain unobservable inputs within these techniques to determine the fair value of the Level 3 derivative instruments. The significant unobservable inputs consist of credit spread, a comparability adjustment, prepayment rate, default rate, loss severity, initial-value servicing, fall-out factor, volatility factor, weighted average life, conversion factor, and correlation factor.

Level 3 derivative assets (liabilities) where we are long the underlying would decrease (increase) in value upon an increase (decrease) in default rate, fall-out factor, credit spread, conversion factor, or loss severity inputs. Conversely, Level 3 derivative assets (liabilities) would generally increase (decrease) in value upon an increase (decrease) in prepayment rate, initial-value servicing, weighted average life, or volatility factor inputs. The inverse of the above relationships would occur for instruments in which we are short the underlying. The correlation factor and comparability adjustment inputs may have a positive or negative impact on the fair value of these derivative instruments depending on the change in value of the item the correlation factor and comparability adjustment is referencing. The correlation factor and comparability adjustment are considered independent from movements in other significant unobservable inputs for derivative instruments.

Generally, for derivative instruments for which we are subject to changes in the value of the underlying referenced instrument, a change in the assumption used for default rate is accompanied by directionally similar change in the risk premium component of the discount rate (specifically, the portion related to credit risk) and a directionally opposite change in the assumption used for prepayment rates. Unobservable inputs for loss severity, fall-out factor, initial-value servicing, weighted average life, conversion factor, and volatility do not increase or decrease based on movements in other significant unobservable inputs for these Level 3 instruments.

MORTGAGE SERVICING RIGHTS We use a discounted cash flow valuation technique to determine the fair value of Level 3 MSRs. These models utilize certain significant unobservable inputs including prepayment rate, discount rate and costs to service. An increase in any of these unobservable inputs will reduce the fair value of the MSRs and alternatively, a decrease in any one of these inputs would result in the MSRs increasing in value. Generally, a change in the assumption used for the default rate is accompanied by a directionally similar change in the assumption used for cost to service and a directionally opposite change in the assumption used for prepayment. The sensitivity of our residential MSRs is discussed further in Note 10 (Securitizations and Variable Interest Entities).

Assets and Liabilities Recorded at Fair Value on a Nonrecurring Basis

We may be required, from time to time, to measure certain assets at fair value on a nonrecurring basis in accordance with GAAP. These adjustments to fair value usually result from application of LOCOM accounting, write-downs of individual assets or use of the measurement alternative for nonmarketable equity securities.

Table 19.11 provides the fair value hierarchy and fair value at the date of the nonrecurring fair value adjustment for all assets that were still held as of December 31, 2019 and 2018, and for which a nonrecurring fair value adjustment was recorded during the years then ended.

Table 19.12 presents the increase (decrease) in value of certain assets held at the end of the respective reporting periods presented for which a nonrecurring fair value adjustment was recognized during the periods presented.

Table 19.11: Fair Value on a Nonrecurring Basis

				December 31, 2019				December 31, 2018
(in millions)	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Mortgage loans held for sale (1)	$ —	2,034	3,803	5,837	—	1,213	1,233	2,446
Loans held for sale	—	5	—	5	—	313	—	313
Loans:								
Commercial	—	280	—	280	—	339	—	339
Consumer	—	213	1	214	—	346	1	347
Total loans	—	493	1	494	—	685	1	686
Nonmarketable equity securities	—	1,308	173	1,481	—	774	157	931
Other assets	—	359	27	386	—	149	6	155
Total assets at fair value on a nonrecurring basis	$ —	4,199	4,004	8,203	—	3,134	1,397	4,531

(1) Consists of commercial mortgages and residential real estate 1-4 family first mortgage loans.

Premises and equipment includes the full impairment of certain capitalized software projects. Other assets includes impairments of operating lease ROU assets, as well as valuation losses on foreclosed real estate and other collateral owned.

Table 19.12: Change in Value of Assets with Nonrecurring Fair Value Adjustment

	Year ended December 31,	
(in millions)	2019	2018
Mortgage loans held for sale	$ 11	21
Loans held for sale	—	(39)
Loans:		
Commercial	(291)	(221)
Consumer	(207)	(284)
Total loans	(498)	(505)
Nonmarketable equity securities	322	265
Premises and equipment	(170)	—
Other assets	(84)	(40)
Total	$ (419)	(298)

Table 19.13 provides quantitative information about the valuation techniques and significant unobservable inputs used in the valuation of substantially all of our Level 3 assets that are measured at fair value on a nonrecurring basis using an internal model. The table is limited to financial instruments that had nonrecurring fair value adjustments during the periods presented.

We have excluded from the table valuation techniques and significant unobservable inputs for certain classes of Level 3 assets we consider both individually and in the aggregate, insignificant relative to our overall Level 3 nonrecurring measurements. We made this determination based upon an evaluation of each class that considered the magnitude of the positions, nature of the unobservable inputs and potential for significant changes in fair value due to changes in those inputs.

Table 19.13: Valuation Techniques – Nonrecurring Basis

($ in millions)		Fair Value Level 3		Valuation Technique(s) (1)	Significant Unobservable Inputs (1)		Range of inputs			Weighted Average (2)
December 31, 2019										
Residential mortgage loans held for sale	**$**	**3,803**	**(3)**	**Discounted cash flow**	**Default rate**	**(4)**	**0.3**	**–**	**48.3%**	**4.6%**
					Discount rate		**1.5**	**–**	**9.4**	**4.3**
					Loss severity		**0.4**	**–**	**100.0**	**23.4**
					Prepayment rate	**(5)**	**4.8**	**–**	**100.0**	**23.2**
Insignificant Level 3 assets		**201**								
Total	**$**	**4,004**								
December 31, 2018										
Residential mortgage loans held for sale	$	1,233	(3)	Discounted cash flow	Default rate	(4)	0.2	–	2.3%	1.4%
					Discount rate		1.5	–	8.5	4.0
					Loss severity		0.5	–	66.0	1.7
					Prepayment rate	(5)	3.5	–	100.0	46.5
Insignificant Level 3 assets		164								
Total	$	1,397								

(1) Refer to the narrative following Table 19.10 for a definition of the valuation technique(s) and significant unobservable inputs.
(2) For residential MLHFS, weighted averages are calculated using the outstanding unpaid principal balance of the loans.
(3) Consists of approximately $1.3 billion and $1.2 billion of government insured/guaranteed loans purchased from GNMA-guaranteed mortgage securitizations at December 31, 2019 and 2018, respectively, and $2.5 billion and $27 million, respectively, of other mortgage loans that are not government insured/guaranteed.
(4) Applies only to non-government insured/guaranteed loans.
(5) Includes the impact on prepayment rate of expected defaults for government insured/guaranteed loans, which impact the frequency and timing of early resolution of loans.

Fair Value Option

The fair value option is an irrevocable election, generally only permitted upon initial recognition of financial assets or liabilities, to measure eligible financial instruments at fair value with changes in fair value reflected in earnings. We may elect the fair value option to align the measurement model with how the financial assets or liabilities are managed or to reduce complexity or accounting asymmetry. Following is a discussion of the portfolios for which we elected the fair value option.

MORTGAGE LOANS HELD FOR SALE (MLHFS) MLHFS measured at fair value include residential mortgage loan originations for which an active secondary market and readily available market prices exist to reliably support our valuations. Loan origination fees on these loans are recorded when earned, and related direct loan origination costs are recognized when incurred. We believe fair value measurement for MLHFS, which we economically hedge with derivatives along with our MSRs measured at fair value, reduces certain timing differences and better matches changes in the value of these assets with changes in the value of derivatives used as economic hedges for these assets.

LOANS HELD FOR SALE (LHFS) We purchase loans for market-making purposes to support the buying and selling demands of our customers. These loans are generally held for a short period of time and managed within parameters of internally approved market risk limits. Fair value measurement best aligns with our risk management practices. Fair value for these loans is generally determined using readily available market data based on recent transaction prices for similar loans.

LOANS Loans measured at fair value consist of reverse mortgage loans previously transferred under a GNMA reverse mortgage securitization program accounted for as a secured borrowing. Before the transfer, they were classified as MLHFS measured at fair value and, as such, continue to be subject to the fair value option.

Table 19.14 reflects differences between the fair value carrying amount of the assets for which we have elected the fair value option and the contractual aggregate unpaid principal amount at maturity.

Table 19.14: Fair Value Option

	December 31, 2019			December 31, 2018		
(in millions)	**Fair value carrying amount**	**Aggregate unpaid principal**	**Fair value carrying amount less aggregate unpaid principal**	Fair value carrying amount	Aggregate unpaid principal	Fair value carrying amount less aggregate unpaid principal
Mortgage loans held for sale:						
Total loans	**$ 16,606**	**16,279**	**327**	11,771	11,573	198
Nonaccrual loans	**133**	**157**	**(24)**	127	158	(31)
Loans 90 days or more past due and still accruing	**8**	**10**	**(2)**	7	9	(2)
Loans held for sale:						
Total loans	**972**	**1,020**	**(48)**	1,469	1,536	(67)
Nonaccrual loans	**21**	**29**	**(8)**	21	32	(11)
Loans:						
Total loans	**171**	**201**	**(30)**	244	274	(30)
Nonaccrual loans	**129**	**159**	**(30)**	179	208	(29)

The changes in fair value related to initial measurement and subsequent changes in fair value included in earnings for these assets measured at fair value are shown in Table 19.15 by income statement line item. Amounts recorded as interest income are excluded from Table 19.15.

Table 19.15: Fair Value Option – Changes in Fair Value Included in Earnings

	Year ended December 31,								
	2019			2018			2017		
(in millions)	**Mortgage banking noninterest income**	**Net gains (losses) from trading activities**	**Other noninterest income**	Mortgage banking noninterest income	Net gains (losses) from trading activities	Other noninterest income	Mortgage banking noninterest income	Net gains (losses) from trading activities	Other noninterest income
Mortgage loans held for sale	**$ 1,064**	**—**	**—**	462	—	—	1,229	—	—
Loans held for sale	**—**	**11**	**2**	—	(1)	1	—	45	2
Loans	**—**	**—**	**—**	—	—	(1)	—	—	—

For performing loans, instrument-specific credit risk gains or losses were derived principally by determining the change in fair value of the loans due to changes in the observable or implied credit spread. Credit spread is the market yield on the loans less the relevant risk-free benchmark interest rate. For nonperforming loans, we attribute all changes in fair value to instrument-specific credit risk. Table 19.16 shows the estimated gains and losses from earnings attributable to instrument-specific credit risk related to assets accounted for under the fair value option.

Table 19.16: Fair Value Option – Gains/Losses Attributable to Instrument-Specific Credit Risk

	Year ended December 31,		
(in millions)	**2019**	2018	2017
Gains (losses) attributable to instrument-specific credit risk:			
Mortgage loans held for sale	**$ 2**	(16)	(12)
Loans held for sale	**13**	—	45
Total	**$ 15**	(16)	33

Disclosures about Fair Value of Financial Instruments

Table 19.17 presents a summary of fair value estimates for financial instruments that are not carried at fair value on a recurring basis. Some financial instruments are excluded from the scope of this table, such as certain insurance contracts and leases. This table also excludes assets and liabilities that are not financial instruments such as the value of the long-term relationships with our deposit, credit card and trust customers, MSRs, premises and equipment, goodwill and deferred taxes.

Loan commitments, standby letters of credit and commercial and similar letters of credit are not included in Table 19.17. A reasonable estimate of the fair value of these instruments is the carrying value of deferred fees plus the allowance for unfunded credit commitments, which totaled $1.0 billion at both December 31, 2019 and 2018.

The total of the fair value calculations presented does not represent, and should not be construed to represent, the underlying fair value of the Company.

Table 19.17: Fair Value Estimates for Financial Instruments

					Estimated fair value
(in millions)	Carrying amount	Level 1	Level 2	Level 3	Total
December 31, 2019					
Financial assets					
Cash and due from banks (1)	**$ 21,757**	**21,757**	**—**	**—**	**21,757**
Interest-earning deposits with banks (1)	**119,493**	**119,257**	**236**	**—**	**119,493**
Federal funds sold and securities purchased under resale agreements (1)	**102,140**	**—**	**102,140**	**—**	**102,140**
Held-to-maturity debt securities	**153,933**	**46,138**	**109,933**	**789**	**156,860**
Mortgage loans held for sale	**6,736**	**—**	**2,939**	**4,721**	**7,660**
Loans held for sale	**5**	**—**	**5**	**—**	**5**
Loans, net (2)	**933,042**	**—**	**54,125**	**891,714**	**945,839**
Nonmarketable equity securities (cost method)	**4,790**	**—**	**—**	**4,823**	**4,823**
Total financial assets	**$ 1,341,896**	**187,152**	**269,378**	**902,047**	**1,358,577**
Financial liabilities					
Deposits (3)	**$ 118,849**	**—**	**87,279**	**31,858**	**119,137**
Short-term borrowings	**104,512**	**—**	**104,513**	**—**	**104,513**
Long-term debt (4)	**228,159**	**—**	**231,332**	**1,720**	**233,052**
Total financial liabilities	**$ 451,520**	**—**	**423,124**	**33,578**	**456,702**
December 31, 2018					
Financial assets					
Cash and due from banks (1)	$ 23,551	23,551	—	—	23,551
Interest-earning deposits with banks (1)	149,736	149,542	194	—	149,736
Federal funds sold and securities purchased under resale agreements (1)	80,207	—	80,207	—	80,207
Held-to-maturity debt securities	144,788	44,339	97,275	501	142,115
Mortgage loans held for sale	3,355	—	2,129	1,233	3,362
Loans held for sale	572	—	572	—	572
Loans, net (2)	923,703	—	45,190	872,725	917,915
Nonmarketable equity securities (cost method)	5,643	—	—	5,675	5,675
Total financial assets	$ 1,331,555	217,432	225,567	880,134	1,323,133
Financial liabilities					
Deposits (3)	$ 130,645	—	107,448	22,641	130,089
Short-term borrowings	105,787	—	105,789	—	105,789
Long-term debt (4)	229,008	—	225,904	2,230	228,134
Total financial liabilities	$ 465,440	—	439,141	24,871	464,012

(1) Amounts consist of financial instruments for which carrying value approximates fair value.
(2) Excludes lease financing with a carrying amount of $19.5 billion and $19.7 billion at December 31, 2019 and 2018, respectively.
(3) Excludes deposit liabilities with no defined or contractual maturity of $1.2 trillion at both December 31, 2019 and 2018.
(4) Excludes capital lease obligations under capital leases of $32 million and $36 million at December 31, 2019 and 2018, respectively.

Note 20: Preferred Stock

We are authorized to issue 20 million shares of preferred stock and 4 million shares of preference stock, both without par value. Preferred shares outstanding rank senior to common shares both as to dividends and liquidation preference but have no general voting rights. We have not issued any preference shares under this authorization. If issued, preference shares would be limited to one vote per share. Our total authorized, issued and outstanding preferred stock is presented in the following two tables along with the Employee Stock Ownership Plan (ESOP) Cumulative Convertible Preferred Stock.

In January 2020, we issued $2.0 billion of our Preferred Stock, Series Z. On February 12, 2020, the Company announced a redemption of the remaining outstanding shares of our Preferred Stock, Series K, and a partial redemption of 26,720 outstanding shares of our Preferred Stock, Series T. The redemptions will occur on March 16, 2020.

Table 20.1: Preferred Stock Shares

	December 31, 2019		December 31, 2018	
	Liquidation preference per share	Shares authorized and designated	Liquidation preference per share	Shares authorized and designated
DEP Shares				
Dividend Equalization Preferred Shares (DEP)	$ 10	97,000	$ 10	97,000
Series I				
Floating Class A Preferred Stock (1)	100,000	25,010	100,000	25,010
Series K				
Floating Non-Cumulative Perpetual Class A Preferred Stock (2)(3)	1,000	3,500,000	1,000	3,500,000
Series L				
7.50% Non-Cumulative Perpetual Convertible Class A Preferred Stock (4)	1,000	4,025,000	1,000	4,025,000
Series N				
5.20% Non-Cumulative Perpetual Class A Preferred Stock	25,000	30,000	25,000	30,000
Series O				
5.125% Non-Cumulative Perpetual Class A Preferred Stock	25,000	27,600	25,000	27,600
Series P				
5.25% Non-Cumulative Perpetual Class A Preferred Stock	25,000	26,400	25,000	26,400
Series Q				
5.85% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	25,000	69,000	25,000	69,000
Series R				
6.625% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	25,000	34,500	25,000	34,500
Series S				
5.90% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	25,000	80,000	25,000	80,000
Series T				
6.00% Non-Cumulative Perpetual Class A Preferred Stock	25,000	32,200	25,000	32,200
Series U				
5.875% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	25,000	80,000	25,000	80,000
Series V				
6.00% Non-Cumulative Perpetual Class A Preferred Stock	25,000	40,000	25,000	40,000
Series W				
5.70% Non-Cumulative Perpetual Class A Preferred Stock	25,000	40,000	25,000	40,000
Series X				
5.50% Non-Cumulative Perpetual Class A Preferred Stock	25,000	46,000	25,000	46,000
Series Y				
5.625% Non-Cumulative Perpetual Class A Preferred Stock	25,000	27,600	25,000	27,600
ESOP				
Cumulative Convertible Preferred Stock (5)	—	1,071,418	—	1,406,460
Total		9,251,728		9,586,770

(1) Series I preferred stock issuance relates to trust preferred securities. See Note 10 (Securitizations and Variable Interest Entities) for additional information. This issuance has a floating interest rate that is the greater of three-month LIBOR plus 0.93% and 5.56975%.
(2) Floating rate for Preferred Stock, Series K, is three-month LIBOR plus 3.77%.
(3) In third quarter 2019, 1,550,000 shares of Preferred Stock, Series K, were redeemed.
(4) Preferred Stock, Series L, may be converted at any time, at the option of the holder, into 6.3814 shares of our common stock, plus cash in lieu of fractional shares, subject to anti-dilution adjustments.
(5) See the ESOP Cumulative Convertible Preferred Stock section in this Note for additional information about the liquidation preference for the ESOP Cumulative Convertible Preferred Stock.

Table 20.2: Preferred Stock – Shares Issued and Carrying Value

	December 31, 2019				December 31, 2018			
(in millions, except shares)	Shares issued and outstanding	Liquidation preference value	Carrying value	Discount	Shares issued and outstanding	Liquidation preference value	Carrying value	Discount
DEP Shares								
Dividend Equalization Preferred Shares (DEP)	96,546	$ —	—	—	96,546	$ —	—	—
Series I (1)(2)								
Floating Class A Preferred Stock	25,010	2,501	2,501	—	25,010	2,501	2,501	—
Series K (1)(3)(4)								
Floating Non-Cumulative Perpetual Class A Preferred Stock	1,802,000	1,802	1,546	256	3,352,000	3,352	2,876	476
Series L (1)(5)								
7.50% Non-Cumulative Perpetual Convertible Class A Preferred Stock	3,967,995	3,968	3,200	768	3,968,000	3,968	3,200	768
Series N (1)								
5.20% Non-Cumulative Perpetual Class A Preferred Stock	30,000	750	750	—	30,000	750	750	—
Series O (1)								
5.125% Non-Cumulative Perpetual Class A Preferred Stock	26,000	650	650	—	26,000	650	650	—
Series P (1)								
5.25% Non-Cumulative Perpetual Class A Preferred Stock	25,000	625	625	—	25,000	625	625	—
Series Q (1)								
5.85% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	69,000	1,725	1,725	—	69,000	1,725	1,725	—
Series R (1)								
6.625% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	33,600	840	840	—	33,600	840	840	—
Series S (1)								
5.90% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	80,000	2,000	2,000	—	80,000	2,000	2,000	—
Series T (1)								
6.00% Non-Cumulative Perpetual Class A Preferred Stock	32,000	800	800	—	32,000	800	800	—
Series U (1)								
5.875% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	80,000	2,000	2,000	—	80,000	2,000	2,000	—
Series V (1)								
6.00% Non-Cumulative Perpetual Class A Preferred Stock	40,000	1,000	1,000	—	40,000	1,000	1,000	—
Series W (1)								
5.70% Non-Cumulative Perpetual Class A Preferred Stock	40,000	1,000	1,000	—	40,000	1,000	1,000	—
Series X (1)								
5.50% Non-Cumulative Perpetual Class A Preferred Stock	46,000	1,150	1,150	—	46,000	1,150	1,150	—
Series Y (1)								
5.625% Non-Cumulative Perpetual Class A Preferred Stock	27,600	690	690	—	27,600	690	690	—
ESOP								
Cumulative Convertible Preferred Stock	1,071,418	1,072	1,072	—	1,406,460	1,407	1,407	—
Total	7,492,169	$ 22,573	21,549	1,024	9,377,216	$ 24,458	23,214	1,244

(1) Preferred shares qualify as Tier 1 capital.
(2) Floating rate for Preferred Stock, Series I, is the greater of three-month LIBOR plus 0.93% and 5.56975%.
(3) Floating rate for Preferred Stock, Series K, is three-month LIBOR plus 3.77%.
(4) In third quarter 2019, 1,550,000 shares of Preferred Stock, Series K, were redeemed.
(5) Preferred Stock, Series L, may be converted at any time, at the option of the holder, into 6.3814 shares of our common stock, plus cash in lieu of fractional shares, subject to anti-dilution adjustments.

ESOP CUMULATIVE CONVERTIBLE PREFERRED STOCK All shares of our ESOP Cumulative Convertible Preferred Stock (ESOP Preferred Stock) were issued to a trustee acting on behalf of the Wells Fargo & Company 401(k) Plan (the 401(k) Plan). Dividends on the ESOP Preferred Stock are cumulative from the date of initial issuance and are payable quarterly at annual rates based upon the year of issuance. Each share of ESOP Preferred Stock released from the unallocated reserve of the 401(k) Plan is converted into shares of our common stock based on the stated value of the ESOP Preferred Stock and the then current market price of our common stock. The ESOP Preferred Stock is also convertible at the option of the holder at any time, unless previously redeemed. We have the option to redeem the ESOP Preferred Stock at any time, in whole or in part, at a redemption price per share equal to the higher of (a) $1,000 per share plus accrued and unpaid dividends or (b) the fair market value, as defined in the Certificates of Designation for the ESOP Preferred Stock.

Table 20.3: ESOP Preferred Stock

	Shares issued and outstanding		Carrying value		Adjustable dividend rate	
(in millions, except shares)	**Dec 31, 2019**	Dec 31, 2018	**Dec 31, 2019**	Dec 31, 2018	Minimum	Maximum
ESOP Preferred Stock						
$1,000 liquidation preference per share						
2018	**254,945**	336,945	**$ 255**	337	7.00%	8.00%
2017	**192,210**	222,210	**192**	222	7.00	8.00
2016	**197,450**	233,835	**198**	234	9.30	10.30
2015	**116,784**	144,338	**117**	144	8.90	9.90
2014	**136,151**	174,151	**136**	174	8.70	9.70
2013	**97,948**	133,948	**98**	134	8.50	9.50
2012	**49,134**	77,634	**49**	78	10.00	11.00
2011	**26,796**	61,796	**27**	62	9.00	10.00
2010 (1)	**—**	21,603	**—**	22	9.50	10.50
Total ESOP Preferred Stock (2)	**1,071,418**	1,406,460	**$ 1,072**	1,407		
Unearned ESOP shares (3)			**$ (1,143)**	(1,502)		

(1) In April 2019, all of the 2010 ESOP Preferred Stock was converted into common stock.
(2) At December 31, 2019 and 2018, additional paid-in capital included $71 million and $95 million, respectively, related to ESOP preferred stock.
(3) We recorded a corresponding charge to unearned ESOP shares in connection with the issuance of the ESOP Preferred Stock. The unearned ESOP shares are reduced as shares of the ESOP Preferred Stock are committed to be released.

Note 21: Common Stock and Stock Plans

Common Stock

Table 21.1 presents our reserved, issued and authorized shares of common stock at December 31, 2019.

Table 21.1: Common Stock Shares

	Number of shares
Dividend reinvestment and common stock purchase plans	6,774,855
Director plans	375,293
Stock plans (1)	488,214,122
Convertible securities and warrants	65,835,437
Total shares reserved	561,199,707
Shares issued	5,481,811,474
Shares not reserved or issued	2,956,988,819
Total shares authorized	9,000,000,000

(1) Includes employee restricted share rights, performance share awards, 401(k), and deferred compensation plans.

In connection with our participation in the Capital Purchase Program (CPP), a part of the Troubled Asset Relief Program (TARP), we issued to the U.S. Treasury Department warrants to purchase 110,261,688 shares of our common stock with an original exercise price of $34.01 per share. The warrants expired on October 29, 2018, and the holders of 110,646 unexercised warrants as of the expiration date are no longer entitled to receive any shares of our common stock. Holders exercised no warrants and 23,217,208 warrants to purchase shares of our common stock in 2019 and 2018, respectively.

Dividend Reinvestment and Common Stock Purchase Plans

Participants in our dividend reinvestment and common stock direct purchase plans may purchase shares of our common stock at fair market value by reinvesting dividends and/or making optional cash payments under the plan's terms.

Employee Stock Plans

We offer stock-based employee compensation plans as described below. For information on our accounting for stock-based compensation plans, see Note 1 (Summary of Significant Accounting Policies).

LONG-TERM INCENTIVE COMPENSATION PLANS Since 2010, we have granted restricted share rights (RSRs) and performance share awards (PSAs) as our primary long-term incentive awards using our Long-Term Incentive Compensation Plan (LTICP).

Holders of RSRs and PSAs may be entitled to receive additional RSRs and PSAs (dividend equivalents) or cash payments equal to the cash dividends that would have been paid had the RSRs or PSAs been issued and outstanding shares of common stock. RSRs and PSAs granted as dividend equivalents are subject to the same vesting schedule and conditions as the underlying award.

Table 21.2 summarizes the major components of stock incentive compensation expense and the related recognized tax benefit.

Table 21.2: Stock Incentive Compensation Expense

	Year ended December 31,		
(in millions)	**2019**	2018	2017
RSRs (1)	$ **1,109**	1,013	743
Performance shares	**108**	9	112
Stock options	**—**	—	(6)
Total stock incentive compensation expense	$ **1,217**	1,022	849
Related recognized tax benefit	$ **301**	252	320

(1) In February 2018, a total of 11.9 million RSRs were granted to all eligible team members in the U.S., and eligible team members outside the U.S., referred to as broad-based RSRs.

For various acquisitions and mergers, we converted employee and director stock options of acquired or merged companies into stock options to purchase our common stock based on the terms of the original stock option plan and the agreed-upon exchange ratio. In addition, we converted restricted stock awards into awards that entitle holders to our stock after the vesting conditions are met. Holders receive cash dividends on outstanding awards if provided in the original award.

The total number of shares of common stock available for grant under the plans at December 31, 2019, was 246 million.

Director Awards

Beginning in 2011, we granted only common stock awards under the LTICP to non-employee directors elected or re-elected at the annual meeting of stockholders and prorated awards to directors who join the Board at any other time. Stock awards vest immediately. Options also were granted to directors prior to 2011 and can be exercised after 12 months through the tenth anniversary of the grant date.

Restricted Share Rights

Holders of RSRs are entitled to the related shares of common stock at no cost generally vesting over three to five years after the RSRs are granted. A summary of the status of our RSRs at December 31, 2019, and changes during 2019 is presented in Table 21.3.

Table 21.3: Restricted Share Rights

	Number	Weighted-average grant-date fair value
Nonvested at January 1, 2019	45,572,498	$ 54.85
Granted	22,743,879	49.32
Vested	(15,281,949)	55.03
Canceled or forfeited	(2,118,967)	55.37
Nonvested at December 31, 2019	50,915,461	52.30

The weighted-average grant date fair value of RSRs granted during 2018 and 2017 was $58.47 and $57.54, respectively.

At December 31, 2019, there was $1.0 billion of total unrecognized compensation cost related to nonvested RSRs. The cost is expected to be recognized over a weighted-average period of 2.4 years. The total fair value of RSRs that vested during 2019, 2018 and 2017 was $773 million, $824 million and $865 million, respectively.

Performance Share Awards

Holders of PSAs are entitled to the related shares of common stock at no cost subject to the Company's achievement of specified performance criteria over a three-year period. PSAs are granted at a target number based on the Company's performance. The number of awards that vest can be adjusted downward to zero and upward to a maximum of either 125% or 150% of target. The awards vest in the quarter after the end of the performance period. For PSAs whose performance period ended December 31, 2019, the determination of the number of performance shares that will vest will occur in first quarter of 2020 after review of the Company's performance by the Human Resources Committee of the Board.

A summary of the status of our PSAs at December 31, 2019, and changes during 2019 is in Table 21.4, based on the performance adjustments recognized as of December 2019.

Table 21.4: Performance Share Awards

	Number		Weighted- average grant-date fair value (1)
Nonvested at January 1, 2019	5,984,686	$	49.91
Granted	2,320,530		49.26
Vested	(1,610,502)		48.59
Canceled or forfeited	(190,501)		56.48
Nonvested at December 31, 2019	6,504,213		49.81

(1) Reflects approval date fair value for grants subject to variable accounting.

Table 21.5: Stock Option Activity

	Number		Weighted-average exercise price	Weighted-average remaining contractual term (in yrs.)		Aggregate intrinsic value (in millions)
Incentive compensation plans						
Options outstanding as of December 31, 2018	8,343,157	$	13.46			
Canceled or forfeited	(170,141)		13.05			
Exercised	(8,112,456)		13.34			
Options exercisable and outstanding as of December 31, 2019	60,560		30.69	0.3	$	1

The total intrinsic value to option holders, which is the stock market value in excess of the option exercise price, of options exercised during 2019, 2018 and 2017 was $291 million, $375 million and $623 million, respectively.

Cash received from the exercise of stock options for 2019, 2018 and 2017 was $108 million, $227 million and $602 million, respectively.

We do not have a specific policy on repurchasing shares to satisfy share option exercises. Rather, we have a general policy on repurchasing shares to meet common stock issuance requirements for our benefit plans (including share option exercises), conversion of our convertible securities, acquisitions and other corporate purposes. Various factors determine the amount and timing of our share repurchases, including our capital requirements, the number of shares we expect to issue for acquisitions and employee benefit plans, market conditions (including the trading price of our stock), and regulatory and legal considerations. These factors can change at any time, and there can be no assurance as to the number of shares we will repurchase or when we will repurchase them.

The weighted-average grant date fair value of performance awards granted during 2018 and 2017 was $58.62 and $57.14, respectively.

At December 31, 2019, there was $29 million of total unrecognized compensation cost related to nonvested performance awards. The cost is expected to be recognized over a weighted-average period of 1.6 years. The total fair value of PSAs that vested during 2019, 2018 and 2017 was $82 million, $107 million and $117 million, respectively.

Stock Options

Table 21.5 summarizes stock option activity and related information for the stock plans. Options assumed in mergers are included in the activity and related information for Incentive Compensation Plans if originally issued under an employee plan, and in the activity and related information for Director Awards if originally issued under a director plan.

Employee Stock Ownership Plan

The Wells Fargo & Company 401(k) Plan (401(k) Plan) is a defined contribution plan with an Employee Stock Ownership Plan (ESOP) feature. The ESOP feature enables the 401(k) Plan to borrow money to purchase our preferred or common stock. From 1994 through 2019, with the exception of 2009, we loaned money to the 401(k) Plan to purchase shares of our ESOP preferred stock. As our employer contributions are made to the 401(k) Plan and are used to make ESOP loan payments, the ESOP preferred stock in the 401(k) Plan is released and converted into our common stock shares. Dividends on the common stock shares allocated as a result of the release and conversion of the ESOP preferred stock reduce retained earnings, and the shares are considered outstanding for computing earnings per share. Dividends on the unallocated ESOP preferred stock do not reduce retained earnings, and the shares are not considered to be common stock equivalents for computing earnings per share. Loan principal and interest payments are made from our employer contributions to the 401(k) Plan, along with dividends paid on the ESOP preferred stock. With each principal and interest payment, a portion of the ESOP preferred stock is released and converted to common stock shares, which are allocated to the 401(k) Plan participants and invested in the Wells Fargo ESOP Fund within the 401(k) Plan.

Table 21.6 presents the balance of common stock and unreleased preferred stock held in the Wells Fargo ESOP fund, the fair value of unreleased ESOP preferred stock and the dividends on allocated shares of common stock and unreleased ESOP Preferred Stock paid to the 401(k) Plan.

Table 21.6: Common Stock and Unreleased Preferred Stock in the Wells Fargo ESOP Fund

		Shares outstanding December 31,		
(in millions, except shares)		**2019**	2018	2017
Allocated shares (common)		**138,978,383**	138,182,911	124,670,717
Unreleased shares (preferred)		**1,071,418**	1,406,460	1,556,104
Fair value of unreleased ESOP preferred shares	**$**	**1,072**	1,407	1,556

		Dividends paid Year ended December 31,		
		2019	2018	2017
Allocated shares (common)	**$**	**233**	213	195
Unreleased shares (preferred)		**101**	159	166

Note 22: Revenue from Contracts with Customers

Our revenue includes net interest income on financial instruments and noninterest income. Table 22.1 presents our revenue by operating segment. The "Other" segment for each of the tables below includes the elimination of certain items that are included in more than one business segment, substantially all of which represents products and services for WIM customers served through Community Banking distribution channels. For additional description of our operating segments, including additional financial information and the underlying management accounting process, see Note 27 (Operating Segments).

We adopted ASU 2014-09 – *Revenue from Contracts with Customers* on a modified retrospective basis as of January 1, 2018. For details on the impact of the adoption of this ASU, see Note 1 (Summary of Significant Accounting Policies) in our 2018 Form 10-K.

Table 22.1: Revenue by Operating Segment

(in millions)		Community Banking	Wholesale Banking	Wealth and Investment Management	Other	Consolidated Company
						Year ended December 31, 2019
Net interest income (1)	**$**	**27,610**	**17,699**	**4,037**	**(2,115)**	**47,231**
Noninterest income:						
Service charges on deposit accounts		**2,823**	**1,974**	**16**	**(15)**	**4,798**
Trust and investment fees:						
Brokerage advisory, commissions and other fees		**1,931**	**292**	**8,946**	**(1,932)**	**9,237**
Trust and investment management		**805**	**486**	**2,587**	**(840)**	**3,038**
Investment banking		**(93)**	**1,889**	**6**	**(5)**	**1,797**
Total trust and investment fees		**2,643**	**2,667**	**11,539**	**(2,777)**	**14,072**
Card fees		**3,655**	**359**	**6**	**(4)**	**4,016**
Other fees:						
Lending related charges and fees (1)(2)		**239**	**1,139**	**8**	**(7)**	**1,379**
Cash network fees		**452**	**—**	**—**	**—**	**452**
Commercial real estate brokerage commissions		**—**	**358**	**—**	**—**	**358**
Wire transfer and other remittance fees		**274**	**196**	**8**	**(4)**	**474**
All other fees (1)		**313**	**108**	**1**	**(1)**	**421**
Total other fees		**1,278**	**1,801**	**17**	**(12)**	**3,084**
Mortgage banking (1)		**2,307**	**412**	**(12)**	**8**	**2,715**
Insurance (1)		**44**	**303**	**72**	**(41)**	**378**
Net gains (losses) from trading activities (1)		**24**	**915**	**53**	**1**	**993**
Net gains (losses) on debt securities (1)		**51**	**89**	**—**	**—**	**140**
Net gains (losses) from equity securities (1)		**2,155**	**416**	**272**	**—**	**2,843**
Lease income (1)		**—**	**1,612**	**—**	**—**	**1,612**
Other income of the segment (1)		**2,726**	**(570)**	**1,341**	**(316)**	**3,181**
Total noninterest income		**17,706**	**9,978**	**13,304**	**(3,156)**	**37,832**
Revenue	**$**	**45,316**	**27,677**	**17,341**	**(5,271)**	**85,063**
						Year ended December 31, 2018
Net interest income (1)	$	29,219	18,690	4,441	(2,355)	49,995
Noninterest income:						
Service charges on deposit accounts		2,641	2,074	16	(15)	4,716
Trust and investment fees:						
Brokerage advisory, commissions and other fees		1,887	317	9,161	(1,929)	9,436
Trust and investment management		910	445	2,893	(932)	3,316
Investment banking		(35)	1,783	9	—	1,757
Total trust and investment fees		2,762	2,545	12,063	(2,861)	14,509
Card fees		3,543	362	6	(4)	3,907
Other fees:						
Lending related charges and fees (1)(2)		278	1,247	7	(6)	1,526
Cash network fees		478	3	—	—	481
Commercial real estate brokerage commissions		—	468	—	—	468
Wire transfer and other remittance fees		264	209	8	(4)	477
All other fees (1)		339	92	2	(1)	432
Total other fees		1,359	2,019	17	(11)	3,384
Mortgage banking (1)		2,659	362	(11)	7	3,017
Insurance (1)		83	312	82	(48)	429
Net gains (losses) from trading activities (1)		28	516	57	1	602
Net gains (losses) on debt securities (1)		(3)	102	9	—	108
Net gains (losses) from equity securities (1)		1,505	293	(283)	—	1,515
Lease income (1)		—	1,753	—	—	1,753
Other income of the segment (1)		3,117	(322)	(21)	(301)	2,473
Total noninterest income		17,694	10,016	11,935	(3,232)	36,413
Revenue	$	46,913	28,706	16,376	(5,587)	86,408

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	Year ended December 31, 2017				
	Community Banking	Wholesale Banking	Wealth and Investment Management	Other	Consolidated Company
Net interest income (1)	$ 28,658	18,810	4,641	(2,552)	49,557
Noninterest income:					
Service charges on deposit accounts	2,909	2,201	17	(16)	5,111
Trust and investment fees:					
Brokerage advisory, commissions and other fees	1,830	304	9,072	(1,848)	9,358
Trust and investment management	889	523	2,877	(917)	3,372
Investment banking	(59)	1,827	(2)	(1)	1,765
Total trust and investment fees	2,660	2,654	11,947	(2,766)	14,495
Card fees	3,613	345	6	(4)	3,960
Other fees:					
Lending related charges and fees (1)(2)	311	1,257	8	(8)	1,568
Cash network fees	498	8	—	—	506
Commercial real estate brokerage commissions	1	461	—	—	462
Wire transfer and other remittance fees	239	204	9	(4)	448
All other fees (1)	448	124	1	—	573
Total other fees	1,497	2,054	18	(12)	3,557
Mortgage banking (1)	3,895	458	(10)	7	4,350
Insurance (1)	139	872	88	(50)	1,049
Net gains (losses) from trading activities (1)	(251)	701	92	—	542
Net gains (losses) on debt securities (1)	709	(232)	2	—	479
Net gains (losses) from equity securities (1)	1,455	116	208	—	1,779
Lease income (1)	—	1,907	—	—	1,907
Other income of the segment (1)	1,734	114	63	(308)	1,603
Total noninterest income	18,360	11,190	12,431	(3,149)	38,832
Revenue	$ 47,018	30,000	17,072	(5,701)	88,389

(1) Most of our revenue is not within the scope of Accounting Standards Update (ASU) 2014-09 – *Revenue from Contracts with Customers*, and additional details are included in other notes to our financial statements. The scope explicitly excludes net interest income as well as many other revenues for financial assets and liabilities, including loans, leases, securities, and derivatives.

(2) Represents combined amount of previously reported "Charges and fees on loans" and "Letters of credit fees."

We provide services to customers which have related performance obligations that we complete to recognize revenue. Our revenues are generally recognized either immediately upon the completion of our service or over time as we perform services. Any services performed over time generally require that we render services each period and therefore we measure our progress in completing these services based upon the passage of time.

SERVICE CHARGES ON DEPOSIT ACCOUNTS are earned on depository accounts for commercial and consumer customers and include fees for account and overdraft services. Account charges include fees for periodic account maintenance activities and event-driven services such as stop payment fees. Our obligation for event-driven services is satisfied at the time of the event when the service is delivered, while our obligation for maintenance services is satisfied over the course of each month. Our obligation for overdraft services is satisfied at the time of the overdraft.

Table 22.2 presents our service charges on deposit accounts by operating segment.

Table 22.2: Service Charges on Deposit Accounts by Operating Segment

	Year ended December 31,														
	Community Banking			Wholesale Banking			Wealth and Investment Management			Other			Consolidated Company		
(in millions)	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017
Overdraft fees	**$ 1,965**	1,776	1,941	**5**	5	6	**1**	1	1	**—**	—	—	**1,971**	1,782	1,948
Account charges	**858**	865	968	**1,969**	2,069	2,195	**15**	15	16	**(15)**	(15)	(16)	**2,827**	2,934	3,163
Service charges on deposit accounts	**$ 2,823**	2,641	2,909	**1,974**	2,074	2,201	**16**	16	17	**(15)**	(15)	(16)	**4,798**	4,716	5,111

BROKERAGE ADVISORY, COMMISSIONS AND OTHER FEES are earned for providing full-service and discount brokerage services predominantly to retail brokerage clients. These revenues include fees earned on asset-based and transactional accounts and other brokerage advisory services.

Asset-based revenues are charged based on the market value of the client's assets. The services and related obligations associated with certain of these revenues, which include investment advice, active management of client assets, or assistance with selecting and engaging a third-party advisory manager, are generally satisfied over a month or quarter. The remaining revenues include trailing commissions which are earned for selling shares to investors. Our obligation associated with earning trailing commissions is satisfied at the time shares are sold. However, these fees are received and recognized over time during the period the customer owns the shares and we remain the broker of record. The amount of trailing commissions is variable based on the length of time the customer holds the shares and on changes in the value of the underlying assets.

Transactional revenues are earned for executing transactions at the client's direction. Our obligation is generally satisfied upon the execution of the transaction and the fees are based on the size and number of transactions executed.

Other revenues earned from other brokerage advisory services include omnibus and networking fees received from mutual fund companies in return for providing record keeping and other administrative services, and annual account maintenance fees charged to customers.

Table 22.3 presents our brokerage advisory, commissions and other fees by operating segment.

Table 22.3: Brokerage Advisory, Commissions and Other Fees by Operating Segment

	Community Banking			Wholesale Banking			Wealth and Investment Management			Other			Consolidated Company		Year ended December 31,
(in millions)	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017
Asset-based revenue (1)	**$ 1,478**	1,482	1,372	**—**	1	1	**6,777**	6,899	6,630	**(1,480)**	(1,484)	(1,371)	**6,775**	6,898	6,632
Transactional revenue	**383**	340	382	**26**	70	40	**1,534**	1,618	1,802	**(383)**	(380)	(400)	**1,560**	1,648	1,824
Other revenue	**70**	65	76	**266**	246	263	**635**	644	640	**(69)**	(65)	(77)	**902**	890	902
Brokerage advisory, commissions and other fees	**$ 1,931**	1,887	1,830	**292**	317	304	**8,946**	9,161	9,072	**(1,932)**	(1,929)	(1,848)	**9,237**	9,436	9,358

(1) We earned trailing commissions of $1.2 billion for the year ended December 31, 2019 and $1.3 billion for both of the years ended December 31, 2018 and 2017, respectively.

TRUST AND INVESTMENT MANAGEMENT FEES are earned for providing trust, investment management and other related services.

Investment management services include managing and administering assets, including mutual funds, and institutional separate accounts. Fees for these services are generally determined based on a tiered scale relative to the market value of assets under management (AUM). In addition to AUM, we have client assets under administration (AUA) that earn various administrative fees which are generally based on the extent of the services provided to administer the account. Services with AUM and AUA-based fees are generally performed over time.

Trust services include acting as a trustee or agent for corporate trust, personal trust, and agency assets. Obligations for trust services are generally satisfied over time, while obligations for activities that are transactional in nature are satisfied at the time of the transaction.

Other related services include the custody and safekeeping of accounts. Our obligation for these services is generally satisfied over time.

Table 22.4 presents our trust and investment management fees by operating segment.

Table 22.4: Trust and Investment Management Fees by Operating Segment

	Community Banking			Wholesale Banking			Wealth and Investment Management			Other			Consolidated Company		Year ended December 31,
(in millions)	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017
Investment management fees	**$ —**	—	1	**—**	—	—	**1,990**	2,087	2,053	**—**	—	—	**1,990**	2,087	2,054
Trust fees	**804**	908	887	**338**	329	421	**557**	728	757	**(840)**	(932)	(916)	**859**	1,033	1,149
Other revenue	**1**	2	1	**148**	116	102	**40**	78	67	**—**	—	(1)	**189**	196	169
Trust and investment management fees	**$ 805**	910	889	**486**	445	523	**2,587**	2,893	2,877	**(840)**	(932)	(917)	**3,038**	3,316	3,372

INVESTMENT BANKING FEES are earned for underwriting debt and equity securities, arranging loan syndications and performing other advisory services. Our obligation for these services is generally satisfied at closing of the transaction. Substantially all of these fees are in the Wholesale Banking operating segment.

CARD FEES include credit and debit card interchange and network revenues and various card-related fees. Credit and debit card interchange and network revenues are earned on credit and debit card transactions conducted through payment networks such as Visa, MasterCard, and American Express. Our obligation is satisfied concurrently with the delivery of services on a daily basis.

Table 22.5 presents our card fees by operating segment.

Table 22.5: Card Fees by Operating Segment

	Community Banking			Wholesale Banking			Wealth and Investment Management			Other			Consolidated Company		Year ended December 31,
(in millions)	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017
Credit card interchange and network revenues (1)	**$ 809**	792	944	**359**	361	345	**6**	6	6	**(4)**	(4)	(4)	**1,170**	1,155	1,291
Debit card interchange and network revenues	**2,148**	2,053	1,964	**—**	—	—	**—**	—	—	**—**	—	—	**2,148**	2,053	1,964
Late fees, cash advance fees, balance transfer fees, and annual fees	**698**	698	705	**—**	1	—	**—**	—	—	**—**	—	—	**698**	699	705
Card fees	**$ 3,655**	3,543	3,613	**359**	362	345	**6**	6	6	**(4)**	(4)	(4)	**4,016**	3,907	3,960

(1) The cost of credit card rewards and rebates of $1.5 billion, $1.4 billion and $1.2 billion for the years ended December 31, 2019, 2018 and 2017, respectively, are presented net against the related revenues.

CASH NETWORK FEES are earned for processing ATM transactions. Our obligation is completed daily upon settlement of ATM transactions. Substantially all of these fees are in the Community Banking operating segment.

COMMERCIAL REAL ESTATE BROKERAGE COMMISSIONS are earned for assisting customers in the sale of real estate property. Our obligation is satisfied upon the successful brokering of a transaction. Fees are based on a fixed percentage of the sales price. All of these fees are in the Wholesale Banking operating segment. In October 2019, we sold our commercial real estate brokerage business (Eastdil).

WIRE TRANSFER AND OTHER REMITTANCE FEES consist of fees earned for funds transfer services and issuing cashier's checks and money orders. Our obligation is satisfied at the time of the funds transfer services or upon issuance of the cashier's check or money order. Substantially all of these fees are in the Community Banking and Wholesale Banking operating segments.

ALL OTHER FEES include various types of fees for products or services such as merchant payment services, safe deposit boxes, and loan syndication agency services. These fees are generally recognized over time as we perform the services. Most of these fees are in the Community Banking operating segment.

Note 23: Employee Benefits and Other Expenses

Pension and Postretirement Plans

We sponsor a frozen noncontributory qualified defined benefit retirement plan, the Wells Fargo & Company Cash Balance Plan (Cash Balance Plan), which covers eligible employees of Wells Fargo. The Cash Balance Plan was frozen on July 1, 2009, and no new benefits accrue after that date.

Prior to July 1, 2009, eligible employees' Cash Balance Plan accounts were allocated a compensation credit based on a percentage of their certified compensation; the freeze discontinued the allocation of compensation credits after June 30, 2009. Investment credits continue to be allocated to participants' accounts based on their accumulated balances.

Although not required, we made a $192 million contribution to our Cash Balance Plan in 2019. We do not expect that we will be required to make a contribution to the Cash Balance Plan in 2020; however, this is dependent on the finalization of the actuarial valuation in 2020. Our decision of whether to make a contribution in 2020 will be based on various factors including the actual investment performance of plan assets during 2020. Given these uncertainties, we cannot estimate at this time the amount, if any, that we will contribute in 2020 to the Cash Balance Plan. For the nonqualified pension plans and postretirement benefit plans, there is no minimum required contribution beyond the amount needed to fund benefit payments.

We recognize settlement losses for our Cash Balance Plan based on assessing whether lump sum payments will, in aggregate for the year, exceed the sum of its annual service and interest cost (threshold). Lump sum payments (included in the "Benefits paid" line in Table 23.1) did not exceed this threshold in 2019. Settlement losses of $134 million were recognized in 2018 representing the pro rata portion of the net loss in cumulative other comprehensive income based on the percentage reduction in the Cash Balance Plan's projected benefit obligation attributable to 2018 lump sum payments.

Our nonqualified defined benefit plans are unfunded and provide supplemental defined benefit pension benefits to certain eligible employees. The benefits under these plans were frozen in prior years.

We provide health care and life insurance benefits for certain retired employees, and we reserve the right to amend, modify or terminate any of the benefits at any time.

The information set forth in the following tables is based on current actuarial reports using the measurement date of December 31 for our pension and postretirement benefit plans.

Table 23.1 presents the changes in the benefit obligation and the fair value of plan assets, the funded status, and the amounts recognized on the balance sheet. The increases in the benefit obligation of the qualified plans and nonqualified plans were primarily due to actuarial losses, reflecting a decrease in the discount rates, partially offset by benefits paid. The decrease in the benefit obligation for the other benefit plans was primarily due to benefits paid (net of participant contributions) and net actuarial gains, partially offset by interest cost. Net actuarial gains were primarily due to actual benefit claims being less than projected, partially offset by a decrease in the discount rate.

Table 23.1: Changes in Benefit Obligation and Fair Value of Plan Assets

		December 31, 2019			December 31, 2018		
		Pension benefits			Pension benefits		
(in millions)		**Qualified**	**Non-qualified**	**Other benefits**	Qualified	Non-qualified	Other benefits
Change in benefit obligation:							
Benefit obligation at beginning of year	$	**10,129**	**557**	**555**	11,110	621	611
Service cost		**11**	**—**	**—**	11	—	—
Interest cost		**419**	**22**	**23**	392	21	21
Plan participants' contributions		**—**	**—**	**44**	—	—	48
Actuarial loss (gain)		**1,229**	**49**	**(11)**	(674)	(27)	(33)
Benefits paid		**(672)**	**(57)**	**(86)**	(719)	(57)	(92)
Medicare Part D subsidy		**—**	**—**	**—**	—	—	2
Settlements, Curtailments, and Amendments		**(2)**	**—**	**—**	1	—	—
Other		**—**	**—**	**—**	13	—	—
Foreign exchange impact		**2**	**1**	**—**	(5)	(1)	(2)
Benefit obligation at end of year		**11,116**	**572**	**525**	10,129	557	555
Change in plan assets:							
Fair value of plan assets at beginning of year		**9,477**	**—**	**511**	10,667	—	565
Actual return on plan assets		**1,758**	**—**	**64**	(478)	—	(17)
Employer contribution		**199**	**57**	**7**	10	57	5
Plan participants' contributions		**—**	**—**	**44**	—	—	48
Benefits paid		**(672)**	**(57)**	**(86)**	(719)	(57)	(92)
Medicare Part D subsidy		**—**	**—**	**—**	—	—	2
Settlement		**(1)**	**—**	**—**	—	—	—
Other		**—**	**—**	**—**	1	—	—
Foreign exchange impact		**2**	**—**	**—**	(4)	—	—
Fair value of plan assets at end of year		**10,763**	**—**	**540**	9,477	—	511
Funded status at end of year	$	**(353)**	**(572)**	**15**	(652)	(557)	(44)
Amounts recognized on the balance sheet at end of year:							
Assets	$	**1**	**—**	**44**	1	—	—
Liabilities		**(354)**	**(572)**	**(29)**	(653)	(557)	(44)

Table 23.2 provides information for pension and post retirement plans with benefit obligations in excess of plan assets.

Table 23.2: Plans with Benefit Obligations in Excess of Plan Assets

		December 31, 2019		December 31, 2018	
(in millions)		**Pension Benefits**	**Other Benefits**	Pension Benefits	Other Benefits
Projected benefit obligation	$	**11,653**	**N/A**	10,640	N/A
Accumulated benefit obligation		**11,634**	**29**	10,627	555
Fair value of plan assets		**10,727**	**—**	9,429	511

Table 23.3 presents the components of net periodic benefit cost and other comprehensive income (OCI).

Table 23.3: Net Periodic Benefit Cost and Other Comprehensive Income

	December 31, 2019			December 31, 2018			December 31, 2017		
	Pension benefits			Pension benefits			Pension benefits		
(in millions)	Qualified	Non-qualified	Other benefits	Qualified	Non-qualified	Other benefits	Qualified	Non-qualified	Other benefits
Service cost	$ 11	—	—	11	—	—	5	—	—
Interest cost (1)	419	22	23	392	21	21	412	24	28
Expected return on plan assets (1)	(567)	—	(28)	(641)	—	(31)	(652)	—	(30)
Amortization of net actuarial loss (gain) (1)	148	10	(17)	131	14	(18)	148	11	(9)
Amortization of prior service credit (1)	—	—	(10)	—	—	(10)	—	—	(10)
Settlement loss (1)	—	2	—	134	2	—	7	6	—
Net periodic benefit cost	11	34	(32)	27	37	(38)	(80)	41	(21)
Other changes in plan assets and benefit obligations recognized in other comprehensive income:									
Net actuarial loss (gain)	38	49	(47)	445	(27)	15	33	46	(128)
Amortization of net actuarial gain (loss)	(148)	(10)	17	(131)	(14)	18	(148)	(11)	9
Prior service cost	—	—	—	1	—	—	1	—	—
Amortization of prior service credit	—	—	10	—	—	10	—	—	10
Settlement	—	(2)	—	(134)	(2)	—	(8)	(6)	—
Total recognized in other comprehensive income	(110)	37	(20)	181	(43)	43	(122)	29	(109)
Total recognized in net periodic benefit cost and other comprehensive income	$ (99)	71	(52)	208	(6)	5	(202)	70	(130)

(1) Effective January 1, 2018, we adopted ASU 2017-07 – *Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost*. Accordingly, 2019 and 2018 balances are reported in other noninterest expense on the consolidated statement of income. For 2017, these balances were reported in employee benefits.

Table 23.4 provides the amounts recognized in cumulative OCI (pre-tax).

Table 23.4: Benefits Recognized in Cumulative OCI

	December 31, 2019			December 31, 2018		
	Pension benefits			Pension benefits		
(in millions)	Qualified	Non-qualified	Other benefits	Qualified	Non-qualified	Other benefits
Net actuarial loss (gain)	$ 3,226	186	(357)	3,336	149	(327)
Net prior service cost (credit)	1	—	(146)	1	—	(156)
Total	$ 3,227	186	(503)	3,337	149	(483)

Plan Assumptions

For additional information on our pension accounting assumptions, see Note 1 (Summary of Significant Accounting Policies). Table 23.5 presents the weighted-average assumptions used to estimate the projected benefit obligation.

Table 23.5: Weighted-Average Assumptions Used to Estimate Projected Benefit Obligation

	December 31, 2019			December 31, 2018		
	Pension benefits			Pension benefits		
	Qualified	**Non-qualified**	**Other benefits**	Qualified	Non-qualified	Other benefits
Discount rate	**3.21%**	**3.03**	**3.10**	4.30	4.20	4.24
Interest crediting rate	**2.70**	**1.35**	**N/A**	3.22	2.18	N/A

Table 23.6 presents the weighted-average assumptions used to determine the net periodic benefit cost.

Table 23.6: Weighted-Average Assumptions Used to Determine Net Periodic Benefit Cost

	December 31, 2019			December 31, 2018			December 31, 2017		
	Pension benefits			Pension benefits			Pension benefits		
	Qualified	**Non-qualified**	**Other benefits**	Qualified	Non-qualified	Other benefits	Qualified	Non-qualified	Other benefits
Discount rate (1)	**4.30%**	**4.10**	**4.24**	3.65	3.65	3.54	3.98	3.93	4.00
Interest crediting rate (1)	**3.22**	**2.05**	**N/A**	2.74	1.68	N/A	2.92	1.85	N/A
Expected return on plan assets	**6.24**	**N/A**	**5.75**	6.24	N/A	5.75	6.70	N/A	5.75

(1) Includes the impact of interim re-measurements as applicable.

To account for postretirement health care plans, we used health care cost trend rates to recognize the effect of expected changes in future health care costs due to medical inflation, utilization changes, new technology, regulatory requirements and Medicare cost shifting. In determining the end of year benefit obligation, we assumed an average annual increase of approximately 8.30% for health care costs in 2020. This rate is assumed to trend down 0.40%-0.50% per year until the trend rate reaches an ultimate rate of 4.50% in 2028. The 2019 periodic benefit cost was determined using an initial annual trend rate of 8.40%. This rate was assumed to decrease 0.50%-0.60% per year until the trend rate reached an ultimate rate of 4.50% in 2026.

Investment Strategy and Asset Allocation

We seek to achieve the expected long-term rate of return with a prudent level of risk, given the benefit obligations of the pension plans and their funded status. Our overall investment strategy is designed to provide our Cash Balance Plan with a moderate amount of long-term growth opportunities while ensuring that risk is mitigated through diversification across numerous asset classes and various investment strategies, coupled with an investment strategy for the fixed income assets that is generally designed to approximate the interest rate sensitivity of the Cash Balance Plan's benefit obligations. As of the end of 2019, the asset allocation for our Cash Balance Plan had a mix range of 20%-40% equities, 50%-70% fixed income, and approximately 10% in real estate, private equity and other investments. The Employee Benefit Review Committee (EBRC), which includes several members of senior management, formally reviews the investment risk and performance of our Cash Balance Plan on a quarterly basis. Annual Plan liability analysis and periodic asset/liability evaluations are also conducted.

Other benefit plan assets include (1) assets held in a 401(h) trust, which are invested with a target mix of 40%-60% for both equities and fixed income, and (2) assets held in the Retiree Medical Plan Voluntary Employees' Beneficiary Association (VEBA) trust, which are predominately invested in fixed income securities and cash. Members of the EBRC formally review the investment risk and performance of these assets on a quarterly basis.

Projected Benefit Payments

Future benefits that we expect to pay under the pension and other benefit plans are presented in Table 23.7.

Table 23.7: Projected Benefit Payments

	Pension benefits		
(in millions)	Qualified	Non-qualified	Other Benefits
Year ended December 31,			
2020	$ 826	50	42
2021	811	48	42
2022	797	45	41
2023	738	44	40
2024	720	42	38
2025-2029	3,391	187	167

Fair Value of Plan Assets

Table 23.8 presents the classification of the fair value of the pension plan and other benefit plan assets in the fair value hierarchy. See Note 19 (Fair Values of Assets and Liabilities) for a description of the fair value hierarchy.

Table 23.8: Pension and Other Benefit Plan Assets

	Carrying value at year end							
	Pension plan assets				Other benefits plan assets			
(in millions)	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
December 31, 2019								
Cash and cash equivalents	**$ 3**	**287**	**—**	**290**	**53**	**145**	**—**	**198**
Long duration fixed income (1)	**821**	**5,259**	**—**	**6,080**	**—**	**—**	**—**	**—**
Intermediate (core) fixed income (2)	**—**	**167**	**—**	**167**	**—**	**177**	**—**	**177**
High-yield fixed income	**—**	**217**	**—**	**217**	**—**	**—**	**—**	**—**
International fixed income	**33**	**97**	**—**	**130**	**—**	**—**	**—**	**—**
Domestic large-cap stocks (3)	**700**	**290**	**—**	**990**	**—**	**73**	**—**	**73**
Domestic mid-cap stocks	**210**	**113**	**—**	**323**	**—**	**19**	**—**	**19**
Domestic small-cap stocks	**201**	**9**	**—**	**210**	**—**	**11**	**—**	**11**
Global stocks (4)	**92**	**374**	**—**	**466**	**—**	**—**	**—**	**—**
International stocks (5)	**567**	**120**	**—**	**687**	**12**	**22**	**—**	**34**
Emerging market stocks	**—**	**249**	**—**	**249**	**—**	**—**	**—**	**—**
Real estate	**141**	**35**	**7**	**183**	**—**	**—**	**—**	**—**
Hedge funds/absolute return	**68**	**50**	**—**	**118**	**—**	**—**	**—**	**—**
Other	**57**	**48**	**9**	**114**	**4**	**—**	**24**	**28**
Plan investments - excluding investments at NAV	**$ 2,893**	**7,315**	**16**	**10,224**	**69**	**447**	**24**	**540**
Investments at NAV (6)				**478**				**—**
Net receivables				**61**				**—**
Total plan assets				**$ 10,763**				**540**
December 31, 2018								
Cash and cash equivalents	$ 2	284	—	286	69	22	—	91
Long duration fixed income (1)	902	4,414	—	5,316	—	—	—	—
Intermediate (core) fixed income (2)	—	118	—	118	—	183	—	183
High-yield fixed income	—	114	—	114	—	—	—	—
International fixed income	55	186	—	241	—	—	—	—
Domestic large-cap stocks (3)	582	238	—	820	—	115	—	115
Domestic mid-cap stocks	167	89	—	256	—	28	—	28
Domestic small-cap stocks	141	7	—	148	—	17	—	17
Global stocks (4)	72	357	—	429	—	—	—	—
International stocks (5)	449	110	—	559	9	40	—	49
Emerging market stocks	—	205	—	205	—	—	—	—
Real estate	148	33	14	195	—	—	—	—
Hedge funds/absolute return	63	32	—	95	—	—	—	—
Other	34	44	8	86	4	—	24	28
Plan investments - excluding investments at NAV	$ 2,615	6,231	22	8,868	82	405	24	511
Investments at NAV (6)				566				—
Net receivables				43				—
Total plan assets				$ 9,477				511

(1) This category includes a diversified mix of assets, which are being managed in accordance with a duration target of approximately 10 years and an emphasis on corporate credit bonds combined with investments in U.S. Treasury securities and other U.S. agency and non-agency bonds.
(2) This category includes assets that are intermediate duration, investment grade bonds held in investment strategies benchmarked to the Bloomberg Barclays Capital U.S. Aggregate Bond Index, including U.S. Treasury securities, agency and non-agency asset-backed bonds and corporate bonds.
(3) This category covers a broad range of investment styles, including active, enhanced index and passive approaches, as well as style characteristics of value, core and growth emphasized strategies. Assets in this category are currently diversified across eight unique investment strategies with no single investment manager strategy representing more than 2.0% of total plan assets.
(4) This category consists of five unique investment strategies providing exposure to broadly diversified, global equity investments, which generally have an allocation of 40-60% in U.S. domiciled equities and an equivalent allocation range in non-U.S. equities, with no single strategy representing more than 1.5% of total Plan assets.
(5) This category includes assets diversified across four unique investment strategies providing exposure to companies in developed market, non-U.S. countries with no single strategy representing more than 2.5% of total plan assets.
(6) Consists of certain investments that are measured at fair value using NAV per share (or its equivalent) as a practical expedient and are excluded from the fair value hierarchy.

Table 23.9 presents the changes in Level 3 pension plan and other benefit plan assets measured at fair value.

Table 23.9: Fair Value Level 3 Pension and Other Benefit Plan Assets

(in millions)		Balance beginning of year	Gains (losses) Realized	Gains (losses) Unrealized (1)	Purchases, sales and settlements (net)	Transfers Into/ (Out of) Level 3	Balance end of year
Quarter ended December 31, 2019							
Pension plan assets:							
Real estate	**$**	**14**	**1**	**1**	**(9)**	**—**	**7**
Other		**8**	**—**	**2**	**(1)**	**—**	**9**
Total pension plan assets	**$**	**22**	**1**	**3**	**(10)**	**—**	**16**
Other benefits plan assets:							
Other	**$**	**24**	**—**	**—**	**—**	**—**	**24**
Total other benefit plan assets	**$**	**24**	**—**	**—**	**—**	**—**	**24**
Quarter ended December 31, 2018							
Pension plan assets:							
Real estate	$	20	(2)	(1)	(3)	—	14
Other		8	—	—	—	—	8
Total pension plan assets	$	28	(2)	(1)	(3)	—	22
Other benefits plan assets:							
Other	$	23	1	—	—	—	24
Total other benefit plan assets	$	23	1	—	—	—	24

(1) All unrealized gains (losses) relate to instruments held at period end.

VALUATION METHODOLOGIES Following is a description of the valuation methodologies used for assets measured at fair value.

Cash and Cash Equivalents – includes investments in collective investment funds valued at fair value based upon the fund's NAV per share held at year-end. The NAV per share is quoted on a private market that is not active; however, the NAV per share is based on underlying investments traded on an active market. This group of assets also includes investments in registered investment companies valued at the NAV per share held at year-end and in interest-bearing bank accounts.

Long Duration, Intermediate (Core), High-Yield, and International Fixed Income – includes investments traded on the secondary markets; prices are measured by using quoted market prices for similar securities, pricing models, and discounted cash flow analyses using significant inputs observable in the market where available, or a combination of multiple valuation techniques. This group of assets also includes highly liquid government securities such as U.S. Treasuries, limited partnerships valued at the NAV, registered investment companies and collective investment funds described above.

Domestic, Global, International and Emerging Market Stocks – investments in exchange-traded equity securities are valued at quoted market values. This group of assets also includes investments in registered investment companies and collective investment funds described above.

Real Estate – includes investments in real estate, which are valued at fair value based on an income capitalization valuation approach. Market values are estimates, and the actual market price of the real estate can only be determined by negotiation between independent third parties in sales transactions. This group of assets also includes investments in exchange-traded equity securities and collective investment funds described above.

Hedge Funds / Absolute Return – includes investments in registered investment companies, and limited partnerships, as described above.

Other – insurance contracts that are stated at cash surrender value. This group of assets also includes investments in registered investment companies and collective investment funds described above.

The methods described above may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. While we believe our valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

Defined Contribution Retirement Plans

We sponsor a qualified defined contribution retirement plan, the Wells Fargo & Company 401(k) Plan (401(k) Plan). Under the 401(k) Plan, after 1 month of service, eligible employees may contribute up to 50% of their certified compensation, subject to statutory limits. Eligible employees who complete one year of service are eligible for quarterly company matching contributions, which are generally dollar for dollar up to 6% of an employee's eligible certified compensation. Matching contributions are 100% vested. The 401(k) Plan includes an employer discretionary profit sharing contribution feature to allow us to make a contribution to eligible employees' 401(k) Plan accounts for a plan year. Eligible employees who complete one year of service are eligible for profit sharing contributions. Profit sharing contributions are vested after three years of service. Total defined contribution retirement plan expenses were $1.1 billion in 2019 and $1.2 billion in both 2018 and 2017.

Other Expenses

Table 23.10 separately presents other expenses exceeding 1% of the sum of net interest income and total noninterest income in any of the years presented.

Table 23.10: Other Expenses

	Year ended December 31,		
(in millions)	**2019**	2018	2017
Operating losses	**$ 4,321**	3,124	5,492
Outside professional services	**3,198**	3,306	3,813
Contract services (1)	**2,489**	2,192	1,638
Leases (2)	**1,155**	1,334	1,351
Advertising and promotion	**1,076**	857	614
Outside data processing	**673**	660	891
Other	**3,840**	4,129	3,789
Total other noninterest expense	**$ 16,752**	15,602	17,588

(1) The amount for 2017 has been revised to conform with the current period presentation whereby temporary help is included in contract services rather than in all other noninterest expense.
(2) Represents expenses for assets we lease to customers.

Note 24: Income Taxes

Table 24.1 presents the components of income tax expense.

Table 24.1: Income Tax Expense

		Year ended December 31,	
(in millions)	2019	2018	2017
Current:			
Federal	$ **5,244**	2,382	3,507
State and local	**2,005**	1,140	561
Non-U.S.	**154**	170	183
Total current	**7,403**	3,692	4,251
Deferred:			
Federal	**(2,374)**	1,706	156
State and local	**(863)**	236	564
Non-U.S.	**(9)**	28	(54)
Total deferred	**(3,246)**	1,970	666
Total	$ **4,157**	5,662	4,917

The tax effects of our temporary differences that gave rise to significant portions of our deferred tax assets and liabilities are presented in Table 24.2.

Table 24.2: Net Deferred Tax Liability (1)

(in millions)	Dec 31, 2019	Dec 31, 2018
Deferred tax assets		
Allowance for credit losses	$ **2,587**	2,644
Deferred compensation and employee benefits	**2,969**	2,893
Accrued expenses	**874**	815
PCI loans	**69**	467
Basis difference in debt securities	**690**	98
Net unrealized losses on debt securities	**—**	1,022
Net operating loss and tax credit carry forwards	**363**	366
Other	**1,207**	1,272
Total deferred tax assets	**8,759**	9,577
Deferred tax assets valuation allowance	**(306)**	(315)
Deferred tax liabilities		
Mortgage servicing rights	**(3,080)**	(3,475)
Leasing	**(4,413)**	(4,271)
Basis difference in investments	**(1,626)**	(1,301)
Mark to market, net	**(4,146)**	(7,252)
Intangible assets	**(511)**	(427)
Net unrealized gains on debt securities	**(504)**	—
Insurance reserves	**(561)**	(696)
Other	**(890)**	(831)
Total deferred tax liabilities	**(15,731)**	(18,253)
Net deferred tax liability (2)	$ **(7,278)**	(8,991)

(1) Prior period amounts have been revised to conform with the current period presentation.
(2) The net deferred tax liability is included in accrued expenses and other liabilities.

Deferred taxes related to net unrealized gains (losses) on debt securities, net unrealized gains (losses) on derivatives, foreign currency translation, and employee benefit plan adjustments are recorded in cumulative OCI. In 2018, we reclassified $400 million from cumulative OCI to retained earnings to update amounts to an appropriate tax rate under the Tax Act. See Note 26 (Other Comprehensive Income) for more information.

We have determined that a valuation allowance is required for 2019 in the amount of $306 million, predominantly attributable to deferred tax assets in various state and non-U.S. jurisdictions where we believe it is more likely than not that these deferred tax assets will not be realized. In these jurisdictions, carry back limitations, lack of sources of taxable income, and tax planning strategy limitations contributed to our conclusion that the deferred tax assets would not be realizable. We have concluded that it is more likely than not that the remaining deferred tax assets will be realized based on our history of earnings, sources of taxable income in carry back periods, and our ability to implement tax planning strategies.

At December 31, 2019, we had net operating loss carry forwards with related deferred tax assets of $363 million. If these carry forwards are not utilized, they will mostly expire in varying amounts through December 31, 2039.

We do not intend to distribute earnings of certain non-U.S. subsidiaries in a taxable manner, and therefore intend to limit distributions of non-U.S. earnings previously taxed in the U.S., that would qualify for the 100% dividends received deduction, and that would not result in any significant state or non-U.S. taxes. All other undistributed non-U.S. earnings will continue to be permanently reinvested outside the U.S. and the related tax liability on these earnings is insignificant.

Table 24.3 reconciles the statutory federal income tax expense and rate to the effective income tax expense and rate. Our effective tax rate is calculated by dividing income tax expense by income before income tax expense less the net income from noncontrolling interests.

Table 24.3: Effective Income Tax Expense and Rate

								December 31,
			2019			2018		2017
(in millions)		Amount	Rate		Amount	Rate	Amount	Rate
Statutory federal income tax expense and rate	$	**4,978**	**21.0%**	$	5,892	21.0%	$ 9,485	35.0%
Change in tax rate resulting from:								
State and local taxes on income, net of federal income tax benefit		**896**	**3.8**		1,076	3.9	926	3.4
Tax-exempt interest		**(460)**	**(2.0)**		(494)	(1.8)	(812)	(3.0)
Tax credits		**(1,715)**	**(7.2)**		(1,537)	(5.5)	(1,419)	(5.2)
Non-deductible accruals		**653**	**2.7**		236	0.8	1,320	4.9
Tax reform		**—**	**—**		164	0.6	(3,713)	(13.7)
Other		**(195)**	**(0.8)**		325	1.2	(870)	(3.3)
Effective income tax expense and rate	$	**4,157**	**17.5%**	$	5,662	20.2%	$ 4,917	18.1%

All three years include income tax expense related to non-tax-deductible litigation accruals. The 2019 and 2018 effective tax rates reflect the reduction in the U.S. federal statutory income tax rate from 35% to 21% resulting from the Tax Cuts & Jobs Act (Tax Act). The 2018 effective tax rate also reflected the reconsideration of reserves for state income taxes following the U.S. Supreme Court opinion in *South Dakota v. Wayfair, Inc.* as well as $164 million of income tax expense resulting from the final re-measurement of our initial estimates for the impacts of the Tax Act. The 2017 effective income tax rate included an estimated impact of the Tax Act, including a benefit of $3.9 billion resulting from the re-measurement of the Company's estimated net deferred tax liability as of December 31, 2017, partially offset by $173 million of income tax expense for the estimated deemed repatriation of the Company's previously undistributed non-U.S. earnings.

Table 24.4 presents the change in unrecognized tax benefits.

Table 24.4: Change in Unrecognized Tax Benefits

			Year ended December 31,
(in millions)		2019	2018
Balance at beginning of year	$	**5,750**	5,167
Additions:			
For tax positions related to the current year		**123**	393
For tax positions related to prior years		**91**	503
Reductions:			
For tax positions related to prior years		**(378)**	(262)
Lapse of statute of limitations		**(5)**	(7)
Settlements with tax authorities		**(123)**	(44)
Balance at end of year	$	**5,458**	5,750

Of the $5.5 billion of unrecognized tax benefits at December 31, 2019, approximately $3.8 billion would, if recognized, affect the effective tax rate. The remaining $1.7 billion of unrecognized tax benefits relates to income tax positions on temporary differences.

We recognize interest and penalties related to unrecognized tax benefits as a component of income tax expense. As of December 31, 2019 and 2018, we have accrued approximately $998 million and $968 million, respectively, for the payment of interest and penalties. In 2019, we recognized in income tax expense a net tax expense related to interest and penalties of $35 million. In 2018, we recognized in income tax expense a net tax expense related to interest and penalties of $200 million.

We are subject to U.S. federal income tax as well as income tax in numerous state and non-U.S. jurisdictions. We are routinely examined by tax authorities in these various jurisdictions. The IRS is currently examining the 2015 through 2016 consolidated U.S. federal income tax returns of Wells Fargo & Company and its subsidiaries. In addition, we are currently subject to examination by various state, local and non-U.S. taxing authorities. With few exceptions, Wells Fargo and its subsidiaries are not subject to federal, state, local and non-U.S. income tax examinations for taxable years prior to 2007.

We are litigating or appealing various issues related to prior IRS examinations for the periods 2003 through 2014. For the 2003 through 2006 periods, we have paid the IRS the contested income tax and interest associated with these issues and refund claims have been filed for the respective years. It is possible that one or more of these examinations, appeals or litigation may be resolved within the next twelve months resulting in a decrease of up to $1.3 billion to our gross unrecognized tax benefits.

Note 25: Earnings and Dividends Per Common Share

Table 25.1 shows earnings per common share and diluted earnings per common share and reconciles the numerator and denominator of both earnings per common share calculations. See Note 1 (Summary of Significant Accounting Policies) for discussion on share repurchases, and the Consolidated Statement of Changes in Equity and Note 21 (Common Stock and Stock Plans) for information about stock and options activity and terms and conditions of warrants.

Table 25.1: Earnings Per Common Share Calculations

			Year ended December 31,	
(in millions, except per share amounts)		**2019**	2018	2017
Wells Fargo net income	$	**19,549**	22,393	22,183
Less: Preferred stock dividends and other (1)		**1,611**	1,704	1,629
Wells Fargo net income applicable to common stock (numerator)	$	**17,938**	20,689	20,554
Earnings per common share				
Average common shares outstanding (denominator)		**4,393.1**	4,799.7	4,964.6
Per share	$	**4.08**	4.31	4.14
Diluted earnings per common share				
Average common shares outstanding		**4,393.1**	4,799.7	4,964.6
Add: Stock options (2)		**0.8**	8.0	17.1
Restricted share rights (2)		**31.5**	26.3	24.7
Warrants (2)		**—**	4.4	10.9
Diluted average common shares outstanding (denominator)		**4,425.4**	4,838.4	5,017.3
Per share	$	**4.05**	4.28	4.10

(1) The years ended December 31, 2019 and December 31, 2018, includes $220 million and $155 million, respectively, as a result of eliminating the discount on our Series K and Series J Preferred Stock. The Series K Preferred Stock was partially redeemed on September 16, 2019, and the Series J Preferred stock was redeemed on September 17, 2018.
(2) Calculated using the treasury stock method.

Table 25.2 presents the outstanding Convertible Preferred Stock, Series L, and options to purchase shares of common stock that were anti-dilutive and therefore not included in the calculation of diluted earnings per common share.

Table 25.2: Outstanding Anti-Dilutive Securities

		Weighted-average shares	
		Year ended December 31,	
(in millions)	**2019**	2018	2017
Convertible Preferred Stock, Series L (1)	**25.3**	25.3	25.3
Stock options (2)	**—**	0.3	1.9

(1) Calculated using the if-converted method.
(2) Calculated using the treasury stock method.

Table 25.3 presents dividends declared per common share.

Table 25.3: Dividends Declared Per Common Share

			Year ended December 31,	
		2019	2018	2017
Per common share	$	**1.92**	1.64	1.54

Note 26: Other Comprehensive Income

Table 26.1 provides the components of other comprehensive income (OCI), reclassifications to net income by income statement line item, and the related tax effects.

Table 26.1: Summary of Other Comprehensive Income

									Year ended December 31,
			2019			2018			2017
(in millions)	**Before tax**	**Tax effect**	**Net of tax**	Before tax	Tax effect	Net of tax	Before tax	Tax effect	Net of tax
Debt securities (1):									
Net unrealized gains (losses) arising during the period	**$ 5,439**	**(1,337)**	**4,102**	(4,493)	1,100	(3,393)	2,719	(1,056)	1,663
Reclassification of net (gains) losses to net income:									
Interest income on debt securities (2)	**263**	**(65)**	**198**	357	(88)	269	198	(75)	123
Net gains on debt securities	**(140)**	**34**	**(106)**	(108)	27	(81)	(479)	181	(298)
Net gains from equity securities (3)	**—**	**—**	**—**	—	—	—	(456)	172	(284)
Other noninterest income	**(1)**	**—**	**(1)**	(1)	—	(1)	—	—	—
Subtotal reclassifications to net income	**122**	**(31)**	**91**	248	(61)	187	(737)	278	(459)
Net change	**5,561**	**(1,368)**	**4,193**	(4,245)	1,039	(3,206)	1,982	(778)	1,204
Derivatives and hedging activities:									
Fair Value Hedges:									
Change in fair value of excluded components on fair value hedges (4)	**(3)**	**1**	**(2)**	(254)	63	(191)	(253)	95	(158)
Cash Flow Hedges:									
Net unrealized losses arising during the period on cash flow hedges	**(21)**	**5**	**(16)**	(278)	67	(211)	(287)	108	(179)
Reclassification of net (gains) losses to net income:									
Interest income on loans	**291**	**(72)**	**219**	292	(72)	220	(551)	208	(343)
Interest expense on long-term debt	**8**	**(2)**	**6**	2	—	2	8	(3)	5
Subtotal reclassifications to net income	**299**	**(74)**	**225**	294	(72)	222	(543)	205	(338)
Net change	**275**	**(68)**	**207**	(238)	58	(180)	(1,083)	408	(675)
Defined benefit plans adjustments:									
Net actuarial and prior service gains (losses) arising during the period	**(40)**	**10**	**(30)**	(434)	106	(328)	49	(12)	37
Reclassification of amounts to noninterest expense and employee benefits (5):									
Amortization of net actuarial loss	**141**	**(35)**	**106**	127	(31)	96	150	(57)	93
Settlements and other	**(8)**	**5**	**(3)**	126	(29)	97	3	2	5
Subtotal reclassifications to noninterest expense and employee benefits	**133**	**(30)**	**103**	253	(60)	193	153	(55)	98
Net change	**93**	**(20)**	**73**	(181)	46	(135)	202	(67)	135
Foreign currency translation adjustments:									
Net unrealized gains (losses) arising during the period	**73**	**(2)**	**71**	(156)	1	(155)	96	3	99
Net change	**73**	**(2)**	**71**	(156)	1	(155)	96	3	99
Other comprehensive income (loss)	**$ 6,002**	**(1,458)**	**4,544**	(4,820)	1,144	(3,676)	1,197	(434)	763
Less: Other comprehensive loss from noncontrolling interests, net of tax			**—**			(2)			(62)
Wells Fargo other comprehensive income (loss), net of tax			**$ 4,544**			(3,674)			825

(1) The year ended December 31, 2017, includes net unrealized gains (losses) arising during the period from equity securities of $81 million and reclassification of net (gains) losses to net income related to equity securities of $(456) million. In connection with our adoption in first quarter 2018 of ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities*, the years ended December 31, 2018, and December 31, 2019, reflect net unrealized gains (losses) arising during the period and reclassification of net (gains) losses to net income from only debt securities.
(2) Represents net unrealized gains and losses amortized over the remaining lives of securities that were transferred from the available-for-sale portfolio to the held-to-maturity portfolio.
(3) Net gains from equity securities is presented for table presentation purposes. After our adoption of ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities* on January 1, 2018, this line will not contain balances as realized and unrealized gains and losses on marketable equity investments will be recorded in earnings.
(4) Represents changes in fair value of cross-currency swaps attributable to changes in cross-currency basis spreads, which are excluded from the assessment of hedge effectiveness and recorded in other comprehensive income.
(5) Effective January 1, 2018, we adopted ASU 2017-07 – *Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost*. Accordingly, 2018 and 2019 balances are reclassified to other noninterest expense on the consolidated statement of income. For 2017 these balances were reclassified to employee benefits.

Table 26.2 provides the cumulative OCI balance activity on an after-tax basis.

Table 26.2: Cumulative OCI Balances

(in millions)		Debt securities (1)	Fair value hedges (2)	Cash flow hedges (3)	Defined benefit plans adjustments	Foreign currency translation adjustments	Cumulative other comprehensive income (loss)
Balance, December 31, 2016	$	(1,099)	—	89	(1,943)	(184)	(3,137)
Transition adjustment (4)		—	169	(1)	—	—	168
Balance, January 1, 2017		(1,099)	169	88	(1,943)	(184)	(2,969)
Net unrealized gains (losses) arising during the period		1,663	(158)	(179)	37	99	1,462
Amounts reclassified from accumulated other comprehensive income		(459)	—	(338)	98	—	(699)
Net change		1,204	(158)	(517)	135	99	763
Less: Other comprehensive income (loss) from noncontrolling interests		(66)	—	—	—	4	(62)
Balance, December 31, 2017		171	11	(429)	(1,808)	(89)	(2,144)
Transition adjustment (5)		(118)	—	—	—	—	(118)
Balance, January 1, 2018		53	11	(429)	(1,808)	(89)	(2,262)
Reclassification of certain tax effects to retained earnings (6)		31	2	(89)	(353)	9	(400)
Net unrealized losses arising during the period		(3,393)	(191)	(211)	(328)	(155)	(4,278)
Amounts reclassified from accumulated other comprehensive income		187	—	222	193	—	602
Net change		(3,175)	(189)	(78)	(488)	(146)	(4,076)
Less: Other comprehensive loss from noncontrolling interests		—	—	—	—	(2)	(2)
Balance, December 31, 2018		(3,122)	(178)	(507)	(2,296)	(233)	(6,336)
Transition adjustment (7)		**481**	**—**	**—**	**—**	**—**	**481**
Balance, January 1, 2019		**(2,641)**	**(178)**	**(507)**	**(2,296)**	**(233)**	**(5,855)**
Net unrealized gains (losses) arising during the period		**4,102**	**(2)**	**(16)**	**(30)**	**71**	**4,125**
Amounts reclassified from accumulated other comprehensive income		**91**	**—**	**225**	**103**	**—**	**419**
Net change		**4,193**	**(2)**	**209**	**73**	**71**	**4,544**
Less: Other comprehensive income (loss) from noncontrolling interests		**—**	**—**	**—**	**—**	**—**	**—**
Balance, December 31, 2019	**$**	**1,552**	**(180)**	**(298)**	**(2,223)**	**(162)**	**(1,311)**

(1) The year ended December 31, 2017, includes net unrealized gains (losses) arising during the period from equity securities of $81 million and reclassification of net (gains) losses to net income related to equity securities of $(456) million. In connection with our adoption in first quarter 2018 of ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities*, the years ended December 31, 2018, and December 31, 2019, reflect net unrealized gains (losses) arising during the period and reclassification of net (gains) losses to net income from only debt securities.

(2) Substantially all of the amounts for fair value hedges are foreign exchange contracts.

(3) Substantially all of the amounts for cash flow hedges are foreign exchange contracts for the year-ended December 31, 2019, and interest rate contracts for the years ended December 31, 2018 and 2017.

(4) Transition adjustment relates to our adoption of ASU 2017-12 – Derivatives and Hedging (Topic 815): *Targeted Improvements to Accounting for Hedging Activities.*

(5) The transition adjustment relates to our adoption of ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities.*

(6) Represents the reclassification from other comprehensive income to retained earnings as a result of our adoption of ASU 2018-02 – Income Statement-Reporting Comprehensive Income (Topic 220): *Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income* in third quarter 2018.

(7) The transition adjustment relates to our adoption of ASU 2017-08 – Receivables – Nonrefundable Fees and Other Costs (Subtopic 310-20): *Premium Amortization on Purchased Callable Debt Securities*. See Note 1 (Summary of Significant Accounting Policies) for more information.

Note 27: Operating Segments

As of December 31, 2019, we had three reportable operating segments: Community Banking; Wholesale Banking; and Wealth and Investment Management (WIM). We define our operating segments by product type and customer segment and their results are based on our management reporting process. The management reporting process is based on U.S. GAAP with specific adjustments, such as for funds transfer pricing for asset/liability management, for shared revenues and expenses, and tax-equivalent adjustments to consistently reflect income from taxable and tax-exempt sources. The management reporting process measures the performance of the operating segments based on our management structure and is not necessarily comparable with similar information for other financial services companies. On February 11, 2020, we announced a new organizational structure with five principal lines of business: Consumer and Small Business Banking; Consumer Lending; Commercial Banking; Corporate and Investment Banking; and Wealth and Investment Management. The Company is currently in the process of transitioning to this new organizational structure, including identifying leadership for some of these principal business lines and aligning management reporting and allocation methodologies. These changes will not impact the consolidated financial results of the Company, but are expected to result in changes to our operating segments. We will update our operating segment disclosures, including comparative financial results, when the Company completes its transition and is managed in accordance with the new organizational structure.

Community Banking offers a complete line of diversified financial products and services for consumers and small businesses with annual sales generally up to $5 million in which the owner generally is the financial decision maker. These financial products and services include checking and savings accounts, credit and debit cards, and automobile, student, mortgage, home equity and small business lending, as well as referrals to Wholesale Banking and WIM business partners.

Community Banking serves customers through a complete range of channels, including traditional and in-supermarket and other small format branches, ATMs, digital (online, mobile, and social), and contact centers (phone, email and correspondence).

The Community Banking segment also includes the results of our Corporate Treasury activities net of allocations (including funds transfer pricing, capital, liquidity and certain corporate expenses) in support of other segments and results of investments in our affiliated venture capital and private equity partnerships.

Wholesale Banking provides financial solutions to businesses with annual sales generally in excess of $5 million and to financial institutions globally. Wholesale Banking provides a complete line of commercial, corporate, capital markets, cash management and real estate banking products and services. These include traditional commercial loans and lines of credit, letters of credit, asset-based lending, equipment leasing, international trade facilities, trade financing, collection services, foreign exchange services, treasury management, institutional fixed-income sales, interest rate, commodity and equity risk management, online/electronic products such as the *Commercial Electronic Office®* (*CEO®*) portal, corporate trust fiduciary and agency services, and investment banking services. Wholesale Banking also supports the CRE market with products and services such as construction loans for commercial and residential development, land acquisition and development loans, secured and unsecured lines of credit, interim financing arrangements for completed structures, rehabilitation loans, affordable housing loans and letters of credit, permanent loans for securitization, and CRE loan servicing.

Wealth and Investment Management provides a full range of personalized wealth management, investment and retirement products and services to clients across U.S.-based businesses including Wells Fargo Advisors, The Private Bank, Abbot Downing, and Wells Fargo Asset Management. We deliver financial planning, private banking, credit, investment management and fiduciary services to high-net worth and ultra-high-net worth individuals and families. We also serve clients' brokerage needs and provide investment management capabilities delivered to global institutional clients through separate accounts and the Wells Fargo Funds.

Other includes the elimination of certain items that are included in more than one business segment, substantially all of which represents products and services for Wealth and Investment Management customers served through Community Banking distribution channels.

Table 27.1 presents our results by operating segment.

Table 27.1: Operating Segments

(income/expense in millions, average balances in billions)		Community Banking	Wholesale Banking	Wealth and Investment Management	Other (1)	Consolidated Company
2019						
Net interest income (2)	**$**	**27,610**	**17,699**	**4,037**	**(2,115)**	**47,231**
Provision (reversal of provision) for credit losses		**2,319**	**378**	**5**	**(15)**	**2,687**
Noninterest income		**17,706**	**9,978**	**13,304**	**(3,156)**	**37,832**
Noninterest expense		**32,696**	**15,352**	**13,709**	**(3,579)**	**58,178**
Income (loss) before income tax expense (benefit)		**10,301**	**11,947**	**3,627**	**(1,677)**	**24,198**
Income tax expense (benefit) (3)		**2,426**	**1,246**	**904**	**(419)**	**4,157**
Net income (loss) before noncontrolling interests		**7,875**	**10,701**	**2,723**	**(1,258)**	**20,041**
Less: Net income (loss) from noncontrolling interests		**477**	**5**	**10**	**—**	**492**
Net income (loss)	**$**	**7,398**	**10,696**	**2,713**	**(1,258)**	**19,549**
2018						
Net interest income (2)	$	29,219	18,690	4,441	(2,355)	49,995
Provision (reversal of provision) for credit losses		1,783	(58)	(5)	24	1,744
Noninterest income		17,694	10,016	11,935	(3,232)	36,413
Noninterest expense		30,491	16,157	12,938	(3,460)	56,126
Income (loss) before income tax expense (benefit)		14,639	12,607	3,443	(2,151)	28,538
Income tax expense (benefit) (3)		3,784	1,555	861	(538)	5,662
Net income (loss) before noncontrolling interests		10,855	11,052	2,582	(1,613)	22,876
Less: Net income (loss) from noncontrolling interests		461	20	2	—	483
Net income (loss)	$	10,394	11,032	2,580	(1,613)	22,393
2017						
Net interest income (2)	$	28,658	18,810	4,641	(2,552)	49,557
Provision (reversal of provision) for credit losses		2,555	(19)	(5)	(3)	2,528
Noninterest income		18,360	11,190	12,431	(3,149)	38,832
Noninterest expense		32,615	16,624	12,623	(3,378)	58,484
Income (loss) before income tax expense (benefit)		11,848	13,395	4,454	(2,320)	27,377
Income tax expense (benefit) (3)		634	3,496	1,668	(881)	4,917
Net income (loss) before noncontrolling interests		11,214	9,899	2,786	(1,439)	22,460
Less: Net income (loss) from noncontrolling interests		276	(15)	16	—	277
Net income (loss)	$	10,938	9,914	2,770	(1,439)	22,183
2019						
Average loans	**$**	**459.4**	**475.3**	**75.6**	**(59.3)**	**951.0**
Average assets		**1,028.4**	**861.0**	**84.3**	**(60.3)**	**1,913.4**
Average deposits		**782.0**	**422.5**	**146.0**	**(64.2)**	**1,286.3**
2018						
Average loans		463.7	465.7	74.6	(58.8)	945.2
Average assets		1,034.1	830.5	83.9	(59.6)	1,888.9
Average deposits		757.2	423.7	165.0	(70.0)	1,275.9

(1) Includes the elimination of certain items that are included in more than one business segment, substantially all of which represents products and services for WIM customers served through Community Banking distribution channels.

(2) Net interest income is the difference between interest earned on assets and the cost of liabilities to fund those assets. Interest earned includes actual interest earned on segment assets as well as interest credits for any funding of a segment available to be provided to other segments. The cost of liabilities includes actual interest expense on segment liabilities as well as funding charges for any funding provided from other segments.

(3) Income tax expense (benefit) for our Wholesale Banking operating segment included income tax credits related to low-income housing and renewable energy investments of $1.8 billion, $1.6 billion and $1.4 billion for the years ended December 31, 2019, 2018 and 2017 respectively.

Note 28: Parent-Only Financial Statements

The following tables present Parent-only condensed financial statements.

Table 28.1: Parent-Only Statement of Income

			Year ended December 31,
(in millions)	**2019**	2018	2017
Income			
Dividends from subsidiaries (1)	$ **21,930**	22,427	20,746
Interest income from subsidiaries	**3,356**	3,298	1,984
Other interest income	**43**	49	146
Other income	**(162)**	(424)	1,238
Total income	**25,167**	25,350	24,114
Expense			
Interest expense:			
Indebtedness to nonbank subsidiaries	**664**	644	189
Short-term borrowings	**—**	2	—
Long-term debt	**4,931**	4,541	3,595
Other	**2**	3	5
Noninterest expense	**1,327**	286	1,888
Total expense	**6,924**	5,476	5,677
Income before income tax benefit and equity in undistributed income of subsidiaries	**18,243**	19,874	18,437
Income tax benefit	**(945)**	(544)	(319)
Equity in undistributed income of subsidiaries	**361**	1,975	3,427
Net income	$ **19,549**	22,393	22,183

(1) Includes dividends paid from indirect bank subsidiaries of $21.8 billion, $20.8 billion and $17.9 billion in 2019, 2018 and 2017, respectively.

Table 28.2: Parent-Only Statement of Comprehensive Income

			Year ended December 31,
(in millions)	**2019**	2018	2017
Net income	$ **19,549**	22,393	22,183
Other comprehensive income (loss), net of tax:			
Debt securities (1)	**(45)**	(12)	94
Derivatives and hedging activities	**(12)**	(198)	(158)
Defined benefit plans adjustment	**75**	(132)	118
Equity in other comprehensive income (loss) of subsidiaries	**4,526**	(3,332)	771
Other comprehensive income (loss), net of tax:	**4,544**	(3,674)	825
Total comprehensive income	$ **24,093**	18,719	23,008

(1) The year ended December 31, 2017 includes net unrealized gains arising during the period from equity securities of $3 million and reclassification of net (gains) to net income related to equity securities of $(21) million. In connection with our adoption in first quarter 2018 of ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities*, the years ended December 31, 2019 and 2018, reflect net unrealized gains (losses) arising during the period and reclassification of net (gains) losses to net income from only debt securities.

Table 28.3: Parent-Only Balance Sheet

(in millions)		Dec 31, 2019	Dec 31, 2018
Assets			
Cash, cash equivalents, and restricted cash due from:			
Subsidiary banks	$	**14,948**	16,301
Nonaffiliates		**1**	—
Debt securities:			
Available-for-sale, at fair value		**1**	1
Loans to nonbank subsidiaries		**145,383**	139,163
Investments in subsidiaries (1)		**208,076**	202,695
Equity securities		**1,007**	2,164
Other assets		**4,608**	4,639
Total assets	$	**374,024**	364,963
Liabilities and equity			
Accrued expenses and other liabilities	$	**8,050**	6,986
Long-term debt		**152,628**	135,079
Indebtedness to nonbank subsidiaries		**26,200**	26,732
Total liabilities		**186,878**	168,797
Stockholders' equity		**187,146**	196,166
Total liabilities and equity	$	**374,024**	364,963

(1) The years ended December 31, 2019, and December 31, 2018, include indirect ownership of bank subsidiaries with equity of $170.4 billion and $167.6 billion, respectively.

Table 28.4: Parent-Only Statement of Cash Flows

		Year ended December 31,	
(in millions)	**2019**	2018	2017
Cash flows from operating activities:			
Net cash provided by operating activities	**$ 27,601**	19,024	22,233
Cash flows from investing activities:			
Available-for-sale debt securities:			
Proceeds from sales:			
Subsidiary banks	**—**	—	8,658
Nonaffiliates	**—**	—	8,824
Prepayments and maturities:			
Subsidiary banks	**—**	—	10,250
Purchases:			
Subsidiary banks	**—**	—	(3,900)
Equity securities, not held for trading:			
Proceeds from sales and capital returns	**326**	355	743
Purchases	**(1,052)**	(220)	(215)
Loans:			
Net advances to subsidiaries	**(3)**	(7)	(35,876)
Capital notes and term loans made to subsidiaries	**(5,286)**	(2,441)	(73,729)
Principal collected on notes/loans made to subsidiaries	**1,703**	756	69,286
Net decrease (increase) in investment in subsidiaries	**(384)**	2,407	(2,029)
Other, net	**22**	109	113
Net cash provided (used) by investing activities	**(4,674)**	959	(17,875)
Cash flows from financing activities:			
Net increase (decrease) in short-term borrowings and indebtedness to subsidiaries	**(636)**	12,467	(8,685)
Long-term debt:			
Proceeds from issuance	**20,369**	1,876	22,217
Repayment	**(8,143)**	(9,162)	(13,709)
Preferred stock:			
Proceeds from issuance	**—**	—	677
Redeemed	**(1,550)**	(2,150)	—
Cash dividends paid	**(1,391)**	(1,622)	(1,629)
Common stock:			
Proceeds from issuance	**380**	632	1,211
Stock tendered for payment of withholding taxes	**(302)**	(331)	(393)
Repurchased	**(24,533)**	(20,633)	(9,908)
Cash dividends paid	**(8,198)**	(7,692)	(7,480)
Other, net	**(275)**	(248)	(138)
Net cash used by financing activities	**(24,279)**	(26,863)	(17,837)
Net change in cash, cash equivalents, and restricted cash	**(1,352)**	(6,880)	(13,479)
Cash, cash equivalents, and restricted cash at beginning of year	**16,301**	23,181	36,660
Cash, cash equivalents, and restricted cash at end of year	**$ 14,949**	16,301	23,181

Note 29: Regulatory and Agency Capital Requirements

The Company and each of its subsidiary banks are subject to regulatory capital adequacy requirements promulgated by federal bank regulatory agencies. The Federal Reserve establishes capital requirements for the consolidated financial holding company, and the OCC has similar requirements for the Company's national banks, including Wells Fargo Bank, N.A. (the Bank).

Table 29.1 presents regulatory capital information for Wells Fargo & Company and the Bank in accordance with the Basel III capital requirements. We must report the lower of our Common Equity Tier 1 (CET1), tier 1 and total capital ratios calculated under the Standardized Approach and under the Advanced Approach in the assessment of our capital adequacy. The Standardized Approach applies assigned risk weights to broad risk categories, while the calculation of risk-weighted assets (RWAs) under the Advanced Approach differs by requiring applicable banks to utilize a risk-sensitive methodology, which relies upon the use of internal credit models, and includes an operational risk component. The Basel III capital requirements for calculating CET1 and tier 1 capital, along with RWAs, are fully phased-in. However, the requirements for determining tier 2 and total capital are still in accordance with Transition Requirements and are scheduled to be fully phased-in by the end of 2021. Accordingly, the information presented below reflects fully phased-in CET1 capital, tier 1 capital, and RWAs, but reflects total capital still in accordance with Transition Requirements.

At December 31, 2019, the Bank and our other insured depository institutions were considered well-capitalized under the requirements of the Federal Deposit Insurance Act.

The Bank is an approved seller/servicer of mortgage loans and is required to maintain minimum levels of shareholders' equity, as specified by various agencies, including the United States Department of Housing and Urban Development, GNMA, FHLMC and FNMA. At December 31, 2019, the Bank met these requirements.

Table 29.1: Regulatory Capital Information

	Wells Fargo & Company				Wells Fargo Bank, N.A.			
	December 31, 2019		December 31, 2018		**December 31, 2019**		December 31, 2018	
(in millions, except ratios)	Advanced Approach	Standardized Approach	Advanced Approach	Standardized Approach	Advanced Approach	Standardized Approach	Advanced Approach	Standardized Approach
Regulatory capital:								
Common equity tier 1	$ **138,760**	**138,760**	146,363	146,363	**145,149**	**145,149**	142,685	142,685
Tier 1	**158,949**	**158,949**	167,866	167,866	**145,149**	**145,149**	142,685	142,685
Total	**188,333**	**196,223**	198,798	207,041	**158,615**	**166,056**	155,558	163,380
Assets:								
Risk-weighted assets	**1,230,066**	**1,245,853**	1,177,350	1,247,210	**1,110,379**	**1,152,791**	1,058,653	1,154,182
Adjusted average assets (1)	**1,913,297**	**1,913,297**	1,850,299	1,850,299	**1,695,807**	**1,695,807**	1,652,009	1,652,009
Regulatory capital ratios:								
Common equity tier 1 capital	**11.28%**	**11.14** *	12.43	11.74 *	**13.07**	**12.59** *	13.48	12.36 *
Tier 1 capital	**12.92**	**12.76** *	14.26	13.46 *	**13.07**	**12.59** *	13.48	12.36 *
Total capital	**15.31** *	**15.75**	16.89	16.60 *	**14.28** *	**14.40**	14.69	14.16 *
Tier 1 leverage (1)	**8.31**	**8.31**	9.07	9.07	**8.56**	**8.56**	8.64	8.64
	Wells Fargo & Company				Wells Fargo Bank, N.A.			
	December 31, 2019		December 31, 2018		**December 31, 2019**		December 31, 2018	
Supplementary leverage: (2)								
Total leverage exposure	$	**2,247,729**		2,174,564		**2,006,180**		1,957,276
Supplementary leverage ratio		**7.07%**		7.72		**7.24**		7.29

*Denotes the lowest capital ratio as determined under the Advanced and Standardized Approaches.

(1) The leverage ratio consists of Tier 1 capital divided by total average assets, excluding goodwill and certain other items.

(2) The supplementary leverage ratio (SLR) consists of Tier 1 capital divided by total leverage exposure. Total leverage exposure consists of total average assets, less goodwill and other permitted Tier 1 capital deductions (net of deferred tax liabilities), plus certain off-balance sheet exposures.

Table 29.2 presents the minimum required regulatory capital ratios under Transition Requirements to which the Company and the Bank were subject as of December 31, 2019, and December 31, 2018.

Table 29.2: Minimum Required Regulatory Capital Ratios – Transition Requirements (1)

	Wells Fargo & Company		Wells Fargo Bank, N.A.	
	December 31, 2019	December 31, 2018	**December 31, 2019**	December 31, 2018
Regulatory capital ratios:				
Common equity tier 1 capital	**9.000%**	7.875	**7.000**	6.375
Tier 1 capital	**10.500**	9.375	**8.500**	7.875
Total capital	**12.500**	11.375	**10.500**	9.875
Tier 1 leverage	**4.000**	4.000	**4.000**	4.000
Supplementary leverage (2)	**5.000**	5.000	**6.000**	6.000

(1) At December 31, 2019, under transition requirements, the CET1, tier 1 and total capital minimum ratio requirements for Wells Fargo & Company include a capital conservation buffer of 2.500% and a global systemically important bank (G-SIB) surcharge of 2.000%. Only the 2.500% capital conservation buffer applies to the Bank at December 31, 2019.

(2) Wells Fargo & Company is required to maintain a SLR of at least 5.000% (comprised of a 3.000% minimum requirement plus a supplementary leverage buffer of 2.000%) to avoid restrictions on capital distributions and discretionary bonus payments. The Bank is required to maintain a SLR of at least 6.000% to be considered well-capitalized under applicable regulatory capital adequacy guidelines.

Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
Wells Fargo & Company:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Wells Fargo & Company and Subsidiaries (the Company) as of December 31, 2019 and 2018, the related consolidated statements of income, comprehensive income, changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 26, 2020, expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

<u>Assessment of the allowance for credit losses</u>

As discussed in Notes 1 and 6 to the consolidated financial statements, the allowance for credit losses is the Company's estimate of credit losses inherent in the loan portfolio, including unfunded credit commitments, at the balance sheet date. The allowance for credit losses at December 31, 2019 was $10.5 billion, or 1.09% of total loans. Of the total allowance for credit losses, $9.2 billion relates to loans collectively evaluated for impairment in accordance with ASC 450-20 and $1.3 billion relates to loans individually evaluated for impairment in accordance with ASC 310-10. The Company has an established process to determine the appropriateness of the allowance for credit losses that estimates the losses inherent in its portfolio and related unfunded credit commitments. The Company develops and documents its allowance methodology at the portfolio segment level - commercial and consumer. For each portfolio segment, losses are estimated collectively for groups of loans with similar characteristics, and individually or pooled for impaired loans.

We identified the assessment of the allowance for credit losses as a critical audit matter because of the complexity and significant judgment involved in evaluating the measurement uncertainty in the estimate. There was a high degree of subjectivity related to the selection of a credit loss estimation model that fits the credit risk characteristics for particular loan portfolios, including the assessment of limitations to credit loss estimation addressed through imprecision. There was also a high degree of subjectivity and potential for management bias related to determining an amount of imprecision for inclusion within the Company's overall estimate of inherent credit losses. Further, the assessment of credit risk ratings for commercial loans required the use of significant judgment as well as industry knowledge and experience to evaluate individual borrower's financial strength and the quality of collateral.

The primary procedures we performed to address this critical audit matter included the following: We tested certain internal controls over the Company's allowance for credit losses estimation process that are designed to (1) evaluate and monitor the ability of the model methodologies to estimate credit losses for selected commercial and consumer portfolios, (2) assess the limitations to credit loss estimation models, (3) determine the amount of imprecision for inclusion within the Company's overall estimate of the effect of quantitative and qualitative factors on inherent credit losses, and (4) assess credit risk ratings for commercial loans. We involved credit risk professionals with specialized skills and knowledge who assisted in testing the Company's process to evaluate the design of selected commercial and consumer portfolio model methodologies and the appropriateness of credit risk ratings to estimate losses in accordance with relevant U.S. generally accepted accounting principles and identify and assess the limitations to the credit loss estimation models. We evaluated the methodologies and assumptions used to estimate certain imprecision amounts. We tested the accuracy of the range for certain quantifiable imprecision amounts, including, as applicable, recalculation of the range and procedures over relevance and reliability of the inputs into the calculation of the range. We tested whether certain imprecision amounts reflect risks inherent in the processes and assumptions used to estimate the allowance for credit losses. We performed trend analyses on the imprecision amount relative to the allowance for credit losses to identify any potential for management bias considering portfolio trends, internal and external credit metrics, and economic factors.

Assessment of the residential mortgage servicing rights (MSRs)

As discussed in Notes 1, 10, 11, 12, and 19 to the consolidated financial statements, the Company recognizes MSRs when it purchases servicing rights from third parties, or retains servicing rights in connection with the sale or securitization of loans it originated. The Company has elected to carry its residential MSRs at fair value with periodic changes reflected in earnings. The Company's residential MSR asset as of December 31, 2019 was $11.5 billion on an underlying loan servicing portfolio of $1.1 trillion.

The Company uses a valuation model for determining fair value that calculates the present value of estimated future net servicing income cash flows. The model incorporates assumptions that market participants use in estimating future net servicing income cash flows. These assumptions include estimates of prepayment speeds, discount rates, default rates, cost to service (including delinquency and foreclosure costs), escrow account earnings, contractual servicing fee income, ancillary income and late fees. The estimated fair value of MSRs is periodically benchmarked to independent appraisals.

We identified the assessment of the valuation of residential MSRs as a critical audit matter because of the complexity and significant judgment involved in deriving the estimate. There was a high degree of subjectivity used to evaluate the following key assumptions because they are unobservable and the sensitivity of changes to those assumptions had a significant effect on the valuation: prepayment speeds, discount rate, and costs to service. There was also a high degree of subjectivity and potential for management bias related to updates made to key assumptions due to changes in market conditions, mortgage interest rates, or servicing standards.

The primary procedures we performed to address the critical audit matter included the following: We tested certain internal controls over the Company's residential MSR valuation process to (1) assess the valuation model, (2) evaluate the key assumptions used in determining the MSR fair value, and (3) compare the MSR fair value to independent appraisals. We involved valuation professionals with specialized skills and knowledge who assisted in evaluating the design of the valuation model used to estimate the MSR fair value in accordance with relevant U.S. generally accepted accounting principles, and to evaluate key assumptions (prepayment speeds, discount rates, and costs to service) based on an analysis of backtesting results and a comparison of key assumptions to available data for comparable entities and independent appraisals. We assessed the key assumption updates made during the year by considering backtesting results, external market events, and independent appraisals or other circumstances and by involving valuation professionals to assist in determining that there were no significant assumption updates that a market participant would have expected to be incorporated in the valuation at year end that were not incorporated.

KPMG LLP

We have served as the Company's auditor since 1931.

San Francisco, California
February 26, 2020

Quarterly Financial Data

Condensed Consolidated Statement of Income - Quarterly (Unaudited)

				2019				2018
				Quarter ended				Quarter ended
(in millions, except per share amounts)	Dec 31,	Sep 30,	Jun 30,	Mar 31,	Dec 31,	Sep 30,	Jun 30,	Mar 31,
Interest income	$ 15,595	16,499	16,986	17,003	16,921	16,364	16,015	15,347
Interest expense	4,395	4,874	4,891	4,692	4,277	3,792	3,474	3,109
Net interest income	11,200	11,625	12,095	12,311	12,644	12,572	12,541	12,238
Provision for credit losses	644	695	503	845	521	580	452	191
Net interest income after provision for credit losses	10,556	10,930	11,592	11,466	12,123	11,992	12,089	12,047
Noninterest income								
Service charges on deposit accounts	1,279	1,219	1,206	1,094	1,176	1,204	1,163	1,173
Trust and investment fees	3,572	3,559	3,568	3,373	3,520	3,631	3,675	3,683
Card fees	1,020	1,027	1,025	944	981	1,017	1,001	908
Other fees	656	858	800	770	888	850	846	800
Mortgage banking	783	466	758	708	467	846	770	934
Insurance	98	91	93	96	109	104	102	114
Net gains from trading activities	131	276	229	357	10	158	191	243
Net gains (losses) on debt securities	(8)	3	20	125	9	57	41	1
Net gains from equity securities	451	956	622	814	21	416	295	783
Lease income	343	402	424	443	402	453	443	455
Other	335	1,528	744	574	753	633	485	602
Total noninterest income	8,660	10,385	9,489	9,298	8,336	9,369	9,012	9,696
Noninterest expense								
Salaries	4,721	4,695	4,541	4,425	4,545	4,461	4,465	4,363
Commission and incentive compensation	2,651	2,735	2,597	2,845	2,427	2,427	2,642	2,768
Employee benefits	1,436	1,164	1,336	1,938	706	1,377	1,245	1,598
Technology and equipment	802	693	607	661	643	634	550	617
Net occupancy	749	760	719	717	735	718	722	713
Core deposit and other intangibles	26	27	27	28	264	264	265	265
FDIC and other deposit assessments	130	93	144	159	153	336	297	324
Other	5,099	5,032	3,478	3,143	3,866	3,546	3,796	4,394
Total noninterest expense	15,614	15,199	13,449	13,916	13,339	13,763	13,982	15,042
Income before income tax expense	3,602	6,116	7,632	6,848	7,120	7,598	7,119	6,701
Income tax expense	678	1,304	1,294	881	966	1,512	1,810	1,374
Net income before noncontrolling interests	2,924	4,812	6,338	5,967	6,154	6,086	5,309	5,327
Less: Net income from noncontrolling interests	51	202	132	107	90	79	123	191
Wells Fargo net income	$ 2,873	4,610	6,206	5,860	6,064	6,007	5,186	5,136
Less: Preferred stock dividends and other	327	573	358	353	353	554	394	403
Wells Fargo net income applicable to common stock	$ 2,546	4,037	5,848	5,507	5,711	5,453	4,792	4,733
Per share information								
Earnings per common share	$ 0.61	0.93	1.31	1.21	1.22	1.14	0.98	0.97
Diluted earnings per common share	0.60	0.92	1.30	1.20	1.21	1.13	0.98	0.96
Average common shares outstanding	4,197.1	4,358.5	4,469.4	4,551.5	4,665.8	4,784.0	4,865.8	4,885.7
Diluted average common shares outstanding	4,234.6	4,389.6	4,495.0	4,584.0	4,700.8	4,823.2	4,899.8	4,930.7

Average Balances, Yields and Rates Paid (Taxable-Equivalent basis) - Quarterly (1) - (Unaudited)

	Quarter ended December 31,					
	2019			2018		
(in millions)	**Average balance**	**Yields/ rates**	**Interest income/ expense**	Average balance	Yields/ rates	Interest income/ expense
Earning assets						
Interest-earning deposits with banks	**$ 127,287**	**1.63%**	**$ 523**	150,091	2.18%	$ 825
Federal funds sold and securities purchased under resale agreements	**109,201**	**1.72**	**472**	76,108	2.22	426
Debt securities (2):						
Trading debt securities	**103,818**	**3.12**	**811**	90,110	3.52	794
Available-for-sale debt securities:						
Securities of U.S. Treasury and federal agencies	**15,636**	**1.79**	**70**	7,195	1.80	32
Securities of U.S. states and political subdivisions	**39,502**	**3.58**	**354**	47,618	4.05	483
Mortgage-backed securities:						
Federal agencies	**161,146**	**2.58**	**1,038**	155,322	2.91	1,128
Residential and commercial	**4,745**	**4.40**	**53**	6,666	4.87	81
Total mortgage-backed securities	**165,891**	**2.63**	**1,091**	161,988	2.99	1,209
Other debt securities	**40,497**	**3.88**	**395**	46,072	4.46	518
Total available-for-sale debt securities	**261,526**	**2.92**	**1,910**	262,873	3.41	2,242
Held-to-maturity debt securities:						
Securities of U.S. Treasury and federal agencies	**45,109**	**2.19**	**248**	44,747	2.19	247
Securities of U.S. states and political subdivisions	**12,701**	**3.88**	**123**	6,247	4.34	67
Federal agency and other mortgage-backed securities	**95,303**	**2.49**	**593**	95,748	2.46	589
Other debt securities	**39**	**3.28**	**1**	68	3.65	1
Total held-to-maturity debt securities	**153,152**	**2.51**	**965**	146,810	2.46	904
Total debt securities	**518,496**	**2.84**	**3,686**	499,793	3.15	3,940
Mortgage loans held for sale (3)	**23,985**	**3.90**	**234**	17,044	4.46	190
Loans held for sale (3)	**1,365**	**4.13**	**15**	1,992	6.69	33
Loans:						
Commercial loans:						
Commercial and industrial - U.S.	**283,650**	**3.84**	**2,747**	281,431	4.40	3,115
Commercial and industrial - Non-U.S.	**67,307**	**3.40**	**577**	62,035	3.73	584
Real estate mortgage	**122,136**	**4.07**	**1,255**	120,404	4.51	1,369
Real estate construction	**20,076**	**4.71**	**239**	23,090	5.32	310
Lease financing	**19,421**	**4.41**	**214**	19,519	4.48	219
Total commercial loans	**512,590**	**3.90**	**5,032**	506,479	4.39	5,597
Consumer loans:						
Real estate 1-4 family first mortgage	**292,388**	**3.66**	**2,678**	285,260	4.02	2,868
Real estate 1-4 family junior lien mortgage	**30,147**	**5.32**	**403**	34,844	5.60	491
Credit card	**39,898**	**12.26**	**1,233**	37,858	12.69	1,211
Automobile	**47,274**	**5.04**	**600**	45,536	5.16	592
Other revolving credit and installment	**34,239**	**6.60**	**571**	36,359	6.95	637
Total consumer loans	**443,946**	**4.92**	**5,485**	439,857	5.25	5,799
Total loans (3)	**956,536**	**4.37**	**10,517**	946,336	4.79	11,396
Equity securities	**38,278**	**2.81**	**269**	37,412	2.79	261
Other	**6,478**	**1.36**	**22**	4,074	1.78	18
Total earning assets	**$ 1,781,626**	**3.51%**	**$ 15,738**	1,732,850	3.93%	$ 17,089
Funding sources						
Deposits:						
Interest-bearing checking	**$ 63,292**	**1.09%**	**$ 174**	53,983	1.21%	$ 165
Market rate and other savings	**732,705**	**0.59**	**1,094**	689,639	0.43	741
Savings certificates	**32,358**	**1.68**	**137**	21,955	0.87	48
Other time deposits	**87,069**	**2.10**	**459**	92,676	2.46	575
Deposits in non-U.S offices	**54,751**	**1.50**	**208**	56,098	1.66	236
Total interest-bearing deposits	**970,175**	**0.85**	**2,072**	914,351	0.77	1,765
Short-term borrowings	**115,949**	**1.50**	**439**	105,962	2.04	546
Long-term debt	**230,430**	**3.02**	**1,743**	226,591	3.17	1,802
Other liabilities	**27,279**	**2.04**	**141**	27,365	2.41	164
Total interest-bearing liabilities	**1,343,833**	**1.30**	**4,395**	1,274,269	1.34	4,277
Portion of noninterest-bearing funding sources	**437,793**	**—**	**—**	458,581	—	—
Total funding sources	**$ 1,781,626**	**0.98**	**4,395**	1,732,850	0.99	4,277
Net interest margin and net interest income on a taxable-equivalent basis (4)		**2.53%**	**$ 11,343**		2.94%	$ 12,812
Noninterest-earning assets						
Cash and due from banks	**$ 19,943**			19,288		
Goodwill	**26,389**			26,423		
Other	**113,885**			100,486		
Total noninterest-earning assets	**$ 160,217**			146,197		
Noninterest-bearing funding sources						
Deposits	**$ 351,738**			354,597		
Other liabilities	**53,879**			51,739		
Total equity	**192,393**			198,442		
Noninterest-bearing funding sources used to fund earning assets	**(437,793)**			(458,581)		
Net noninterest-bearing funding sources	**$ 160,217**			146,197		
Total assets	**$ 1,941,843**			1,879,047		
Average prime rate		4.83%			5.28%	
Average three-month London Interbank Offered Rate (LIBOR)		1.93%			2.62%	

(1) Yields/rates and amounts include the effects of hedge and risk management activities associated with the respective asset and liability categories.
(2) Yields/rates are based on interest income/expense amounts for the period, annualized based on the accrual basis for the respective accounts. The average balance amounts represent amortized cost for the periods presented.
(3) Nonaccrual loans and related income are included in their respective loan categories.
(4) Includes taxable-equivalent adjustments of $143 million and $168 million for the quarters ended December 31, 2019 and 2018, respectively, predominantly related to tax-exempt income on certain loans and securities. The federal statutory tax rate was 21% for the periods ended December 31, 2019 and 2018.

Glossary of Acronyms

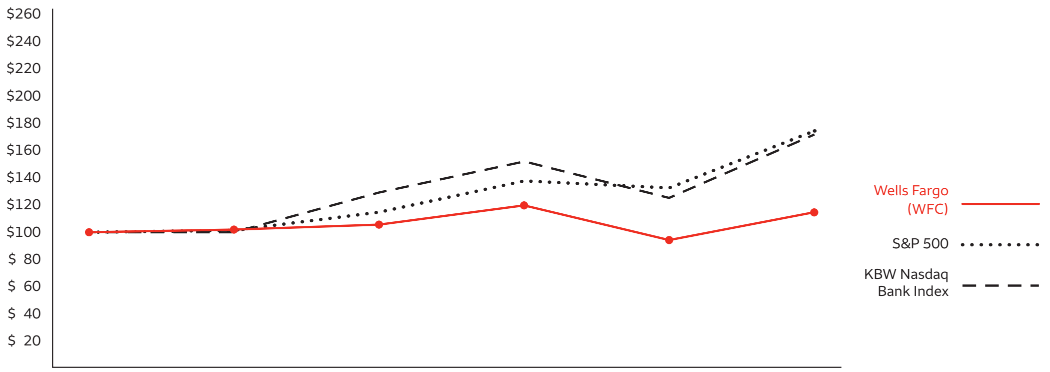
ACL	Allowance for credit losses
AFS	Available-for-sale
ALCO	Asset/Liability Management Committee
ARM	Adjustable-rate mortgage
ASC	Accounting Standards Codification
ASU	Accounting Standards Update
AUA	Assets under administration
AUM	Assets under management
AVM	Automated valuation model
BCBS	Basel Committee on Bank Supervision
BHC	Bank holding company
CCAR	Comprehensive Capital Analysis and Review
CD	Certificate of deposit
CDS	Credit default swaps
CECL	Current expected credit loss
CET1	Common Equity Tier 1
CFPB	Consumer Financial Protection Bureau
CLO	Collateralized loan obligation
CLTV	Combined loan-to-value
CPI	Collateral protection insurance
CRE	Commercial real estate
DPD	Days past due
ESOP	Employee Stock Ownership Plan
FASB	Financial Accounting Standards Board
FDIC	Federal Deposit Insurance Corporation
FHA	Federal Housing Administration
FHLB	Federal Home Loan Bank
FHLMC	Federal Home Loan Mortgage Corporation
FICO	Fair Isaac Corporation (credit rating)
FNMA	Federal National Mortgage Association
FRB	Board of Governors of the Federal Reserve System
GAAP	Generally accepted accounting principles
GNMA	Government National Mortgage Association
GSE	Government-sponsored entity
G-SIB	Globally systemic important bank
HQLA	High-quality liquid assets
HTM	Held-to-maturity
LCR	Liquidity coverage ratio
LHFS	Loans held for sale
LIBOR	London Interbank Offered Rate
LIHTC	Low income housing tax credit
LOCOM	Lower of cost or market value
LTV	Loan-to-value
MBS	Mortgage-backed security
MLHFS	Mortgage loans held for sale
MSR	Mortgage servicing right
NAV	Net asset value
NPA	Nonperforming asset
NSFR	Net stable funding ratio
OCC	Office of the Comptroller of the Currency
OCI	Other comprehensive income
OTC	Over-the-counter
OTTI	Other-than-temporary impairment
PCI	Purchased credit-impaired
PTPP	Pre-tax pre-provision profit
RBC	Risk-based capital
RMBS	Residential mortgage-backed securities
ROA	Wells Fargo net income to average total assets
ROE	Wells Fargo net income applicable to common stock to average Wells Fargo common stockholders' equity
ROTCE	Return on average tangible common equity
RWAs	Risk-weighted assets
SEC	Securities and Exchange Commission
S&P	Standard & Poor's Ratings Services
SLR	Supplementary leverage ratio
SOFR	Secured Overnight Financing Rate
SPE	Special purpose entity
TDR	Troubled debt restructuring
TLAC	Total Loss Absorbing Capacity
VA	Department of Veterans Affairs
VaR	Value-at-Risk
VIE	Variable interest entity
WIM	Wealth and Investment Management

Stock Performance

These graphs compare the cumulative total stockholder return and total compound annual growth rate (CAGR) for our common stock (NYSE: WFC) for the five- and ten-year periods ended December 31, 2019, with the cumulative total stockholder returns for the same periods for the Keefe, Bruyette and Woods (KBW) Total Return Bank Index (KBW Nasdaq Bank Index (BKX)) and the S&P 500 Index.

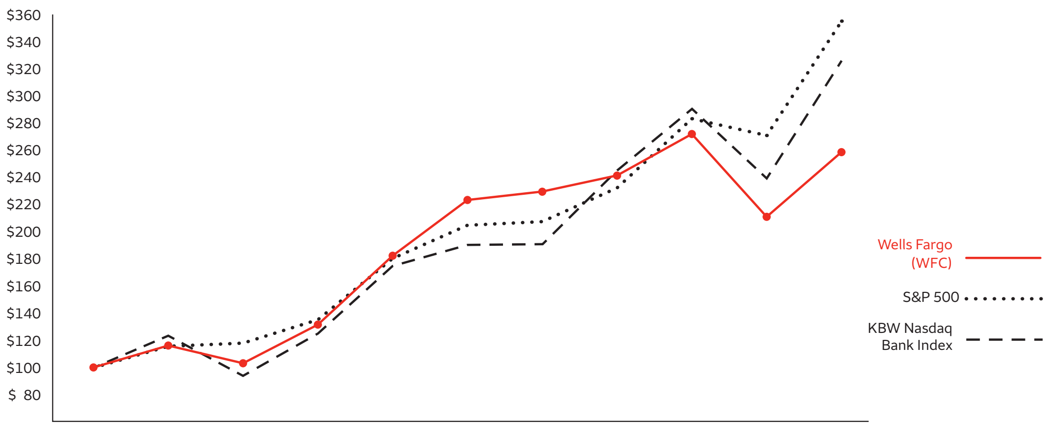
The cumulative total stockholder returns (including reinvested dividends) in the graphs assume the investment of $100 in Wells Fargo's common stock, the KBW Nasdaq Bank Index, and the S&P 500 Index.

FIVE YEAR PERFORMANCE GRAPH



2014	2015	2016	2017	2018	2019	5-year CAGR	
$100	**$102**	**$106**	**$120**	**$94**	**$114**	**3%**	**Wells Fargo**
100	101	114	138	132	174	12%	S&P 500
100	100	129	153	126	172	11%	KBW Nasdaq Bank Index

TEN YEAR PERFORMANCE GRAPH



2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	10-year CAGR	
$100	**$116**	**$105**	**$133**	**$182**	**$226**	**$230**	**$241**	**$272**	**$213**	**$259**	**10%**	**Wells Fargo**
100	115	117	136	180	205	208	233	284	271	357	14%	S&P 500
100	123	95	126	174	190	191	245	291	239	326	13%	KBW Nasdaq Bank Index

Wells Fargo & Company

Wells Fargo & Company (NYSE: WFC) is a diversified, community-based financial services company with $1.9 trillion in assets. Wells Fargo's vision is to satisfy our customers' financial needs and help them succeed financially. Founded in 1852 and headquartered in San Francisco, Wells Fargo provides banking, investment and mortgage products and services, as well as consumer and commercial finance, through 7,400 locations, more than 13,000 ATMs, the internet (wellsfargo.com) and mobile banking, and has offices in 32 countries and territories to support customers who conduct business in the global economy. With approximately 260,000 team members, Wells Fargo serves one in three households in the United States. Wells Fargo & Company was ranked No. 29 on Fortune's 2019 rankings of America's largest corporations.

COMMON STOCK

Wells Fargo & Company is listed and trades on the New York Stock Exchange: WFC

4,134,425,937 common shares outstanding (12/31/19)

STOCK PURCHASE AND DIVIDEND REINVESTMENT

You can buy Wells Fargo stock directly from Wells Fargo, even if you're not a Wells Fargo stockholder, through optional cash payments or automatic monthly deductions from a bank account. You can also have your dividends reinvested automatically. It's a convenient, economical way to increase your Wells Fargo investment.

Call 1-877-840-0492 for an enrollment kit, which includes a plan prospectus.

FORM 10-K

We will send Wells Fargo's 2019 Annual Report on Form 10-K (including the financial statements filed with the Securities and Exchange Commission) free to any shareholder who asks for a copy in writing.

Shareholders also can ask for copies of any exhibit to the Form 10-K. We will charge a fee to cover expenses to prepare and send any exhibits. Please send requests to: Corporate Secretary, Wells Fargo & Company, MAC D1130-117, 301 S. Tryon Street, 11th Floor, Charlotte, North Carolina 28282-1921.

SEC FILINGS

Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports are available free of charge on our website (www.wellsfargo.com) as soon as practical after they are electronically filed with or furnished to the SEC. Those reports and amendments are also available free of charge on the SEC's website at www.sec.gov.

FORWARD-LOOKING STATEMENTS

This Annual Report contains forward-looking statements about our future financial performance and business. Because forward-looking statements are based on our current expectations and assumptions regarding the future, they are subject to inherent risks and uncertainties. Do not unduly rely on forward-looking statements, as actual results could differ materially from expectations. Forward-looking statements speak only as of the date made, and we do not undertake to update them to reflect changes or events that occur after that date. For information about factors that could cause actual results to differ materially from our expectations, refer to the discussion under "Forward-Looking Statements" and "Risk Factors" in the Financial Review portion of this Annual Report.

INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

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San Francisco, California
1-415-963-5100

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1-415-371-2921
investorrelations@wellsfargo.com

SHAREOWNER SERVICES AND TRANSFER AGENT

EQ Shareowner Services
P.O. Box 64874
St. Paul, Minnesota
55164-0874
1-877-840-0492
www.shareowneronline.com

ANNUAL SHAREHOLDERS' MEETING

10 a.m. Mountain Daylight Time
Tuesday, April 28, 2020
The Grand America Hotel
555 South Main Street
Salt Lake City, Utah
84111-4100

Wells Fargo's Extensive Network

LOCATIONS*
7.4K

ATMs
13K

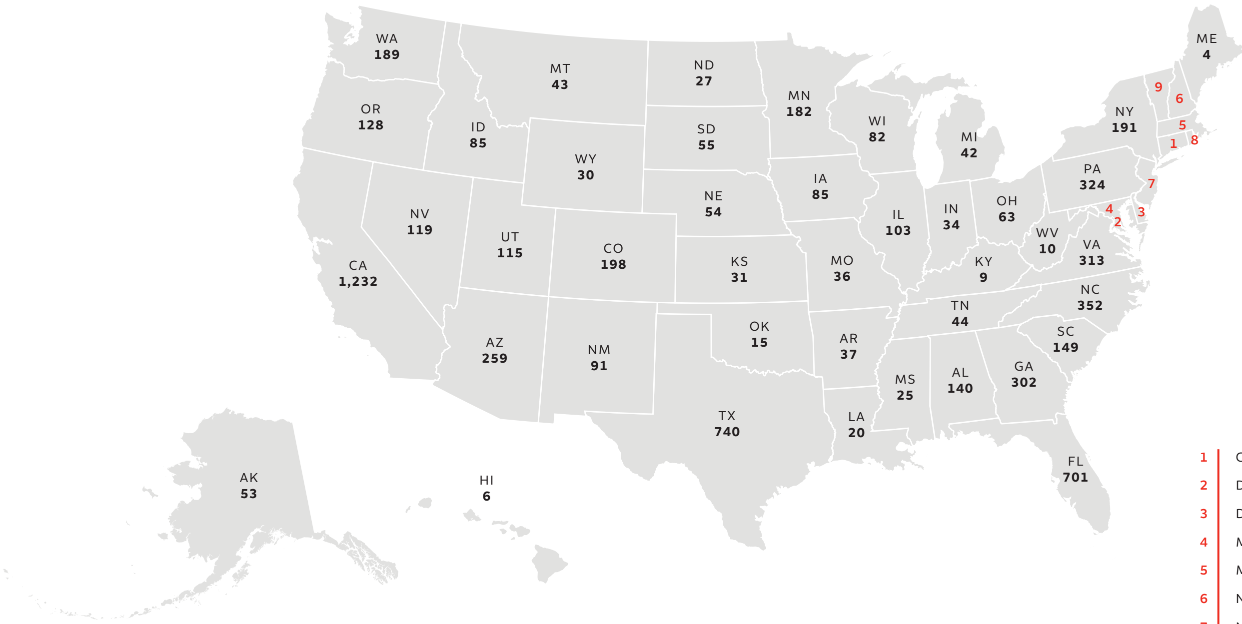
CUSTOMERS
70M+

WELLSFARGO.COM**
30.3M
digital (online and mobile) active customers

MOBILE BANKING**
24.4M
mobile active users

*Number of domestic and global locations. Includes Wells Fargo Advisors Private Client Group and Financial Network locations.
**Data as of November 2019.

NUMBER OF DOMESTIC LOCATIONS BY STATE



1	CT: **90**
2	DC: **40**
3	DE: **22**
4	MD: **121**
5	MA: **33**
6	NH: **6**
7	NJ: **336**
8	RI: **6**
9	VT: **7**

Data as of December 31, 2019.

AROUND THE WORLD

Argentina
Australia
Bahamas
Bangladesh
Brazil
Canada
Cayman Islands
Chile
China
Colombia
Dominican Republic
France
Germany
Hong Kong
India
Ireland
Israel
Italy
Japan
Luxembourg
Netherlands
New Zealand
Philippines
Singapore
South Korea
Sweden
Taiwan
Thailand
United Arab Emirates
United Kingdom
Vietnam

WELLS FARGO

WELLS FARGO & COMPANY
420 MONTGOMERY STREET | SAN FRANCISCO, CA | 94104
1-866-878-5865 | WELLSFARGO.COM

WELLS FARGO

Our road *ahead*

WELLS FARGO & COMPANY | 2018 ANNUAL REPORT

Cover: Wells Fargo customer Erik Gruber outside his new home in Philadelphia. Learn more on page 34.

Contents

Dear Fellow Shareholders

We are steadfast in our commitment to building and protecting the long-term value of the company.

Looking back on my first year as chair of the Wells Fargo Board of Directors, I am encouraged by the progress the company and our board have made as we build a better Wells Fargo for the future.

Before I talk about the board, I'd like to recognize the tireless efforts of our management team. Tim Sloan became CEO just over two years ago, and since then, with the full support of the board, he has been driving transformational change at the company.

As CEO, Tim's first priority was to initiate an extensive review to identify, understand, and resolve the problems of the past; to provide appropriate remediation to customers who were harmed; and to be transparent about our progress. We discovered a variety of issues, and even though the specific causes may have been different, some common themes emerged, such as the company's history of running businesses individually and the decentralized nature of certain control functions. I believe this review was necessary to help us serve our customers better. In the past two years, we have centralized many aspects of our organizational structure, strengthened risk management, and improved governance practices and oversight. Going forward, we believe maintaining a holistic view of the company and focusing on operational excellence will result in continued positive change.

Organizationally, Tim has pulled together a strong management team that blends Wells Fargo veterans with experienced talent from elsewhere. Three of his direct reports are from outside the company, and two more — the company's new head of Technology and chief auditor — will join Wells Fargo in April. Most of his other direct reports are in new or expanded roles. Together, the leadership team is executing plans to streamline the company's operating structure, better define roles and responsibilities, fill key positions, enhance the way we serve customers, strengthen risk and compliance measures, and instill our Vision, Values & Goals uniformly into the culture of Wells Fargo. In addition, the management team has redesigned the strategy, leadership, and incentive structure of the retail bank and the Wells Fargo Auto business to align with a more forward-looking consumer approach. One important early indicator of the success of these efforts is that "Customer Loyalty" and "Overall Satisfaction with Most Recent Visit" Community Bank branch survey scores reached 24-month highs in December 2018. At the same time, voluntary team member attrition in 2018 improved to its lowest level in six years.

Early in 2018, we agreed to a consent order with the Board of Governors of the Federal Reserve System and consent orders with the Office of the Comptroller of the Currency and the Consumer Financial Protection Bureau. To make sure we are meeting our commitments under the consent orders, the board and senior management are engaged in regular dialogue with our regulators. Clear communication is necessary so that the comprehensive changes we are making across the company will sufficiently strengthen our governance and oversight, as well as operational and compliance risk management. Although we are devoting a significant amount of resources to these efforts, we also have been delivering on our ongoing cost-reduction initiatives. Expense savings from simplifying and centralizing operations help fund our investments in areas such as risk management and technology.

We continue to have constructive dialogue with the Federal Reserve on an ongoing basis to clarify expectations, receive feedback, and assess progress under the consent order, and we are now planning to operate under the asset cap through the end of 2019. Making the changes necessary to ensure we meet regulatory expectations remains a top priority, as is continuing to serve our customers and help them succeed financially.

OUR BOARD OF DIRECTORS

The board operates very differently today than it did a year ago. Following our independent board investigation into retail sales practices and our 2017 board self-evaluation, we identified several areas in which we could enhance board oversight. As a result, we added more directors with expertise in financial services; adjusted committee structures, charters, and membership; enhanced agenda planning; and worked with management to better focus materials provided to the board. Mary Jo White, a senior partner at the law firm of Debevoise & Plimpton LLP and former chair of the Securities and Exchange Commission, was engaged by the board to facilitate its 2017 self-evaluation and work with the board on its 2018 self-evaluation to help assess our progress. Regular self-assessment provides us a mechanism for continuous improvement.

With 13 directors, our board is smaller than in the recent past. More than half of the current directors joined the board in 2017 or later. These new directors came ready to work and began to contribute immediately. The new directors have brought important experience in several areas, including financial services, other highly regulated industries, and consumer brand management. With board turnover, we have also refreshed our board committee leadership. Since September 2017, six of seven standing board committees have new committee chairs. Today, the average tenure of our independent directors is less than four years. Even as the board and its committees have experienced much change, we remain focused on responding to stakeholders, enhancing oversight, and creating long-term value for shareholders.

In January 2019, Wayne Hewett joined our board. Throughout his career as a CEO and senior executive, Wayne has had a record of success managing strategic priorities in complex business environments. His background as an industrial engineer and experience with data-driven process improvement methodologies will be especially valuable as we focus on operational excellence.

Karen Peetz will retire from the board at our Annual Meeting of Shareholders in April 2019. Karen has been effective at framing risk management imperatives and insisting on individual accountability, especially in her role as chair of the Risk Committee. Since Karen joined the Risk Committee, we have brought on to our board and Risk Committee additional expertise in risk management of financial institutions. By announcing her retirement decision early, Karen has again demonstrated her commitment to responsible governance by ensuring a smooth transition of Risk Committee chair to Maria Morris, who will continue the work Karen started.

OVERSIGHT

Our board oversight in 2018 focused heavily on identifying, understanding, and resolving issues within the company, including concerns identified by our regulators. We are also looking to the future. In his letter to shareholders, Tim details management strategies to achieve our six company goals of becoming the financial services leader in customer service and advice, team member engagement, innovation, risk management, corporate citizenship, and shareholder value. Going forward, board oversight of those goals will emphasize the following:

- ***Meeting regulatory expectations.*** We recognize the importance of fully satisfying regulatory expectations. We are specifically focused on satisfying the requirements of the company's outstanding consent orders. But more broadly, we are enhancing our risk and reporting systems to meet the heightened regulatory expectations for systemically important financial institutions and our own goal of industry leadership in risk management. We are engaging in frequent and open communication with our regulators about our progress.

- ***Enhancing risk management.*** Wells Fargo has been and remains an industry leader in credit, market, and liquidity risk management. Over the years, the company has demonstrated an ability to manage through difficult economic conditions, including the 2008 financial crisis, but management of compliance and operational risks needed improvement. We have new leadership in the chief risk officer, chief compliance officer, head of Regulatory Relations, and chief operational risk officer roles. They have developed and are busy implementing plans to continue building our operational and compliance risk management systems to a level that matches our business, structure, and strategies. These plans include enhancing management-level governance committee structures, oversight, monitoring and controls, and escalation processes and procedures. Our objective is to build an industry-leading risk management program.

- ***Operational excellence.*** Many of our past operational risk problems stemmed from weaknesses in underlying operations. In 2018, management launched a project to inventory and map all our business processes. While identifying risk areas will improve our control testing and monitoring functions, reducing the number and complexity of our business processes also offers the potential for improving the efficiency and effectiveness of core operations. We expect this work to improve the customer and team member experience, reduce operating costs, and enhance risk management.

- ***Oversight of culture and human capital management.*** We continue to assess and shape the company's culture, with an emphasis on such areas as ethics, training and development, and diversity and inclusion. One of the guiding values of Wells Fargo is "people as a competitive advantage." We expect to devote a substantial amount of board attention to talent management strategies, including plans to attract, retain, reward, develop, and care for the very best people available. We recognize the importance of rewarding outstanding performance and holding team members accountable.

- ***Technology.*** New generations of customers and team members expect technology to work seamlessly and intuitively. Thoughtful use of emerging technologies can enable quantum leaps in innovation and efficiency. At the same time, cyber risk is at an all-time high. We want to make sure all our systems operate on up-to-date platforms, are able to process and protect massive amounts of data, and contribute to our vision of operational excellence and leadership in innovation.

We have already made progress in each of these areas, and we will continue to focus on them in 2019.

STAKEHOLDER INTERACTION

For the past several years, our independent directors have participated in a shareholder engagement program to help us better understand our shareholders' views on key corporate governance and other topics. The candid feedback of our shareholders helps us define priorities, assess progress, and enhance our corporate governance practices. In 2018, I met with shareholders representing more than 35 percent of our company's common stock to discuss our governance approach.

Our board is also focused on corporate citizenship, which is overseen by the board's Corporate Responsibility Committee. The committee reviews environmental and social governance practices and policies. Following our 2018 Annual Meeting of Shareholders, Corporate Responsibility Committee members met with members of our external Stakeholder Advisory Council to seek feedback and insights on current and emerging issues important to them. Tim and I continued to meet with the council during the year to discuss such varied topics as mortgage lending, services for unbanked or underbanked consumers, our efforts to help customers avoid and reduce overdraft fees, environmental commitments, human rights, and reputational risk issues.

One of our most significant responses to shareholder feedback was the publication of a Business Standards Report on our website in early 2019. The report was the culmination of engagement with a group of stakeholders led by the Interfaith Center on Corporate Responsibility, which requested the report. The report discusses our business practices and the many fundamental changes we have made —

and continue to make — as we transform our company. The report also details what we have learned and what we have changed as we work to improve the company and rebuild trust. I encourage you to read it.

> ***"The entire board remains excited and optimistic about Wells Fargo."***

LONG-TERM SHAREHOLDER VALUE

Over the past few years, management and the board have devoted a substantial amount of time and attention to the problems we have found in our company. Finding, fixing, and atoning for those problems is necessary to build our future on a strong foundation and is required to meet the expectations of our regulators and regain the trust of our customers, team members, and the public. Through it all, we have also delivered solid financial performance. The company earned $22.4 billion in 2018, or $4.28 per diluted common share, the highest earnings per share in the company's history. Our ability to sustain solid financial performance in the face of our recent challenges is a testament to the financial durability provided by our core franchise and diversified business model.

Our capital levels are well in excess of regulatory minimums. As part of the company's goal of delivering long-term shareholder value, we're committed to returning capital to shareholders when appropriate. During 2018 we returned a record $25.8 billion in capital to shareholders through common stock dividends and net share repurchases, representing a 78 percent increase from 2017. In January 2019, we increased the quarterly common stock dividend from 43 cents to 45 cents per share.

We do not take our strengths for granted. We intend to continue to strengthen risk management, streamline and simplify operations, and innovate responsibly so we can build on our strengths. The goal of all these efforts is to become even more customer-focused, innovative, and better positioned for the future — creating long-term value for our shareholders.

IN APPRECIATION

On behalf of the directors of your company, thank you for choosing to invest in Wells Fargo and for your continued faith in the future of our company. Even though much work remains, we believe we are on the right path and are making real progress. We are confident we have a CEO and management team with the vision and strategy to achieve our goals — and to fix the problems of the past while building a strong foundation for the future. The changes the company is making are showing positive signs, and we are confident in our success.

I encourage you to carefully review this report, our 2019 proxy statement, and the other materials the company makes available to shareholders to better understand the opportunities and challenges ahead and Wells Fargo's work to execute its strategy. We are steadfast in our commitment to building and protecting the long-term value of the company.

The entire board remains excited and optimistic about Wells Fargo.

Elizabeth A Duke

ELIZABETH A. DUKE

Chair, Board of Directors
Wells Fargo & Company
February 15, 2019

I am as optimistic as ever about the future of Wells Fargo.

We have a clear vision and deeply held values. Our company continues to produce strong financial results, we have robust goals in place, and I believe we have the best team members in the business to execute on our goals for our 70 million customers.

We are building on a truly remarkable history. Wells Fargo has prospered for 166 years, an incredibly durable franchise. Our symbol, the stagecoach, was not only transformative in its time, it also signifies forward momentum. Today we are maintaining that momentum in many ways, including a new brand strategy inspired by human ingenuity and featuring a more modern version of the stagecoach.

In 2018, we further strengthened the foundation for our road ahead through new products and services, improvements in the customer experience, greater operational efficiency, and deepened commitments to our communities and our team members. We continued to make progress in our efforts to address past issues and rebuild trust with stakeholders. While we have more work to do, we have learned from our mistakes and are making fundamental changes as we transform Wells Fargo for the future.

THE DURABILITY OF THE FRANCHISE

I believe Wells Fargo is prepared for the future — for evolving customer preferences, for emerging technologies, for new risks, and more — and I am confident that our underlying strengths provide a very strong foundation for success. These strengths include our diversified business model, which has enabled us to perform well through a variety of interest rate and economic cycles.

We also have industry-leading distribution, both physical and digital. We are a longtime leader in providing innovation for our customers, and our pace of innovation has increased.

We have a large customer base, serving one in three U.S. households, and our valuable low-cost deposit franchise includes $1.3 trillion in deposits. We offer a broad product set at scale, including being among the largest lenders in the U.S., and our outstanding team is committed to serving our customers.

Our strong credit discipline has enabled us to perform well through numerous credit cycles, and we currently have historically low charge-offs. We have delivered consistent shareholder returns and built a strong capital position, and we remain committed to returning more capital to shareholders.

In January 2019, we released a Business Standards Report detailing the actions we have taken to address past issues and outlining our business practices and areas of focus as we move forward. The report addresses how we are improving our culture, making things right for customers who were harmed, and strengthening our risk management and controls. Titled "Learning from the past, transforming for the future," it represents our commitment to transparency as well as an important step in engaging and rebuilding trust with all of our stakeholders.

Every day I meet with people who have a stake in our success — including customers, team members, community leaders, investors, and government leaders. These conversations are the best part of my day! The feedback I hear is one way to affirm that we've made a lot of progress in transforming Wells Fargo. We have work ahead, and we are staying focused on our six company goals: becoming the financial services leader in customer service and advice, team member engagement, innovation, risk management, corporate citizenship, and shareholder value.

WE ARE TRANSFORMING FOR THE FUTURE

The future of the financial services industry encompasses many different aspects, and I am confident that Wells Fargo is taking a comprehensive view.

This year, we have made significant progress on strengthening our risk management, especially operational and compliance risk. This is a top priority for the company and for me. To further our risk management capabilities, we've made a tremendous investment in people, technology, infrastructure, and cybersecurity.

We also continue to focus on our culture. It's how we put our vision and values, the bedrock of our company, into practice. And that's how we will achieve our goals. Culture also means that we work as a team to hold each other accountable. In order for Wells Fargo to fulfill its vision of helping our customers succeed financially, every team member needs to be living our values every day.

We made several leadership changes in 2018. For example, we welcomed a new chief risk officer, Mandy Norton, who brings nearly three decades of financial industry experience to the role. Mandy has immediately made her mark as an experienced and insightful leader who has driven our risk management work forward throughout the company.

We announced that Saul Van Beurden, who has 25 years of financial services experience, will fill the new head of Technology role at our company, reflecting the importance of centralizing and elevating that work. And Julie Scammahorn will join Wells Fargo as chief auditor. Julie brings significant experience and a proven track record to this role, having led large audit functions for global financial services institutions. Saul and Julie will join our Operating Committee. I also elevated our head of Human Resources, David Galloreese, who joined the company in 2018, to the Operating Committee, reporting to me, and consolidated our Corporate Philanthropy and Community Relations work with the Stakeholder Relations function led by Jim Rowe, who also reports to me.

> ***"We are making changes to better serve our customers, as we continue to put them at the center of everything we do."***

I am pleased that 2018 was another great year of innovation for our customers and clients. We prioritize innovation not in terms of what we *can* do, but based on what our customers tell us they want and need. That means the continued expansion of services such as *Pay With Wells Fargo*℠, now in pilot; our online mortgage application; and *Control Tower*™.

We are also focused on operational excellence, which we are driving through every corner of our business. This effort includes reducing the number of processes we have for any given task and assessing the efficiency of those processes. We are considering where there are risks in our operations and how we can mitigate them. We are evaluating the number of platforms and technology tools we use in our work and how we can combine and reduce them. And, finally, we are ensuring that we have the proper oversight and the proper testing for each of our processes. Some examples:

- Wells Fargo Auto, which serves more than 3 million auto loan customers and more than 11,000 auto dealers, centralized back-office business functions to create greater consistency and manage risk. A key component of the centralization process was the consolidation of 57 regional business centers into four regional hubs, which we completed in 2018. This transformation was designed to enable us to better serve our customers and improve our efficiency by simplifying change delivery, reducing operational risk, leveraging enterprise infrastructure and standards, improving consistency, increasing career development opportunities for team members, and creating economies of skill and scale by co-locating similar functions.

- Wealth Management's Fiduciary Management Services team instituted a series of enhancements to its client service model in 2018, including moving to a single point of contact from a team-based model for serving affluent fiduciary and trust clients, having newly assigned relationship managers proactively reach out to each client, and implementing an automated workflow tool to provide front office partners with visibility into servicing requests. One result is that overall client loyalty and satisfaction increased more than 10 percentage points.

- We're in the process of transforming our Wholesale Banking division to reduce duplicative processes and platforms and break down the silos that exist across our businesses so we can provide a more consistent and efficient customer and team member experience. That should allow us to do a better job of serving the customer's existing and emerging needs. Since I spent many years of my career in the Wholesale Banking business, I know firsthand what an incredible difference these operational improvements can make for our team members and our customers.

- We have brought together more than 200 team members from 14 teams to create an Estate Care Center of Excellence, focused on simplifying the estate settlement process for survivors when a loved one passes away. When rollout is complete to all of our branches, survivors will no longer have to contact multiple lines of business to deal with finances. A dedicated team member will support them throughout the process, reducing required paperwork and providing access to new digital self-service capabilities to simplify settling an estate. In the wake of the tragic wildfires in Northern California, the Estate Care Center of Excellence developed special procedures to assist family members who lack traditional documentation.

Finally, we've made good progress in making things right for our customers. We created a Customer Remediation Center of Excellence to establish a consistent approach to managing and executing remediation efforts across Wells Fargo. This includes strengthening internal governance and reporting processes to achieve greater accountability. It also includes investing in specialized teams dedicated to remediation efforts and providing them the resources they need to provide outstanding service to customers.

All of these elements are examples of the significant milestones we accomplished in 2018.

FINANCIAL REPORT

Our financial results in 2018 were solid. Wells Fargo generated $22.4 billion in net income in 2018, or $4.28 per diluted common share, the highest earnings per common share in the company's history. We achieved our 2018 expense target. Expenses declined, driven by lower operating losses as well as the progress we've made to reduce expenses while reinvesting in the business. Revenue declined as growth in net interest income was more than offset by a decline in noninterest income.

Credit quality remained strong with our net charge-off rate near historic lows. Our capital levels also remained strong, and we returned a record $25.8 billion to shareholders in 2018, up 78 percent from 2017, including reducing our common shares outstanding by 6 percent in 2018.

With respect to the Federal Reserve consent order from February 2018, we continue to have constructive dialogue with the Federal Reserve on an ongoing basis to clarify expectations, receive feedback, and assess progress. In order to have enough time to incorporate this feedback into our plans in a thoughtful manner, adopt and implement the final plans as accepted by the Federal Reserve, and complete the required third-party reviews, we are planning to operate under the consent order's asset cap through the end of 2019. Making the changes necessary to ensure we meet regulatory expectations remains a top priority, as is continuing to serve our customers and help them succeed financially. We believe that we can achieve both of these priorities while we operate under the asset cap.

OUR COMPANY GOALS

More than a year ago, I introduced six company goals, so everyone at Wells Fargo would be clear on the most important things we need to do to continue to move forward. Our goals are rooted in our vision — to satisfy our customers' financial needs and help them succeed financially — and our company values of doing what's right for customers, people as a competitive advantage, ethics, diversity and inclusion, and leadership.

I am delighted that in 2018 we made very strong progress toward our goals.

THE VISION, VALUES & GOALS OF WELLS FARGO

Our Vision

We want to satisfy our customers' financial needs and help them succeed financially.

Our Values

- What's right for customers
- People as a competitive advantage
- Ethics
- Diversity and inclusion
- Leadership

Our Goals

We want to become ***the*** financial services leader in these areas:

Customer service and advice	Team member engagement
Innovation	Risk management
Corporate citizenship	Shareholder value

CUSTOMER SERVICE AND ADVICE

We are making changes to better serve our customers, as we continue to put them at the center of everything we do. As a company, we have always emphasized working together as a team to provide the best service for all our customers — because no matter the role, our work affects them.

How we serve our customers' needs is evolving. Our Consumer Strategy is a holistic approach designed to meet our customers' financial needs by anticipating and serving every stage of their financial journey — and it extends across all of our consumer businesses.

When customers start their financial journey, they may rely on balance alerts so they can monitor their checking account status more closely. (We sent an average of 37 million monthly zero-balance and customer-specific balance alerts to our customers last year!) Or *Overdraft Rewind*®, which helped more than 2.3 million customers avoid overdraft charges in 2018. Eventually, customers might want an auto, mortgage, or small business loan; a retirement savings account; or the services of our wealth management team. Having one Consumer Strategy means we are with our customers at every step of their financial lives.

We are continuing to improve the customer and team member experience within Consumer Banking with speed, convenience, and new digital offerings. Our branch survey scores for "Customer Loyalty" and "Overall Satisfaction with Most Recent Visit" reached a 24-month high in December 2018.

The Customer Relationship View, a new customer relationship platform we developed, gives our team members a more holistic view of each customer and saves customers from rehashing interactions they've already had. For example, one of our bankers in Lubbock, Texas, phoned a longtime customer to thank him for his business, and in the course of their conversation, the banker reminded him that he had more than 64,000 unused credit card points.

The customer was then advised that he could redeem the points through our *Go Far® Rewards* program. The customer redeemed the points for cash, which he used to buy plane tickets for family members so they could visit him and his wife.

Changes like these help our team members become better connected with their customers and maintain their focus on our customers' needs. Between May and December 2018, our bankers reached out to 3.3 million customers to thank them for their business, respond to their questions, and make appointments for in-person consultations.

We are also transforming our Wealth and Investment Management businesses to make them more client-centric. The changes we are making are designed to make WIM faster, simpler, and better for clients, with a focus on the research, thought leadership, and advice that WIM clients value. An example is *Envision Scenario,* introduced in 2018, which allows clients to see how changing their investment decisions can impact their investment goals.

And as I stated earlier, putting the customer at the center of everything we do also means that we make things right for them. So we have worked to implement a consistent, companywide customer complaints strategy, using data and analytics so we can assist our customers with their concerns more proactively and, when necessary, direct them to a team member with expertise to understand their concerns and resolve them.

TEAM MEMBER ENGAGEMENT

I am privileged to meet regularly with our customers and community leaders, and I hear their appreciation and praise for our team members. I am proud of Wells Fargo's 259,000 hardworking team members, who take care of customers every day and demonstrate great optimism about our future. Our voluntary team member attrition improved to its lowest level in six years in 2018. Team members are truly our greatest asset.

They are also the source of some of our best ideas! In 2018, we continued to gather their ideas and feedback through multiple channels, including surveys, focus groups, our internal team member portal, and town hall meetings. Our team members will tell you that I am the biggest cheerleader for our surveys, because I believe so strongly in the importance of their feedback. In fact, I think they get tired of me reminding them to take advantage of every opportunity to have their voices heard.

Our team members are the face of Wells Fargo, and they drive our company culture. In 2018, we introduced a set of clear and common behavioral expectations for all team members. These expectations describe how team members should conduct themselves at work, and this allows us to more consistently align individual actions with our Vision, Values & Goals. We help ensure accountability and measure performance against these expectations through a single leadership objective that all team members had as part of their 2018 performance plans. A common "One Wells Fargo" culture helps ensure that we are focused on the right things to drive our success.

> ***"Team members are truly our greatest asset."***

Diversity and inclusion, one of our five primary values, is essential to our success. In order to satisfy our customers' financial needs and help them succeed financially, our team needs to reflect the diversity of our customers in the U.S., which is growing more diverse every day, and around the world. I also strongly believe that when you get people with different experiences in a room or working on a team together, you get better ideas and better problem solving. I'm proud that our efforts have been recognized externally by the Bloomberg Gender Equality Index, DiversityInc, the Human Rights Campaign, and the National Organization on Disability.

An example of our focus on diversity and inclusion in action is our commitment to military service members and veterans. At any one time, Wells Fargo has more than 250 team members on active duty. We support those team members through financial and other benefits. We value the leadership and skills of military veterans, and we have a number of recruiting programs in place to help us identify and hire veterans.

Our team members are our competitive advantage, and we continue to invest in them in many ways. In 2018, we increased the minimum base pay in the U.S. to $15 an hour, which benefited approximately 36,000 team members. We also reviewed pay for team members whose salaries were at or slightly above the new minimum wage and increased the base pay for approximately 50,000 team members. Our team members receive competitive salaries, training and development offerings, and leadership opportunities. And we spend approximately $13,000 annually per U.S. team member to provide affordable health care options, work-life balance programs, 401(k) matching contributions, a discretionary profit-sharing plan, and family leave. In 2018, approximately 250,000 team members worldwide were awarded restricted share rights equivalent to 50 shares of Wells Fargo stock to eligible full-time employees, and the equivalent of 30 shares to eligible part-time employees, with a two-year vesting period. This ties their success to what's important to our shareholders. As I said above, we seek out team member feedback regularly so we can measure the effectiveness of what we offer, and we use team member ideas and opinions to drive our engagement efforts.

Most important, through their feedback, our team members remind me how important the work we do is, because they tell me how much they care about our customers.

INNOVATION

At Wells Fargo, we are innovating because our customers are asking for it. They expect us to keep up with other technological advances they see in their daily lives. Convenience used to mean a bank branch on every corner, but now there are a variety of channels our customers can use to engage with us: a branch, their phones, online banking, and more. As customer engagement continues to grow, we are using customer feedback to drive new products and services.

An example is the new Wells Fargo Propel® American Express® Card (page 36). Propel offers one of the most compelling rewards programs for no-annual-fee cards, and we're delighted with its success so far. It came to life because our customers and our team members told us what they wanted.

Our innovation program is focused on five areas that can help us deliver additional value to our customers.

- First, we are creating digital account opening experiences for many of our products so the experience is simple and fast and helps customers get the most out of their new accounts. An example is our online mortgage application (page 34). Usage of our online mortgage application saw a steady increase throughout 2018, with online applications representing 30 percent of our total retail applications in December.

"I am confident that our strong innovation program will allow us to continue to provide lasting value to customers."

- Second, we are enhancing our payments capabilities so customers can easily make payments as well as gain more visibility into and control over their accounts. For instance, Zelle℠ allows customers to make real-time payments to friends and family, and later this year we plan to complete the rollout of *Pay With Wells Fargo*℠, which displays customers' most commonly used payment features on our mobile app home screen, making it quick and easy to send a payment, pay a bill, or make a transfer.

- Third, we are building personalized experiences for every customer. For example, *Greenhouse*®, our mobile banking app with cash management expertise for new-to-banking customers, offers personalized guidance to help customers save for monthly expenses and manage their money responsibly, and we expect its rollout in 2019.

- Fourth, we are building capabilities to allow us to seamlessly serve customers through multiple channels. We are bringing digital experiences to our branches to speed authentication and account opening, and we offer banking and payment services on non-Wells Fargo platforms.

- Finally, we are building capabilities and technologies that enable innovation, such as artificial intelligence, identity management, distributed ledger, and application programming interfaces.

Since we centralized our innovation work in 2016, we have increased the pace of innovation and new product development. I am confident that our strong innovation program will allow us to continue to provide lasting value to customers and maintain and strengthen our market leadership.

RISK MANAGEMENT

Risk management continues to be a priority for the company, and, to that end, in 2018 we continued to invest in technology, infrastructure, cybersecurity, and people. We have adopted and are implementing our enhanced risk management framework. We have added a number of new leaders to the risk management team, through both internal and external hires, including more than 3,200 risk management team members hired from outside the company over the past three years. We now have more clarity of roles and responsibilities across the entire company, providing breadth to our risk management discipline.

We have historically been strong in many areas of risk management, including credit risk, market risk, and liquidity risk. We know we have work to do in compliance and operational risk, and under Chief Compliance Officer Mike Roemer's leadership, most of the Compliance team is now part of one organization and, after centralization, numbers nearly 4,000 team members. Mike is focused on transforming our compliance function into a competitive advantage for the company and integrating and implementing best practices across the company. Our Operational Risk team, under the leadership of Chief Operational Risk Officer Mark Weintraub, oversees the management of operational risk exposures and the effectiveness of our operational risk management practices. This includes educating and empowering team members to identify and assess risks and help ensure we have the right controls in place to mitigate those risks.

Through our enhanced risk management framework, we have a greater ability to understand and manage our risks in a comprehensive and holistic manner. As a result, we can better drive and support effective decisions about risk management at all levels of the company. We continue to work very hard and through multiple avenues to strengthen risk management. We aren't finished and continue to make progress, building on the changes we have made.

Hand in hand with the enhancements we have made to our risk management framework is our continued emphasis on our "raise your hand" culture, in which every team member is encouraged to speak up if they need help or see something that doesn't look right. We've coupled that effort with enhanced escalation channels and processes to help ensure that any questions raised by team members are investigated thoroughly and confidentially. Every team member has personal accountability for managing risk.

CORPORATE CITIZENSHIP

I believe our commitment to corporate citizenship sets us apart. Our goal is clear: We want to help people and communities succeed financially in all of the places where we live and do business. We take a comprehensive approach to increasing access to economic opportunities and strengthening local neighborhoods, working with a range of public and private sector stakeholders to understand the most urgent problems and the solutions that can have the most impact.

> ***"Our goal is clear: We want to help people and communities succeed financially in all of the places where we live and do business."***

This problem-solving mindset was showcased in our October announcement of the *Where We Live*℠ program in Washington, D.C., which combines the power of philanthropy and our market-leading lending businesses with our deep community partnerships. We made a five-year commitment of $1.6 billion to help revitalize disadvantaged neighborhoods in the district. Through our collaboration with the National Community Reinvestment Coalition and nearly 20 other local community organizations, we plan to increase affordable housing, small business growth, and job skills for underserved residents in Ward 7 and Ward 8 through corporate philanthropy and our mortgage and small business lending businesses.

We continue to make progress in our efforts to address the negative consequences of climate change and other environmental challenges affecting our planet. In addition to reducing our company's environmental footprint, in April 2018 we announced our commitment to provide $200 billion in financing to sustainable businesses and projects by 2030, with more than 50 percent focused on clean technology and renewable energy transactions to help accelerate the transition to a low-carbon economy. This commitment demonstrates how our products and services, operations and culture, and philanthropy can be harnessed toward a single goal. As an example, Wells Fargo committed capital in construction debt, as well as the tax-equity funding of $35 million, for Origis Energy's new solar generation facility in Orange County, Florida. This facility will include more than half a million solar panels, producing and transmitting enough renewable electricity to reduce greenhouse gas emissions by more than 57,000 tons per year.

One of my personal highlights this year was announcing and then surpassing our $400 million philanthropy target for 2018. Wells Fargo donated $444 million in 2018 to nearly 11,000 nonprofits to help communities and people in need. It is exciting to think of the positive change we can make in our communities and in people's lives through the Wells Fargo Foundation, which is investing an average of more than $1 million a day toward important causes and into the communities we serve. Beginning in 2019, we are targeting 2 percent of our after-tax profits for corporate philanthropy. We were recognized in 2018 as the No. 2 most generous cash donor in the U.S., and the top financial institution in overall giving, by *The Chronicle of Philanthropy* (based on 2017 data).

We all have causes that are especially near and dear to our hearts, and the WE Care Fund is close to mine. The WE Care Fund, now in its 17th year, provides financial grants to help team members recover from natural disasters, accidents, and other life-changing events. Team member donations to the WE Care Fund are augmented by funding from the Wells Fargo Foundation. One team member found support and assistance when her husband was diagnosed with an aggressive form of amyotrophic lateral sclerosis, or ALS. With the help of a WE Care Fund grant, they were able to build a wheelchair ramp at their home, giving them one less expense to worry about. The WE Care Fund is just one of many ways our team members contribute their financial resources and volunteer hours to make our communities and our teams better. I am deeply moved by the care that our team members demonstrate for each other every day.

SHAREHOLDER VALUE

Our first five company goals all contribute to our final goal, which is to deliver long-term shareholder value through our diversified business model, a solid risk discipline, efficient execution, a strong balance sheet, and a world-class team dedicated to meeting the financial needs of our customers.

Wells Fargo has a solid base from which to achieve this goal, including strong levels of capital and liquidity. And historically, we have generated steady financial performance over time and through different economic cycles. We also remained disciplined regarding credit. Our net charge-off ratio in 2018 was near historic lows, and our nonperforming assets declined 16 percent from a year ago.

We returned $25.8 billion to our shareholders through common stock dividends and net share repurchases in 2018, up 78 percent from 2017. We reduced our common shares outstanding by 6 percent in 2018, the sixth year in a row we have reduced our common share count. In July 2018, we increased our quarterly common stock dividend to 43 cents per share, and in January 2019, we increased our quarterly common stock dividend to 45 cents per share.

Our efficiency initiatives contribute to our ability to provide long-term shareholder value. They are focused on three areas: further centralization and optimization to create a simpler and more collaborative Wells Fargo, realigning our businesses to more efficiently serve customers, and enhancing our governance and enforcement of controls and policies to drive down costs. We met our expense target in 2018, and we remain committed to meeting our expense targets for 2019 and 2020.

As planned, we completed 300 branch consolidations in 2018 and sold 52 branches in the fourth quarter. Following these changes, our physical distribution remains unparalleled in the industry; we have branches in more states and in twice the number of markets as our peers. We believe we have an opportunity to further reduce redundancies without meaningfully affecting our distribution, while having room to grow in many of our businesses.

OUR PERFORMANCE

$ in millions, except per share amounts	2018	2017	% CHANGE
FOR THE YEAR			
Wells Fargo net income	$ 22,393	22,183	1
Wells Fargo net income applicable to common stock	20,689	20,554	1
Diluted earnings per common share	4.28	4.10	4
Profitability ratios:			
Wells Fargo net income to average assets (ROA)	1.19 %	1.15	3
Wells Fargo net income applicable to common stock to average Wells Fargo common stockholders' equity (ROE)	11.53	11.35	2
Return on average tangible common equity (ROTCE)[1]	13.73	13.55	1
Efficiency ratio[2]	65.0	66.2	(2)
Total revenue	$ 86,408	88,389	(2)
Pre-tax pre-provision profit[3]	30,282	29,905	1
Dividends declared per common share	1.640	1.540	6
Average common shares outstanding	4,799.7	4,964.6	(3)
Diluted average common shares outstanding	4,838.4	5,017.3	(4)
Average loans	$ 945,197	956,129	(1)
Average assets	1,888,892	1,933,005	(2)
Average total deposits	1,275,857	1,304,622	(2)
Average consumer and small business banking deposits[4]	747,183	758,271	(1)
Net interest margin	2.91 %	2.87	1
AT YEAR-END			
Debt securities[5]	$ 484,689	473,366	2
Loans	953,110	956,770	-
Allowance for loan losses	9,775	11,004	(11)
Goodwill	26,418	26,587	(1)
Equity securities[5]	55,148	62,497	(12)
Assets	1,895,883	1,951,757	(3)
Deposits	1,286,170	1,335,991	(4)
Common stockholders' equity	174,359	183,134	(5)
Wells Fargo stockholders' equity	196,166	206,936	(5)
Total equity	197,066	208,079	(5)
Tangible common equity[1]	145,980	153,730	(5)
Capital ratios[6]:			
Total equity to assets	10.39 %	10.66	(3)
Risk-based capital[7]:			
Common Equity Tier 1	11.74	12.28	(4)
Tier 1 capital	13.46	14.14	(5)
Total capital	16.60	17.46	(5)
Tier 1 leverage	9.07	9.35	(3)
Common shares outstanding	4,581.3	4,891.6	(6)
Book value per common share[8]	$ 38.06	37.44	2
Tangible book value per common share[1, 8]	31.86	31.43	1
Team members (active, full-time equivalent)	258,700	262,700	(2)

1 Tangible common equity is a non-GAAP financial measure and represents total equity less preferred equity, noncontrolling interests, and goodwill and certain identifiable intangible assets (including goodwill and intangible assets associated with certain of our nonmarketable equity securities, but excluding mortgage servicing rights), net of applicable deferred taxes. The methodology of determining tangible common equity may differ among companies. Management believes that return on average tangible common equity and tangible book value per common share, which utilize tangible common equity, are useful financial measures because they enable investors and others to assess the Company's use of equity. For additional information, including a corresponding reconciliation to GAAP financial measures, see the "Financial Review – Capital Management – Tangible Common Equity" section in this Report.

2 The efficiency ratio is noninterest expense divided by total revenue (net interest income and noninterest income).

3 Pre-tax pre-provision profit (PTPP) is total revenue less noninterest expense. Management believes that PTPP is a useful financial measure because it enables investors and others to assess the Company's ability to generate capital to cover credit losses through a credit cycle.

4 Consumer and small business banking deposits are total deposits excluding mortgage escrow and wholesale deposits.

5 Financial information for 2017 has been revised to reflect the impact of our adoption in first quarter 2018 of Accounting Standards Update (ASU) 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities,* which amends the presentation and accounting for certain financial instruments, including equity securities. See Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report for more information.

6 See the "Financial Review – Capital Management" section and Note 28 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report for additional information.

7 The risk-based capital ratios were calculated under the lower of Standardized or Advanced Approach determined pursuant to Basel III. Beginning January 1, 2018, the requirements for calculating common equity tier 1 and tier 1 capital, along with risk-weighted assets, became fully phased-in; however, the requirements for calculating tier 2 and total capital are still in accordance with Transition Requirements. See the "Financial Review – Capital Management" section and Note 28 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report for additional information.

8 Book value per common share is common stockholders' equity divided by common shares outstanding. Tangible book value per common share is tangible common equity divided by common shares outstanding.

As an example, we streamlined the retail mortgage sales operation, eliminating layers and reengineering the mortgage fulfillment process. We will continue to look for ways to improve efficiency as we focus on creating long-term shareholder value.

IN CLOSING

I am confident that Wells Fargo is well-positioned for the future. In 2019, we will continue working to build the most customer-focused, efficient, and innovative Wells Fargo ever — characterized by a strong financial foundation, a leading presence in the markets we serve, focused growth within a strong risk management framework, operational excellence, and highly engaged team members.

As we look ahead, we won't lose sight of our roots and our company's history. We are building on an exceptionally strong foundation to transform Wells Fargo into a better bank for the future.

Coupled with the strong optimism I feel for the future of our company is a deep sense of gratitude. I am thankful for the leadership, guidance, and support of Betsy Duke, our board chair, and our other highly qualified, hard-working, and dedicated board members. I would like to especially recognize Karen Peetz, who is retiring from the board this year, for her contributions, and welcome Wayne Hewett, who joined the board this year and brings deep experience in business operations and processes.

I am also thankful for our customers, who are at the center of everything we do. And I am especially grateful for our 259,000 talented team members, who work hard every day to ensure we realize our vision of satisfying our customers' financial needs. I am honored to lead them.

The future always brings both opportunities and challenges, and I feel optimistic about what lies ahead for Wells Fargo. I thank you, our shareholders, for your support of Wells Fargo during 2018 and as we travel our road ahead.

TIMOTHY J. SLOAN

Chief Executive Officer and President
Wells Fargo & Company
February 15, 2019

As Wells Fargo makes progress on the road ahead, CEO Tim Sloan has established six goals to guide us.

The stories that follow illustrate just a few of the many ways we are working to become the financial services leader in:

- ***Customer service and advice***
- ***Team member engagement***
- ***Innovation***
- ***Risk management***
- ***Corporate citizenship***
- ***Shareholder value***

Learn more about everyone featured in this year's Annual Report at wellsfargo.com/stories

Strengthening financial health through *focused conversation*

WHEN DARLENE AHMED NEEDED GUIDANCE ON HER FINANCIAL JOURNEY, SHE FOUND IT IN WELLS FARGO'S FINANCIAL HEALTH CONVERSATIONS PROGRAM.

Talking about money isn't always easy, but it can be a tremendous help.

Darlene Ahmed of Fruitland Park, Florida, found that out last year when a series of focused conversations helped her transition from renting an apartment to owning her first home. It was the kind of talk that takes place daily in all parts of Wells Fargo — in person, over mobile devices, and on the phone.

Ahmed, 57, a certified nursing assistant at an assisted-living facility, had rented for years while raising a child — financially secure but unsure if she was ready for homeownership. When she became an empty nester, she figured the time might be right. She called Wells Fargo Home Lending and soon learned she couldn't be pre-approved for a mortgage. The culprit? A low credit score.

"I was shocked when I heard what my credit score was," Ahmed said. She was put in touch with Financial Health Banker Dustin Griffin in Sioux Falls, South Dakota. Griffin started by asking questions, and soon the two had hit upon a hard fact: What Ahmed always thought was good — no credit cards, no loans, no lines of credit — actually meant a thin credit history and low credit score. So over a series of short conversations, Griffin recommended that Ahmed start slowly building her credit history — applying for a couple of credit cards, paying off all purchases on time, and never using more than 30 percent of the available balances.

Months later, when she tried for pre-approval again, "I got approved and a week later found my house on my birthday," said Ahmed. "Dustin was right there for me every step of the way, giving me peace of mind, confidence, and guidance."

Griffin said, "Once she figured out what she wanted, there was no stopping her! I just helped lay out a clear path for her to get there."

Since 2015, Griffin and his Wells Fargo teammates have helped nearly 50,000 customers learn to save more and strengthen their credit through Financial Health Conversations, a program for customers who request additional help to save more, improve credit, or save for a home. Wells Fargo operates the program from contact centers in Sioux Falls; Charlotte, North Carolina; Richmond, Virginia; and Phoenix — as well as El Monte, California, and San Antonio, which also serve Spanish-speaking customers. The team conducts more than 400 conversations weekly.

Griffin concluded, "It's important to me not just to give out information but to form a real bond and connection with customers like Darlene. I couldn't be happier for her."

Right: Darlene Ahmed at her home in Fruitland Park, Florida.

A plan to provide *working capital*

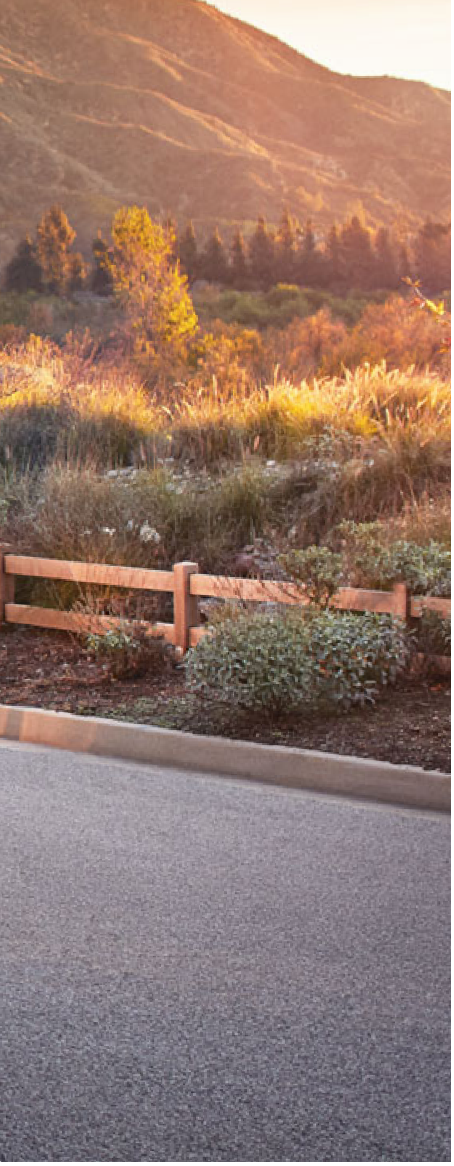
BUSINESS OWNER RAY HUFNAGEL GOT FINANCIAL PLANNING HELP — AND THE FINANCING HE NEEDED TO GROW — FROM HIS WELLS FARGO BANKER.

Now that a decade has passed, businessman Ray Hufnagel can see that the low point for his company also was a catalyst for its success today. But it didn't feel like it at the time.

Plastic Express, a logistics services company based in City of Industry, California, was like many businesses that struggled at the beginning of the Great Recession. Despite a 30-year track record, it didn't turn a profit in 2008, and the company was rebuffed when it turned to its bank for advice. "Everything was great with our old bank until our checking account went to zero," said Hufnagel, president and CEO. "They really weren't interested in looking at our financials or helping us plan. I just didn't feel supported."

So Hufnagel connected with Wells Fargo Commercial Banker Jay Hong of Pasadena, California, who recognized an opportunity for growth in the then-regional company that specialized in loading and shipping plastic resin — the BB-sized core ingredient for all plastic products.

Together, Hufnagel and Hong devised a plan to meet Plastic Express' short-term needs while also looking strategically at the years ahead. Hong said, "To meet the demand for the unique service Plastic Express provides, and to be prepared to earn new business, they needed access to capital — often ahead of revenue coming in. So Wells Fargo did the research and worked with their team.



"Now we provide the working capital the company needs to finance things like new and replacement equipment — like tractors, trailers, and packaging lines — which are key drivers for the company's continued growth."

A decade later, Plastic Express has executed on its strategic plan of expanding geographically. The company now covers the U.S. coast to coast, with 16 warehouses, 19 trucking terminals, 42 bulk rail terminals, and 9,000 railcar spots. It also now employs 375 people. "We've grown both our national footprint and our ability to deliver for our customers — as well as quadrupling gross revenue — since we started our relationship with Wells Fargo," Hufnagel said.

A bonus, according to Hufnagel, who was a Navy pilot with 15 years of active duty service: "I love the fact that Wells Fargo hires veterans."

Hong, an Army combat veteran, concluded, "The military taught me the value of teamwork, risk assessment, and planning — all of which have benefited my work as Plastic Express' relationship manager at Wells Fargo."

Above: Ray Hufnagel, right, with Wells Fargo's Jay Hong in City of Industry, California.

The voice of a *veteran*

CHANTY CLAY SUCCESSFULLY NAVIGATED THE TRANSITION FROM MILITARY SERVICE TO WELLS FARGO, AND NOW SHE USES THAT EXPERIENCE AND HER PH.D. TO GUIDE OTHERS.

If experience is a great teacher, then Chanty Clay of St. Louis is a master.

She served 10 years in the U.S. Air Force, where she worked in inventory management, training, and human relations, and earned a college degree. After honorable discharge, she applied the leadership skills she had learned to Wells Fargo and then earned a Ph.D. Today she leads a team of Human Resources consultants at Wells Fargo and mentors eight veterans — both inside and outside the company — who are making the transition to life after the military.

"What the Air Force prepared me for was to use my competencies, regardless of the industry," Clay said. "In the military, you contribute to the team in so many different ways. For any veteran making the transition to civilian life, the most important thing to realize is that you have specific skills from your military job and also interpersonal and leadership skills that are applicable to other areas."

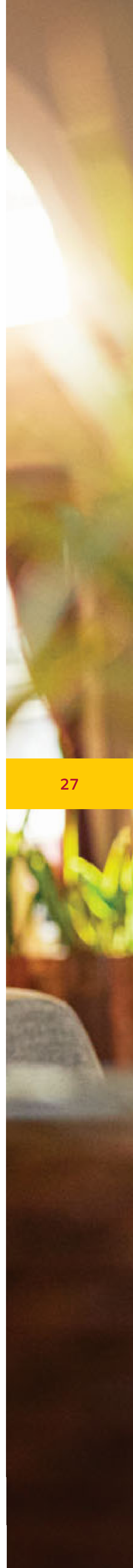
For example, in Air Force inventory management, one of Clay's early roles involved answering questions from service members about their supplies and reports. "I saw the value of true customer service — building trust, maintaining relationships, and delivering outstanding service. Those are values I've continued to hold onto throughout my career," she said.

Clay made the decision to enlist in the military while she was a 20-year-old college student trying to figure out what to do with the rest of her life. In considering her options, Clay said, "I appreciated the structure of the military, and I appreciated the camaraderie, but most important, I appreciated the opportunity to have diverse experiences and learn new things."

Making connections is part of what drives Clay's work in supporting veterans today. She helped create the local St. Louis chapter of the internal Veterans' Team Member Network at Wells Fargo. Clay said she is proud "to provide a safe space where veterans can share with me what they're experiencing. Together, we can confront challenges and celebrate successes."

Jerry Quinn, Military Affairs Program manager for Wells Fargo, said, "Chanty's personal story of transition, utilizing her skills and abilities, is an experience many veterans have. And her dedication is further testimony of the value veterans bring to Wells Fargo and our communities."

Left: Wells Fargo's Chanty Clay with Alexander Propst, a veteran she mentors, in St. Louis.



Teaming up to promote economic *empowerment*

WITH BACKING FROM WELLS FARGO, YVONNE GREEN STRIVES TO EMPOWER THOSE WHO LIVE AND WORK OUTSIDE THE TRADITIONAL FINANCIAL SYSTEM.

"Financial success" has many definitions. For Yvonne Green, it starts with saving money rather than living paycheck to paycheck and depending on pawnshops and payday lenders.

Green considers herself lucky to have parents who, despite limited resources, insisted she open a checking account when she got her first job at 16. Now, as a fellow with the independent initiative Bank On Houston, she works as a financial health advocate for those in her hometown who live outside the traditional financial system.

"I'm reminded daily of what it means to save as much of your money as you can, while at the same time avoiding taking on debt that you cannot manage," said Green. "That legacy lives on through my work at Bank On Houston, and for that I am truly grateful."

Bank On works with coalitions around the U.S. to build financial capacity in communities. In 2017, Wells Fargo invested $1 million to launch the Bank On Fellows program with the Cities for Financial Empowerment Fund, which aims to improve the financial stability of low and moderate-income households. The CFE Fund and Wells Fargo share a commitment to economic empowerment and strengthening financial self-sufficiency in underserved communities. In 2018, Wells Fargo announced an additional $1 million grant to expand the Bank On Fellowship — which currently operates in Alabama, Connecticut, Ohio, Florida, and Texas — to five additional markets.

The program aims to address the needs of those who are unbanked (people who do not have a checking or savings account) and underbanked (people who have a checking or savings account but also use services outside of traditional financial institutions). The Federal Deposit Insurance Corporation estimates that 63 million U.S. adults meet these definitions because they don't have enough money to meet a minimum balance requirement, distrust financial institutions, or have identification or credit problems — making them susceptible to expensive, alternative financial services.

"The Bank On program is all about communicating the benefits of accounts and saving," said Lisa Price of Wells Fargo Community Relations in Phoenix. "It doesn't promote one financial institution over another."

Fellows like Green work with consumers, community organizations, local governments, and various financial institutions to connect those in need with safe financial products.

"I believe that sharing my story can help communities understand the importance of financial empowerment," Green said. "By using safe and affordable products, families can begin to build better financial practices, accumulate wealth, and leave a lasting legacy."

Right: Yvonne Green, left, with Wells Fargo s Lisa Price in Houston.

Engineering a *better tomorrow*

SCHOLARSHIP SUPPORT FROM WELLS FARGO HELPED BIOENGINEER LILY SOOKLAL EARN HER COLLEGE DEGREE, AND NOW SHE IS PAYING IT FORWARD.

Lily Sooklal, 24, was never really sure what she wanted to be when she grew up. Then a relative's medical diagnosis brought things into focus, and today she is a bioengineer designing and developing medical devices that aim to diagnose disease.

"I was inspired to study bioengineering by my aunt's multiple sclerosis," said Sooklal, an Indo-Trinidadian American whose parents emigrated from Trinidad to the U.S. "The chance I had to work in a lab researching that same disease during my first year of college was amazing, and I discovered I wanted to do work that gives back to patients like my aunt in other countries."

She added, "In my family, education has a lot of value, and the desire to earn a college degree is something my parents instilled in me early on." Her family has a long history of farming in Trinidad, and her father was not able to go to high school. Sooklal's family lived below the poverty line, and she became aware that she would need to pay her own way through school.

Sooklal found help from APIA Scholars, which promotes the success of Asian and Pacific Islander American students through scholarships, college planning, leadership training, and financial education, and provides professional development tools and resources. Wells Fargo has worked with APIA Scholars since 2006, providing more than $7.6 million to fund more than 1,700 college scholarships. Many of the 252 APIA/Wells Fargo scholars pursuing their education in the 2018–19 academic year have similar backgrounds as Sooklal: Eighty-five percent are first-generation college students, and 67 percent were living at or below the poverty line.

Jimmie Paschall, head of Enterprise Diversity & Inclusion at Wells Fargo, said, "We aim to make a positive contribution to communities through philanthropy, advancing diversity and inclusion, and creating economic opportunity. Through APIA Scholars, Wells Fargo is supporting both diversity and higher education in a direct and meaningful way: by providing talented, underserved APIA students the financial means to achieve their dreams."

Sooklal's scholarship helped her with college tuition and housing costs. She also benefited from an APIA initiative that provides tips, advice, and information to help college students be successful in their first year. Now she works to pay it forward: At her company, she serves as co-president of a women's network and supports an internal Asian resource group. Sooklal also runs networking and resume workshops every year at the University of Maryland.

She concluded, "I believe it's important to support — both at the high school and college levels — women in technical fields, and organizations like APIA Scholars are part of that. APIA Scholars has given people in the Asian community hope and light. It means a lot."

Right: Lily Sooklal at the University of Maryland, College Park.

Helping clients protect their *financial resources*

WELLS FARGO ADVISORS TEAM MEMBERS WORK TO HELP SENIORS BY MANAGING RISK AND PUTTING SAFEGUARDS IN PLACE.

In reviewing the activity in a client's brokerage account, a Wells Fargo Advisors financial advisor wondered: Why would an 80-year-old be taking out so much cash, and so often?

The advisor alerted the Elder Client Initiatives team, which investigated and soon found the answer: One of her sons was making the withdrawals for himself. The team moved quickly and advised the client to add a different relative as a "trusted contact" on the client's account — which stopped the abuse.

This is one of many successes the team has logged since it was created in 2014, among the first of its kind in the brokerage industry. "Everything we do is designed to help clients manage risk and avoid financial harm," said Ron Long, head of Elder Client Initiatives at Wells Fargo Advisors.

Long's team investigates more than 200 cases a month, typically referred by financial advisors who spot red flags that indicate their customers may be at risk of abuse. The team also conducts research on related issues and works with protective services and senior advocacy groups across the U.S.

"We know that families are not always having the conversations they should be having about protecting savings and investments," Long said. "That allows scammers to come onto the scene and take advantage."

The Elder Client Initiatives team also worked with lawmakers in Alabama on legislation to help protect seniors from financial crimes. Joe Borg, director of the Alabama Securities Commission, worked with Long to come up with proposed provisions, such as requiring the reporting of certain transactions and authorizing financial advisors to speak with the clients' trusted contacts about suspected problems.

"If a hospital has to report when someone falls out of bed, why shouldn't we as an industry have to report attempts to wipe out someone's bank or retirement account?" said Borg. "The Alabama legislature shared our concerns, and the law passed."

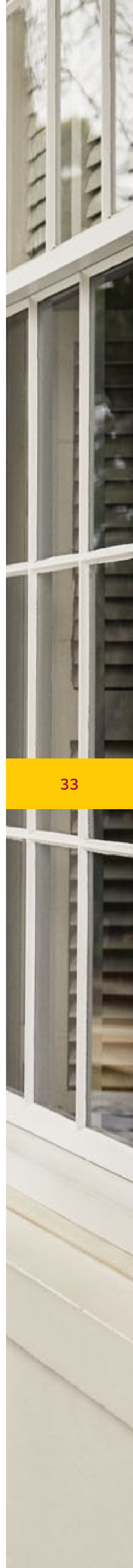
Every year, Wells Fargo trains team members who interact with customers on how to prevent, identify, and report suspected elder financial abuse.

Long concluded, "Putting safeguards in place — and engaging in transparent, open dialogue — is critical if we want to protect the dollars older Americans have worked so hard to accumulate. We are proud to be part of that."

Investment and insurance products: NOT FDIC-Insured/NO Bank Guarantee/MAY Lose Value

Wells Fargo Advisors is a trade name used by Wells Fargo Clearing Services, LLC, Member SIPC, a registered broker-dealer and non-bank affiliate of Wells Fargo & Company. CAR–0119–00596

Left: Wells Fargo Advisors' Ron Long, right, with Joe Borg in Montgomery, Alabama.



Reaching homebuyers in their *digital domain*

WELLS FARGO S NEW ONLINE MORTGAGE APPLICATION GIVES CUSTOMERS LIKE ERIK GRUBER THE SPEED AND CONVENIENCE THEY'VE COME TO EXPECT.

Erik Gruber spends most of his life on the internet, whether he's creating videos for work or ordering pizza for dinner. So when he started to consider becoming a homeowner, it was only natural to research the subject online, find houses online — and get pre-approved for a mortgage using an online application from Wells Fargo.

"Whenever I have the option, online usually works best for me," said Gruber, 29, a Wells Fargo customer in suburban Philadelphia. "It's just more convenient."

He is far from alone. Wells Fargo has attracted hundreds of thousands of customers to the online mortgage application since the tool launched in first quarter 2018. In fact, in December 2018, 30 percent of all retail mortgage applications were done through the online mortgage application.

Michael DeVito, head of Wells Fargo Home Lending, said, "We see a broad range of customers readily embracing the online mortgage application. We are attracting customers of all ages as they increasingly use their smartphones and mobile devices for daily activities. Digital tools like the online mortgage application help Wells Fargo deliver simplicity and convenience for customers."

It is especially convenient for tech-savvy millennial professionals who, like Gruber,

are part of the gig economy — self-employed contractors who work for multiple employers, have many income sources, and who have lots of paperwork to manage.

"Millennials want their information fast," said Derek Tesinsky, a Wells Fargo home mortgage consultant in Des Moines, Iowa, who worked with Gruber on his loan. "They want an interface that tells them what they need and what needs to be done. They don't want to spend their time talking on the phone to submit an application."

After submitting his application online, Gruber received a decision from the company in a matter of hours. Then, once he found a house, he sent documents to Wells Fargo through *your*LoanTracker[SM], an online tool that allows direct uploading. He closed on his new home in spring 2018.

He concluded, "I do all my other banking with Wells Fargo, so it made sense to use Wells Fargo for my mortgage. And the online mortgage application worked great! It all boiled down to convenience."

Above: Erik Gruber at work near Philadelphia.

Propel® Card strategy: *Listen, learn, design, deploy*

BY CONSULTING CUSTOMERS AT EVERY TURN, THIS TEAM DEVELOPED AN OFFERING WITH A STRONG VALUE PROPOSITION FOR CUSTOMERS AND WELLS FARGO.

When Wells Fargo's new Propel® Card received a top industry rating in late 2018, a digital celebration broke out among the hundreds of team members across the U.S. who had worked hard to help make sure it provides *just* what it was intended to — and also fits with the company's strategy to develop services and products for a range of different customers.

"Based on what active-lifestyle consumers told us, we developed a simple, easy to understand card that rewards them for the things they are already doing every day," said Beverly Anderson, head of Wells Fargo Cards and Retail Services. "Things like dining out with friends, commuting to work, planning a summer vacation, or downloading a favorite TV series to binge-watch.

"We also wanted to deliver a compelling, digital first experience that lets people apply for the card wherever they happened to be shopping digitally. In an article published on Nov. 12, 2018, *Business Insider* named the Propel Card 'the best no-fee card to open in 2018,' and that recognition underscored our achievement."

The enhanced rewards card — Wells Fargo's latest card with partner American Express — was introduced in summer 2018. Supported by the *Go Far® Rewards* program, the Propel Card also gives customers a range of options for redeeming their rewards points, including for cash at Wells Fargo ATMs, online purchases, gift cards for charitable donations, gifts to friends, and sharing them with other cardholders they know.

Creating products like the Propel Card to serve existing customers and attract new ones — while maintaining its risk discipline — is one of the key ways Wells Fargo creates value for its shareholders. Anderson and the Propel Card team undertook market research, conducted focus group studies, and interviewed customers for more than a year as they tested and developed the concept, model, and implementation strategy. Anderson said the team combined the scientific method with common sense and intuitive insights into people and their spending behavior.

Heather Philp, head of the Propel Card team, said her team's biggest challenge — and highest priority — was to identify the best value proposition for customers. "They wanted a card that would work for their lives, rather than having to make their lives work around the card," she said. "We believe the Propel Card does just that."

Right: Wells Fargo s Beverly Anderson with her team in Wilmington, Delaware.


PROPEL
WELLS FARGO
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AMERICAN EXPRESS

OPERATING COMMITTEE AND OTHER CORPORATE OFFICERS

Wells Fargo Operating Committee*† *(left to right):
Mary T. Mack, Jonathan G. Weiss, Avid Modjtabai, David C. Galloreese, Timothy J. Sloan, John R. Shrewsberry, Amanda G. Norton, C. Allen Parker, and Perry G. Pelos

†On January 9, 2019, Wells Fargo announced that Saul Van Beurden will join the company in April as head of Technology and become a member of the Operating Committee. On February 6, 2019, Wells Fargo announced that Julie Scammahorn will join the company in April as chief auditor and become a member of the Operating Committee.

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CEO and President*

ANTHONY R. AUGLIERA
Corporate Secretary

NEAL A. BLINDE
Treasurer

JOHN M. CAMPBELL
Head of Investor Relations

JON R. CAMPBELL
Head of Corporate Philanthropy and Community Relations

DAVID C. GALLOREESE
Head of Human Resources*

RICHARD D. LEVY
Controller*

MARY T. MACK
Head of Consumer Banking*

AVID MODJTABAI
Head of Payments, Virtual Solutions and Innovation*

DAVID MOSKOWITZ
Head of Government Relations and Public Policy

AMANDA G. NORTON
Chief Risk Officer*

C. ALLEN PARKER
General Counsel*

PERRY G. PELOS
Head of Wholesale Banking*

JAMES H. ROWE
Head of Stakeholder Relations

JOHN R. SHREWSBERRY
Chief Financial Officer*

JONATHAN G. WEISS
Head of Wealth and Investment Management*

MARY S. WENZEL
Head of Sustainability and Corporate Responsibility

* "Executive officers" according to Securities and Exchange Commission rules. | As of February 15, 2019

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FRP Holdings, Inc.
(Real estate)

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Principal, Abraham Clark Consulting, LLC, and Retired Senior Vice President, Global Public Policy and External Relations and Chief Sustainability Officer
Kellogg Company
(Food manufacturing)

THEODORE F. CRAVER, JR. 1, 4

Retired Chairman, President and CEO
Edison International
(Energy)

ELIZABETH A. DUKE 3, 4, 5, 7

Chair
Wells Fargo & Company
Former member of the Federal Reserve Board of Governors
(U.S. regulatory agency)

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Senior Advisor
Permira *(Private equity)*,
and Chairman
DiversiTech Corporation
(HVAC-R manufacturing)

DONALD M. JAMES 4, 5, 6

Retired Chairman
Vulcan Materials Company
(Construction materials)

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Retired Executive Vice President and Head of Global Employee Benefits business
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(Health and life insurance)

KAREN B. PEETZ 6, 7

Retired President
The Bank of New York Mellon Corporation
(Banking and financial services)

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(Audit, tax, financial advisory)

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Retired Chairman and CEO
Staples, Inc.
(Office supply retailer)

TIMOTHY J. SLOAN

CEO and President
Wells Fargo & Company

SUZANNE M. VAUTRINOT 2, 3, 7

President
Kilovolt Consulting, Inc.
(Cyber and technology consulting)
Major General and Commander
United States Air Force (retired)

Standing Committees
1. Audit and Examination 2. Corporate Responsibilty 3. Credit 4. Finance 5. Governance and Nominating 6. Human Resources 7. Risk | As of February 15, 2019

OUR COMMUNITY IMPACT

2018 Corporate Responsibility Highlights

Wells Fargo is committed to making a positive impact by helping people and communities succeed financially — and creating solutions for a stronger, more sustainable future in which everyone can grow and prosper. Read more at wellsfargo.com/about/corporate-responsibility. Here is a snapshot of our community impact in 2018.

STRENGTHENING COMMUNITIES

Contributed ***$444 million*** and volunteered ***2+ million*** hours, improving lives and supporting economic growth in the U.S. and around the world.

EMPOWERING DIVERSE SMALL BUSINESSES

Awarded ***$94.8 million*** in grants and capital to grow diverse small businesses since 2015, supporting economic equity and employment opportunities for ***36,000*** people.

ACCELERATING TO A LOW-CARBON ECONOMY

Met ***100%*** of our global electricity needs with renewable energy. Committed to providing ***$200 billion*** in financing to sustainable businesses and projects by 2030.

EXPANDING ACCESS TO CLEAN ENERGY

Provided ***2,000*** low-income and tribal households with solar power to decrease energy bills, and trained ***3,500*** people for careers in clean energy.

ADVANCING AFFORDABLE HOUSING

Financed ***31,800*** affordable rental units. Created ***3,900+*** homeowners through NeighborhoodLIFT® program, offering homebuyer education, down payment assistance, and grants to revitalize neighborhoods.

IMPROVING FINANCIAL HEALTH AND CAPABILITY

Reached ***1.7 million*** people to provide financial education through Wells Fargo's Hands on Banking® program, including new content for veterans and people with disabilities.

Data for January 1, 2018 – December 31, 2018, unless otherwise noted.

WELLS FARGO & COMPANY 2018 FINANCIAL REPORT

This Annual Report, including the Financial Review and the Financial Statements and related Notes, contains forward-looking statements, which may include forecasts of our financial results and condition, expectations for our operations and business, and our assumptions for those forecasts and expectations. Do not unduly rely on forward-looking statements. Actual results may differ materially from our forward-looking statements due to several factors. Factors that could cause our actual results to differ materially from our forward-looking statements are described in this Report, including in the "Forward-Looking Statements" and "Risk Factors" sections, and in the "Regulation and Supervision" section of our Annual Report on Form 10-K for the year ended December 31, 2018 (2018 Form 10-K).

When we refer to "Wells Fargo," "the Company," "we," "our," or "us" in this Report, we mean Wells Fargo & Company and Subsidiaries (consolidated). When we refer to the "Parent," we mean Wells Fargo & Company. See the Glossary of Acronyms for terms used throughout this Report.

Financial Review[1]

Overview

Wells Fargo & Company is a diversified, community-based financial services company with $1.90 trillion in assets. Founded in 1852 and headquartered in San Francisco, we provide banking, investment and mortgage products and services, as well as consumer and commercial finance, through 7,800 locations, more than 13,000 ATMs, digital (online, mobile and social), and contact centers (phone, email and correspondence), and we have offices in 37 countries and territories to support customers who conduct business in the global economy. With approximately 259,000 active, full-time equivalent team members, we serve one in three households in the United States and ranked No. 26 on *Fortune's* 2018 rankings of America's largest corporations. We ranked fourth in assets and third in the market value of our common stock among all U.S. banks at December 31, 2018.

We use our *Vision, Values & Goals* to guide us toward growth and success. Our vision is to satisfy our customers' financial needs and help them succeed financially. We aspire to create deep and enduring relationships with our customers by providing them with an exceptional experience and by understanding their needs and delivering the most relevant products, services, advice, and guidance.

We have five primary values, which are based on our vision and guide the actions we take. First, we place customers at the center of everything we do. We want to exceed customer expectations and build relationships that last a lifetime. Second, we value and support our people as a competitive advantage and strive to attract, develop, motivate, and retain the best team members. Third, we strive for the highest ethical standards of integrity, transparency, and principled performance. Fourth, we value and promote diversity and inclusion in all aspects of business and at all levels. Fifth, we look to each of our team members to be a leader in establishing, sharing, and communicating our vision for our customers, communities, team members, and shareholders. In addition to our five primary values, one of our key day-to-day priorities is to make risk management a competitive advantage by working hard to ensure that appropriate controls are in place to reduce risks to our customers, maintain and increase our competitive market position, and protect Wells Fargo's long-term safety, soundness, and reputation.

1 Financial information for periods prior to 2018 has been revised to reflect presentation changes made in connection with our adoption in first quarter 2018 of Accounting Standards Update (ASU) 2016-01 Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities*. See Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report for more information.

In keeping with our primary values and risk management priorities, we have six long-term goals for the Company, which entail becoming the financial services leader in the following areas:

- Customer service and advice – provide exceptional service and guidance to our customers to help them succeed financially.
- Team member engagement – be a company where people feel included, valued, and supported; everyone is respected; and we work as a team.
- Innovation – create lasting value for our customers and increased efficiency for our operations through innovative thinking, industry-leading technology, and a willingness to test and learn.
- Risk management – set the global standard in managing all forms of risk.
- Corporate citizenship – make a positive contribution to communities through philanthropy, advancing diversity and inclusion, creating economic opportunity, and promoting environmental sustainability.
- Shareholder value – deliver long-term value for shareholders.

Federal Reserve Board Consent Order Regarding Governance Oversight and Compliance and Operational Risk Management

On February 2, 2018, the Company entered into a consent order with the Board of Governors of the Federal Reserve System (FRB). As required by the consent order, the Board submitted to the FRB a plan to further enhance the Board's governance and oversight of the Company, and the Company submitted to the FRB a plan to further improve the Company's compliance and operational risk management program. The consent order requires the Company, following the FRB's acceptance and approval of the plans and the Company's adoption and implementation of the plans, to complete third-party reviews of the enhancements and improvements provided for in the plans. Until these third-party reviews are complete and the plans are approved and implemented to the satisfaction of the FRB, the Company's total consolidated assets will be limited to the level as of December 31, 2017. Compliance with this asset cap will be measured on a two-quarter daily average basis to allow for management of temporary fluctuations. The Company continues to have constructive dialogue with the FRB on an ongoing basis to clarify expectations, receive feedback, and assess progress under the consent order. In order to have enough time to incorporate this feedback into the Company's plans in a thoughtful manner, adopt and implement the final plans as accepted by the FRB, and complete the required third-party reviews, the Company is planning to operate under the asset cap through the end of 2019. As of the end of fourth quarter 2018, our total consolidated assets, as calculated pursuant to the requirements of the consent order, were below our level of total assets as of December 31, 2017. Additionally, after removal of the asset cap, a second third-party review must also be conducted to assess the efficacy and sustainability of the enhancements and improvements.

Consent Orders with the Consumer Financial Protection Bureau and Office of the Comptroller of the Currency Regarding Compliance Risk Management Program, Automobile Collateral Protection Insurance Policies, and Mortgage Interest Rate Lock Extensions

On April 20, 2018, the Company entered into consent orders with the Consumer Financial Protection Bureau (CFPB) and the Office of the Comptroller of the Currency (OCC) to pay an aggregate of $1 billion in civil money penalties to resolve matters regarding the Company's compliance risk management program and past practices involving certain automobile collateral protection insurance policies and certain mortgage interest rate lock extensions. As required by the consent orders, the Company submitted to the CFPB and OCC an enterprise-wide compliance risk management plan and a plan to enhance the Company's internal audit program with respect to federal consumer financial law and the terms of the consent orders. In addition, as required by the consent orders, the Company submitted for non-objection plans to remediate customers affected by the automobile collateral protection insurance and mortgage interest rate lock matters, as well as a plan for the management of remediation activities conducted by the Company.

Retail Sales Practices Matters

As we have previously reported, in September 2016 we announced settlements with the CFPB, the OCC, and the Office of the Los Angeles City Attorney, and entered into consent orders with the CFPB and the OCC, in connection with allegations that some of our retail customers received products and services they did not request. As a result, it remains our top priority to rebuild trust through a comprehensive action plan that includes making things right for our customers, team members, and other stakeholders, and building a better Company for the future.

Our priority of rebuilding trust has included numerous actions focused on identifying potential financial harm and customer remediation. The Board and management are conducting company-wide reviews of sales practices issues. These reviews are ongoing. In August 2017, a third-party consulting firm completed an expanded data-driven review of retail banking accounts opened from January 2009 to September 2016 to identify financial harm stemming from potentially unauthorized accounts. We have completed financial remediation for the customers identified through the expanded account analysis. Additionally, customer outreach under the $142 million class action lawsuit settlement concerning improper retail sales practices (*Jabbari v. Wells Fargo Bank, N.A.*), into which the Company entered to provide further remediation to customers, concluded in June 2018 and the period for customers to submit claims closed on July 7, 2018. The settlement administrator will pay claims following the calculation of compensatory damages and favorable resolution of pending appeals in the case.

For additional information regarding sales practices matters, including related legal matters, see the "Risk Factors" section and Note 16 (Legal Actions) to Financial Statements in this Report.

Additional Efforts to Rebuild Trust

Our priority of rebuilding trust has also included an effort to identify other areas or instances where customers may have experienced financial harm. We are working with our regulatory agencies in this effort, and we have accrued for the reasonably estimable remediation costs related to these matters, which amounts may change based on additional facts and information, as well as ongoing reviews and communications with our regulators. As part of this effort, we are focused on the following key areas:

- **Automobile Lending Business** The Company is reviewing practices concerning the origination, servicing, and/or collection of consumer automobile loans, including matters related to certain insurance products, and is providing remediation to the extent it identifies affected customers. For example:
  - In July 2017, the Company announced it would remediate customers who may have been financially harmed due to issues related to automobile collateral protection insurance (CPI) policies purchased through a third-party vendor on their behalf (based on an understanding that the borrowers did not have physical damage insurance coverage on their automobiles as required during the term of their automobile loans). The practice of placing CPI had been previously discontinued by the Company. The Company is in the process of providing remediation to affected customers and/or letters to affected customers through which they may claim or otherwise receive remediation compensation for policies placed between October 15, 2005, and September 30, 2016.
  - The Company has identified certain issues related to the unused portion of guaranteed automobile protection waiver or insurance agreements between the customer and dealer and, by assignment, the lender, which will result in remediation to customers in certain states. The Company is in the process of providing remediation to affected customers.
- **Mortgage Interest Rate Lock Extensions** In October 2017, the Company announced plans to reach out to all home lending customers who paid fees for mortgage rate lock extensions requested from September 16, 2013, through February 28, 2017, and to provide refunds, with interest, to customers who believe they should not have paid those fees. The plan to issue refunds follows an internal review that determined a rate lock extension policy implemented in September 2013 was, at times, not consistently applied, resulting in some borrowers being charged fees in cases where the Company was primarily responsible for the delays that made the extensions necessary. Effective March 1, 2017, the Company changed how it manages the mortgage rate lock extension process by establishing a centralized review team that reviews all rate lock extension requests for consistent application of the policy. Although the Company believes a substantial number of the rate lock extension fees during the period in question were appropriately charged under its policy, due to

our customer-oriented remediation approach, we have issued refunds and interest to substantially all of our customers who paid rate lock extension fees during the period in question. We have substantially completed the remediation process.

- **Add-on Products** The Company is reviewing practices related to certain consumer "add-on" products, including identity theft and debt protection products that were subject to an OCC consent order entered into in June 2015, as well as home and automobile warranty products, and memberships in discount programs. The products were sold to customers through a number of distribution channels and, in some cases, were acquired by the Company in connection with the purchase of loans. Sales of certain of these products have been discontinued over the past few years primarily due to decisions made by the Company in the normal course of business, and by mid-2017, the Company had ceased selling any of these products to consumers. We are in the process of providing remediation where we identify affected customers, and are also providing refunds to customers who purchased certain products. The review of the Company's historical practices with respect to these products is ongoing, focusing on, among other topics, sales practices, adequacy of disclosures, customer servicing, and volume and type of customer complaints.
- **Consumer Deposit Account Freezing/Closing** The Company is reviewing procedures regarding the freezing (and, in many cases, closing) of consumer deposit accounts after the Company detected suspected fraudulent activity (by third-parties or account holders) that affected those accounts. This review is ongoing.
- **Review of Certain Activities Within Wealth and Investment Management** A review of certain activities within Wealth and Investment Management (WIM) being conducted by the Board, in response to inquiries from federal government agencies, is assessing whether there have been inappropriate referrals or recommendations, including with respect to rollovers for 401(k) plan participants, certain alternative investments, or referrals of brokerage customers to the Company's investment and fiduciary services business. The Board's review is substantially completed and has not, to date, uncovered evidence of systemic or widespread issues in these businesses. Federal government agencies continue to review this matter.
- **Fiduciary and Custody Account Fee Calculations** The Company is reviewing fee calculations within certain fiduciary and custody accounts in its investment and fiduciary services business, which is part of the wealth management business in WIM. The Company has determined that there have been instances of incorrect fees being applied to certain assets and accounts, resulting in both overcharges and undercharges to customers. These issues include the incorrect set-up and maintenance in the system of record of the values associated with certain assets. Systems, operations, and account-level reviews are underway to determine the extent of any assets and accounts affected, and root cause analyses are being performed with the assistance of third parties. These reviews are ongoing and, as a result of its reviews to date, the Company has suspended the charging of fees on some assets and accounts, has notified the affected customers, and is continuing its analysis of those assets and accounts. The review of customer accounts is ongoing to determine the extent of any additional necessary remediation, including with respect to additional accounts not yet reviewed, which may lead to additional accruals and fee suspensions.
- **Foreign Exchange Business** The Company has completed an assessment, with the assistance of a third party, of its policies, practices, and procedures in its foreign exchange (FX) business. The FX business continues to revise and implement new policies, practices, and procedures, including those related to pricing. The Company has begun providing remediation to customers that may have received pricing inconsistent with commitments made to those customers, and rebates to customers where historic pricing, while consistent with contracts entered into with those customers, does not conform to the Company's recently implemented standards and pricing. The Company's review of affected customers is ongoing.
- **Mortgage Loan Modifications** An internal review of the Company's use of a mortgage loan modification underwriting tool identified a calculation error regarding foreclosure attorneys' fees affecting certain accounts that were in the foreclosure process between April 13, 2010, and October 2, 2015, when the error was corrected. A subsequent expanded review identified related errors regarding the maximum allowable foreclosure attorneys' fees permitted for certain accounts that were in the foreclosure process between March 15, 2010, and April 30, 2018, when new controls were implemented. Similar to the initial calculation error, these errors caused an overstatement of the attorneys' fees that were included for purposes of determining whether a customer qualified for a mortgage loan modification or repayment plan pursuant to the requirements of government-sponsored enterprises (such as Fannie Mae and Freddie Mac), the Federal Housing Administration (FHA), and the U.S. Department of Treasury's Home Affordable Modification Program (HAMP). Customers were not actually charged the incorrect attorneys' fees. As previously disclosed, the Company has identified customers who, as a result of these errors, were incorrectly denied a loan modification or were not offered a loan modification or repayment plan in cases where they otherwise would have qualified, as well as instances where a foreclosure was completed after the loan modification was denied or the customer was deemed ineligible to be offered a loan modification or repayment plan. The number of previously disclosed customers affected by these errors may change as a result of ongoing validation, but is not expected to have changed materially upon completion of this validation. The Company has contacted substantially all of the identified customers affected by these errors and has provided remediation as well as the option to pursue no-cost mediation with an independent mediator. The Company's review of its mortgage loan modification practices is ongoing, and we are providing remediation to the extent we identify additional affected customers as a result of this review.

To the extent issues are identified, we will continue to assess any customer harm and provide remediation as appropriate. This effort to identify other instances in which customers may have experienced harm is ongoing, and it is possible that we may identify other areas of potential concern.

For more information, including related legal and regulatory risk, see the "Risk Factors" section and Note 16 (Legal Actions) to Financial Statements in this Report.

Financial Performance

In 2018, we generated $22.4 billion of net income and diluted earnings per common share (EPS) of $4.28, compared with $22.2 billion of net income and EPS of $4.10 for 2017. We grew average commercial and industrial, and average real estate 1-4 family first mortgage loans compared with 2017, maintained strong capital and liquidity levels, and rewarded our shareholders by increasing our dividend and continuing to repurchase shares of our common stock. Our achievements during 2018 continued to demonstrate the benefit of our diversified business model and our ability to generate consistent financial performance. We remain focused on meeting the financial needs of our customers. Noteworthy financial performance items for 2018 (compared with 2017) included:

- revenue of $86.4 billion, down from $88.4 billion, which included net interest income of $50.0 billion, up $438 million, or 1%;
- average loans of $945.2 billion, down 1%;
- average deposits of $1.3 trillion, down $28.8 billion, or 2%;
- return on assets (ROA) of 1.19% and return on equity (ROE) of 11.53%, up from 1.15% and 11.35%, respectively, a year ago;
- our credit results improved with a net charge-off rate of 0.29%, compared with 0.31% a year ago;
- nonaccrual loans of $6.5 billion, down $1.2 billion, or 15%, from a year ago; and
- $25.8 billion in capital returned to our shareholders through increased common stock dividends and additional net share repurchases, up 78% from a year ago.

Table 1 presents a six-year summary of selected financial data and Table 2 presents selected ratios and per common share data.

Balance Sheet and Liquidity

Our balance sheet remained strong during 2018 with strong credit quality and solid levels of liquidity and capital. Our total assets were $1.90 trillion at December 31, 2018. Cash and other short-term investments decreased $42.5 billion from December 31, 2017, reflecting lower deposit balances. Debt securities grew $11.3 billion, or 2%, from December 31, 2017. Our loan portfolio declined $3.7 billion from December 31, 2017. Growth in commercial and industrial loans and real estate 1-4 family first mortgage loans was more than offset by declines in commercial real estate mortgage, real estate 1-4 family junior lien mortgage and automobile loans.

Deposits at December 31, 2018, were down $49.8 billion, or 4%, from 2017. The decline was driven by a decrease in commercial deposits from financial institutions, which includes actions the Company took in the first half of 2018 in response to the asset cap, and a decline in consumer and small business banking deposits. Our average deposit cost increased 21 basis points from a year ago driven by an increase in Wholesale Banking and Wealth and Investment Management deposit rates.

Credit Quality

Credit quality remained solid in 2018, driven by continued strong performance in the commercial and consumer real estate portfolios. Performance in several of our commercial and consumer loan portfolios remained near historically low loss levels and reflected our long-term risk focus. Net charge-offs were $2.7 billion, or 0.29% of average loans, in 2018, compared with $2.9 billion, or 0.31%, in 2017.

Net losses in our commercial portfolio were $429 million, or 9 basis points of average commercial loans, in 2018, compared with $446 million, or 9 basis points, in 2017, driven by decreased losses in our commercial and industrial loan portfolio. Net consumer losses decreased to 52 basis points of average consumer loans in 2018, compared with 55 basis points in 2017. Losses in our consumer real estate portfolios declined $93 million in 2018 to a net recovery position. The consumer loss levels reflected decreased losses in our automobile and other revolving and installment loan portfolios, lower losses in our residential real estate portfolios due to the benefit of the improving housing market, and our continued focus on originating high quality loans.

The allowance for credit losses of $10.7 billion at December 31, 2018, declined $1.3 billion from the prior year. Our provision for credit losses in 2018 was $1.7 billion, compared with $2.5 billion in 2017, reflecting a release of $1.0 billion in the allowance for credit losses, compared with a release of $400 million in 2017. The release in 2018 and 2017 was due to strong underlying credit performance.

Nonperforming assets (NPAs) at the end of 2018 were $6.9 billion, down 16% from the end of 2017. Nonaccrual loans declined $1.2 billion from the prior year end while foreclosed assets were down $191 million from 2017.

Capital

Our financial performance in 2018 allowed us to maintain a solid capital position with total equity of $197.1 billion at December 31, 2018, compared with $208.1 billion at December 31, 2017. We returned $25.8 billion to shareholders in 2018 ($14.5 billion in 2017) through common stock dividends and net share repurchases, and our net payout ratio (which is the ratio of (i) common stock dividends and share repurchases less issuances and stock compensation-related items, divided by (ii) net income applicable to common stock) was 125%. During 2018 we increased our quarterly common stock dividend from $0.39 to $0.43 per share. Our common shares outstanding declined by 310.4 million shares, or 6%, as we continued to reduce our common share count through the repurchase of 375.5 million common shares during the year. We expect our share count to continue to decline in 2019 as a result of anticipated net share repurchases.

We believe an important measure of our capital strength is the Common Equity Tier 1 ratio on a fully phased-in basis, which was 11.74% as of December 31, 2018, down from 11.98% a year ago, but still well above our internal target of 10%. Likewise, our other regulatory capital ratios remained strong. See the "Capital Management" section in this Report for more information regarding our capital, including the calculation of our regulatory capital amounts.

Overview *(continued)*

Table 1: Six-Year Summary of Selected Financial Data

(in millions, except per share amounts)	2018	2017	2016	2015	2014	2013	% Change 2018/ 2017	Five-year compound growth rate
Income statement								
Net interest income	**$ 49,995**	49,557	47,754	45,301	43,527	42,800	**1%**	**3**
Noninterest income	**36,413**	38,832	40,513	40,756	40,820	40,980	**(6)**	**(2)**
Revenue	**86,408**	88,389	88,267	86,057	84,347	83,780	**(2)**	**1**
Provision for credit losses	**1,744**	2,528	3,770	2,442	1,395	2,309	**(31)**	**(5)**
Noninterest expense	**56,126**	58,484	52,377	49,974	49,037	48,842	**(4)**	**3**
Net income before noncontrolling interests	**22,876**	22,460	22,045	23,276	23,608	22,224	**2**	**1**
Less: Net income from noncontrolling interests	**483**	277	107	382	551	346	**74**	**7**
Wells Fargo net income	**22,393**	22,183	21,938	22,894	23,057	21,878	**1**	**—**
Earnings per common share	**4.31**	4.14	4.03	4.18	4.17	3.95	**4**	**2**
Diluted earnings per common share	**4.28**	4.10	3.99	4.12	4.10	3.89	**4**	**2**
Dividends declared per common share	**1.640**	1.540	1.515	1.475	1.350	1.150	**6**	**7**
Balance sheet (at year end)								
Debt securities	**$ 484,689**	473,366	459,038	394,744	350,661	298,241	**2%**	**10**
Loans	**953,110**	956,770	967,604	916,559	862,551	822,286	**—**	**3**
Allowance for loan losses	**9,775**	11,004	11,419	11,545	12,319	14,502	**(11)**	**(8)**
Goodwill	**26,418**	26,587	26,693	25,529	25,705	25,637	**(1)**	**1**
Equity securities	**55,148**	62,497	49,110	40,266	44,005	32,227	**(12)**	**11**
Assets	**1,895,883**	1,951,757	1,930,115	1,787,632	1,687,155	1,523,502	**(3)**	**4**
Deposits	**1,286,170**	1,335,991	1,306,079	1,223,312	1,168,310	1,079,177	**(4)**	**4**
Long-term debt	**229,044**	225,020	255,077	199,536	183,943	152,998	**2**	**8**
Wells Fargo stockholders' equity	**196,166**	206,936	199,581	192,998	184,394	170,142	**(5)**	**3**
Noncontrolling interests	**900**	1,143	916	893	868	866	**(21)**	**1**
Total equity	**197,066**	208,079	200,497	193,891	185,262	171,008	**(5)**	**3**

Table 2: Ratios and Per Common Share Data

	Year ended December 31,		
	2018	2017	2016
Profitability ratios			
Wells Fargo net income to average assets (ROA)	**1.19%**	1.15	1.16
Wells Fargo net income applicable to common stock to average Wells Fargo common stockholders' equity (ROE)	**11.53**	11.35	11.49
Return on average tangible common equity (ROTCE) (1)	**13.73**	13.55	13.85
Efficiency ratio (2)	**65.0**	66.2	59.3
Capital ratios (3)			
At year end:			
Wells Fargo common stockholders' equity to assets	**9.20**	9.38	9.14
Total equity to assets	**10.39**	10.66	10.39
Risk-based capital (4):			
Common Equity Tier 1	**11.74**	12.28	11.13
Tier 1 capital	**13.46**	14.14	12.82
Total capital	**16.60**	17.46	16.04
Tier 1 leverage	**9.07**	9.35	8.95
Average balances:			
Average Wells Fargo common stockholders' equity to average assets	**9.50**	9.37	9.40
Average total equity to average assets	**10.77**	10.64	10.64
Per common share data			
Dividend payout (5)	**38.3**	37.6	38.0
Book value (6)	**$ 38.06**	37.44	35.18

(1) Tangible common equity is a non-GAAP financial measure and represents total equity less preferred equity, noncontrolling interests, and goodwill and certain identifiable intangible assets (including goodwill and intangible assets associated with certain of our nonmarketable equity securities, but excluding mortgage servicing rights), net of applicable deferred taxes. The methodology of determining tangible common equity may differ among companies. Management believes that return on average tangible common equity, which utilizes tangible common equity, is a useful financial measure because it enables investors and others to assess the Company's use of equity. For additional information, including a corresponding reconciliation to GAAP financial measures, see the "Capital Management – Tangible Common Equity" section in this Report.
(2) The efficiency ratio is noninterest expense divided by total revenue (net interest income and noninterest income).
(3) See the "Capital Management" section and Note 28 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report for additional information.
(4) The risk-based capital ratios were calculated under the lower of Standardized or Advanced Approach determined pursuant to Basel III. Beginning January 1, 2018, the requirements for calculating common equity tier 1 and tier 1 capital, along with risk-weighted assets, became fully phased-in; Accordingly, the information presented reflects fully phased-in common equity tier 1 capital, tier 1 capital and risk-weighted assets but reflects total capital still in accordance with Transition Requirements. See the "Capital Management" section and Note 28 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report for additional information.
(5) Dividend payout ratio is dividends declared per common share as a percentage of diluted earnings per common share.
(6) Book value per common share is common stockholders' equity divided by common shares outstanding.

Earnings Performance

Wells Fargo net income for 2018 was $22.4 billion ($4.28 diluted earnings per common share), compared with $22.2 billion ($4.10 diluted per share) for 2017 and $21.9 billion ($3.99 diluted per share) for 2016. Our financial performance in 2018 benefited from a $438 million increase in net interest income, a $784 million decrease in our provision for credit losses, and a $2.4 billion decrease in noninterest expense, partially offset by a $2.4 billion decrease in noninterest income, and a $745 million increase in income tax expense.

Revenue, the sum of net interest income and noninterest income, was $86.4 billion in 2018, compared with $88.4 billion in 2017 and $88.3 billion in 2016. The decrease in revenue for 2018 compared with 2017 was predominantly due to a decrease in noninterest income, reflecting decreases in mortgage banking income, insurance income, service charges on deposit accounts, and net gains (losses) from debt and equity securities, partially offset by an increase in all other noninterest income. Our diversified sources of revenue generated by our businesses continued to be balanced between net interest income and noninterest income. In 2018, net interest income of $50.0 billion represented 58% of revenue, compared with $49.6 billion (56%) in 2017 and $47.8 billion (54%) in 2016. Table 3 presents the components of revenue and noninterest expense as a percentage of revenue for year-over-year results.

See later in this section for discussions of net interest income, noninterest income and noninterest expense.

Table 3: Net Interest Income, Noninterest Income and Noninterest Expense as a Percentage of Revenue

								Year ended December 31,
(in millions)		**2018**	**% of revenue**		2017	% of revenue		2016	% of revenue
Interest income (on a taxable-equivalent basis)									
Debt securities	**$**	**14,947**	**17%**	$	14,084	15%	$	12,328	14%
Mortgage loans held for sale (MLHFS)		**777**	**1**		786	1		784	1
Loans held for sale (LHFS)		**140**	**—**		50	3		38	—
Loans		**44,086**	**51**		41,551	47		39,630	45
Equity securities		**999**	**1**		821	1		669	1
Other interest income		**4,359**	**5**		2,941	3		1,457	2
Total interest income (on a taxable-equivalent basis)		**65,308**	**76**		60,233	68		54,906	62
Interest expense (on a taxable-equivalent basis)									
Deposits		**5,622**	**7**		3,013	3		1,395	2
Short-term borrowings		**1,719**	**2**		761	1		333	—
Long-term debt		**6,703**	**8**		5,157	6		3,830	5
Other interest expense		**610**	**1**		424	—		354	—
Total interest expense (on a taxable-equivalent basis)		**14,654**	**17**		9,355	11		5,912	7
Net interest income (on a taxable-equivalent basis)		**50,654**	**59**		50,878	57		48,994	55
Taxable-equivalent adjustment		**(659)**	**(1)**		(1,321)	(1)		(1,240)	(1)
Net interest income (A)		**49,995**	**58**		49,557	56		47,754	54
Noninterest income									
Service charges on deposit accounts		**4,716**	**5**		5,111	6		5,372	6
Trust and investment fees (1)		**14,509**	**17**		14,495	16		14,243	16
Card fees		**3,907**	**5**		3,960	4		3,936	5
Other fees (1)		**3,384**	**4**		3,557	4		3,727	4
Mortgage banking (1)		**3,017**	**3**		4,350	5		6,096	7
Insurance		**429**	**—**		1,049	1		1,268	2
Net gains from trading activities		**602**	**1**		542	1		610	1
Net gains on debt securities		**108**	**—**		479	1		942	1
Net gains from equity securities		**1,515**	**2**		1,779	2		1,103	1
Lease income		**1,753**	**2**		1,907	2		1,927	2
Other (1)		**2,473**	**3**		1,603	2		1,289	1
Total noninterest income (B)		**36,413**	**42**		38,832	44		40,513	46
Noninterest expense									
Salaries		**17,834**	**21**		17,363	20		16,552	19
Commission and incentive compensation		**10,264**	**12**		10,442	12		10,247	12
Employee benefits		**4,926**	**6**		5,566	6		5,094	6
Equipment		**2,444**	**3**		2,237	3		2,154	2
Net occupancy		**2,888**	**3**		2,849	3		2,855	3
Core deposit and other intangibles		**1,058**	**1**		1,152	1		1,192	1
FDIC and other deposit assessments		**1,110**	**1**		1,287	1		1,168	1
Operating losses		**3,124**	**4**		5,492	6		1,608	2
Outside professional services		**3,306**	**4**		3,813	4		3,138	4
Other (2)		**9,172**	**11**		8,283	9		8,369	9
Total noninterest expense		**56,126**	**65**		58,484	66		52,377	59
Revenue (A) + (B)	**$**	**86,408**		$	88,389		$	88,267	

(1) See Table 7 – Noninterest Income in this Report for additional detail.
(2) See Table 8 – Noninterest Expense in this Report for additional detail.

Net Interest Income

Net interest income is the interest earned on debt securities, loans (including yield-related loan fees) and other interest-earning assets minus the interest paid on deposits, short-term borrowings and long-term debt. Net interest margin is the average yield on earning assets minus the average interest rate paid for deposits and our other sources of funding. Net interest income and the net interest margin are presented on a taxable-equivalent basis in Table 5 to consistently reflect income from taxable and tax-exempt loans and debt and equity securities based on a 21% and 35% federal statutory tax rate for the periods ending December 31, 2018 and 2017, respectively.

Net interest income and the net interest margin in any one period can be significantly affected by a variety of factors including the mix and overall size of our earning assets portfolio and the cost of funding those assets. In addition, some variable sources of interest income, such as resolutions from purchased credit-impaired (PCI) loans, loan fees, periodic dividends, and collection of interest on nonaccrual loans, can vary from period to period.

Net interest income on a taxable-equivalent basis was $50.7 billion in 2018, compared with $50.9 billion in 2017, and $49.0 billion in 2016. The decrease in net interest income in 2018, compared with 2017, was driven by:

- lower loan swap income due to unwinding the receive-fixed loan swap portfolio;
- lower tax-equivalent net interest income from updated tax-equivalent factors reflecting new tax law;
- a smaller balance sheet and unfavorable mix;
- higher premium amortization; and
- unfavorable hedge ineffectiveness accounting results;

partially offset by:

- the net repricing benefit of higher interest rates; and
- higher variable income.

The increase in net interest income for 2017, compared with 2016, was driven by growth in earning assets and the benefit of higher interest rates, partially offset by growth and repricing of long-term debt. Deposit interest expense also increased in 2017, largely due to an increase in wholesale and Wealth and Investment Management (WIM) deposit pricing resulting from higher interest rates.

Net interest margin on a taxable-equivalent basis was 2.91% in 2018, compared with 2.87% in 2017 and 2.86% in 2016. The increase in net interest margin in 2018, compared with 2017, was driven by:

- the net repricing benefit of higher interest rates;
- runoff of lower yielding assets and other favorable mix; and
- higher variable income;

partially offset by:

- lower loan swap income due to unwinding the receive-fixed loan swap portfolio;
- lower tax-equivalent net interest income from updated tax-equivalent factors reflecting new tax law;
- higher premium amortization; and
- unfavorable hedge ineffectiveness accounting results.

The slight increase in net interest margin in 2017, compared with 2016, was due to the repricing benefits of earning assets from higher interest rates exceeding the repricing costs of deposits and market based funding sources.

Table 4 presents the components of earning assets and funding sources as a percentage of earning assets to provide a more meaningful analysis of year-over-year changes that influenced net interest income.

Average earning assets decreased $38.1 billion in 2018 compared with 2017. The decrease was driven by:

- average loans decreased $10.9 billion in 2018;
- average interest-earning deposits decreased $45.5 billion in 2018;

partially offset by:

- average federal funds sold and securities purchased under resale agreements increased $3.9 billion in 2018;
- average debt securities increased $13.8 billion in 2018; and
- average equity securities increased $2.0 billion in 2018.

Deposits are an important low-cost source of funding and affect both net interest income and the net interest margin. Deposits include noninterest-bearing deposits, interest-bearing checking, market rate and other savings, savings certificates, other time deposits, and deposits in foreign offices. Average deposits decreased to $1.28 trillion in 2018, compared with $1.30 trillion in 2017, and represented 135% of average loans in 2018, compared with 136% in 2017. Average deposits were 73% of average earning assets in both 2018 and 2017.

Table 5 presents the individual components of net interest income and the net interest margin. The effect on interest income and costs of earning asset and funding mix changes described above, combined with rate changes during 2018, are analyzed in Table 6.

Table 4: Average Earning Assets and Funding Sources as a Percentage of Average Earning Assets

(in millions)	2018 Average balance	2018 % of earning assets	2017 Average balance	2017 % of earning assets
			Year ended December 31,	
Earning assets				
Interest-earning deposits with banks	$ 156,366	9%	$ 201,864	12%
Federal funds sold, securities purchased under resale agreements	78,547	5	74,697	4
Debt securities:				
Trading debt securities	83,526	5	74,475	4
Available-for-sale debt securities:				
Securities of U.S. Treasury and federal agencies	6,618	—	15,966	1
Securities of U.S. states and political subdivisions	47,884	3	52,658	3
Mortgage-backed securities:				
Federal agencies	156,052	9	145,310	8
Residential and commercial	7,769	—	11,839	1
Total mortgage-backed securities	163,821	9	157,149	9
Other debt securities	46,875	3	48,714	3
Total available-for-sale debt securities	265,198	15	274,487	16
Held-to-maturity debt securities:				
Securities of U.S. Treasury and federal agencies	44,735	3	44,705	3
Securities of U.S. states and political subdivisions	6,253	—	6,268	—
Federal agency mortgage-backed securities	94,216	5	78,330	4
Other debt securities	361	—	2,194	—
Held-to-maturity debt securities	145,565	8	131,497	7
Total debt securities	494,289	28	480,459	27
Mortgage loans held for sale (1)	18,394	1	20,780	1
Loans held for sale (1)	2,526	—	1,487	—
Commercial loans:				
Commercial and industrial – U.S.	275,656	16	272,034	16
Commercial and industrial – Non-U.S.	60,718	4	57,198	3
Real estate mortgage	122,947	7	129,990	7
Real estate construction	23,609	1	24,813	1
Lease financing	19,392	1	19,128	1
Total commercial loans	502,322	29	503,163	28
Consumer loans:				
Real estate 1-4 family first mortgage	284,178	16	277,751	16
Real estate 1-4 family junior lien mortgage	36,687	2	42,780	3
Credit card	36,780	2	35,600	2
Automobile	48,115	3	57,900	3
Other revolving credit and installment	37,115	2	38,935	2
Total consumer loans	442,875	25	452,966	26
Total loans (1)	945,197	54	956,129	54
Equity securities	38,092	2	36,105	2
Other	5,071	1	5,069	—
Total earning assets	$ 1,738,482	100%	$ 1,776,590	100%
Funding sources				
Deposits:				
Interest-bearing checking	$ 63,243	4%	$ 49,474	3%
Market rate and other savings	684,882	39	682,053	39
Savings certificates	20,653	1	22,190	1
Other time deposits	84,822	5	61,625	3
Deposits in foreign offices	63,945	4	123,816	7
Total interest-bearing deposits	917,545	53	939,158	53
Short-term borrowings	104,267	6	98,922	6
Long-term debt	224,268	13	246,195	14
Other liabilities	27,648	1	21,872	1
Total interest-bearing liabilities	1,273,728	73	1,306,147	74
Portion of noninterest-bearing funding sources	464,754	27	470,443	26
Total funding sources	$ 1,738,482	100%	$ 1,776,590	100%
Noninterest-earning assets				
Cash and due from banks	$ 18,777		18,622	
Goodwill	26,453		26,629	
Other	105,180		111,164	
Total noninterest-earning assets	$ 150,410		156,415	
Noninterest-bearing funding sources				
Deposits	$ 358,312		365,464	
Other liabilities	53,496		55,740	
Total equity	203,356		205,654	
Noninterest-bearing funding sources used to fund earning assets	(464,754)		(470,443)	
Net noninterest-bearing funding sources	$ 150,410		156,415	
Total assets	$ 1,888,892		1,933,005	

(1) Nonaccrual loans are included in their respective loan categories.

Table 5: Average Balances, Yields and Rates Paid (Taxable-Equivalent Basis) (1)(2)

(in millions)	2018 Average balance	2018 Yields/ rates	2018 Interest income/ expense	2017 Average balance	2017 Yields/ rates	2017 Interest income/ expense
Earning assets						
Interest-earning deposits with banks (3)	$ 156,366	1.82%	$ 2,854	201,864	1.07%	$ 2,162
Federal funds sold and securities purchased under resale agreements (3)	78,547	1.82	1,431	74,697	0.98	735
Debt securities (4):						
Trading debt securities	83,526	3.42	2,856	74,475	3.16	2,356
Available-for-sale debt securities:						
Securities of U.S. Treasury and federal agencies	6,618	1.70	112	15,966	1.49	239
Securities of U.S. states and political subdivisions	47,884	3.77	1,806	52,658	3.95	2,082
Mortgage-backed securities:						
Federal agencies	156,052	2.79	4,348	145,310	2.60	3,782
Residential and commercial	7,769	4.62	358	11,839	5.33	631
Total mortgage-backed securities	163,821	2.87	4,706	157,149	2.81	4,413
Other debt securities	46,875	4.22	1,980	48,714	3.68	1,794
Total available-for-sale debt securities	265,198	3.24	8,604	274,487	3.11	8,528
Held-to-maturity debt securities:						
Securities of U.S. Treasury and federal agencies	44,735	2.19	980	44,705	2.19	979
Securities of U.S. states and political subdivisions	6,253	4.34	271	6,268	5.32	334
Federal agency and other mortgage-backed securities	94,216	2.36	2,221	78,330	2.34	1,832
Other debt securities	361	4.00	15	2,194	2.50	55
Held-to-maturity debt securities	145,565	2.40	3,487	131,497	2.43	3,200
Total debt securities	494,289	3.02	14,947	480,459	2.93	14,084
Mortgage loans held for sale (5)	18,394	4.22	777	20,780	3.78	786
Loans held for sale (5)	2,526	5.56	140	1,487	3.40	50
Commercial:						
Commercial and industrial – U.S.	275,656	4.16	11,465	272,034	3.75	10,196
Commercial and industrial – Non-U.S.	60,718	3.53	2,143	57,198	2.86	1,639
Real estate mortgage	122,947	4.29	5,279	129,990	3.74	4,859
Real estate construction	23,609	4.94	1,167	24,813	4.10	1,017
Lease financing	19,392	4.74	919	19,128	3.74	715
Total commercial loans	502,322	4.18	20,973	503,163	3.66	18,426
Consumer:						
Real estate 1-4 family first mortgage	284,178	4.04	11,481	277,751	4.03	11,206
Real estate 1-4 family junior lien mortgage	36,687	5.38	1,975	42,780	4.82	2,062
Credit card	36,780	12.72	4,678	35,600	12.23	4,355
Automobile	48,115	5.18	2,491	57,900	5.34	3,094
Other revolving credit and installment	37,115	6.70	2,488	38,935	6.18	2,408
Total consumer loans	442,875	5.22	23,113	452,966	5.11	23,125
Total loans (5)	945,197	4.66	44,086	956,129	4.35	41,551
Equity securities	38,092	2.62	999	36,105	2.27	821
Other	5,071	1.46	74	5,069	0.85	44
Total earning assets	$ 1,738,482	3.76%	$ 65,308	1,776,590	3.40%	$ 60,233
Funding sources						
Deposits:						
Interest-bearing checking	$ 63,243	0.96%	$ 606	49,474	0.49%	$ 242
Market rate and other savings	684,882	0.31	2,157	682,053	0.14	983
Savings certificates	20,653	0.57	118	22,190	0.30	67
Other time deposits	84,822	2.25	1,906	61,625	1.43	880
Deposits in foreign offices	63,945	1.30	835	123,816	0.68	841
Total interest-bearing deposits	917,545	0.61	5,622	939,158	0.32	3,013
Short-term borrowings	104,267	1.65	1,719	98,922	0.77	761
Long-term debt	224,268	2.99	6,703	246,195	2.09	5,157
Other liabilities	27,648	2.21	610	21,872	1.94	424
Total interest-bearing liabilities	1,273,728	1.15	14,654	1,306,147	0.72	9,355
Portion of noninterest-bearing funding sources	464,754	—	—	470,443	—	—
Total funding sources	$ 1,738,482	0.85	14,654	1,776,590	0.53	9,355
Net interest margin and net interest income on a taxable-equivalent basis (6)		2.91%	$ 50,654		2.87%	$ 50,878
Noninterest-earning assets						
Cash and due from banks	$ 18,777			18,622		
Goodwill	26,453			26,629		
Other	105,180			111,164		
Total noninterest-earning assets	$ 150,410			156,415		
Noninterest-bearing funding sources						
Deposits	$ 358,312			365,464		
Other liabilities	53,496			55,740		
Total equity	203,356			205,654		
Noninterest-bearing funding sources used to fund earning assets	(464,754)			(470,443)		
Net noninterest-bearing funding sources	$ 150,410			156,415		
Total assets	$ 1,888,892			1,933,005		

(1) Our average prime rate was 4.91% for the year ended December 31, 2018, 4.10% for the year ended December 31, 2017, 3.51% for the year ended December 31, 2016, and 3.26% for the year ended December 31, 2015, and 3.25% for the year ended December 31, 2014. The average three-month London Interbank Offered Rate (LIBOR) was 2.31%, 1.26%, 0.74%, 0.32%, and 0.23% for the same years, respectively.
(2) Yield/rates and amounts include the effects of hedge and risk management activities associated with the respective asset and liability categories.
(3) Financial information for the prior periods has been revised to reflect the impact of our adoption of Accounting Standards Update (ASU) 2016-18 – Statement of Cash Flows (Topic 230): *Restricted Cash* in which we changed the presentation of our cash and cash equivalents to include both cash and due from banks as well as interest-earning deposits with banks, which are inclusive of any restricted cash.

		2016			2015			2014
Average balance	Yields/ rates	Interest income/ expense	Average balance	Yields/ rates	Interest income/ expense	Average balance	Yields/ rates	Interest income/ expense
$ 225,955	0.51%	$ 1,161	222,773	0.27%	$ 605	209,686	0.26%	$ 554
61,763	0.48	296	44,059	0.30	133	31,596	0.38	119
70,195	2.97	2,082	51,551	3.16	1,627	43,108	3.23	1,392
29,418	1.56	457	32,093	1.58	505	10,400	1.64	171
52,959	4.20	2,225	47,404	4.23	2,007	43,138	4.29	1,852
110,637	2.50	2,764	100,218	2.73	2,733	114,076	2.84	3,235
18,725	5.49	1,029	22,490	5.73	1,289	26,475	6.03	1,597
129,362	2.93	3,793	122,708	3.28	4,022	140,551	3.44	4,832
52,731	3.36	1,771	48,515	3.32	1,609	45,759	3.57	1,635
264,470	3.12	8,246	250,720	3.25	8,143	239,848	3.54	8,490
44,675	2.19	979	44,173	2.19	968	17,239	2.23	385
2,893	5.32	154	2,087	5.40	113	246	4.93	12
39,330	2.00	786	21,967	2.23	489	5,921	2.55	151
4,043	2.01	81	5,821	1.73	101	5,913	1.85	109
90,941	2.20	2,000	74,048	2.26	1,671	29,319	2.24	657
425,606	2.90	12,328	376,319	3.04	11,441	312,275	3.37	10,539
22,412	3.50	784	21,603	3.63	785	19,018	4.03	767
1,361	2.76	38	1,651	2.59	43	5,585	2.02	113
268,182	3.45	9,243	237,844	3.29	7,836	204,819	3.35	6,869
51,601	2.36	1,219	46,028	1.90	877	42,661	2.03	867
127,232	3.44	4,371	116,893	3.41	3,984	112,710	3.64	4,100
23,197	3.55	824	20,979	3.57	749	17,676	4.21	744
17,950	5.10	916	12,301	4.70	577	12,257	5.63	690
488,162	3.39	16,573	434,045	3.23	14,023	390,123	3.40	13,270
276,712	4.01	11,096	268,560	4.10	11,002	261,620	4.19	10,961
49,735	4.39	2,183	56,242	4.25	2,391	62,510	4.30	2,686
34,178	11.62	3,970	31,307	11.70	3,664	27,491	11.98	3,294
61,566	5.62	3,458	57,766	5.84	3,374	53,854	6.27	3,377
39,607	5.93	2,350	37,512	5.89	2,209	38,834	5.48	2,127
461,798	4.99	23,057	451,387	5.02	22,640	444,309	5.05	22,445
949,960	4.17	39,630	885,432	4.14	36,663	834,432	4.28	35,715
27,417	2.44	669	23,921	2.94	703	21,125	3.08	650
—	—	—	—	—	—	—	—	—
$ 1,714,474	3.21%	$ 54,906	1,575,758	3.20%	$ 50,373	1,433,717	3.39%	$ 48,457
$ 42,379	0.14%	$ 60	38,640	0.05%	$ 20	39,729	0.07%	$ 26
663,557	0.07	449	625,549	0.06	367	585,854	0.07	403
25,912	0.35	91	31,887	0.63	201	38,111	0.85	323
55,846	0.91	508	51,790	0.45	232	51,434	0.40	207
103,206	0.28	287	107,138	0.13	143	95,889	0.14	137
890,900	0.16	1,395	855,004	0.11	963	811,017	0.14	1,096
115,187	0.29	333	87,465	0.07	64	60,111	0.10	62
239,471	1.60	3,830	185,078	1.40	2,592	167,420	1.49	2,488
16,702	2.12	354	16,545	2.15	357	14,401	2.65	382
1,262,260	0.47	5,912	1,144,092	0.35	3,976	1,052,949	0.38	4,028
452,214	—	—	431,666	—	—	380,768	—	—
$ 1,714,474	0.35	5,912	1,575,758	0.25	3,976	1,433,717	0.28	4,028
	2.86%	$ 48,994		2.95%	$ 46,397		3.11%	$ 44,429
$ 18,617			17,327			16,361		
26,700			25,673			25,687		
125,650			124,161			117,584		
$ 170,967			167,161			159,632		
$ 359,666			339,069			303,127		
62,825			68,174			56,985		
200,690			191,584			180,288		
(452,214)			(431,666)			(380,768)		
$ 170,967			167,161			159,632		
$ 1,885,441			1,742,919			1,593,349		

(4) Yields and rates are based on interest income/expense amounts for the period. The average balance amounts represent amortized cost for the periods presented.
(5) Nonaccrual loans and related income are included in their respective loan categories.
(6) Includes taxable-equivalent adjustments of $659 million, $1.3 billion, $1.2 billion, $1.1 billion and $902 million for the years ended December 31, 2018, 2017, 2016, 2015 and 2014, respectively, predominantly related to tax-exempt income on certain loans and securities. The federal statutory tax rate utilized was 21% for the period ended December 31, 2018, and 35% for the periods ended December 31, 2017, 2016, 2015 and 2014.

Table 6 allocates the changes in net interest income on a taxable-equivalent basis to changes in either average balances or average rates for both interest-earning assets and interest-bearing liabilities. Because of the numerous simultaneous volume and rate changes during any period, it is not possible to precisely allocate such changes between volume and rate. For this table, changes that are not solely due to either volume or rate are allocated to these categories on a pro-rata basis based on the absolute value of the change due to average volume and average rate.

Table 6: Analysis of Changes in Net Interest Income

						Year ended December 31,
	2018 over 2017			2017 over 2016		
(in millions)	Volume	Rate	Total	Volume	Rate	Total
Increase (decrease) in interest income:						
Interest-earning deposits with banks (1)	$ **(569)**	**1,261**	**692**	(135)	1,136	1,001
Federal funds sold and securities purchased under resale agreements (1)	**40**	**656**	**696**	73	366	439
Debt securities:						
Trading debt securities	**298**	**202**	**500**	134	140	274
Available-for-sale debt securities:						
Securities of U.S. Treasury and federal agencies	**(157)**	**30**	**(127)**	(198)	(20)	(218)
Securities of U.S. states and political subdivisions	**(184)**	**(92)**	**(276)**	(13)	(130)	(143)
Mortgage-backed securities:						
Federal agencies	**285**	**281**	**566**	902	116	1,018
Residential and commercial	**(197)**	**(76)**	**(273)**	(369)	(29)	(398)
Total mortgage-backed securities	**88**	**205**	**293**	533	87	620
Other debt securities	**(70)**	**256**	**186**	(140)	163	23
Total available-for-sale debt securities	**(323)**	**399**	**76**	182	100	282
Held-to-maturity debt securities:						
Securities of U.S. Treasury and federal agencies	**1**	**—**	**1**	—	—	—
Securities of U.S. states and political subdivisions	**(1)**	**(62)**	**(63)**	180	—	180
Federal agency mortgage-backed securities	**373**	**16**	**389**	893	153	1,046
Other debt securities	**(62)**	**22**	**(40)**	(43)	17	(26)
Total held-to-maturity debt securities	**311**	**(24)**	**287**	1,030	170	1,200
Mortgage loans held for sale	**(95)**	**86**	**(9)**	(59)	61	2
Loans held for sale	**47**	**43**	**90**	3	9	12
Commercial loans:						
Commercial and industrial – U.S.	**138**	**1,131**	**1,269**	135	818	953
Commercial and industrial – Non-U.S.	**105**	**399**	**504**	142	278	420
Real estate mortgage	**(272)**	**692**	**420**	97	391	488
Real estate construction	**(51)**	**201**	**150**	59	134	193
Lease financing	**10**	**194**	**204**	57	(258)	(201)
Total commercial loans	**(70)**	**2,617**	**2,547**	490	1,363	1,853
Consumer loans:						
Real estate 1-4 family first mortgage	**248**	**27**	**275**	48	62	110
Real estate 1-4 family junior lien mortgage	**(312)**	**225**	**(87)**	(323)	202	(121)
Credit card	**146**	**177**	**323**	170	215	385
Automobile	**(512)**	**(91)**	**(603)**	(198)	(166)	(364)
Other revolving credit and installment	**(116)**	**196**	**80**	(40)	98	58
Total consumer loans	**(546)**	**534**	**(12)**	(343)	411	68
Total loans	**(616)**	**3,151**	**2,535**	147	1,774	1,921
Equity securities	**47**	**131**	**178**	201	(49)	152
Other	**—**	**30**	**30**	44	—	44
Total increase in interest income (1)	**(860)**	**5,935**	**5,075**	1,620	3,707	5,327
Increase (decrease) in interest expense:						
Deposits:						
Interest-bearing checking	**82**	**282**	**364**	11	171	182
Market rate and other savings	**4**	**1,170**	**1,174**	14	520	534
Savings certificates	**(5)**	**56**	**51**	(12)	(12)	(24)
Other time deposits	**407**	**619**	**1,026**	57	315	372
Deposits in foreign offices	**(534)**	**528**	**(6)**	68	486	554
Total interest-bearing deposits	**(46)**	**2,655**	**2,609**	138	1,480	1,618
Short-term borrowings	**43**	**915**	**958**	(53)	481	428
Long-term debt	**(495)**	**2,041**	**1,546**	111	1,216	1,327
Other liabilities	**122**	**64**	**186**	102	(32)	70
Total increase in interest expense	**(376)**	**5,675**	**5,299**	298	3,145	3,443
Increase (decrease) in net interest income on a taxable-equivalent basis	$ **(484)**	**260**	**(224)**	1,322	562	1,884

(1) Financial information has been revised to reflect the impact of our adoption in first quarter 2018 of ASU 2016-18 – Statement of Cash Flows (Topic 230): *Restricted Cash* in which we changed the presentation of our cash and cash equivalents to include both cash and due from banks as well as interest-earning deposits with banks, which are inclusive of any restricted cash. See Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report for more information.

Noninterest Income

Table 7: Noninterest Income

	Year ended December 31,		
(in millions)	**2018**	2017	2016
Service charges on deposit accounts	**$ 4,716**	5,111	5,372
Trust and investment fees:			
Brokerage advisory, commissions and other fees	**9,436**	9,358	9,216
Trust and investment management	**3,316**	3,372	3,336
Investment banking	**1,757**	1,765	1,691
Total trust and investment fees	**14,509**	14,495	14,243
Card fees	**3,907**	3,960	3,936
Other fees:			
Lending related charges and fees (1)	**1,526**	1,568	1,562
Cash network fees	**481**	506	537
Commercial real estate brokerage commissions	**468**	462	494
Wire transfer and other remittance fees	**477**	448	401
All other fees (2)	**432**	573	733
Total other fees	**3,384**	3,557	3,727
Mortgage banking:			
Servicing income, net	**1,373**	1,427	1,765
Net gains on mortgage loan origination/sales activities	**1,644**	2,923	4,331
Total mortgage banking	**3,017**	4,350	6,096
Insurance	**429**	1,049	1,268
Net gains from trading activities	**602**	542	610
Net gains on debt securities	**108**	479	942
Net gains from equity securities	**1,515**	1,779	1,103
Lease income	**1,753**	1,907	1,927
Life insurance investment income	**651**	594	587
All other	**1,822**	1,009	702
Total	**$ 36,413**	38,832	40,513

(1) Represents combined amount of previously reported "Charges and fees on loans" and "Letters of credit fees".
(2) All other fees have been revised to include merchant processing fees for the year ended 2016.

Noninterest income of $36.4 billion represented 42% of revenue for 2018, compared with $38.8 billion, or 44%, for 2017 and $40.5 billion, or 46%, for 2016. The decline in noninterest income in 2018 compared with 2017 was predominantly due to lower mortgage banking income, lower insurance income due to the sale of Wells Fargo Insurance Services in fourth quarter 2017, lower service charges on deposit accounts, lower gains on debt securities, and lower deferred compensation plan investment results (offset in employee benefits expense). These decreases were partially offset by higher gains from equity securities and higher all other income. The decline in noninterest income in 2017 compared with 2016 was predominantly driven by lower mortgage banking, impairments on low income housing credits and tax-advantaged renewable energy investments as a result of the Tax Act, and lower service charges on deposit accounts. These decreases in noninterest income were partially offset by growth in trust and investment fees, deferred compensation plan investment results (offset in employee benefits expense), and the net impact of our insurance services business divestiture in November 2017 and gains from the sale of Pick-a-Pay PCI loans. For more information on our performance obligations and the nature of services performed for certain of our revenues discussed below, see Note 21 (Revenue from Contracts with Customers) to Financial Statements in this Report.

Service charges on deposit accounts were $4.7 billion in 2018, down from $5.1 billion in 2017 due to lower overdraft and monthly service fees driven by customer-friendly initiatives that help customers minimize monthly service charges and overdraft fees, and the impact of a higher earnings credit rate applied to commercial accounts due to increased interest rates. Service charges on deposit accounts decreased $261 million in 2017 from 2016 due to lower consumer and business checking account service charges, lower overdraft fees driven by customer-friendly initiatives including the Overdraft Rewind launched in November 2017, and a higher earnings credit rate applied to commercial accounts due to increased interest rates.

Brokerage advisory, commissions and other fees increased to $9.44 billion in 2018, from $9.36 billion in 2017, which increased $142 million from 2016. The increase in these fees in both 2018 and 2017 was due to higher asset-based fees, partially offset by lower transactional commission revenue. Retail brokerage client assets totaled $1.49 trillion at December 31, 2018, compared with $1.65 trillion and $1.49 trillion at December 31, 2017 and 2016, respectively. All retail brokerage services are provided by our WIM operating segment. For additional information on retail brokerage client assets, see the discussion and Tables 9d and 9e in the "Operating Segment Results – Wealth and Investment Management – Retail Brokerage Client Assets" section in this Report.

Trust and investment management fee income is largely from client assets under management (AUM), for which fees are based on a tiered scale relative to market value of the assets, and client assets under administration (AUA), for which fees are generally based on the extent of services to administer the assets. Trust and investment management fees of $3.3 billion in 2018 declined slightly from 2017 as a decrease in corporate trust fees due to the sale of Wells Fargo Shareowner Services in first quarter 2018 was only partially offset by growth in management fees for investment advice on mutual funds. Trust and investment management fees of $3.4 billion in 2017 were relatively stable compared with 2016. Our AUM totaled $638.3 billion at December 31, 2018, compared with $690.3 billion and $652.2 billion at December 31, 2017 and 2016, respectively, with substantially all of our AUM managed by our WIM operating segment. Additional information regarding our WIM operating segment AUM is provided in Table 9f and the related discussion in the "Operating Segment Results – Wealth and Investment Management – Trust and Investment Client Assets Under Management" section in this Report. Our AUA totaled $1.7 trillion at both December 31, 2018 and 2017, compared with $1.6 trillion at December 31, 2016.

Investment banking fees of $1.8 billion in 2018 were relatively stable compared with 2017. Investment banking fees in 2017 increased $74 million compared with 2016 due to higher equity and debt originations, partially offset by lower advisory fees.

Card fees were $3.9 billion in 2018, compared with $4.0 billion in 2017 and $3.9 billion in 2016. The decrease in 2018 reflected the impact of the new revenue recognition accounting standard, which reduced noninterest expense and lowered card fees in 2018 by an equal amount due to the netting of card payment network charges against related interchange and network revenues in card fees. This decrease in card fees in 2018 was partially offset by higher interchange fees. Card fees increased in 2017, compared with 2016, predominantly due to increased purchase activity.

Other fees were $3.4 billion in 2018, compared with $3.6 billion in 2017 and $3.7 billion in 2016. Other fees declined in both 2018 and 2017 predominantly due to lower all other fees. All other fees were $432 million in 2018, compared with $573 million in 2017 and $733 million in 2016. The decrease in 2018 compared with 2017 was driven by lost fees from discontinued products. The decrease in all other fees in 2017 compared with 2016 was driven by lower fees from discontinued products and the impact of the sale of our global fund services business in fourth quarter 2016.

Mortgage banking income, consisting of net servicing income and net gains on loan origination/sales activities, totaled \$3.0 billion in 2018, compared with \$4.4 billion in 2017 and \$6.1 billion in 2016. As further discussed below, the decrease in mortgage banking income in both 2018 and 2017 was primarily driven by overall reductions in the size of the residential mortgage market as well as declines in production margins.

In addition to servicing fees, net servicing income includes amortization of commercial mortgage servicing rights (MSRs), changes in the fair value of residential MSRs during the period, as well as changes in the value of derivatives (economic hedges) used to hedge the residential MSRs during the period. Net servicing income of \$1.4 billion for 2018 included a \$112 million net MSR valuation loss (\$960 million increase in the fair value of the MSRs and a \$1.1 billion hedge loss). Net servicing income of \$1.4 billion for 2017 included a \$287 million net MSR valuation gain (\$126 million decrease in the fair value of the MSRs and a \$413 million hedge gain), and net servicing income of \$1.8 billion for 2016 included a \$826 million net MSR valuation gain (\$565 million increase in the fair value of MSRs and a \$261 million hedge gain). The decline in net MSR valuation results in 2018, compared with 2017, was predominantly due to negative MSR valuation adjustments in fourth quarter 2018 for servicing and foreclosure costs, discount rates and prepayment estimates recognized as a result of recent market observations related to an acceleration of prepayments, including for Department of Veterans Affairs (VA) loans. The decrease in net MSR valuation gains in 2017, compared with 2016, was largely due to lower hedge gains in 2017 and MSR valuation adjustments in first quarter 2016 that reflected a reduction in forecasted prepayments due to updated economic, customer data attributes and mortgage market rate inputs. Net servicing income in 2018 was also favorably impacted by lower unreimbursed servicing and foreclosure costs as we continued to reduce our inventory of aged FHA loans in foreclosure.

Our portfolio of loans serviced for others was \$1.71 trillion at December 31, 2018, \$1.70 trillion at December 31, 2017, and \$1.68 trillion at December 31, 2016. At December 31, 2018, the ratio of combined residential and commercial MSRs to related loans serviced for others was 0.94%, compared with 0.88% at December 31, 2017, and 0.85% at December 31, 2016. See the "Risk Management – Asset/Liability Management – Mortgage Banking Interest Rate and Market Risk" section in this Report for additional information regarding our MSRs risks and hedging approach.

Net gains on mortgage loan origination/sales activities was \$1.6 billion in 2018, compared with \$2.9 billion in 2017 and \$4.3 billion in 2016. The decrease in both 2018 and 2017 was driven by decreased origination volumes and margins.

Mortgage loan originations were \$177 billion in 2018, compared with \$212 billion in 2017 and \$249 billion in 2016. The production margin on residential held-for-sale mortgage loan originations, which represents net gains on residential mortgage loan origination/sales activities divided by total residential held-for-sale mortgage loan originations, provides a measure of the profitability of our residential mortgage origination activity. Table 7a presents the information used in determining the production margin.

Table 7a: Selected Mortgage Production Data

		Year ended December 31,		
		2018	2017	2016
Net gains on mortgage loan origination/sales activities (in millions):				
Residential	(A)	**\$ 1,174**	2,140	3,168
Commercial		**265**	358	400
Residential pipeline and unsold/ repurchased loan management (1)		**205**	425	763
Total		**\$ 1,644**	2,923	4,331
Residential real estate originations (in billions):				
Held-for-sale	(B)	**\$ 132**	160	186
Held-for-investment		**45**	52	63
Total		**\$ 177**	212	249
Production margin on residential held-for-sale mortgage originations	(A)/(B)	**0.89%**	1.34	1.71

(1) Predominantly includes the results of Government National Mortgage Association (GNMA) loss mitigation activities, interest rate management activities and changes in estimate to the liability for mortgage loan repurchase losses.

The production margin was 0.89% for 2018, compared with 1.34% for 2017 and 1.71% for 2016. The decline in the production margin in 2018 was due to lower margins in both retail and correspondent production channels and a shift to more correspondent origination volume, which has a lower production margin. The decrease in the production margin in 2017 was due to a shift in origination channel mix from retail to correspondent.

Mortgage applications were \$230 billion in 2018, compared with \$278 billion in 2017 and \$347 billion in 2016. The 1-4 family first mortgage unclosed pipeline was \$18 billion at December 31, 2018, compared with \$23 billion at December 31, 2017, and \$30 billion at December 31, 2016. For additional information about our mortgage banking activities and results, see the "Risk Management – Asset/Liability Management – Mortgage Banking Interest Rate and Market Risk" section and Note 10 (Mortgage Banking Activities) and Note 18 (Fair Values of Assets and Liabilities) to Financial Statements in this Report.

Net gains on mortgage loan origination/sales activities include adjustments to the mortgage repurchase liability. Mortgage loans are repurchased from third parties based on standard representations and warranties, and early payment default clauses in mortgage sale contracts.

Insurance income was $429 million in 2018 compared with $1.0 billion in 2017 and $1.3 billion in 2016. The decrease in both 2018 and 2017 was driven by the sale of Wells Fargo Insurance Services in fourth quarter 2017. The decrease in 2017 was also driven by the divestiture of our crop insurance business in first quarter 2016.

Net gains from trading activities, which reflect unrealized changes in fair value of our trading positions and realized gains and losses, were $602 million in 2018, compared with $542 million in 2017 and $610 million in 2016. The increase in 2018 was due to growth in equity trading driven by market volatility, partially offset by lower foreign exchange trading income. The decrease in 2017, compared with 2016, was driven by lower customer accommodation trading activity. Net gains from trading activities do not include interest and dividend income and expense on trading securities. Those amounts are reported within interest income from trading assets and other interest expense from trading liabilities. For additional information about trading activities, see the "Risk Management – Asset/Liability Management – Market Risk – Trading Activities" section and Note 4 (Trading Activities) to Financial Statements in this Report.

Net gains on debt and equity securities totaled $1.6 billion for 2018 and $2.3 billion and $2.0 billion for 2017 and 2016, respectively, after other-than-temporary impairment (OTTI) write-downs of $380 million, $606 million and $642 million, respectively, for the same periods. The decrease in 2018 was predominantly driven by lower deferred compensation gains (offset in employee benefits expense) and lower net gains on debt securities, partially offset by higher net gains from nonmarketable equity securities and $313 million of unrealized gains from the impact of the new accounting standard for financial instruments which requires any gain or loss associated with the fair value measurement of equity securities to be reflected in earnings. The decrease in OTTI in 2018 was predominantly driven by lower write-downs in municipal debt securities, commercial mortgage-backed securities and corporate debt securities. The decrease in net gains on debt and equity securities in 2017, compared with 2016, was driven by lower net gains on debt securities, partially offset by higher net gains from nonmarketable equity securities.

Lease income was $1.8 billion in 2018, compared with $1.9 billion in 2017, driven by lower rail and equipment lease income. Lease income in 2017 was stable compared with 2016.

All other income was $1.8 billion in 2018, compared with $1.0 billion in 2017 and $702 million in 2016. All other income includes losses on low income housing tax credit investments, foreign currency adjustments, income from investments accounted for under the equity method, hedge accounting results related to hedges of foreign currency risk, and the results of certain economic hedges, any of which can cause decreases and net losses in other income. The increase in other income in 2018, compared with 2017, was predominantly driven by $2.0 billion higher pre-tax gains from the sales of purchased credit-impaired (PCI) Pick-a-Pay loans, a pre-tax gain from the sale of Wells Fargo Shareowner Services, and gains from the previously announced sale of 52 retail branches. The increase was partially offset by a gain from the sale of our insurance services business in 2017, a realized loss related to the previously announced sale of certain assets and liabilities of Reliable Financial Services, Inc. (a subsidiary of Wells Fargo's automobile financing business), and a lower benefit from hedge ineffectiveness accounting. The increase in other income in 2017 compared with 2016 was driven by a $848 million pre-tax gain from the sale of our insurance services business in fourth quarter 2017 and a $309 million pre-tax gain from the sale of a PCI Pick-a-Pay loan portfolio in second quarter 2017, as well as the impact of our adoption in fourth quarter 2017 of Accounting Standards Update (ASU) 2017-12 – Derivatives and Hedging (Topic 815): *Targeted Improvements to Accounting for Hedging Activities*, partially offset by a gain from the sale of our crop insurance business in first quarter 2016 and a gain from the sale of our health benefit services business in second quarter 2016. All other income in 2017 also included $284 million of impairments on low income housing investments and $130 million of impairments on tax-advantaged renewable energy investments in each case due to the 2017 Tax Cuts & Jobs Act (Tax Act).

Noninterest Expense

Table 8: Noninterest Expense

	Year ended December 31,		
(in millions)	**2018**	2017	2016
Salaries	**$ 17,834**	17,363	16,552
Commission and incentive compensation	**10,264**	10,442	10,247
Employee benefits	**4,926**	5,566	5,094
Equipment	**2,444**	2,237	2,154
Net occupancy	**2,888**	2,849	2,855
Core deposit and other intangibles	**1,058**	1,152	1,192
FDIC and other deposit assessments	**1,110**	1,287	1,168
Outside professional services	**3,306**	3,813	3,138
Operating losses	**3,124**	5,492	1,608
Contract services (1)	**2,192**	1,638	1,497
Operating leases	**1,334**	1,351	1,329
Advertising and promotion	**857**	614	595
Outside data processing	**660**	891	888
Travel and entertainment	**618**	687	704
Postage, stationery and supplies	**515**	544	622
Telecommunications	**361**	364	383
Foreclosed assets	**188**	251	202
Insurance	**101**	100	179
All other (1)	**2,346**	1,843	1,970
Total	**$ 56,126**	58,484	52,377

(1) The periods prior to 2018 have been revised to conform with the current period presentation whereby temporary help is included in contract services rather than in all other noninterest expense.

Noninterest expense was $56.1 billion in 2018, down 4% from $58.5 billion in 2017, which was up 12% from $52.4 billion in 2016. The decrease in 2018, compared with 2017, was driven by lower operating losses, personnel expenses, outside data processing, and FDIC expense, partially offset by higher advertising and promotion, equipment, and other expense. The increase in 2017, compared with 2016, was predominantly driven by higher operating losses, personnel expenses, and outside professional and contract services, partially offset by lower insurance and postage, stationery and supplies.

Personnel expenses, which include salaries, commissions, incentive compensation and employee benefits, were down $347 million, or 1% in 2018, compared with 2017, due to lower deferred compensation costs (offset in net gains from equity securities), and lower commission and incentive compensation, partially offset by salary and minimum pay increases, and higher company health plan and retirement plan expenses. Personnel expenses were up $1.5 billion, or 5% in 2017, compared with 2016, due to annual salary increases, higher deferred compensation costs (offset in net gains from equity securities), and higher employee benefits.

Equipment expense was up 9% in 2018, compared with 2017, due to increased computer purchases and equipment expense related to the Company's migration to Windows 10, higher software license and maintenance expense, as well as higher depreciation expense. Equipment expense was up 4% in 2017, compared with 2016, primarily due to higher depreciation expense.

FDIC and other deposit assessments were down 14% in 2018, compared with 2017, due to the completion of the FDIC temporary surcharge which ended September 30, 2018. FDIC and other deposit assessments were up 10% in 2017, compared with 2016, due to an increase in deposit assessments as a result of the FDIC temporary surcharge which became effective on July 1, 2016. See the "Regulation and Supervision" section in our 2018 Form 10-K for additional information.

Operating losses were down $2.4 billion in 2018, compared with 2017, due to lower litigation accruals, partially offset by higher remediation accruals for previously disclosed matters. Operating losses were up $3.9 billion in 2017, compared with 2016, predominantly due to higher litigation accruals for a variety of matters, including mortgage-related regulatory investigations, sales practices, and other consumer-related matters. Litigation accruals in 2017 included $3.7 billion that were non tax-deductible.

Outside professional and contract services expense was up 1% in 2018, compared with 2017, driven by higher project and technology spending on regulatory and compliance related initiatives. Outside professional and contract services expense was up 18% in 2017, compared with 2016, driven by higher project and technology spending on regulatory and compliance related initiatives, as well as higher legal expense related to sales practice matters.

Outside data processing expense was down 26% in 2018, compared with 2017, reflecting lower data processing expense related to the GE Capital business acquisitions and the impact of the new revenue recognition accounting standard, which reduced noninterest expense and lowered card fees by an equal amount due to the netting of card payment network charges against related interchange and network revenues in card fees. Outside data processing expense was relatively stable in 2017, compared with 2016.

Advertising and promotion expense was up 40% in 2018, compared with 2017, due to higher advertising expense, including expense for the "Re-Established" advertising campaign launched in second quarter 2018. Advertising and promotion expense was up 3% in 2017, compared with 2016, due to higher advertising expense, including higher media and production expense, partially offset by lower sales promotion expense.

Foreclosed assets expense was down 25% in 2018, compared with 2017, predominantly due to lower operating expenses. Foreclosed assets expense was up 24% in 2017, compared with 2016, due to lower gains on sales of foreclosed properties, partially offset by lower operating expenses.

Insurance expense was relatively stable in 2018, compared with 2017, and was down 44% in 2017, compared with 2016, predominantly driven by the sale of our crop insurance business in first quarter 2016.

All other noninterest expense was up 27% in 2018, compared with 2017, predominantly due to higher charitable donations expense, higher insurance premium payments, a pension plan settlement expense, and lower gains on the sale of corporate properties. All other noninterest expense was down 6% in 2017, compared with 2016, due to lower insurance premium payments and higher gains on the sale of a corporate property, partially offset by higher charitable donations expense. All other noninterest expense in 2018 included a $305 million contribution to the Wells Fargo Foundation, compared with a $199 million contribution in 2017 and a $107 million contribution in 2016.

Our full year 2018 efficiency ratio was 65.0%, compared with 66.2% in 2017 and 59.3% in 2016.

Income Tax Expense

The 2018 annual effective income tax rate was 20.2%, compared with 18.1% in 2017 and 31.5% in 2016. The 2018 effective income tax rate reflected the reduction to the U.S. federal income tax rate from 35% to 21% resulting from the 2017 Tax Act. It also included income tax expense related to non-deductible litigation accruals and the reconsideration of reserves for state income taxes following the U.S. Supreme Court opinion in *South Dakota v. Wayfair, Inc.* In addition, we recognized $164 million of income tax expense associated with the final re-measurement of our initial estimates for the impacts of the 2017 Tax Act, in accordance with ASC Topic 740, Income Taxes and SEC Accounting Bulletin 118. The 2017 effective income tax rate included an estimated impact of the Tax Act including a benefit of $3.89 billion resulting from the re-measurement of the Company's estimated net deferred tax liability as of December 31, 2017, partially offset by $173 million of income tax expense for the estimated deemed repatriation of the Company's previously undistributed foreign earnings. The 2017 effective income tax rate also included income tax expense of $1.3 billion related to the effect of discrete non tax-deductible items, predominantly consisting of litigation accruals. The effective income tax rate for 2016 included net reductions in reserves for uncertain tax positions resulting from settlements with tax authorities, partially offset by a net increase in tax benefits related to tax credit investments. See Note 23 (Income Taxes) to Financial Statements in this Report for additional information about our income taxes.

Operating Segment Results

We are organized for management reporting purposes into three operating segments: Community Banking; Wholesale Banking; and Wealth and Investment Management (WIM). These segments are defined by product type and customer segment and their results are based on our management accounting process, for which there is no comprehensive, authoritative financial accounting guidance equivalent to generally accepted accounting principles (GAAP). Effective first quarter 2018, we adopted a new funds transfer pricing methodology to allow for better comparability of performance across the Company. Under the new methodology, assets and liabilities now receive a funding charge or credit that considers interest rate risk, liquidity risk, and other product characteristics on a more granular level. This methodology change affects results across all three of our reportable operating segments and operating segment results for periods prior to 2018 have been revised to reflect this methodology change. Our previously reported consolidated financial results were not impacted by the methodology change; however, in connection with our adoption of ASU 2016-01 in first quarter 2018, certain reclassifications have occurred within noninterest income. Table 9 and the following discussion present our results by operating segment. For additional description of our operating segments, including additional financial information and the underlying management accounting process, see Note 26 (Operating Segments) to Financial Statements in this Report.

Table 9: Operating Segment Results – Highlights

					Year ended December 31,
(in millions, except average balances which are in billions)	Community Banking	Wholesale Banking	Wealth and Investment Management	Other (1)	Consolidated Company
2018					
Revenue	**$ 46,913**	**28,706**	**16,376**	**(5,587)**	**86,408**
Provision (reversal of provision) for credit losses	**1,783**	**(58)**	**(5)**	**24**	**1,744**
Net income (loss)	**10,394**	**11,032**	**2,580**	**(1,613)**	**22,393**
Average loans	**$ 463.7**	**465.7**	**74.6**	**(58.8)**	**945.2**
Average deposits	**757.2**	**423.7**	**165.0**	**(70.0)**	**1,275.9**
2017					
Revenue	$ 47,018	30,000	17,072	(5,701)	88,389
Provision (reversal of provision) for credit losses	2,555	(19)	(5)	(3)	2,528
Net income (loss)	10,938	9,914	2,770	(1,439)	22,183
Average loans	$ 475.7	465.6	71.9	(57.1)	956.1
Average deposits	729.6	464.2	189.0	(78.2)	1,304.6
2016					
Revenue	$ 46,513	31,047	16,278	(5,571)	88,267
Provision (reversal of provision) for credit losses	2,691	1,073	(5)	11	3,770
Net income (loss)	10,818	9,942	2,637	(1,459)	21,938
Average loans	$ 485.2	451.0	67.3	(53.5)	950.0
Average deposits	703.6	436.2	189.7	(78.9)	1,250.6

(1) Includes the elimination of certain items that are included in more than one business segment, most of which represents products and services for WIM customers served through Community Banking distribution channels.

Community Banking offers a complete line of diversified financial products and services for consumers and small businesses including checking and savings accounts, credit and debit cards, and automobile, student, mortgage, home equity and small business lending, as well as referrals to Wholesale Banking and WIM business partners. The Community Banking segment also includes the results of our Corporate Treasury activities net of allocations (including funds transfer pricing, capital, liquidity and certain corporate expenses) in support of other segments and results of investments in our affiliated venture capital and private equity partnerships. We continue to wind down the personal insurance business and expect to substantially complete these activities in the first half of 2019. Table 9a provides additional financial information for Community Banking.

Table 9a: Community Banking

				Year ended December 31,	
(in millions, except average balances which are in billions)	**2018**	2017	% Change	2016	% Change
Net interest income	**$ 29,219**	28,658	2%	$ 27,333	5%
Noninterest income:					
Service charges on deposit accounts	**2,641**	2,909	(9)	3,111	(6)
Trust and investment fees:					
Brokerage advisory, commissions and other fees (1)	**1,887**	1,830	3	1,854	(1)
Trust and investment management (1)	**910**	889	2	849	5
Investment banking (2)	**(35)**	(59)	41	(141)	58
Total trust and investment fees	**2,762**	2,660	4	2,562	4
Card fees	**3,543**	3,613	(2)	3,598	—
Other fees	**1,359**	1,497	(9)	1,636	(8)
Mortgage banking	**2,659**	3,895	(32)	5,624	(31)
Insurance	**83**	139	(40)	112	24
Net gains (losses) from trading activities	**28**	(251)	111	(148)	(70)
Net gains (losses) on debt securities	**(3)**	709	NM	933	(24)
Net gains from equity securities (3)	**1,505**	1,455	3	804	81
Other income of the segment	**3,117**	1,734	80	948	83
Total noninterest income	**17,694**	18,360	(4)	19,180	(4)
Total revenue	**46,913**	47,018	—	46,513	1
Provision for credit losses	**1,783**	2,555	(30)	2,691	(5)
Noninterest expense:					
Personnel expense	**21,252**	20,381	4	19,382	5
Equipment	**2,356**	2,157	9	2,040	6
Net occupancy	**2,166**	2,111	3	2,114	—
Core deposit and other intangibles	**404**	446	(9)	505	(12)
FDIC and other deposit assessments	**624**	715	(13)	651	10
Outside professional services	**1,560**	1,875	(17)	1,264	48
Operating losses	**2,656**	5,312	(50)	1,454	265
Other expense of the segment	**(527)**	(382)	(38)	245	NM
Total noninterest expense	**30,491**	32,615	(7)	27,655	18
Income before income tax expense and noncontrolling interests	**14,639**	11,848	24	16,167	(27)
Income tax expense	**3,784**	634	497	5,213	(88)
Net income from noncontrolling interests (4)	**461**	276	67	136	103
Net income	**$ 10,394**	10,938	(5)	$ 10,818	1
Average loans	**$ 463.7**	475.7	(3)	$ 485.2	(2)
Average deposits	**757.2**	729.6	4	703.6	4

NM - Not meaningful
(1) Represents income on products and services for WIM customers served through Community Banking distribution channels and is eliminated in consolidation.
(2) Includes syndication and underwriting fees paid to Wells Fargo Securities which are offset in our Wholesale Banking segment.
(3) Largely represents gains resulting from venture capital investments.
(4) Reflects results attributable to noncontrolling interests predominantly associated with the Company's consolidated venture capital investments.

Community Banking reported net income of $10.4 billion in 2018, down $544 million, or 5%, from $10.9 billion in 2017, which was up $120 million, or 1%, from 2016. Revenue was $46.9 billion in 2018, down $105 million from $47.0 billion in 2017, which was up $505 million, or 1%, compared with 2016. The decrease in revenue in 2018 was due to lower mortgage banking revenue driven by lower mortgage loan originations and a decrease in servicing income, lower gains on debt securities, lower service charges on deposit accounts, and lower other fees. These decreases were partially offset by higher other income, including gains from the sales of PCI mortgage loans and the sale of 52 branches, and higher net interest income. The increase in revenue in 2017 was due to higher net interest income, higher gains on equity securities, higher deferred compensation plan investment results (offset in employee benefits expense), and higher other income (including higher net hedge ineffectiveness income and a gain on the sale of PCI mortgage loans), partially offset by lower mortgage banking revenue, lower gains on debt securities, and lower service charges on deposit accounts.

Average deposits increased $27.6 billion in 2018, or 4%, from 2017, which increased $26.0 billion, or 4%, from 2016.

Noninterest expense of $30.5 billion decreased $2.1 billion in 2018, or 7%, from 2017, which increased $5.0 billion, or 18%, from 2016. The decrease in 2018 was predominantly driven by lower operating losses due to lower litigation accruals, partially offset by higher outside professional and contract services expense driven by project and technology spending on regulatory and compliance-related initiatives. The increase in 2017 was substantially due to higher operating losses driven by higher litigation accruals, higher personnel expense, and higher outside professional services, partially offset by lower foreclosed assets expense driven by improvement in the residential real estate portfolio, lower telephone and supplies expenses, and lower other expense.

The provision for credit losses in 2018 decreased $772 million from 2017 due to credit improvement in the consumer real estate and automobile portfolios. The provision for credit losses in 2017 decreased $136 million from 2016 due to credit improvement in the consumer real estate portfolio.

Income tax expense was $3.8 billion in 2018, up $3.2 billion from $634 million in 2017, which was down $4.6 billion from 2016. Income tax expense in 2018 included the adverse impact of non-deductible litigation accruals, the reconsideration of reserves for state income taxes following the U.S. Supreme Court opinion in *South Dakota v. Wayfair, Inc.*, and the expense associated with the final re-measurement of our initial estimates for the impacts of the 2017 Tax Act. Income tax expense in 2017 included the estimated net benefit from the impact of the 2017 Tax Act to the Company, partially offset by the impact of discrete non tax-deductible items, predominantly litigation accruals.

Wholesale Banking provides financial solutions to businesses across the United States and globally with annual sales generally in excess of $5 million. Products and businesses include Commercial Banking, Commercial Real Estate, Corporate and Investment Banking, Credit Investment Portfolio, Treasury Management, and Commercial Capital. Table 9b provides additional financial information for Wholesale Banking.

Table 9b: Wholesale Banking

					Year ended December 31,
(in millions, except average balances which are in billions)	**2018**	2017	% Change	2016	% Change
Net interest income	**$ 18,690**	18,810	(1)%	$ 18,699	1%
Noninterest income:					
Service charges on deposit accounts	**2,074**	2,201	(6)	2,260	(3)
Trust and investment fees:					
Brokerage advisory, commissions and other fees	**317**	304	4	368	(17)
Trust and investment management	**445**	523	(15)	473	11
Investment banking	**1,783**	1,827	(2)	1,833	—
Total trust and investment fees	**2,545**	2,654	(4)	2,674	(1)
Card fees	**362**	345	5	336	3
Other fees	**2,019**	2,054	(2)	2,085	(1)
Mortgage banking	**362**	458	(21)	475	(4)
Insurance	**312**	872	(64)	1,156	(25)
Net gains from trading activities	**516**	701	(26)	677	4
Net gains (losses) on debt securities	**102**	(232)	144	8	NM
Net gains from equity securities	**293**	116	153	199	(42)
Other income of the segment	**1,431**	2,021	(29)	2,478	(18)
Total noninterest income	**10,016**	11,190	(10)	12,348	(9)
Total revenue	**28,706**	30,000	(4)	31,047	(3)
Provision (reversal of provision) for credit losses	**(58)**	(19)	NM	1,073	NM
Noninterest expense:					
Personnel expense	**5,567**	6,603	(16)	6,456	2
Equipment	**48**	55	(13)	68	(19)
Net occupancy	**403**	425	(5)	423	—
Core deposit and other intangibles	**378**	414	(9)	385	8
FDIC and other deposit assessments	**419**	481	(13)	428	12
Outside professional services	**958**	1,134	(16)	989	15
Operating losses	**246**	74	232	115	(36)
Other expense of the segment	**8,138**	7,438	9	7,037	6
Total noninterest expense	**16,157**	16,624	(3)	15,901	5
Income before income tax expense and noncontrolling interest	**12,607**	13,395	(6)	14,073	(5)
Income tax expense	**1,555**	3,496	(56)	4,159	(16)
Net income (loss) from noncontrolling interest	**20**	(15)	233	(28)	46
Net income	**$ 11,032**	9,914	11	$ 9,942	—
Average loans	**$ 465.7**	465.6	—	$ 451.0	3
Average deposits	**423.7**	464.2	(9)	436.2	6

NM - Not meaningful

Wholesale Banking reported net income of $11.0 billion in 2018, up $1.1 billion from 2017, which was down $28 million from 2016. The increase in 2018 was due to the reduced U.S. federal statutory income tax rate as well as lower noninterest expense, partially offset by lower revenue. The decrease in 2017 compared with 2016 was due to lower noninterest income and higher noninterest expense, partially offset by higher net interest income and lower loan loss provision. Revenue in 2018 of $28.7 billion decreased $1.3 billion, or 4%, from 2017, which decreased $1.0 billion, or 3%, from 2016. Net interest income of $18.7 billion in 2018 decreased $120 million, or 1%, from 2017, which increased $111 million, or 1%, from 2016. The decrease in net interest income in 2018 was due to lower income on trading assets, debt securities, and loans, partially offset by the impact of higher interest rates and the increased income on leveraged leases related to the basis adjustment in 2017 associated with the Tax Act. The increase in net interest income in 2017 was due to strong deposit growth and the impact of rising interest rates, partially offset by lower income on debt securities and trading assets as well as the 2017 leveraged lease adjustment.

Average loans of $465.7 billion in 2018 were relatively flat compared with 2017, which increased $14.6 billion, or 3%, from 2016. Loan growth in 2018 from commercial and industrial loans was substantially offset by declines in commercial real estate loans. Loan growth in 2017 was broad based across many Wholesale Banking businesses and included the impact of the GE Capital business acquisitions in 2016. Average deposits of $423.7 billion in 2018 decreased $40.5 billion, or 9%, which increased $28 billion, or 6%, from 2016. The decline in 2018 was driven by actions taken in the first half of 2018 in response to the asset cap included in the FRB consent order on February 2, 2018, and declines across many businesses as commercial customers allocated more cash to higher-rate alternatives.

Noninterest income of $10.0 billion in 2018 decreased $1.2 billion, or 10%, from 2017, which decreased $1.2 billion, or 9%, from 2016. The decrease in 2018 was driven by the impact of the 2017 sale of Wells Fargo Insurance Services USA (WFIS), as well as lower trading, operating lease income, service charges on deposits and mortgage banking fees, partially offset by losses taken in fourth quarter 2017 from adjustments to tax advantaged businesses due to the Tax Act as well as the gain on the sale of Wells Fargo Shareowner Services in 2018. The decrease in 2017, compared with 2016, was driven by the gains on the sale of our crop insurance and health benefit services businesses in 2016, impairments to low income housing and renewable energy investments as a result of the Tax Act, lower insurance income driven by the 2016 sale of our crop insurance business, and lower gains on debt and equity securities. These declines were partially offset by a gain on the sale of our insurance services business in 2017.

Noninterest expense of $16.2 billion in 2018 decreased $467 million, or 3%, compared with 2017, which increased $723 million, or 5%, compared with 2016. The decrease in 2018 was primarily due to lower personnel expense related to the sale of WFIS and lower variable compensation, lower project related spending, and lower FDIC expense, partially offset by higher operating losses and increased regulatory, risk, cyber and technology expenses. The increase in 2017 was predominantly due to increased project and technology spending on compliance and regulatory requirements. The provision for credit losses in 2018 decreased $39 million from 2017, from lower losses. The provision for credit losses in 2017 decreased from $1.1 billion in 2016, predominantly due to lower losses in the oil and gas portfolio.

Wealth and Investment Management provides a full range of personalized wealth management, investment and retirement products and services to clients across U.S. based businesses including Wells Fargo Advisors, The Private Bank, Abbot Downing, Wells Fargo Institutional Retirement and Trust, and Wells Fargo Asset Management. We deliver financial planning, private banking, credit, investment management and fiduciary services to high-net worth and ultra-high-net worth individuals and families. We also serve clients' brokerage needs, supply retirement and trust services to institutional clients and provide investment management capabilities delivered to global institutional clients through separate accounts and the Wells Fargo Funds. Table 9c provides additional financial information for WIM.

Table 9c: Wealth and Investment Management

				Year ended December 31,	
(in millions, except average balances which are in billions)	**2018**	2017	% Change	2016	% Change
Net interest income	**$ 4,441**	4,641	(4)%	$ 4,249	9%
Noninterest income:					
Service charges on deposit accounts	**16**	17	(6)	19	(11)
Trust and investment fees:					
Brokerage advisory, commissions and other fees	**9,161**	9,072	1	8,870	2
Trust and investment management	**2,893**	2,877	1	2,891	—
Investment banking (1)	**9**	(2)	550	(1)	(100)
Total trust and investment fees	**12,063**	11,947	1	11,760	2
Card fees	**6**	6	—	6	—
Other fees	**17**	18	(6)	18	—
Mortgage banking	**(11)**	(10)	(10)	(9)	(11)
Insurance	**82**	88	(7)	—	NM
Net gains from trading activities	**57**	92	(38)	81	14
Net gains on debt securities	**9**	2	350	1	100
Net gains (losses) from equity securities	**(283)**	208	NM	100	108
Other income of the segment	**(21)**	63	NM	53	19
Total noninterest income	**11,935**	12,431	(4)	12,029	3
Total revenue	**16,376**	17,072	(4)	16,278	5
Reversal of provision for credit losses	**(5)**	(5)	—	(5)	—
Noninterest expense:					
Personnel expense	**8,085**	8,126	(1)	7,704	5
Equipment	**42**	28	50	51	(45)
Net occupancy	**440**	431	2	436	(1)
Core deposit and other intangibles	**276**	292	(5)	302	(3)
FDIC and other deposit assessments	**116**	154	(25)	152	1
Outside professional services	**815**	834	(2)	916	(9)
Operating losses	**232**	115	102	50	130
Other expense of the segment	**2,932**	2,643	11	2,440	8
Total noninterest expense	**12,938**	12,623	2	12,051	5
Income before income tax expense and noncontrolling interest	**3,443**	4,454	(23)	4,232	5
Income tax expense	**861**	1,668	(48)	1,596	5
Net income (loss) from noncontrolling interest	**2**	16	(88)	(1)	NM
Net income	**$ 2,580**	2,770	(7)	$ 2,637	5
Average loans	**$ 74.6**	71.9	4	$ 67.3	7
Average deposits	**165.0**	189.0	(13)	189.7	—

NM - Not meaningful
(1) Includes syndication and underwriting fees paid to Wells Fargo Securities which are offset in our Wholesale Banking segment.

WIM reported net income of $2.6 billion in 2018, down $190 million, or 7%, from 2017, which was up $133 million, or 5%, from 2016. Revenue of $16.4 billion in 2018 decreased $696 million from 2017, which was up $794 million from 2016. The decrease in revenue in 2018 was due to lower noninterest income and net interest income. The increase in revenue in 2017 was due to growth in net interest income and asset-based fees. Net interest income decreased 4% in 2018 primarily due to lower deposit balances, partially offset by higher interest rates. Net interest income increased 9% in 2017 predominantly due to higher interest rates. Average loan balances of $74.6 billion in 2018 increased $2.7 billion from $71.9 billion in 2017, which was up 7% from 2016. Average deposits of $165.0 billion in 2018 decreased 13% from $189.0 billion in 2017, which was relatively flat compared with 2016. Noninterest income in 2018 decreased 4% from 2017 due to net losses from equity securities on lower deferred compensation plan investment results (offset in employee benefits expense), the impairment on the sale of our ownership stake in RockCreek, and lower transaction revenue, partially offset by higher asset-based fees. Noninterest income in 2017 increased 3% from 2016 due to higher asset-based fees and gains on deferred compensation plan investments (offset in employee benefits expense), partially offset by lower transaction revenue. Noninterest expense of $12.9 billion in 2018 increased 2% from $12.6 billion in 2017 due to higher project and technology spending on compliance and regulatory requirements, higher broker commissions, higher operating losses and higher other personnel expense, partially offset by lower employee benefits from deferred compensation plan expense (offset in deferred compensation plan investments). Noninterest expense of $12.6 billion in 2017 increased 5% from $12.1 billion in 2016 due to higher project and technology spending on compliance and regulatory requirements, higher broker commissions, and higher employee benefits from deferred compensation plan expense (offset in deferred compensation plan investments). The provision for credit losses was flat in both 2018 and 2017.

The following discussions provide additional information for client assets we oversee in our retail brokerage advisory and trust and investment management business lines.

Retail Brokerage Client Assets Brokerage advisory, commissions and other fees are received for providing full-service and discount brokerage services predominantly to retail brokerage clients. Offering advisory account relationships to our brokerage clients is an important component of our broader strategy of meeting their financial needs. Although a majority of our retail brokerage client assets are in accounts that earn brokerage commissions, the fees from those accounts generally represent transactional commissions based on the number and size of transactions executed at the client's direction. Fees earned from advisory accounts are asset-based, are priced at the beginning of the quarter, and depend on changes in the value of the client's assets as well as the level of assets resulting from inflows and outflows. A majority of our brokerage advisory, commissions and other fee income is earned from advisory accounts. Table 9d shows advisory account client assets as a percentage of total retail brokerage client assets at December 31, 2018, 2017 and 2016.

Table 9d: Retail Brokerage Client Assets

		Year ended December 31,	
(in billions)	**2018**	2017	2016
Retail brokerage client assets	**$ 1,487.6**	1,651.3	1,486.1
Advisory account client assets	**501.1**	542.8	463.8
Advisory account client assets as a percentage of total client assets	**34%**	33	31

Retail Brokerage advisory accounts include assets that are financial advisor-directed and separately managed by third-party managers, as well as certain client-directed brokerage assets where we earn a fee for advisory and other services, but do not have investment discretion. These advisory accounts generate fees as a percentage of the market value of the assets as of the beginning of the quarter, which vary across the account types based on the distinct services provided, and are affected by investment performance as well as asset inflows and outflows. For the years ended December 31, 2018, 2017 and 2016, the average fee rate by account type ranged from 80 to 120 basis points. Table 9e presents retail brokerage advisory account client assets activity by account type for the years ended December 31, 2018, 2017 and 2016.

Table 9e: Retail Brokerage Advisory Account Client Assets

					Year ended
(in billions)	Balance, beginning of period	Inflows (1)	Outflows (2)	Market impact (3)	Balance, end of period
December 31, 2018					
Client directed (4)	**$ 170.9**	**33.6**	**(41.0)**	**(12.0)**	**151.5**
Financial advisor directed (5)	**147.0**	**30.0**	**(32.9)**	**(2.2)**	**141.9**
Separate accounts (6)	**149.1**	**23.8**	**(29.1)**	**(7.4)**	**136.4**
Mutual fund advisory (7)	**75.8**	**12.8**	**(13.8)**	**(3.5)**	**71.3**
Total advisory client assets	**$ 542.8**	**100.2**	**(116.8)**	**(25.1)**	**501.1**
December 31, 2017					
Client directed (4)	$ 159.1	37.1	(39.2)	13.9	170.9
Financial advisor directed (5)	115.7	30.6	(24.5)	25.2	147.0
Separate accounts (6)	125.7	26.1	(23.5)	20.8	149.1
Mutual fund advisory (7)	63.3	13.1	(11.1)	10.5	75.8
Total advisory client assets	$ 463.8	106.9	(98.3)	70.4	542.8
December 31, 2016					
Client directed (4)	$ 154.7	36.0	(37.5)	5.9	159.1
Financial advisor directed (5)	91.9	28.6	(18.7)	13.9	115.7
Separate accounts (6)	110.4	26.0	(21.9)	11.2	125.7
Mutual fund advisory (7)	62.9	8.7	(11.6)	3.3	63.3
Total advisory client assets	$ 419.9	99.3	(89.7)	34.3	463.8

(1) Inflows include new advisory account assets, contributions, dividends and interest.
(2) Outflows include closed advisory account assets, withdrawals and client management fees.
(3) Market impact reflects gains and losses on portfolio investments.
(4) Investment advice and other services are provided to client, but decisions are made by the client and the fees earned are based on a percentage of the advisory account assets, not the number and size of transactions executed by the client.
(5) Professionally managed portfolios with fees earned based on respective strategies and as a percentage of certain client assets.
(6) Professional advisory portfolios managed by Wells Fargo Asset Management advisors or third-party asset managers. Fees are earned based on a percentage of certain client assets.
(7) Program with portfolios constructed of load-waived, no-load and institutional share class mutual funds. Fees are earned based on a percentage of certain client assets.

Trust and Investment Client Assets Under Management

We earn trust and investment management fees from managing and administering assets, including mutual funds, institutional separate accounts, personal trust, employee benefit trust and agency assets through our asset management, wealth and retirement businesses. Our asset management business is conducted by Wells Fargo Asset Management (WFAM), which offers Wells Fargo proprietary mutual funds and manages institutional separate accounts. Our wealth business manages assets for high net worth clients, and our retirement business provides total retirement management, investments, and trust and custody solutions tailored to meet the needs of institutional clients. Substantially all of our trust and investment management fee income is earned from AUM where we have discretionary management authority over the investments and generate fees as a percentage of the market value of the AUM. Table 9f presents AUM activity for the years ended December 31, 2018, 2017 and 2016.

Table 9f: WIM Trust and Investment – Assets Under Management

					Year ended
(in billions)	Balance, beginning of period	Inflows (1)	Outflows (2)	Market impact (3)	Balance, end of period
December 31, 2018					
Assets managed by WFAM (4):					
Money market funds (5)	**$ 108.2**	**4.2**	**—**	**—**	**112.4**
Other assets managed	**395.7**	**85.5**	**(120.2)**	**(7.5)**	**353.5**
Assets managed by Wealth and Retirement (6)	**186.2**	**36.3**	**(39.5)**	**(12.3)**	**170.7**
Total assets under management	**$ 690.1**	**126.0**	**(159.7)**	**(19.8)**	**636.6**
December 31, 2017					
Assets managed by WFAM (4):					
Money market funds (5)	$ 102.6	5.6	—	—	108.2
Other assets managed	379.6	116.0	(130.9)	31.0	395.7
Assets managed by Wealth and Retirement (6)	168.5	41.1	(39.4)	16.0	186.2
Total assets under management	$ 650.7	162.7	(170.3)	47.0	690.1
December 31, 2016					
Assets managed by WFAM (4):					
Money market funds (5)	$ 123.6	—	(21.0)	—	102.6
Other assets managed	366.1	114.0	(125.0)	24.5	379.6
Assets managed by Wealth and Retirement (6)	162.1	37.0	(35.9)	5.3	168.5
Total assets under management	$ 651.8	151.0	(181.9)	29.8	650.7

(1) Inflows include new managed account assets, contributions, dividends and interest.
(2) Outflows include closed managed account assets, withdrawals and client management fees.
(3) Market impact reflects gains and losses on portfolio investments.
(4) Assets managed by WFAM consist of equity, alternative, balanced, fixed income, money market, and stable value, and include client assets that are managed or sub-advised on behalf of other Wells Fargo lines of business.
(5) Money Market funds activity is presented on a net inflow or net outflow basis, because the gross flows are not meaningful nor used by management as an indicator of performance.
(6) Includes \$4.9 billion, \$5.5 billion and \$6.9 billion as of December 31, 2018, 2017 and 2016, respectively, of client assets invested in proprietary funds managed by WFAM.

At December 31, 2018, our assets totaled $1.9 trillion, down $55.9 billion from December 31, 2017. Asset decline was predominantly due to interest-earning deposits with banks, which declined $42.8 billion.

The following discussion provides additional information about the major components of our balance sheet. Information regarding our capital and changes in our asset mix is included in the "Earnings Performance – Net Interest Income" and "Capital Management" sections and Note 28 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report.

Available-for-Sale and Held-to-Maturity Debt Securities

Table 10: Available-for-Sale and Held-to-Maturity Debt Securities

	December 31, 2018			December 31, 2017		
(in millions)	Amortized Cost	Net unrealized gain (loss)	Fair value	Amortized Cost	Net unrealized gain (loss)	Fair value
Available-for-sale	$ 272,471	(2,559)	269,912	275,096	1,311	276,407
Held-to-maturity	144,788	(2,673)	142,115	139,335	(350)	138,985
Total (1)	417,259	(5,232)	412,027	414,431	961	415,392

(1) Available-for-sale debt securities are carried on the balance sheet at fair value. Held-to-maturity debt securities are carried on the balance sheet at amortized cost.

Table 10 presents a summary of our available-for-sale and held-to-maturity debt securities, which decreased $1.0 billion in balance sheet carrying value from December 31, 2017, largely due to higher net unrealized losses, partially offset by purchases outpacing paydowns and maturities.

The total net unrealized losses on available-for-sale debt securities were $2.6 billion at December 31, 2018, down from net unrealized gains of $1.3 billion at December 31, 2017, primarily due to higher interest rates and wider credit spreads.

The size and composition of our available-for-sale and held-to-maturity debt securities is largely dependent upon the Company's liquidity and interest rate risk management objectives. Our business generates assets and liabilities, such as loans, deposits and long-term debt, which have different maturities, yields, re-pricing, prepayment characteristics and other provisions that expose us to interest rate and liquidity risk.

The available-for-sale debt securities portfolio predominantly consists of liquid, high quality U.S. Treasury and federal agency debt, agency mortgage-backed securities (MBS), privately-issued residential and commercial MBS, securities issued by U.S. states and political subdivisions, corporate debt securities, and highly rated collateralized loan obligations. Due to its highly liquid nature, the available-for-sale debt securities portfolio can be used to meet funding needs that arise in the normal course of business or due to market stress. Changes in our interest rate risk profile may occur due to changes in overall economic or market conditions, which could influence loan origination demand, prepayment speeds, or deposit balances and mix. In response, the available-for-sale debt securities portfolio can be rebalanced to meet the Company's interest rate risk management objectives. In addition to meeting liquidity and interest rate risk management objectives, the available-for-sale debt securities portfolio may provide yield enhancement over other short-term assets. See the "Risk Management – Asset/Liability Management" section in this Report for more information on liquidity and interest rate risk.

The held-to-maturity debt securities portfolio consists of high quality U.S. Treasury debt, securities issued by U.S. states and political subdivisions, agency MBS, asset-backed securities (ABS) primarily collateralized by automobile loans and leases and cash, and collateralized loan obligations where our intent is to hold these securities to maturity and collect the contractual cash flows. The held-to-maturity debt securities portfolio may also provide yield enhancement over short-term assets.

We analyze debt securities for other-than-temporary impairment (OTTI) quarterly or more often if a potential loss-triggering event occurs. In 2018, we recognized $28 million of OTTI write-downs on debt securities. For a discussion of our OTTI accounting policies and underlying considerations and analysis, see Note 1 (Summary of Significant Accounting Policies) and Note 5 (Available-for-Sale and Held-to-Maturity Debt Securities) to Financial Statements in this Report.

At December 31, 2018, debt securities included $55.6 billion of municipal bonds, of which 93.4% were rated "A-" or better based predominantly on external and, in some cases, internal ratings. Additionally, some of the debt securities in our total municipal bond portfolio are guaranteed against loss by bond insurers. These guaranteed bonds are predominantly investment grade and were generally underwritten in accordance with our own investment standards prior to the determination to purchase, without relying on the bond insurer's guarantee in making the investment decision. The credit quality of our municipal bond holdings are monitored as part of our ongoing impairment analysis.

The weighted-average expected maturity of debt securities available-for-sale was 6.2 years at December 31, 2018. The expected remaining maturity is shorter than the remaining contractual maturity for the 59.4% of this portfolio that is MBS because borrowers generally have the right to prepay obligations before the underlying mortgages mature. The estimated effects of a 200 basis point increase or decrease in interest rates on the fair value and the expected remaining maturity of the MBS available-for-sale portfolio are shown in Table 11.

Table 11: Mortgage-Backed Securities Available for Sale

(in billions)	Fair value	Net unrealized gain (loss)	Expected remaining maturity (in years)
At December 31, 2018			
Actual	160.2	(2.6)	5.8
Assuming a 200 basis point:			
Increase in interest rates	143.3	(19.5)	7.8
Decrease in interest rates	171.7	8.9	3.1

The weighted-average expected maturity of debt securities held-to-maturity was 5.6 years at December 31, 2018. See Note 5 (Available-for-Sale and Held-to-Maturity Debt Securities) to Financial Statements in this Report for a summary of debt securities by security type.

Loan Portfolios

Table 12 provides a summary of total outstanding loans by portfolio segment. Total loans decreased $3.7 billion from December 31, 2017, driven by a decline in consumer loans, partially offset by an increase in commercial loans. Commercial loan growth reflected growth in commercial and industrial loans, partially offset by a decline in commercial real estate loans reflecting continued credit discipline. The decrease in consumer loans reflected paydowns, sales of 1-4 family first mortgage PCI Pick-a-Pay loans, a continued decline in junior lien mortgage loans, the sale of Reliable Financial Services, Inc., and an expected decline in automobile loans as originations were more than offset by paydowns.

Table 12: Loan Portfolios

(in millions)	December 31, 2018	December 31, 2017
Commercial	$ 513,405	503,388
Consumer	439,705	453,382
Total loans	953,110	956,770
Change from prior year	$ (3,660)	(10,834)

A discussion of average loan balances and a comparative detail of average loan balances is included in Table 5 under "Earnings Performance – Net Interest Income" earlier in this Report. Additional information on total loans outstanding by portfolio segment and class of financing receivable is included in the "Risk Management – Credit Risk Management" section in this Report. Period-end balances and other loan related information are in Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Table 13 shows contractual loan maturities for loan categories normally not subject to regular periodic principal reduction and the contractual distribution of loans in those categories to changes in interest rates.

Table 13: Maturities for Selected Commercial Loan Categories

	December 31, 2018				December 31, 2017			
(in millions)	Within one year	After one year through five years	After five years	Total	Within one year	After one year through five years	After five years	Total
Selected loan maturities:								
Commercial and industrial	$ 109,566	213,425	27,208	350,199	105,327	201,530	26,268	333,125
Real estate mortgage	16,413	63,648	40,953	121,014	20,069	64,384	42,146	126,599
Real estate construction	9,958	11,343	1,195	22,496	9,555	13,276	1,448	24,279
Total selected loans	$ 135,937	288,416	69,356	493,709	134,951	279,190	69,862	484,003
Distribution of loans to changes in interest rates:								
Loans at fixed interest rates	$ 17,619	28,545	28,163	74,327	18,587	30,049	26,748	75,384
Loans at floating/variable interest rates	118,318	259,871	41,193	419,382	116,364	249,141	43,114	408,619
Total selected loans	$ 135,937	288,416	69,356	493,709	134,951	279,190	69,862	484,003

Deposits

Deposits were $1.3 trillion at December 31, 2018, down $49.8 billion from December 31, 2017, due to a decrease in commercial deposits from financial institutions and a decline in consumer and small business banking deposits. The decline in commercial deposits from financial institutions was due to actions taken in the first half of 2018 in response to the asset cap included in the consent order issued by the FRB on February 2, 2018, and declines across many businesses as commercial customers allocated more cash to higher-rate alternative investments. The decline in consumer and small business banking deposits was due to higher balance customers moving a portion of those balances to other cash alternatives offering higher rates. Table 14 provides additional information regarding deposits. Information regarding the impact of deposits on net interest income and a comparison of average deposit balances is provided in "Earnings Performance – Net Interest Income" and Table 5 earlier in this Report.

Table 14: Deposits

($ in millions)		Dec 31, 2018	% of total deposits		Dec 31, 2017	% of total deposits	% Change
Noninterest-bearing	$	**349,534**	**27%**	$	373,722	28%	(6)
Interest-bearing checking		**56,797**	**4**		51,928	4	9
Market rate and other savings		**703,338**	**55**		690,168	52	2
Savings certificates		**22,648**	**2**		20,415	2	11
Other time deposits		**95,602**	**7**		71,715	4	33
Deposits in foreign offices (1)		**58,251**	**5**		128,043	10	(55)
Total deposits	$	**1,286,170**	**100%**	$	1,335,991	100%	(4)

(1) Includes Eurodollar sweep balances of $31.8 billion and $80.1 billion at December 31, 2018 and 2017, respectively.

Equity

Total equity was $197.1 billion at December 31, 2018, compared with $208.1 billion at December 31, 2017. The decrease was driven by a $17.3 billion increase in treasury stock, a $4.2 billion decline in cumulative other comprehensive income predominantly due to fair value adjustments to available-for-sale securities caused by an increase in long-term interest rates, and a $2.1 billion decline in preferred stock, partially offset by a $12.9 billion increase in retained earnings from earnings net of dividends paid. The increase in treasury stock was the result of the repurchase of 375.5 million shares of common stock in 2018, an increase of 91% from 2017.

Off-Balance Sheet Arrangements

In the ordinary course of business, we engage in financial transactions that are not recorded on the balance sheet, or may be recorded on the balance sheet in amounts that are different from the full contract or notional amount of the transaction. Our off-balance sheet arrangements include commitments to lend and purchase debt and equity securities, transactions with unconsolidated entities, guarantees, derivatives, and other commitments. These transactions are designed to (1) meet the financial needs of customers, (2) manage our credit, market or liquidity risks, and/or (3) diversify our funding sources.

Commitments to Lend and Purchase Debt and Equity Securities

We enter into commitments to lend funds to customers, which are usually at a stated interest rate, if funded, and for specific purposes and time periods. When we make commitments, we are exposed to credit risk. However, the maximum credit risk for these commitments will generally be lower than the contractual amount because a significant portion of these commitments is expected to expire without being used by the customer. For more information on lending commitments, see Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report. We also enter into commitments to purchase securities under resale agreements. For more information on commitments to purchase securities under resale agreements, see Note 15 (Guarantees, Pledged Assets and Collateral, and Other Commitments) to Financial Statements in this Report. We also may enter into commitments to purchase debt and equity securities to provide capital for customers' funding, liquidity or other future needs. For more information, see the "Off-Balance Sheet Arrangements – Contractual Cash Obligations" section in this report and Note 15 (Guarantees, Pledged Assets and Collateral, and Other Commitments) to Financial Statements in this Report.

Transactions with Unconsolidated Entities

In the normal course of business, we enter into various types of on- and off-balance sheet transactions with special purpose entities (SPEs), which are corporations, trusts, limited liability companies or partnerships that are established for a limited purpose. Generally, SPEs are formed in connection with securitization transactions and are considered variable interest entities (VIEs). For more information on securitizations, including sales proceeds and cash flows from securitizations, see Note 9 (Securitizations and Variable Interest Entities) to Financial Statements in this Report.

Guarantees and Certain Contingent Arrangements

Guarantees are contracts that contingently require us to make payments to a guaranteed party based on an event or a change in an underlying asset, liability, rate or index. Guarantees are generally in the form of standby letters of credit, securities lending and other indemnifications, written put options, recourse obligations and other types of arrangements. For more information on guarantees and certain contingent arrangements, see Note 15 (Guarantees, Pledged Assets and Collateral, and Other Commitments) to Financial Statements in this Report.

Derivatives

We use derivatives to manage exposure to market risk, including interest rate risk, credit risk and foreign currency risk, and to assist customers with their risk management objectives. Derivatives are recorded on the balance sheet at fair value, and volume can be measured in terms of the notional amount, which is generally not exchanged, but is used only as the basis on which interest and other payments are determined. The notional amount is not recorded on the balance sheet and is not, when viewed in isolation, a meaningful measure of the risk profile of the instruments. For more information on derivatives, see Note 17 (Derivatives) to Financial Statements in this Report.

Other Commitments

We also have other off-balance sheet transactions, including obligations to make rental payments under noncancelable operating leases. Our operating lease obligations are discussed in Note 7 (Premises, Equipment, Lease Commitments and Other Assets) to Financial Statements in this Report.

Contractual Cash Obligations

In addition to the contractual commitments and arrangements previously described, which, depending on the nature of the obligation, may or may not require use of our resources, we enter into other contractual obligations that may require future cash payments in the ordinary course of business, including debt issuances for the funding of operations and leases for premises and equipment.

Table 15 summarizes these contractual obligations as of December 31, 2018, excluding the projected cash payments for obligations for short-term borrowing arrangements and pension and postretirement benefit plans. More information on those obligations is in Note 13 (Short-Term Borrowings) and Note 22 (Employee Benefits and Other Expenses) to Financial Statements in this Report.

Table 15: Contractual Cash Obligations

		December 31, 2018					
(in millions)	Note(s) to Financial Statements	Less than 1 year	1-3 years	3-5 years	More than 5 years	Indeterminate maturity	Total
Contractual payments by period:							
Deposits (1)	12	$ 88,435	32,310	6,188	3,712	1,155,525	1,286,170
Long-term debt (2)	14	46,547	73,239	36,892	72,366	—	229,044
Interest (3)		8,496	11,082	6,669	24,791	—	51,038
Operating leases	7	1,174	1,936	1,290	1,654	—	6,054
Unrecognized tax obligations	23	4	—	—	—	3,939	3,943
Commitments to purchase debt and equity securities (4)	15	2,436	409	—	—	—	2,845
Purchase and other obligations (5)		777	811	258	331	—	2,177
Total contractual obligations		$ 147,869	119,787	51,297	102,854	1,159,464	1,581,271

(1) Includes interest-bearing and noninterest-bearing checking, and market rate and other savings accounts.
(2) Balances are presented net of unamortized debt discounts and premiums and purchase accounting adjustments.
(3) Represents the future interest obligations related to interest-bearing time deposits and long-term debt in the normal course of business including a net reduction of $2.3 billion related to hedges used to manage interest rate risk. These interest obligations assume no early debt redemption. We estimated variable interest rate payments using December 31, 2018, rates, which we held constant until maturity. We have excluded interest related to structured notes where our payment obligation is contingent on the performance of certain benchmarks.
(4) Includes unfunded commitments to purchase debt and equity securities, excluding trade date payables, of $335 million and $2.5 billion, respectively. We have presented predominantly all of our contractual obligations on equity securities above in the maturing in less than one year category as there are no specified contribution dates in the agreements. These obligations may be requested at any time by the investment manager.
(5) Represents agreements related to unrecognized obligations to purchase goods or services.

We are subject to the income tax laws of the U.S., its states and municipalities, and those of the foreign jurisdictions in which we operate. We have various unrecognized tax obligations related to these operations that may require future cash tax payments to various taxing authorities. Because of their uncertain nature, the expected timing and amounts of these payments generally are not reasonably estimable or determinable. We attempt to estimate the amount payable in the next 12 months based on the status of our tax examinations and settlement discussions. See Note 23 (Income Taxes) to Financial Statements in this Report for more information.

Transactions with Related Parties

The Related Party Disclosures topic of the Accounting Standards Codification (ASC) 850 requires disclosure of material related party transactions, other than compensation arrangements, expense allowances and other similar items in the ordinary course of business. Based on ASC 850, we had no transactions required to be reported for the years ended December 31, 2018, 2017 and 2016. The Company has included within its disclosures information on its equity securities, relationships with variable interest entities, and employee benefit plan arrangements. See Note 8 (Equity Securities), Note 9 (Securitizations and Variable Interest Entities) and Note 22 (Employee Benefits and Other Expenses) to Financial Statements in this Report.

Risk Management

Wells Fargo manages a variety of risks that can significantly affect our financial performance and our ability to meet the expectations of our customers, stockholders, regulators and other stakeholders. We operate under a Board approved risk management framework which outlines our company-wide approach to risk management and oversight and describes the structures and practices employed to manage current and emerging risks inherent to Wells Fargo. We believe that enhancements made during 2018 to our risk management framework transform and clarify our risk management approach by emphasizing the role of risk management when setting corporate strategy and by further rationalizing and integrating certain risk management organizational, governance and reporting practices.

Risk Management Framework

Our risk management framework defines how we manage risk in a comprehensive, integrated and consistent manner and lays out our vision for the risk management of the organization. It reinforces each team member's personal accountability for risk management and is built on a foundation that begins with a deep understanding of the Company's processes, risks and controls. Our risk management framework also supports members of senior management in achieving the Company's strategic objectives and priorities, and it supports the Board as it carries out its risk oversight responsibilities.

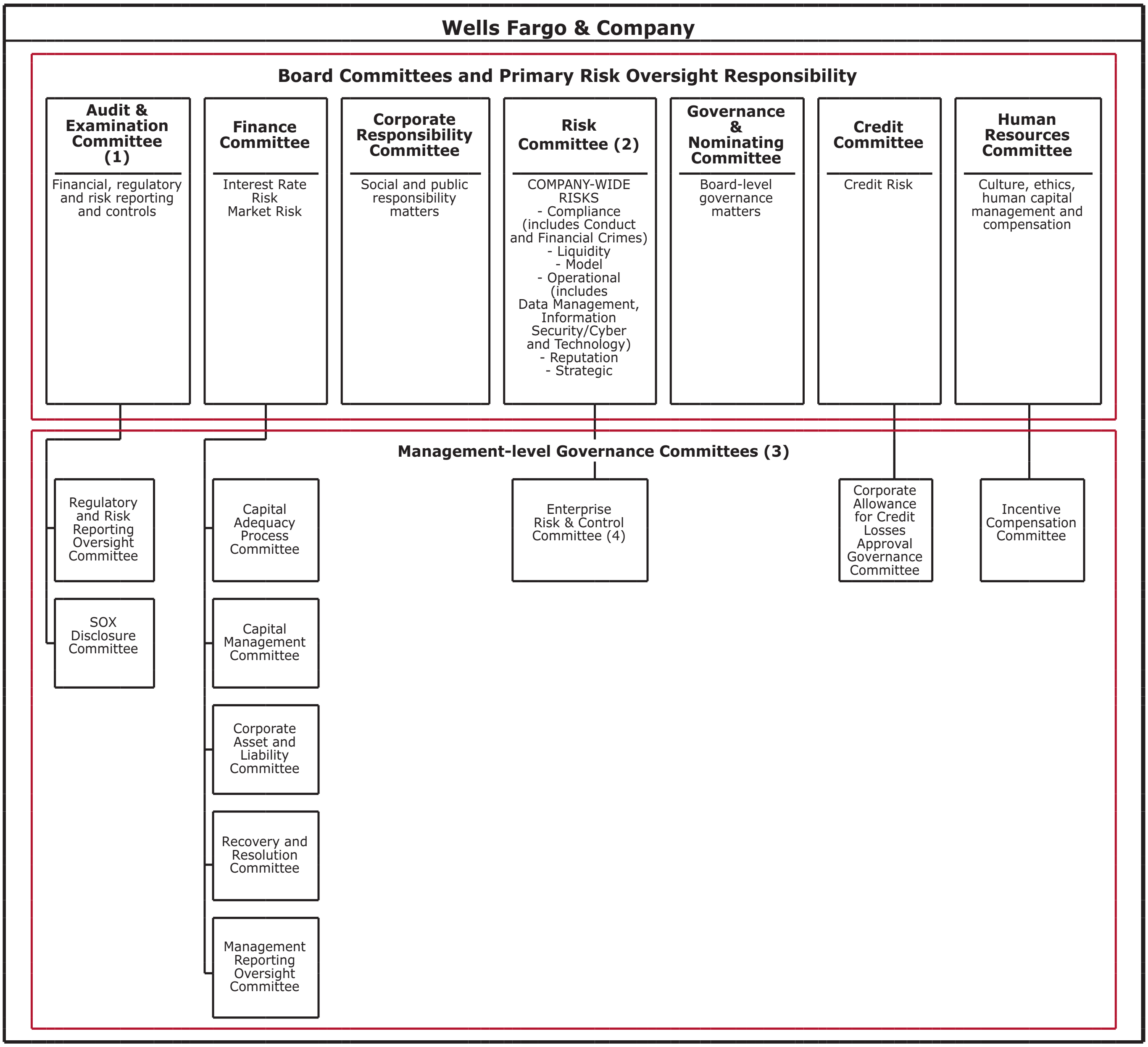
The risk management framework consists of three lines of defense: (1) the front line which consists of Wells Fargo's risk-generating activities, including all activities of its four primary business groups (Consumer Banking; Wholesale Banking; Wealth and Investment Management; and Payments, Virtual Solutions & Innovation) and certain activities of its enterprise functions (Human Resources, Enterprise Finance, Technology, Legal Department, Corporate Risk, Stakeholder Relations, and Wells Fargo Audit Services); (2) independent risk management, which consists of our Corporate Risk function and is led by our Chief Risk Officer (CRO) who reports to the Board's Risk Committee; and (3) internal audit, which is Wells Fargo Audit Services and is led by our Chief Auditor who reports to the Board's Audit & Examination Committee. In addition to the three lines of defense, our risk management framework includes enterprise control activities, which are certain specialized activities performed within centralized enterprise functions (such as Human Resources and the Legal Department) with a focus on controlling specific risks. Key elements of our risk management framework include:

- A **strong culture** that emphasizes each team member's ownership and understanding of risk. We want to cultivate an environment that expects and promotes robust communication and cooperation among the three lines of defense and supports identifying, escalating and addressing current and emerging risk issues.
- A **company-wide statement of risk appetite** that guides business and risk leaders as they manage risk on a daily basis. The company-wide statement of risk appetite describes the nature and magnitude of risk that the Company is willing to assume in pursuit of its business and strategic objectives, consistent with capital, liquidity and other regulatory requirements.
- A **risk management governance structure**, including escalation requirements and a committee structure that helps provide comprehensive oversight of the risks we face.
- A **company-wide risk inventory** that promotes a standardized and systematic process to identify and quantify risks at the business group and enterprise level to guide strategic business decisions and capital planning efforts.
- **Policies, procedures, and controls** which form an integrated risk management program that promotes active, prompt, and consistent identification, measurement, assessment, control, mitigation, reporting, and monitoring of current and emerging risk exposures across Wells Fargo and are integrated with clear enterprise risk roles and responsibilities for the three lines of defense.
- **Three lines of defense** that are closely integrated, each with specific roles and responsibilities for risk management and a clear engagement model that promotes challenge and appropriate escalation of issues and information.

Board and Management-level Committee Structures

Wells Fargo's Board committee and management-level governance committee structures are designed to ensure that key risks are identified and escalated and, if necessary, decided upon at the appropriate level of the Company. Accordingly, the structure is built upon defined escalation and reporting paths from the front line to independent risk management and management-level governance committees and, ultimately, to the Board as appropriate. Each management-level governance committee has defined escalation processes, authorities and responsibilities as outlined in its charter. Our Board committee and management-level governance committee structures, and the primary risk oversight responsibilities of each of those committees, is presented in Table 16.

Table 16: Board and Management-level Governance Committee Structure



(1) The Audit & Examination Committee additionally oversees the internal audit function, external auditor independence, activities, and performance, and the disclosure framework for financial, regulatory and risk reports prepared for the Board, management, and bank regulatory agencies, and assists the Board in its oversight of the Company's compliance with legal and regulatory requirements.
(2) The Risk Committee has a compliance subcommittee and a technology subcommittee to assist it in providing oversight of those risks as discussed herein.
(3) Pursuant to their charters, many of the management-level governance committees have formed one or more sub-committees to address specific risk matters.
(4) Certain committees report to the Enterprise Risk & Control Committee and have dual escalation and informational reporting paths to Board committees.

Board Oversight of Risk

The business and affairs of the Company are managed under the direction of the Board, whose responsibilities include overseeing management's implementation of the Company's risk management framework and ongoing oversight and governance of the Company's risk management activities. The Board carries out its risk oversight responsibilities directly and through the work of its seven standing committees, which all report to the full Board. Each Board committee works closely with management to understand and oversee the Company's key risk exposures.

The Risk Committee oversees company-wide risks. The Board's other standing committees also have primary oversight responsibility for certain specific risk matters, as highlighted in Table 16.

The Risk Committee additionally oversees the Company's Corporate Risk function and plays an active role in approving and overseeing the Company's risk management framework. The Risk Committee and the full Board review and approve the enterprise statement of risk appetite annually, and the Risk Committee also actively monitors the Company's risk profile relative to the approved risk appetite.

The full Board receives reports at each of its regular meetings from the Board committee chairs about committee activities, including risk oversight matters, and the Risk Committee receives periodic reports from management regarding current or emerging risk matters.

Management Oversight of Risk

The Company's management-level governance committees are designed to enable understanding, consideration and decision-making of significant risk and control matters at the appropriate level of the Company and by the appropriate mix of executives. Each committee has a defined set of authorities and responsibilities as set forth in its charter, and each committee has defined escalation paths and risk reporting responsibilities, including to the Board or Board committees, as appropriate.

The Enterprise Risk & Control Committee is the management-level governance committee that governs the management of financial risks, non-financial risks and enterprise and other risk programs. The Enterprise Risk & Control Committee is co-chaired by the Company's CEO and CRO and has an escalation path to the Board's Risk Committee. It considers and decides risk and control matters, addresses escalated issues, actively oversees risk mitigation, and provides regular updates to the Board's Risk Committee regarding emerging risks and senior management's assessment of the effectiveness of the Company's risk management program. It may escalate certain risk and control matters to other Board committees as appropriate based on their primary risk oversight responsibilities.

Each business group and enterprise function has a Risk & Control Committee that reports to the Enterprise Risk & Control Committee and has a mandate that mirrors the Enterprise Risk & Control Committee but is limited to the relevant business group or enterprise function. These committees focus on the risks that each group or function generates and is responsible for managing, and on the controls that are expected to be in place. Additionally, there are standalone specific risk type- or program-specific risk governance committees reporting to the Enterprise Risk & Control Committee to help provide complete and comprehensive governance for certain risk areas.

While the Enterprise Risk & Control Committee and the committees that report to it serve as the focal point for the management of company-wide risk matters, the management of certain specific risk types is supported by additional management-level governance committees, which all report to at least one of the Board's standing committees.

The Corporate Risk function, which is the Company's independent risk management organization, is headed by the Company's CRO who, among other things, is responsible for setting the strategic direction and driving the execution of Wells Fargo's risk management activities. The Corporate Risk function provides senior management and the Board with an independent perspective of the level of risk to which the Company is exposed.

Corporate Risk develops the Company's enterprise statement of risk appetite in the context of our risk management framework described above. As part of Wells Fargo's risk appetite, we maintain metrics along with associated objectives to measure and monitor the amount of risk that the Company is prepared to take. Actual results of these metrics are reported to the Enterprise Risk & Control Committee on a quarterly basis and to the Board's Risk Committee. Our business groups also have business-specific risk appetite statements based on the enterprise statement of risk appetite. The metrics included in the business group statements are harmonized with the enterprise level metrics to ensure consistency where appropriate. Business lines also maintain metrics and qualitative statements that are unique to their line of business. This allows for monitoring of risk and definition of risk appetite deeper within the organization.

The Company's senior management, including the CRO and Chief Auditor, work closely with the Board's committees and provide ongoing reports and updates on risk matters during and outside of regular committee meetings, as appropriate.

Operational Risk Management

Operational risk is the risk resulting from inadequate or failed internal controls, processes, people and systems, or from external events. Operational risk is inherent in all Wells Fargo activities.

The Board's Risk Committee has primary oversight responsibility for all aspects of operational risk, including significant policies and programs regarding the Company's business continuity, data management, information security, privacy, technology, and third-party risk management. As part of its oversight responsibilities, the Board's Risk Committee approves the operational risk statement of risk appetite including inner and outer boundary thresholds, reviews and approves significant operational risk policies, and oversees the Company's ongoing operational risk management program.

At the management level, the Operational Risk function, which is part of Corporate Risk, has primary oversight responsibility for operational risk. The Operational Risk function reports to the CRO and also provides periodic reporting related to operational risk to the Board's Risk Committee. Within the Operational Risk function, Information Security Risk Management has oversight responsibility for information security risk, and Technology Risk Management Oversight has oversight responsibility for technology risk. Oversight of data management risk, an operational risk, is an enterprise control activity performed within the Data Management & Insight function, and oversight of human capital risk, an operational risk, is an enterprise control activity performed within the Human Resources function. In addition, the Risk & Control Committee for each business group and enterprise function reports operational risk matters to the Enterprise Risk & Control Committee.

Information security is a significant operational risk for financial institutions such as Wells Fargo, and includes the risk resulting from cyber attacks and other information security events relating to Wells Fargo technology, systems, networks, and data that would disrupt Wells Fargo's businesses, result in the disclosure of confidential data which could damage Wells Fargo's reputation, cause losses or increase costs. Wells Fargo's Board is actively engaged in the oversight of the Company's information security risk management and cyber defense programs. The Board's Risk Committee has primary oversight responsibility for information security risk and approves the Company's information security program, which includes the information security policy and the cyber defense program. The Risk Committee formed a Technology Subcommittee to assist it in providing oversight of technology, information security, and cyber risks as well as data management risk. The Technology Subcommittee reviews and recommends to the Risk Committee for approval any significant supporting information security (including cybersecurity) risk, technology risk, and data management risk programs and/or policies, including the Company's data management strategy. The Technology Subcommittee reports to the Risk Committee and both provide updates to the full Board.

Wells Fargo and other financial institutions continue to be the target of various evolving and adaptive cyber attacks, including malware and denial-of-service, as part of an effort to disrupt the operations of financial institutions, potentially test their cybersecurity capabilities, commit fraud, or obtain confidential, proprietary or other information. Cyber attacks have also focused on targeting online applications and services, such as online banking, as well as cloud-based services provided by third parties, and have targeted the infrastructure of the internet causing the widespread unavailability of websites and degrading website performance. Wells Fargo has not experienced any material losses relating to these or other types of cyber attacks. Cybersecurity risk is a priority for Wells Fargo, and we continue to develop and enhance our controls, processes and systems in order to protect our networks, computers, software and data from attack, damage or unauthorized access. Wells Fargo is also proactively involved in industry cybersecurity efforts and working with other parties, including our third-party service providers and governmental agencies, to continue to enhance defenses and improve resiliency to cybersecurity threats. See the "Risk Factors" section in this Report for additional information regarding the risks associated with a failure or breach of our operational or security systems or infrastructure, including as a result of cyber attacks.

Compliance Risk Management

Compliance risk is the risk resulting from the failure to comply with applicable laws, regulations, rules, and other regulatory requirements, and the failure to appropriately address and limit violations of law and any associated impact to customers. Compliance risk encompasses other standards of self-regulatory organizations applicable to the banking industry as well as nonconformance with applicable internal policies and procedures.

The Board's Risk Committee has primary oversight responsibility for all aspects of compliance risk, including financial crimes risk. As part of its oversight responsibilities, the Board's Risk Committee approves the compliance risk and financial crimes risk statement of risk appetites including inner and outer boundary thresholds, reviews and approves significant compliance risk and financial crimes risk policies and programs, and oversees the Company's ongoing compliance risk management and financial crimes risk management programs. The Compliance Subcommittee of the Risk Committee assists the Risk Committee in providing oversight of the Company's compliance program and compliance risk management. The Compliance Subcommittee reports to the Risk Committee and both provide updates to the full Board.

At the management level, Wells Fargo Compliance, which is part of Corporate Risk, monitors the implementation of the Company's compliance program. Financial Crimes Risk Management, which is part of Wells Fargo Compliance, oversees and monitors financial crimes risk. Wells Fargo Compliance reports to the CRO and also provides periodic reporting related to compliance risk to the Board's Risk Committee and Compliance Subcommittee. In addition, the Risk & Control Committee for each business group and enterprise function reports compliance risk matters to the Enterprise Risk & Control Committee. We continue to enhance our oversight of operational and compliance risk management, including as required by the FRB's February 2, 2018, and the CFPB/OCC's April 20, 2018, consent orders.

Conduct Risk Management

Conduct risk, a sub-category of compliance risk, is the risk resulting from inappropriate, unethical, or unlawful behavior on the part of team members or individuals acting on behalf of the Company, caused by deliberate actions or business practices.

The Board has enhanced its oversight of conduct risk to oversee the alignment of team member conduct to the Company's risk appetite (which the Board approves annually) and culture as reflected in our *Vision, Values & Goals* and Code of Ethics and Business Conduct. The Board's Risk Committee has primary oversight responsibility for company-wide conduct risk and risk management components of the Company's culture, while the responsibilities of the Board's Human Resources Committee include oversight of the Company's company-wide culture, Code of Ethics and Business Conduct, conflicts of interest program, human capital management (including talent management and succession planning), performance management program, and incentive compensation risk management program.

At the management level, the Conduct Management Office has primary oversight responsibility for key elements of conduct risk, including internal investigations, sales practices oversight, complaints oversight, and ethics oversight. The Conduct Management Office reports to the CRO and also provides periodic reporting related to conduct risk to the relevant Board committees. In addition, the Risk & Control Committee for each business group and enterprise function reports conduct risk matters to the Enterprise Risk & Control Committee.

The Company's incentive compensation risk management program is overseen by the management-level Incentive Compensation Committee, which is chaired by the Head of Human Resources and provides periodic reporting related to incentive compensation risk to the Board's Human Resources Committee. The Human Resources function, which reports to the CEO, also oversees the Company's culture program, which promotes compliance with laws, consideration of risks when making decisions, and facilitates open dialogue and transparency among the lines of defense.

Strategic Risk Management

Strategic risk is the risk to earnings, capital, and/or liquidity arising from adverse or poorly executed business decisions or ill-timed or inadequate responses to changes in the internal and external operating environment.

The Board has primary oversight responsibility for strategic planning and oversees management's development and implementation of and approves the Company's strategic plan, and considers whether it is aligned with the Company's risk appetite. Management develops, executes and recommends strategic corporate transactions and the Board evaluates management's proposals, including their impact on the Company's risk profile and financial position. The Board's Risk Committee has primary oversight responsibility for the Company's strategic risk and the adequacy of the Company's strategic risk management program, including associated risk management practices, processes and controls. The Board's Risk Committee also reviews and approves significant strategic risk governance documents, and receives periodic reporting from management regarding risks related to new products, and changes to products, as appropriate.

At the management level, the Strategic Risk function, which is part of Corporate Risk, has primary oversight responsibility for strategic risk. The Strategic Risk function reports into the CRO and also provides periodic reporting related to strategic risk to the Board's Risk Committee. In addition, the Risk & Control Committee for each business group and enterprise function reports strategic risk matters to the Enterprise Risk & Control Committee.

Model Risk Management

Model risk is the risk arising from decisions based on incorrect or misused model outputs or reports.

The Board's Risk Committee has primary oversight responsibility for model risk. As part of its oversight responsibilities, the Board's Risk Committee oversees the Company's model risk management policy, model validation activities, model performance, model issue remediation status, and adherence to model risk appetite metrics.

At the management level, the Corporate Model Risk function, which is part of Corporate Risk, has primary oversight responsibility for model risk and is responsible for ongoing governance, validation and monitoring of model risk across the Company. The Corporate Model Risk function reports to the CRO and also provides periodic reporting related to model risk to the Board's Risk Committee. In addition, the Risk & Control Committee for each business group and enterprise function reports model risk matters to the Enterprise Risk & Control Committee.

Reputation Risk Management

Reputation risk is the risk arising from negative perceptions by stakeholders, whether real or not, resulting in potential loss of trust in the Company's competence or integrity. Key external stakeholders include customers, potential and non-customers, shareholders, regulators, elected officials, advocacy groups, and the media.

The Board's Risk Committee has primary oversight responsibility for company-wide reputation risk, while each Board committee has reputation risk oversight responsibilities related to their primary oversight responsibilities. As part of its oversight responsibilities, the Board's Risk Committee receives reports from management that help it monitor how effectively the Company is managing reputation risk. As part of its oversight responsibilities for social and public responsibility matters, the Board's Corporate Responsibility Committee also receives reports from management relating to the Company's brand and stakeholder perception of the Company.

At the management level, the Reputation Risk Oversight function, which is part of Corporate Risk, has primary oversight responsibility for reputation risk. The Reputation Risk Oversight function reports into the CRO and also provides periodic reporting related to reputation risk to the Board's Risk Committee. In addition, the Risk & Control Committee for each business group and enterprise function reports reputation risk matters to the Enterprise Risk & Control Committee.

Credit Risk Management

We define credit risk as the risk of loss associated with a borrower or counterparty default (failure to meet obligations in accordance with agreed upon terms). Credit risk exists with many of our assets and exposures such as debt security holdings, certain derivatives, and loans.

The Board's Credit Committee has primary oversight responsibility for credit risk. At the management level, the Corporate Credit function, which is part of Corporate Risk, has primary oversight responsibility for credit risk. The Corporate Credit function reports to the CRO and also provides periodic reporting related to credit risk to the Board's Credit Committee. In addition, the Risk & Control Committee for each business group and enterprise function reports credit risk matters to the Enterprise Risk & Control Committee.

The following discussion focuses on our loan portfolios, which represent the largest component of assets on our balance sheet for which we have credit risk. Table 17 presents our total loans outstanding by portfolio segment and class of financing receivable.

Table 17: Total Loans Outstanding by Portfolio Segment and Class of Financing Receivable

(in millions)	Dec 31, 2018	Dec 31, 2017
Commercial:		
Commercial and industrial	**$ 350,199**	333,125
Real estate mortgage	**121,014**	126,599
Real estate construction	**22,496**	24,279
Lease financing	**19,696**	19,385
Total commercial	**513,405**	503,388
Consumer:		
Real estate 1-4 family first mortgage	**285,065**	284,054
Real estate 1-4 family junior lien mortgage	**34,398**	39,713
Credit card	**39,025**	37,976
Automobile	**45,069**	53,371
Other revolving credit and installment	**36,148**	38,268
Total consumer	**439,705**	453,382
Total loans	**$ 953,110**	956,770

We manage our credit risk by establishing what we believe are sound credit policies for underwriting new business, while monitoring and reviewing the performance of our existing loan portfolios. We employ various credit risk management and monitoring activities to mitigate risks associated with multiple risk factors affecting loans we hold, could acquire or originate including:

- Loan concentrations and related credit quality
- Counterparty credit risk
- Economic and market conditions
- Legislative or regulatory mandates
- Changes in interest rates
- Merger and acquisition activities
- Reputation risk

Our credit risk management oversight process is governed centrally, but provides for decentralized management and accountability by our lines of business. Our overall credit process includes comprehensive credit policies, disciplined credit underwriting, frequent and detailed risk measurement and modeling, extensive credit training programs, and a continual loan review and audit process.

A key to our credit risk management is adherence to a well-controlled underwriting process, which we believe is appropriate for the needs of our customers as well as investors who purchase the loans or securities collateralized by the loans.

Credit Quality Overview Solid credit quality continued in 2018, as our net charge-off rate remained low at 0.29% of average total loans. We continued to benefit from improvements in the performance of our commercial and consumer real estate portfolios. In particular:

- Nonaccrual loans were $6.5 billion at December 31, 2018, down from $7.6 billion at December 31, 2017. Commercial nonaccrual loans declined to $2.2 billion at December 31, 2018, compared with $2.6 billion at December 31, 2017, and consumer nonaccrual loans declined to $4.3 billion at December 31, 2018, compared with $5.0 billion at December 31, 2017. The decline in nonaccrual loans reflected an improved housing market and credit improvement in commercial and industrial loans. Nonaccrual loans represented 0.68% of total loans at December 31, 2018, compared with 0.80% at December 31, 2017.
- Net charge-offs as a percentage of average total loans decreased to 0.29% in 2018, compared with 0.31% in 2017. Net charge-offs as a percentage of our average commercial and consumer portfolios were 0.09% and 0.52% in 2018, respectively, compared with 0.09% and 0.55%, respectively, in 2017.
- Loans that are not government insured/guaranteed and 90 days or more past due and still accruing were $94 million and $885 million in our commercial and consumer portfolios, respectively, at December 31, 2018, compared with $49 million and $1.0 billion at December 31, 2017.
- Our provision for credit losses was $1.7 billion during 2018, compared with $2.5 billion in 2017.
- The allowance for credit losses declined to $10.7 billion, or 1.12% of total loans, at December 31, 2018, compared with $12.0 billion, or 1.25%, at December 31, 2017.

Additional information on our loan portfolios and our credit quality trends follows.

PURCHASED CREDIT-IMPAIRED (PCI) LOANS Loans acquired with evidence of credit deterioration since their origination and where it is probable that we will not collect all contractually required principal and interest payments are PCI loans. Substantially all of our PCI loans were acquired in the Wachovia acquisition on December 31, 2008. PCI loans are recorded at fair value at the date of acquisition, and the historical allowance for credit losses related to these loans is not carried over. The carrying value of PCI loans at December 31, 2018, totaled $5.0 billion, compared with $12.8 billion at December 31, 2017, and $58.8 billion at December 31, 2008. The decrease from December 31, 2017, was due to the sales of $6.2 billion of Pick-a-Pay PCI loans during 2018, as well as portfolio runoff. PCI loans are considered to be accruing due to the existence of the accretable yield amount, which represents the cash expected to be collected in excess of their carrying value, and not based on consideration given to contractual interest payments. The accretable yield at December 31, 2018, was $3.0 billion.

A nonaccretable difference is established for PCI loans to absorb losses expected on the contractual amounts of those loans in excess of the fair value recorded at the date of acquisition. Amounts absorbed by the nonaccretable difference do not affect the income statement or the allowance for credit losses. At December 31, 2018, $480 million in nonaccretable difference remained to absorb losses on PCI loans.

For additional information on PCI loans, see the "Risk Management – Credit Risk Management – Real Estate 1-4 Family First and Junior Lien Mortgage Loans – Pick-a-Pay Portfolio" section in this Report, Note 1 (Summary of Significant Accounting Policies) and Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Significant Loan Portfolio Reviews Measuring and monitoring our credit risk is an ongoing process that tracks delinquencies, collateral values, Fair Isaac Corporation (FICO) scores, economic trends by geographic areas, loan-level risk grading for certain portfolios (typically commercial) and other indications of credit risk. Our credit risk monitoring process is designed to enable early identification of developing risk and to support our determination of an appropriate allowance for credit losses. The following discussion provides additional characteristics and analysis of our significant portfolios. See Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report for more analysis and credit metric information for each of the following portfolios.

COMMERCIAL AND INDUSTRIAL LOANS AND LEASE FINANCING For purposes of portfolio risk management, we aggregate commercial and industrial loans and lease financing according to market segmentation and standard industry codes. We generally subject commercial and industrial loans and lease financing to individual risk assessment using our internal borrower and collateral quality ratings. Our ratings are aligned to regulatory definitions of pass and criticized categories with criticized divided among special mention, substandard, doubtful and loss categories.

The commercial and industrial loans and lease financing portfolio totaled $369.9 billion, or 39% of total loans, at December 31, 2018. The net charge-off rate for this portfolio was 0.13% in 2018, compared with 0.15% in 2017. At December 31, 2018, 0.43% of this portfolio was nonaccruing, compared with 0.56% at December 31, 2017, reflecting a decrease of $399 million in nonaccrual loans, predominantly due to credit improvement in the oil and gas portfolio. Also, $15.8 billion of the commercial and industrial loan and lease financing portfolio was internally classified as criticized in accordance with regulatory guidance at December 31, 2018, compared with $17.9 billion at December 31, 2017. The decrease in criticized loans, which also includes the decrease in nonaccrual loans, was mostly due to improvement in the oil and gas portfolio.

Most of our commercial and industrial loans and lease financing portfolio is secured by short-term assets, such as accounts receivable, inventory and securities, as well as long-lived assets, such as equipment and other business assets. Generally, the collateral securing this portfolio represents a secondary source of repayment.

Table 18 provides a breakout of commercial and industrial loans and lease financing by industry, and includes $63.7 billion of foreign loans at December 31, 2018. Foreign loans totaled $21.8 billion within the investors category, $19.1 billion within the financial institutions category and $1.2 billion within the oil and gas category.

The investors category includes loans to special purpose vehicles (SPVs) formed by sponsoring entities to invest in financial assets backed predominantly by commercial and residential real estate or corporate cash flow, and are repaid from the asset cash flows or the sale of assets by the SPV. We limit loan amounts to a percentage of the value of the underlying assets, as determined by us, based on analysis of underlying credit risk and other factors such as asset duration and ongoing performance.

We provide financial institutions with a variety of relationship focused products and services, including loans supporting short-term trade finance and working capital needs. The $19.1 billion of foreign loans in the financial institutions category were predominantly originated by our Corporate and Investment Banking business.

The oil and gas loan portfolio totaled $12.2 billion, or 1% of total outstanding loans at December 31, 2018, compared with $12.5 billion, or 1% of total outstanding loans at December 31, 2017. Oil and gas nonaccrual loans decreased to $416 million at December 31, 2018, compared with $1.1 billion at December 31, 2017, due to continued credit improvement in the portfolio.

Table 18: Commercial and Industrial Loans and Lease Financing by Industry (1)

	December 31, 2018		
(in millions)	Nonaccrual loans	Total portfolio (2)	% of total loans
Investors	$ 24	73,880	8%
Financial institutions	159	43,054	5
Cyclical retailers	81	27,875	3
Food and beverage	53	17,175	2
Healthcare	126	16,611	2
Technology	15	16,379	2
Industrial equipment	63	14,780	2
Real estate lessor	6	14,711	2
Oil and gas	416	12,221	1
Transportation	51	8,773	1
Business services	27	8,245	1
Public administration	7	7,659	1
Other	548	108,532 (3)	9
Total	$ 1,576	369,895	39%

(1) Industry categories are based on the North American Industry Classification System and the amounts reported include foreign loans. See Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report for a breakout of commercial foreign loans.
(2) Includes $4 million PCI loans, which are considered to be accruing due to the existence of the accretable yield and not based on consideration given to contractual interest payments.
(3) No other single industry had total loans in excess of $6.0 billion.

Risk mitigation actions, including the restructuring of repayment terms, securing collateral or guarantees, and entering into extensions, are based on a re-underwriting of the loan and our assessment of the borrower's ability to perform under the agreed-upon terms. Extension terms generally range from six to thirty-six months and may require that the borrower provide additional economic support in the form of partial repayment, or additional collateral or guarantees. In cases where the value of collateral or financial condition of the borrower is insufficient to repay our loan, we may rely upon the support of an outside repayment guarantee in providing the extension.

Our ability to seek performance under a guarantee is directly related to the guarantor's creditworthiness, capacity and willingness to perform, which is evaluated on an annual basis, or more frequently as warranted. Our evaluation is based on the most current financial information available and is focused on various key financial metrics, including net worth, leverage, and current and future liquidity. We consider the guarantor's reputation, creditworthiness, and willingness to work with us based on our analysis as well as other lenders' experience with the guarantor. Our assessment of the guarantor's credit strength is reflected in our loan risk ratings for such loans. The loan risk rating and accruing status are important factors in our allowance methodology.

In considering the accrual status of the loan, we evaluate the collateral and future cash flows as well as the anticipated support of any repayment guarantor. In many cases, the strength of the guarantor provides sufficient assurance that full repayment of the loan is expected. When full and timely collection of the loan becomes uncertain, including the performance of the guarantor, we place the loan on nonaccrual status. As appropriate, we also charge the loan down in accordance with our charge-off policies, generally to the net realizable value of the collateral securing the loan, if any.

COMMERCIAL REAL ESTATE (CRE) We generally subject CRE loans to individual risk assessment using our internal borrower and collateral quality ratings. Our ratings are aligned to regulatory definitions of pass and criticized categories with criticized segmented among special mention, substandard, doubtful and loss categories. The CRE portfolio, which included $7.7 billion of foreign CRE loans, totaled $143.5 billion, or 15% of total loans, at December 31, 2018, and consisted of $121.0 billion of mortgage loans and $22.5 billion of construction loans.

Table 19 summarizes CRE loans by state and property type with the related nonaccrual totals. The portfolio is diversified both geographically and by property type. The largest geographic concentrations of CRE loans are in California, New York, Florida and Texas, which combined represented 50% of the total CRE portfolio. By property type, the largest concentrations are office buildings at 27% and apartments at 16% of the portfolio. CRE nonaccrual loans totaled 0.4% of the CRE outstanding balance at December 31, 2018, compared with 0.4% at December 31, 2017. At December 31, 2018, we had $4.5 billion of criticized CRE mortgage loans, compared with $4.3 billion at December 31, 2017, and $289 million of criticized CRE construction loans, compared with $298 million at December 31, 2017.

Table 19: CRE Loans by State and Property Type

								December 31, 2018
	Real estate mortgage		Real estate construction		Total			
(in millions)	Nonaccrual loans	Total portfolio	Nonaccrual loans	Total portfolio	Nonaccrual loans	Total portfolio		% of total loans
By state:								
California	$ 143	34,396	7	4,559	150	38,955		4%
New York	10	10,676	—	2,796	10	13,472		1
Florida	29	7,708	2	2,044	31	9,752		1
Texas	64	7,796	1	1,451	65	9,247		1
Arizona	33	4,246	—	366	33	4,612		*
North Carolina	31	3,679	6	849	37	4,528		*
Georgia	12	3,615	—	606	12	4,221		*
Washington	11	3,390	1	593	12	3,983		*
Virginia	12	2,864	—	941	12	3,805		*
Illinois	7	2,958	—	429	7	3,387		*
Other	228	39,686	15	7,862	243	47,548	(1)	5
Total	$ 580	121,014	32	22,496	612	143,510		15%
By property:								
Office buildings	$ 142	36,089	2	3,079	144	39,168		4%
Apartments	12	16,107	—	7,484	12	23,591		2
Industrial/warehouse	95	15,366	—	1,295	95	16,661		2
Retail (excluding shopping center)	99	14,512	7	569	106	15,081		2
Shopping center	6	11,217	—	1,184	6	12,401		1
Hotel/motel	19	9,649	—	1,832	19	11,481		1
Mixed use properties (2)	81	5,943	2	524	83	6,467		1
Institutional	43	3,135	—	1,946	43	5,081		1
Agriculture	46	2,468	—	33	46	2,501		*
1-4 family structure	—	9	6	2,210	6	2,219		*
Other	37	6,519	15	2,340	52	8,859		1
Total	$ 580	121,014	32	22,496	612	143,510		15%

* Less than 1%.
(1) Includes 40 states; no state had loans in excess of $3.4 billion.
(2) Mixed use properties are primarily owner occupied real estate, including data centers, flexible space leased to multiple tenants, light manufacturing and other specialized uses.

FOREIGN LOANS AND COUNTRY RISK EXPOSURE We classify loans for financial statement and certain regulatory purposes as foreign primarily based on whether the borrower's primary address is outside of the United States. At December 31, 2018, foreign loans totaled $71.9 billion, representing approximately 8% of our total consolidated loans outstanding, compared with $70.4 billion, or approximately 7% of total consolidated loans outstanding, at December 31, 2017. Foreign loans were approximately 4% of our consolidated total assets at both December 31, 2018, and December 31, 2017.

Our country risk monitoring process incorporates frequent dialogue with our financial institution customers, counterparties and regulatory agencies, enhanced by centralized monitoring of macroeconomic and capital markets conditions in the respective countries. We establish exposure limits for each country through a centralized oversight process based on customer needs, and in consideration of relevant economic, political, social, legal, and transfer risks. We monitor exposures closely and adjust our country limits in response to changing conditions.

We evaluate our individual country risk exposure based on our assessment of the borrower's ability to repay, which gives consideration for allowable transfers of risk such as guarantees and collateral and may be different from the reporting based on the borrower's primary address. Our largest single foreign country exposure based on our assessment of risk at December 31, 2018, was the United Kingdom, which totaled $27.2 billion, or approximately 1% of our total assets, and included $3.1 billion of sovereign claims. Our United Kingdom sovereign claims arise predominantly from deposits we have placed with the Bank of England pursuant to regulatory requirements in support of our London branch. The United Kingdom officially announced its intention to leave the European Union (Brexit) on March 29, 2017, starting the two-year negotiation process leading to its departure. We continue to implement plans for Brexit. Our primary goal is to continue to serve our existing clients in the United Kingdom and the European Union as well as to continue to meet the needs of our domestic clients as they do business in the United Kingdom and the European Union. We have an existing authorized bank in Ireland and an asset management entity in Luxembourg. We are also in the process of obtaining regulatory approvals to establish a broker dealer in France. We continue to explore options to leverage these entities in order to continue to serve clients in the European Union. In addition, the impact of Brexit on our supplier contracts, staffing and business operations in the European Union is subject to an ongoing review, and we are implementing mitigating actions where possible. For additional information on risks associated with Brexit, see the "Risk Factors" section in this Report.

Table 20 provides information regarding our top 20 exposures by country (excluding the U.S.) and our Eurozone exposure, based on our assessment of risk, which gives consideration to the country of any guarantors and/or underlying collateral.

Table 20: Select Country Exposures

									December 31, 2018
	Lending (1)		Securities (2)		Derivatives and other (3)		Total exposure		
(in millions)	Sovereign	Non-sovereign	Sovereign	Non-sovereign	Sovereign	Non-sovereign	Sovereign	Non-sovereign (4)	Total
Top 20 country exposures:									
United Kingdom	$ 3,102	22,227	—	1,694	3	215	3,105	24,136	27,241
Canada	31	16,651	(27)	190	—	135	4	16,976	16,980
Cayman Islands	—	7,208	—	—	—	182	—	7,390	7,390
Germany	3,840	1,871	(10)	(7)	—	340	3,830	2,204	6,034
Ireland	20	3,897	—	132	—	74	20	4,103	4,123
Bermuda	—	3,841	—	98	—	56	—	3,995	3,995
China	—	2,754	(1)	(28)	25	17	24	2,743	2,767
Guernsey	—	2,606	—	—	—	2	—	2,608	2,608
Netherlands	—	2,180	43	315	—	28	43	2,523	2,566
India	—	2,120	—	156	—	—	—	2,276	2,276
Luxembourg	—	1,502	—	617	—	30	—	2,149	2,149
Brazil	—	1,967	—	—	22	—	22	1,967	1,989
Chile	1	1,654	—	(3)	—	5	1	1,656	1,657
Japan	271	1,082	3	55	—	11	274	1,148	1,422
Australia	—	1,288	—	94	—	10	—	1,392	1,392
France	—	1,220	—	81	8	3	8	1,304	1,312
South Korea	—	1,254	11	9	—	5	11	1,268	1,279
Switzerland	—	1,206	—	(22)	—	17	—	1,201	1,201
Mexico	—	1,164	—	5	—	3	—	1,172	1,172
Virgin Islands (British)	—	1,018	—	64	—	—	—	1,082	1,082
Total top 20 country exposures	$ 7,265	78,710	19	3,450	58	1,133	7,342	83,293	90,635
Eurozone exposure:									
Eurozone countries included in Top 20 above (5)	$ 3,860	10,670	33	1,138	8	475	3,901	12,283	16,184
Austria	—	680	—	116	—	—	—	796	796
Spain	—	428	—	17	—	35	—	480	480
Belgium	—	322	—	(67)	—	—	—	255	255
Other Eurozone countries (6)	23	187	—	74	—	—	23	261	284
Total Eurozone exposure	$ 3,883	12,287	33	1,278	8	510	3,924	14,075	17,999

(1) Lending exposure includes funded loans and unfunded commitments, leveraged leases, and money market placements presented on a gross basis prior to the deduction of impairment allowance and collateral received under the terms of the credit agreements. For the countries listed above, there are $478 million in defeased leases secured significantly by U.S. Treasury and government agency securities.
(2) Represents exposure on debt and equity securities of foreign issuers. Long and short positions are netted and net short positions are reflected as negative exposure.
(3) Represents counterparty exposure on foreign exchange and derivative contracts, and securities resale and lending agreements. This exposure is presented net of counterparty netting adjustments and reduced by the amount of cash collateral. It includes credit default swaps (CDS) predominantly used for market making activities in the U.S. and London based trading businesses, which sometimes results in selling and purchasing protection on the identical reference entities. Generally, we do not use market instruments such as CDS to hedge the credit risk of our investment or loan positions, although we do use them to manage risk in our trading businesses. At December 31, 2018, the gross notional amount of our CDS sold that reference assets in the Top 20 or Eurozone countries was $332 million, which was offset by the notional amount of CDS purchased of $484 million. We did not have any CDS purchased or sold that reference pools of assets that contain sovereign debt or where the reference asset was solely the sovereign debt of a foreign country.
(4) For countries presented in the table, total non-sovereign exposure comprises $41.3 billion exposure to financial institutions and $43.8 billion to non-financial corporations at December 31, 2018.
(5) Consists of exposure to Germany, Ireland, Netherlands, Luxembourg and France included in Top 20.
(6) Includes non-sovereign exposure to Italy, Portugal, and Greece in the amount of $141 million, $19 million and $14 million, respectively. We had no sovereign exposure in these countries at December 31, 2018.

REAL ESTATE 1-4 FAMILY FIRST AND JUNIOR LIEN MORTGAGE LOANS Our real estate 1-4 family first and junior lien mortgage loans, as presented in Table 21, include loans we have made to customers and retained as part of our asset/ liability management strategy, the Pick-a-Pay portfolio acquired from Wachovia which is discussed later in this Report and other purchased loans, and loans included on our balance sheet as a result of consolidation of variable interest entities (VIEs).

Table 21: Real Estate 1-4 Family First and Junior Lien Mortgage Loans

	December 31, 2018		December 31, 2017	
(in millions)	Balance	% of portfolio	Balance	% of portfolio
Real estate 1-4 family first mortgage	$ 285,065	89%	$ 284,054	88%
Real estate 1-4 family junior lien mortgage	34,398	11	39,713	12
Total real estate 1-4 family mortgage loans	$ 319,463	100%	$ 323,767	100%

The real estate 1-4 family mortgage loan portfolio includes some loans with adjustable-rate features and some with an interest-only feature as part of the loan terms. Interest-only loans were approximately 4% of total loans at both December 31, 2018 and 2017. We believe we have manageable adjustable-rate mortgage (ARM) reset risk across our owned mortgage loan portfolios. We do not offer option ARM products, nor do we offer variable-rate mortgage products with fixed payment amounts, commonly referred to within the financial services industry as negative amortizing mortgage loans. The option ARMs we do have are included in the Pick-a-Pay portfolio which was acquired from Wachovia. For more information, see the "Pick-a-Pay Portfolio" section in this Report.

We continue to modify real estate 1-4 family mortgage loans to assist homeowners and other borrowers experiencing financial difficulties. Loans are generally underwritten at the time of the modification in accordance with underwriting guidelines established for our loan modification programs. Under these programs, we may provide concessions such as interest rate reductions, forbearance of principal, and in some cases, principal forgiveness. These programs generally include trial payment periods of three to four months, and after successful completion and compliance with terms during this period, the loan is permanently modified. Loans included under these programs are accounted for as troubled debt restructurings (TDRs) at the start of a trial period or at the time of permanent modification, if no trial period is used. See the "Critical Accounting Policies – Allowance for Credit Losses" section in this Report for discussion on how we determine the allowance attributable to our modified residential real estate portfolios.

Part of our credit monitoring includes tracking delinquency, current FICO scores and loan/combined loan to collateral values (LTV/CLTV) on the entire real estate 1-4 family mortgage loan portfolio. These credit risk indicators, which exclude government insured/guaranteed loans, continued to improve in 2018 on the non-PCI mortgage portfolio. Loans 30 days or more delinquent at December 31, 2018, totaled $4.0 billion, or 1% of total non-PCI mortgages, compared with $5.3 billion, or 2%, at December 31, 2017. Loans with FICO scores lower than 640 totaled $9.7 billion, or 3% of total non-PCI mortgages at December 31, 2018, compared with $11.7 billion, or 4%, at December 31, 2017. Mortgages with a LTV/CLTV greater than 100% totaled $3.9 billion at December 31, 2018, or 1% of total non-PCI mortgages, compared with $6.1 billion, or 2%, at December 31, 2017. Information regarding credit quality indicators, including PCI credit quality indicators, can be found in Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Real estate 1-4 family first and junior lien mortgage loans by state are presented in Table 22. Our real estate 1-4 family non-PCI mortgage loans to borrowers in California represented 12% of total loans at December 31, 2018, located predominantly within the larger metropolitan areas, with no single California metropolitan area consisting of more than 5% of total loans. We monitor changes in real estate values and underlying economic or market conditions for all geographic areas of our real estate 1-4 family first and junior lien mortgage portfolios as part of our credit risk management process. Our underwriting and periodic review of loans and lines secured by residential real estate collateral includes appraisals or estimates from automated valuation models (AVMs) to support property values. AVMs are computer-based tools used to estimate the market value of homes. AVMs are a lower-cost alternative to appraisals and support valuations of large numbers of properties in a short period of time using market comparables and price trends for local market areas. The primary risk associated with the use of AVMs is that the value of an individual property may vary significantly from the average for the market area. We have processes to periodically validate AVMs and specific risk management guidelines addressing the circumstances when AVMs may be used. AVMs are not allowed in real estate 1-4 family first and junior lien mortgage origination underwriting. Broker evaluations and enhanced desktop appraisal reports are allowed in junior lien originations and some first lien line of credit originations up to $250,000. An appraisal is required for all real estate 1-4 family first and junior lien mortgage commitments greater than $250,000. Additional information about AVMs and our policy for their use can be found in Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Table 22: Real Estate 1-4 Family First and Junior Lien Mortgage Loans by State

	December 31, 2018			
(in millions)	Real estate 1-4 family first mortgage	Real estate 1-4 family junior lien mortgage	Total real estate 1-4 family mortgage	% of total loans
Real estate 1-4 family loans (excluding PCI):				
California	$ 109,092	9,338	118,430	12%
New York	28,954	1,714	30,668	3
New Jersey	13,811	3,152	16,963	2
Florida	12,350	3,140	15,490	2
Washington	9,677	759	10,436	1
Virginia	8,343	2,020	10,363	1
Texas	8,566	658	9,224	1
North Carolina	5,888	1,608	7,496	1
Pennsylvania	5,422	1,929	7,351	1
Other (1)	65,042	10,063	75,105	8
Government insured/ guaranteed loans (2)	12,932	—	12,932	1
Real estate 1-4 family loans (excluding PCI)	280,077	34,381	314,458	33
Real estate 1-4 family PCI loans	4,988	17	5,005	1
Total	$ 285,065	34,398	319,463	34%

(1) Consists of 41 states; no state had loans in excess of $6.8 billion.
(2) Represents loans whose repayments are predominantly insured by the Federal Housing Administration (FHA) or guaranteed by the Department of Veterans Affairs (VA).

First Lien Mortgage Portfolio Our total real estate 1-4 family first lien mortgage portfolio increased $1.0 billion in 2018, as growth in held for investment nonconforming mortgage loans was partially offset by payoffs and Pick-a-Pay PCI loan sales of $6.2 billion. In addition, $1.3 billion of nonconforming mortgage loan originations that would have otherwise been included in this portfolio, were designated as held for sale in 2018 in anticipation of the future issuance of residential mortgage-backed securities. We retained $42.0 billion in nonconforming originations, consisting of loans that exceed conventional conforming loan amount limits established by federal government-sponsored entities (GSEs) in 2018.

The credit performance associated with our real estate 1-4 family first lien mortgage portfolio continued to improve in 2018, as measured through net charge-offs and nonaccrual loans. Net charge-offs as a percentage of average real estate 1-4 family first lien mortgage loans improved to a net recovery of 0.03% in 2018, compared with a net recovery of 0.02% in 2017. Nonaccrual loans were $3.2 billion at December 31, 2018, compared with $3.7 billion at December 31, 2017. The decrease in nonaccrual loans from December 31, 2017, was driven by nonaccrual loan sales and an improving housing environment.

Table 23 shows certain delinquency and loss information for the first lien mortgage portfolio and lists the top five states by outstanding balance.

Table 23: First Lien Mortgage Portfolio Performance

	Outstanding balance		% of loans 30 days or more past due		Loss (recovery) rate	
	December 31,		December 31,		Year ended December 31,	
(in millions)	**2018**	2017	**2018**	2017	**2018**	2017
California	**$ 109,092**	101,464	**0.68%**	1.06	**(0.06)**	(0.07)
New York	**28,954**	26,624	**1.12**	1.65	**0.04**	0.03
New Jersey	**13,811**	13,212	**1.91**	2.74	**0.03**	0.16
Florida	**12,350**	13,083	**2.58**	3.95	**(0.17)**	(0.16)
Washington	**9,677**	8,845	**0.57**	0.85	**(0.06)**	(0.08)
Other	**93,261**	92,961	**1.70**	2.25	**(0.02)**	0.02
Total	**267,145**	256,189	**1.23**	1.78	**(0.03)**	(0.02)
Government insured/guaranteed loans	**12,932**	15,143				
PCI	**4,988**	12,722				
Total first lien mortgages	**$ 285,065**	284,054				

Pick-a-Pay Portfolio The Pick-a-Pay portfolio was one of the consumer residential first lien mortgage portfolios we acquired from Wachovia and a majority of the portfolio was identified as PCI loans.

The Pick-a-Pay portfolio is included in the consumer real estate 1-4 family first mortgage class of loans throughout this Report. Table 24 provides balances by types of loans as of December 31, 2018. As a result of our loan modification and loss mitigation efforts as well as borrower payoffs, Pick-a-Pay option payment loans have been reduced to $8.8 billion at December 31, 2018, from $99.9 billion at acquisition. Total adjusted unpaid principal balance of Pick-a-Pay PCI loans was $6.6 billion at December 31, 2018, compared with $61.0 billion at acquisition. Due to loan modification and loss mitigation efforts as well as borrower payoffs, the adjusted unpaid principal balance of option payment PCI loans has declined to 19% of the total Pick-a-Pay portfolio at December 31, 2018, compared with 51% at acquisition. As favorable sale opportunities arise, we may sell portions of this portfolio. We expect to close on the sale of approximately $2.4 billion unpaid principal balance of Pick-a-Pay PCI loans in first quarter 2019.

Table 24: Pick-a-Pay Portfolio – Comparison to Acquisition Date

	December 31, 2018		December 31, 2008	
(in millions)	**Adjusted unpaid principal balance (1)**	**% of total**	Adjusted unpaid principal balance (1)	% of total
Option payment loans	**$ 8,813**	**50%**	$ 99,937	86%
Non-option payment adjustable-rate and fixed-rate loans	**2,848**	**16**	15,763	14
Full-term loan modifications	**6,080**	**34**	—	—
Total adjusted unpaid principal balance	**$ 17,741**	**100%**	$ 115,700	100%
Total carrying value	**$ 16,115**		$ 95,315	

(1) Adjusted unpaid principal balance includes write-downs taken on loans where severe delinquency (normally 180 days) or other indications of severe borrower financial stress exist that indicate there will be a loss of contractually due amounts upon final resolution of the loan.

Pick-a-Pay option payment loans may have fixed or adjustable rates with payment options that include a minimum payment, an interest-only payment or fully amortizing payment (both 15- and 30-year options).

Since December 31, 2008, we have completed over 138,000 proprietary and Home Affordability Modification Program (HAMP) Pick-a-Pay loan modifications, which have resulted in over $6.1 billion of principal forgiveness. We have also provided interest rate reductions and loan term extensions to enable sustainable homeownership for our Pick-a-Pay customers.

The predominant portion of our PCI loans is included in the Pick-a-Pay portfolio. Our cash flows expected to be collected have been favorably affected over time by lower expected defaults and losses as a result of observed and forecasted economic strengthening, particularly in housing prices, and our loan modification efforts. Since acquisition, we have reclassified $9.3 billion from the nonaccretable difference to the accretable yield. Fluctuations in the accretable yield are driven by changes in interest rate indices for variable rate PCI loans, prepayment assumptions, and expected principal and interest payments over the estimated life of the portfolio, which will be affected by the pace and degree of improvements in the U.S. economy and housing markets and projected lifetime performance resulting from loan modification activity. Changes in the projected timing of cash flow events, including loan liquidations, prepayments, modifications and short sales, can also affect the accretable yield and the estimated weighted-average life of the portfolio.

During 2018, we sold $6.2 billion of Pick-a-Pay PCI loans that resulted in a gain of $2.4 billion. The accretable yield balance related to our Pick-a-Pay PCI loan portfolio declined $5.9 billion during 2018, driven by realized accretion of $1.0 billion, $2.4 billion from the gain on the loan sales, a $2.1 billion reduction in expected interest cash flows resulting from the loan sales, and a $752 million reduction in cash flows resulting from higher prepayments, partially offset by a $372 million reclassification from nonaccretable difference. An increase in expected prepayments and passage of time lowered our estimated weighted-average life to approximately 5.5 years at December 31, 2018, from 6.8 years at December 31, 2017. The accretable yield percentage for Pick-a-Pay PCI loans for fourth quarter 2018 was 11.47%, up from 9.83% in fourth quarter 2017, due to an increase in the amount of accretable yield relative to the shortened weighted-average life. Based on loan sales in fourth quarter 2018, we expect the accretable yield percentage to increase to approximately 11.49% for first quarter 2019.

For further information on the judgment involved in estimating expected cash flows for PCI loans, see Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report.

Junior Lien Mortgage Portfolio The junior lien mortgage portfolio consists of residential mortgage lines and loans that are subordinate in rights to an existing lien on the same property. It is not unusual for these lines and loans to have draw periods, interest only payments, balloon payments, adjustable rates and similar features. Junior lien loan products are mostly amortizing payment loans with fixed interest rates and repayment periods between five to 30 years.

We continuously monitor the credit performance of our junior lien mortgage portfolio for trends and factors that influence the frequency and severity of loss. We have observed that the severity of loss for junior lien mortgages is high and generally not affected by whether we or a third party own or service the related first lien mortgage, but the frequency of delinquency is typically lower when we own or service the first lien mortgage. In general, we have limited information available on the delinquency status of the third party owned or serviced first lien where we also hold a junior lien. To capture this inherent loss content, our allowance process for junior lien mortgages considers the relative difference in loss experience for junior lien mortgages behind first lien mortgage loans we own or service, compared with those behind first lien mortgage loans owned or serviced by third parties. In addition, our allowance process for junior lien mortgages that are current, but are in their revolving period, considers the inherent loss where the borrower is delinquent on the corresponding first lien mortgage loans.

Table 25 shows certain delinquency and loss information for the junior lien mortgage portfolio and lists the top five states by outstanding balance. The decrease in outstanding balances since December 31, 2017, predominantly reflects loan paydowns. As of December 31, 2018, 6% of the outstanding balance of the junior lien mortgage portfolio was associated with loans that had a combined loan to value (CLTV) ratio in excess of 100%. Of those junior lien mortgages with a CLTV ratio in excess of 100%, 2.93% were 30 days or more past due. CLTV means the ratio of the total loan balance of first lien mortgages and junior lien mortgages (including unused line amounts for credit line products) to property collateral value. The unsecured portion (the outstanding amount that was in excess of the most recent property collateral value) of the outstanding balances of these loans totaled 2% of the junior lien mortgage portfolio at December 31, 2018. For additional information on consumer loans by LTV/CLTV, see Table 6.12 in Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Table 25: Junior Lien Mortgage Portfolio Performance

	Outstanding balance		% of loans 30 days or more past due		Loss (recovery) rate	
	December 31,		December 31,		Year ended December 31,	
(in millions)	**2018**	2017	**2018**	2017	**2018**	2017
California	**$ 9,338**	10,599	**1.67%**	2.09	**(0.46)**	(0.40)
New Jersey	**3,152**	3,606	**2.57**	2.86	**0.25**	0.64
Florida	**3,140**	3,688	**2.73**	3.05	**—**	0.10
Virginia	**2,020**	2,358	**1.91**	2.34	**0.19**	0.29
Pennsylvania	**1,929**	2,210	**2.10**	2.37	**0.15**	0.39
Other	**14,802**	17,225	**2.12**	2.33	**(0.07)**	0.08
Total	**34,381**	39,686	**2.08**	2.38	**(0.11)**	0.03
PCI	**17**	27				
Total junior lien mortgages	**$ 34,398**	39,713				

Our junior lien, as well as first lien, lines of credit portfolios generally have draw periods of 10, 15 or 20 years with variable interest rate and payment options during the draw period of (1) interest only or (2) 1.5% of outstanding principal balance plus accrued interest. During the draw period, the borrower has the option of converting all or a portion of the line from a variable interest rate to a fixed rate with terms including interest-only payments for a fixed period between three to seven years or a fully amortizing payment with a fixed period between five to 30 years. At the end of the draw period, a line of credit generally converts to an amortizing payment schedule with repayment terms of up to 30 years based on the balance at time of conversion. Certain lines and loans have been structured with a balloon payment, which requires full repayment of the outstanding balance at the end of the term period. The conversion of lines or loans to fully amortizing or balloon payoff may result in a significant payment increase, which can affect some borrowers' ability to repay the outstanding balance.

On a monthly basis, we monitor the payment characteristics of borrowers in our first and junior lien lines of credit portfolios. In December 2018, approximately 44% of these borrowers paid only the minimum amount due and approximately 50% paid more than the minimum amount due. The rest were either delinquent or paid less than the minimum amount due. For the borrowers with an interest only payment feature, approximately 30% paid only the minimum amount due and approximately 63% paid more than the minimum amount due.

The lines that enter their amortization period may experience higher delinquencies and higher loss rates than the ones in their draw or term period. We have considered this increased inherent risk in our allowance for credit loss estimate.

In anticipation of our borrowers reaching the end of their contractual commitment, we have created a program to inform, educate and help these borrowers transition from interest-only to fully-amortizing payments or full repayment. We monitor the performance of the borrowers moving through the program in an effort to refine our ongoing program strategy.

Table 26 reflects the outstanding balance of our portfolio of junior lien mortgages, including lines and loans, and first lien lines segregated into scheduled end of draw or end of term periods and products that are currently amortizing, or in balloon repayment status. It excludes real estate 1-4 family first lien line reverse mortgages, which total $109 million, because they are predominantly insured by the FHA, and it excludes PCI loans, which total $34 million, because their losses were generally reflected in our nonaccretable difference established at the date of acquisition.

Table 26: Junior Lien Mortgage Line and Loan and First Lien Mortgage Line Portfolios Payment Schedule

		Scheduled end of draw/term						
(in millions)	Outstanding balance December 31, 2018	2019	2020	2021	2022	2023	2024 and thereafter (1)	Amortizing
Junior lien lines and loans	$ **34,381**	456	499	1,107	3,964	2,754	14,291	11,310
First lien lines	**11,802**	169	197	509	1,887	1,419	5,616	2,005
Total (2)(3)	$ **46,183**	625	696	1,616	5,851	4,173	19,907	13,315
% of portfolios	**100%**	**1**	**2**	**3**	**13**	**9**	**43**	**29**

(1) Substantially all lines and loans are scheduled to convert to amortizing loans by the end of 2028, with annual scheduled amounts through 2028 ranging from $2.4 billion to $5.8 billion and averaging $3.9 billion per year.
(2) Junior and first lien lines are primarily interest-only during their draw period. The unfunded credit commitments for junior and first lien lines totaled $60.1 billion at December 31, 2018.
(3) Includes scheduled end-of-term balloon payments for lines and loans totaling $179 million, $223 million, $365 million, $172 million, $7 million and $30 million for 2019, 2020, 2021, 2022, 2023, and 2024 and thereafter, respectively. Amortizing lines and loans include $56 million of end-of-term balloon payments, which are past due. At December 31, 2018, $488 million, or 4% of outstanding lines of credit that are amortizing, are 30 days or more past due compared to $553 million or 2% for lines in their draw period.

CREDIT CARDS Our credit card portfolio totaled $39.0 billion at December 31, 2018, which represented 4% of our total outstanding loans. The net charge-off rate for our credit card portfolio was 3.51% for 2018, compared with 3.49% for 2017.

AUTOMOBILE Our automobile portfolio, predominantly composed of indirect loans, totaled $45.1 billion at December 31, 2018. The net charge-off rate for our automobile portfolio was 1.21% for 2018, compared with 1.18% for 2017.

OTHER REVOLVING CREDIT AND INSTALLMENT Other revolving credit and installment loans totaled $36.1 billion at December 31, 2018, and primarily included student and securities-based loans. Our private student loan portfolio totaled $11.2 billion at December 31, 2018. The net charge-off rate for other revolving credit and installment loans was 1.53% for 2018, compared with 1.52% for 2017.

NONPERFORMING ASSETS (NONACCRUAL LOANS AND FORECLOSED ASSETS) Table 27 summarizes nonperforming assets (NPAs) for each of the last five years. We generally place loans on nonaccrual status when:

- the full and timely collection of interest or principal becomes uncertain (generally based on an assessment of the borrower's financial condition and the adequacy of collateral, if any), such as in bankruptcy or other circumstances;
- they are 90 days (120 days with respect to real estate 1-4 family first and junior lien mortgages) past due for interest or principal, unless both well-secured and in the process of collection;
- part of the principal balance has been charged off; or
- for junior lien mortgages, we have evidence that the related first lien mortgage may be 120 days past due or in the process of foreclosure regardless of the junior lien delinquency status.

Credit card loans are not placed on nonaccrual status, but are generally fully charged off when the loan reaches 180 days past due.

Note 1 (Summary of Significant Accounting Policies – Loans) to Financial Statements in this Report describes our accounting policy for nonaccrual and impaired loans.

Nonaccrual loans were $6.5 billion at December 31, 2018, down $1.2 billion from a year ago, due to a $413 million decrease in commercial and industrial nonaccruals reflecting continued credit improvement in the portfolio, as well as a decrease of $690 million in consumer real estate nonaccruals.

Table 27: Nonperforming Assets (Nonaccrual Loans and Foreclosed Assets)

					December 31,
(in millions)	**2018**	2017	2016	2015	2014
Nonaccrual loans:					
Commercial:					
Commercial and industrial	**$ 1,486**	1,899	3,199	1,363	537
Real estate mortgage	**580**	628	685	969	1,490
Real estate construction	**32**	37	43	66	187
Lease financing	**90**	76	115	26	24
Total commercial	**2,188**	2,640	4,042	2,424	2,238
Consumer:					
Real estate 1-4 family first mortgage	**3,183**	3,732	4,516	6,829	8,056
Real estate 1-4 family junior lien mortgage	**945**	1,086	1,206	1,495	1,848
Automobile	**130**	130	106	121	137
Other revolving credit and installment	**50**	58	51	49	41
Total consumer	**4,308**	5,006	5,879	8,494	10,082
Total nonaccrual loans (1)(2)(3)(4)	**$ 6,496**	7,646	9,921	10,918	12,320
As a percentage of total loans	**0.68%**	0.80	1.03	1.19	1.43
Foreclosed assets:					
Government insured/guaranteed (5)	**$ 88**	120	197	446	982
Non-government insured/guaranteed	**363**	522	781	979	1,627
Total foreclosed assets	**451**	642	978	1,425	2,609
Total nonperforming assets	**$ 6,947**	8,288	10,899	12,343	14,929
As a percentage of total loans	**0.73%**	0.87	1.13	1.35	1.73

(1) Financial information for periods prior to December 31, 2018, has been revised to exclude mortgage loans held for sale (MLHFS), loans held for sale (LHFS) and loans held at fair value of $390 million, $463 million, $464 million, and $528 million at December 31, 2017, 2016, 2015, and 2014, respectively.
(2) Excludes PCI loans because they continue to earn interest income from accretable yield, independent of performance in accordance with their contractual terms.
(3) Real estate 1-4 family mortgage loans predominantly insured by the FHA or guaranteed by the VA are not placed on nonaccrual status because they are insured or guaranteed.
(4) See Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report for further information on impaired loans.
(5) Consistent with regulatory reporting requirements, foreclosed real estate resulting from government insured/guaranteed loans are classified as nonperforming. However, both principal and interest related to these foreclosed real estate assets are collectible because the loans were predominantly insured by the FHA or guaranteed by the VA. Foreclosure of certain government guaranteed residential real estate mortgage loans that meet criteria specified by Accounting Standards Update (ASU) 2014-14, *Classification of Certain Government-Guaranteed Mortgage Loans Upon Foreclosure*, effective as of January 1, 2014, are excluded from this table and included in Accounts Receivable in Other Assets. For more information on the classification of certain government-guaranteed mortgage loans upon foreclosure, see Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report.

Table 28 provides a summary of nonperforming assets during 2018.

Table 28: Nonperforming Assets by Quarter During 2018

	December 31, 2018		September 30, 2018		June 30, 2018		March 31, 2018	
(in millions)	Balance	% of total loans	Balance	% of total loans	Balance	% of total loans	Balance	% of total loans
Nonaccrual loans:								
Commercial:								
Commercial and industrial	$ 1,486	0.42%	$ 1,555	0.46%	$ 1,559	0.46%	$ 1,516	0.45%
Real estate mortgage	580	0.48	603	0.50	765	0.62	755	0.60
Real estate construction	32	0.14	44	0.19	51	0.22	45	0.19
Lease financing	90	0.46	96	0.49	80	0.41	93	0.48
Total commercial	2,188	0.43	2,298	0.46	2,455	0.49	2,409	0.48
Consumer:								
Real estate 1-4 family first mortgage	3,183	1.12	3,267	1.15	3,469	1.23	3,673	1.30
Real estate 1-4 family junior lien mortgage	945	2.75	983	2.78	1,029	2.82	1,087	2.87
Automobile	130	0.29	118	0.26	119	0.25	117	0.24
Other revolving credit and installment	50	0.14	48	0.13	54	0.14	53	0.14
Total consumer	4,308	0.98	4,416	1.00	4,671	1.06	4,930	1.11
Total nonaccrual loans (1)	6,496	0.68	6,714	0.71	7,126	0.75	7,339	0.77
Foreclosed assets:								
Government insured/guaranteed	88		87		90		103	
Non-government insured/guaranteed	363		435		409		468	
Total foreclosed assets	451		522		499		571	
Total nonperforming assets	$ 6,947	0.73%	$ 7,236	0.77%	$ 7,625	0.81%	$ 7,910	0.83%
Change in NPAs from prior quarter	$ (289)		(389)		(285)		(378)	

(1) Financial information for periods prior to December 31, 2018, has been revised to exclude MLHFS, LHFS and loans held at fair value of $339 million, $360 million, and $380 million, at September 30, June 30, and March 31, 2018, respectively.

Table 29 provides an analysis of the changes in nonaccrual loans.

Table 29: Analysis of Changes in Nonaccrual Loans

		Quarter ended				
	Dec 31,	Sep 30,	Jun 30,	Mar 31,	Year ended Dec 31,	
(in millions)	**2018**	2018	2018	2018	**2018**	2017
Commercial nonaccrual loans						
Balance, beginning of period	$ **2,298**	2,455	2,409	2,640	**2,640**	4,059
Inflows	**662**	774	726	605	**2,767**	2,893
Outflows:						
Returned to accruing	**(45)**	(122)	(43)	(113)	**(323)**	(417)
Foreclosures	**(12)**	—	—	—	**(12)**	(20)
Charge-offs	**(193)**	(191)	(133)	(119)	**(636)**	(630)
Payments, sales and other	**(522)**	(618)	(504)	(604)	**(2,248)**	(3,245)
Total outflows	**(772)**	(931)	(680)	(836)	**(3,219)**	(4,312)
Balance, end of period	**2,188**	2,298	2,455	2,409	**2,188**	2,640
Consumer nonaccrual loans						
Balance, beginning of period	**4,416**	4,671	4,930	5,006	**5,006**	5,879
Inflows	**569**	572	578	714	**2,433**	3,093
Outflows:						
Returned to accruing	**(269)**	(319)	(342)	(374)	**(1,304)**	(1,583)
Foreclosures	**(35)**	(41)	(40)	(50)	**(166)**	(218)
Charge-offs	**(57)**	(65)	(84)	(86)	**(292)**	(468)
Payments, sales and other	**(316)**	(402)	(371)	(280)	**(1,369)**	(1,697)
Total outflows	**(677)**	(827)	(837)	(790)	**(3,131)**	(3,966)
Balance, end of period	**4,308**	4,416	4,671	4,930	**4,308**	5,006
Total nonaccrual loans (1)	$ **6,496**	6,714	7,126	7,339	**6,496**	7,646

(1) Financial information for periods prior to December 31, 2018, has been revised to exclude MLHFS, LHFS and loans held at fair value of $339 million, $360 million, and $380 million, at September 30, June 30, and March 31, 2018, respectively, and $390 million at December 31, 2017.

Typically, changes to nonaccrual loans period-over-period represent inflows for loans that are placed on nonaccrual status in accordance with our policy, offset by reductions for loans that are paid down, charged off, sold, foreclosed, or are no longer classified as nonaccrual as a result of continued performance and an improvement in the borrower's financial condition and loan repayment capabilities. Also, reductions can come from borrower repayments even if the loan remains on nonaccrual.

While nonaccrual loans are not free of loss content, we believe exposure to loss is significantly mitigated by the following factors at December 31, 2018:

- Over 96% of total commercial nonaccrual loans and 99% of total consumer nonaccrual loans are secured. Of the consumer nonaccrual loans, 96% are secured by real estate and 87% have a combined LTV (CLTV) ratio of 80% or less.
- losses of $358 million and $1.5 billion have already been recognized on 20% of commercial nonaccrual loans and 45% of consumer nonaccrual loans, respectively. Generally, when a consumer real estate loan is 120 days past due (except when required earlier by guidance issued by bank regulatory agencies), we transfer it to nonaccrual status. When the loan reaches 180 days past due, or is active or discharged in bankruptcy, it is our policy to write these loans down to net realizable value (fair value of collateral less estimated costs to sell). Thereafter, we re-evaluate each loan regularly and record additional write-downs if needed.
- 82% of commercial nonaccrual loans were current on interest, but were on nonaccrual status because the full or timely collection of interest or principal had become uncertain.
- 72% of commercial nonaccrual loans were current on both principal and interest, but will remain on nonaccrual status until the full and timely collection of principal and interest becomes certain.
- the remaining risk of loss of all nonaccrual loans has been considered and we believe is adequately covered by the allowance for loan losses.
- of $1.9 billion of consumer loans in bankruptcy or discharged in bankruptcy, and classified as nonaccrual, $1.3 billion were current.

We continue to work with our customers experiencing financial difficulty to determine if they can qualify for a loan modification so that they can stay in their homes. Under our proprietary modification programs, customers may be required to provide updated documentation, and some programs require completion of payment during trial periods to demonstrate sustained performance before the loan can be removed from nonaccrual status.

If interest due on all nonaccrual loans (including loans that were, but are no longer on nonaccrual at year end) had been accrued under the original terms, approximately $446 million of interest would have been recorded as income on these loans, compared with $426 million actually recorded as interest income in 2018, versus $500 million and $395 million, respectively, in 2017.

Table 30 provides a summary of foreclosed assets and an analysis of changes in foreclosed assets.

Table 30: Foreclosed Assets

		Quarter ended				
	Dec 31,	Sep 30,	Jun 30,	Mar 31,	Year ended Dec 31,	
(in millions)	**2018**	2018	2018	2018	**2018**	2017
Summary by loan segment						
Government insured/guaranteed	**$ 88**	87	90	103	**88**	120
PCI loans:						
Commercial	**24**	31	42	59	**24**	57
Consumer	**72**	63	61	58	**72**	62
Total PCI loans	**96**	94	103	117	**96**	119
All other loans:						
Commercial	**103**	170	134	162	**103**	207
Consumer	**164**	171	172	189	**164**	196
Total all other loans	**267**	341	306	351	**267**	403
Total foreclosed assets	**$ 451**	522	499	571	**451**	642
Analysis of changes in foreclosed assets						
Balance, beginning of period	**$ 522**	499	571	642	**642**	978
Net change in government insured/guaranteed (2)	**1**	(3)	(13)	(17)	**(32)**	(77)
Additions to foreclosed assets (3)	**193**	209	191	185	**778**	899
Reductions:						
Sales	**(274)**	(181)	(257)	(245)	**(957)**	(1,125)
Write-downs and gains (losses) on sales	**9**	(2)	7	6	**20**	(33)
Total reductions	**(265)**	(183)	(250)	(239)	**(937)**	(1,158)
Balance, end of period	**$ 451**	522	499	571	**451**	642

(1) Foreclosed government insured/guaranteed loans are temporarily transferred to and held by us as servicer, until reimburseme nt is received from FHA or VA. The net change in government insured/guaranteed foreclosed assets is generally made up of inflows from mortgages held for investment and MLHFS, and outflows when we are reimbursed by FHA/VA.
(2) Includes loans moved into foreclosure from nonaccrual status, PCI loans transitioned directly to foreclosed assets and repossessed automobiles.

Foreclosed assets at December 31, 2018, included $317 million of foreclosed residential real estate, of which 28% is predominantly FHA insured or VA guaranteed and expected to have minimal or no loss content. The remaining foreclosed assets balance of $134 million has been written down to estimated net realizable value. Of the $451 million in foreclosed assets at December 31, 2018, 65% have been in the foreclosed assets portfolio one year or less.

TROUBLED DEBT RESTRUCTURINGS (TDRs)

Table 31: Troubled Debt Restructurings (TDRs)

					December 31,
(in millions)	**2018**	2017	2016	2015	2014
Commercial:					
Commercial and industrial	$ **1,623**	2,096	2,584	1,123	724
Real estate mortgage	**704**	901	1,119	1,456	1,880
Real estate construction	**39**	44	91	125	314
Lease financing	**56**	35	6	1	2
Total commercial TDRs	**2,422**	3,076	3,800	2,705	2,920
Consumer:					
Real estate 1-4 family first mortgage	**10,629**	12,080	14,134	16,812	18,226
Real estate 1-4 family junior lien mortgage	**1,639**	1,849	2,074	2,306	2,437
Credit Card	**449**	356	300	299	338
Automobile	**89**	87	85	105	127
Other revolving credit and installment	**154**	126	101	73	49
Trial modifications	**149**	194	299	402	452
Total consumer TDRs	**13,109**	14,692	16,993	19,997	21,629
Total TDRs	$ **15,531**	17,768	20,793	22,702	24,549
TDRs on nonaccrual status	$ **4,058**	4,801	6,193	6,506	7,104
TDRs on accrual status:					
Government insured/guaranteed	**1,299**	1,359	1,526	1,771	2,078
Non-government insured/guaranteed	**10,174**	11,608	13,074	14,425	15,367
Total TDRs	$ **15,531**	17,768	20,793	22,702	24,549

Table 32: TDRs Balance by Quarter During 2018

(in millions)	**Dec 31, 2018**	Sep 30, 2018	Jun 30, 2018	Mar 31, 2018
Commercial:				
Commercial and industrial	$ **1,623**	1,837	1,792	1,703
Real estate mortgage	**704**	782	904	939
Real estate construction	**39**	49	40	45
Lease financing	**56**	65	50	53
Total commercial TDRs	**2,422**	2,733	2,786	2,740
Consumer:				
Real estate 1-4 family first mortgage	**10,629**	10,967	11,387	11,782
Real estate 1-4 family junior lien mortgage	**1,639**	1,689	1,735	1,794
Credit Card	**449**	431	410	386
Automobile	**89**	91	81	83
Other revolving credit and installment	**154**	146	141	137
Trial modifications	**149**	163	200	198
Total consumer TDRs	**13,109**	13,487	13,954	14,380
Total TDRs	$ **15,531**	16,220	16,740	17,120
TDRs on nonaccrual status	$ **4,058**	4,298	4,454	4,428
TDRs on accrual status:				
Government insured/guaranteed	**1,299**	1,308	1,368	1,375
Non-government insured/guaranteed	**10,174**	10,614	10,918	11,317
Total TDRs	$ **15,531**	16,220	16,740	17,120

Table 31 and Table 32 provide information regarding the recorded investment of loans modified in TDRs. The allowance for loan losses for TDRs was $1.2 billion and $1.6 billion at December 31, 2018 and 2017, respectively. See Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report for additional information regarding TDRs. In those situations where principal is forgiven, the entire amount of such forgiveness is immediately charged off to the extent not done so prior to the modification. When we delay the timing on the repayment of a portion of principal (principal forbearance), we charge off the amount of forbearance if that amount is not considered fully collectible.

Our nonaccrual policies are generally the same for all loan types when a restructuring is involved. We typically re-underwrite loans at the time of restructuring to determine whether there is sufficient evidence of sustained repayment capacity based on the borrower's documented income, debt to income ratios, and other factors. Loans lacking sufficient evidence of sustained repayment capacity at the time of modification are charged down to the fair value of the collateral, if applicable. For an accruing loan that has been modified, if the borrower has demonstrated performance under the previous terms and the underwriting process shows the capacity to continue to perform under the restructured terms, the loan will generally remain in accruing status. Otherwise, the loan will be placed in nonaccrual status and may be returned to accruing status when the borrower demonstrates a sustained period of performance, generally six consecutive months of payments, or equivalent, inclusive of consecutive payments made prior to modification. Loans will also be placed on nonaccrual, and a corresponding charge-off is recorded to the loan balance, when we believe that principal and interest contractually due under the modified agreement will not be collectible.

Table 33 provides an analysis of the changes in TDRs. Loans modified more than once are reported as TDR inflows only in the period they are first modified. Other than resolutions such as foreclosures, sales and transfers to held for sale, we may remove loans held for investment from TDR classification, but only if they have been refinanced or restructured at market terms and qualify as a new loan.

Table 33: Analysis of Changes in TDRs

	Quarter ended					
	Dec 31,	Sep 30,	Jun 30,	Mar 31,	Year ended Dec 31,	
(in millions)	**2018**	2018	2018	2018	**2018**	2017
Commercial TDRs						
Balance, beginning of period	$ **2,733**	2,786	2,740	3,076	**3,076**	3,800
Inflows (1)(2)	**374**	588	481	321	**1,764**	2,117
Outflows						
Charge-offs	**(88)**	(92)	(41)	(63)	**(284)**	(306)
Foreclosure	**(2)**	(13)	—	—	**(15)**	(15)
Payments, sales and other (2)(3)	**(595)**	(536)	(394)	(594)	**(2,119)**	(2,520)
Balance, end of period	**2,422**	2,733	2,786	2,740	**2,422**	3,076
Consumer TDRs						
Balance, beginning of period	**13,487**	13,954	14,380	14,692	**14,692**	16,993
Inflows (1)	**379**	414	467	487	**1,747**	1,817
Outflows						
Charge-offs	**(57)**	(56)	(56)	(54)	**(223)**	(205)
Foreclosure	**(90)**	(116)	(133)	(131)	**(470)**	(619)
Payments, sales and other (3)	**(595)**	(672)	(706)	(618)	**(2,591)**	(3,189)
Net change in trial modifications (4)	**(15)**	(37)	2	4	**(46)**	(105)
Balance, end of period	**13,109**	13,487	13,954	14,380	**13,109**	14,692
Total TDRs	$ **15,531**	16,220	16,740	17,120	**15,531**	17,768

(1) Inflows include loans that modify, even if they resolve within the period, as well as gross advances on term loans that modified in a prior period and net advances on revolving commercial TDRs that modified in a prior period.
(2) Information for the quarter ended June 30, 2018, has been revised to offset payments and advances (i.e., inflows) on revolving commercial TDRs, for consistent presentation of this activity for all periods.
(3) Other outflows include normal amortization/accretion of loan basis adjustments and loans transferred to held-for-sale. It also includes $59 million and $5 million of loans refinanced or restructured at market terms and qualifying as new loans and removed from TDR classification for the quarters ended December 31 and March 31, 2018, respectively, while no loans were removed from TDR classification for the quarters ended September 30 and June 30, 2018. During 2017, $6 million of loans refinanced or structured as new loans and were removed from TDR classification.
(4) Net change in trial modifications includes: inflows of new TDRs entering the trial payment period, net of outflows for modifications that either (i) successfully perform and enter into a permanent modification, or (ii) did not successfully perform according to the terms of the trial period plan and are subsequently charged-off, foreclosed upon or otherwise resolved.

LOANS 90 DAYS OR MORE PAST DUE AND STILL ACCRUING Loans 90 days or more past due as to interest or principal are still accruing if they are (1) well-secured and in the process of collection or (2) real estate 1-4 family mortgage loans or consumer loans exempt under regulatory rules from being classified as nonaccrual until later delinquency, usually 120 days past due. PCI loans are not included in past due and still accruing loans even when they are 90 days or more contractually past due. These PCI loans are considered to be accruing because they continue to earn interest from accretable yield, independent of performance in accordance with their contractual terms.

Excluding insured/guaranteed loans, loans 90 days or more past due and still accruing at December 31, 2018, were down $78 million, or 7%, from December 31, 2017, due to payoffs, modifications and other loss mitigation activities and credit stabilization.

Loans 90 days or more past due and still accruing whose repayments are predominantly insured by the FHA or guaranteed by the VA for mortgages were $7.7 billion at December 31, 2018, down from $10.5 billion at December 31, 2017, due to an improvement in delinquencies, loan modification activity, as well as runoff. All remaining student loans guaranteed by agencies on behalf of the U.S. Department of Education under the FFELP were sold as of March 31, 2017.

Table 34 reflects non-PCI loans 90 days or more past due and still accruing by class for loans not government insured/guaranteed. For additional information on delinquencies by loan class, see Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Table 34: Loans 90 Days or More Past Due and Still Accruing (1)

	December 31,				
(in millions)	**2018**	2017	2016	2015	2014
Total (excluding PCI)(2):	**$ 8,704**	11,532	11,437	13,866	17,183
Less: FHA insured/VA guaranteed (3)	**7,725**	10,475	10,467	12,863	16,204
Less: Student loans guaranteed under the FFELP (4)	**—**	—	3	26	63
Total, not government insured/guaranteed	**$ 979**	1,057	967	977	916
By segment and class, not government insured/guaranteed:					
Commercial:					
Commercial and industrial	**$ 43**	26	28	97	31
Real estate mortgage	**51**	23	36	13	16
Real estate construction	**—**	—	—	4	—
Total commercial	**94**	49	64	114	47
Consumer:					
Real estate 1-4 family first mortgage	**124**	213	170	220	256
Real estate 1-4 family junior lien mortgage	**32**	60	56	65	83
Credit card	**513**	492	452	397	364
Automobile	**114**	143	112	79	73
Other revolving credit and installment	**102**	100	113	102	93
Total consumer	**885**	1,008	903	863	869
Total, not government insured/guaranteed	**$ 979**	1,057	967	977	916

(1) Financial information for periods prior to December 31, 2018, has been revised to exclude MLHFS, LHFS and loans held at fair value, which reduced "Total, not government insured/guaranteed" by $6 million, $5 million, $4 million and $4 million at December 31, 2017, 2016, 2015 and 2014, respectively.
(2) PCI loans totaled $370 million, $1.4 billion, $2.0 billion, $2.9 billion and $3.7 billion at December 31, 2018, 2017, 2016, 2015 and 2014, respectively.
(3) Represents loans whose repayments are predominantly insured by the FHA or guaranteed by the VA.
(4) Represents loans whose repayments are largely guaranteed by agencies on behalf of the U.S. Department of Education under the FFELP. All remaining student loans guaranteed under the FFELP were sold as of March 31, 2017.

NET CHARGE-OFFS

Table 35: Net Charge-offs

($ in millions)	Year ended December 31, Net loan charge-offs	Year ended December 31, % of avg. loans	Quarter ended December 31, Net loan charge-offs	December 31, % of avg. loans (1)	September 30, Net loan charge-offs	September 30, % of avg. loans (1)	June 30, Net loan charge-offs	June 30, % of avg. loans (1)	March 31, Net loan charge-offs	March 31, % of avg. loans (1)
2018										
Commercial:										
Commercial and industrial	**$ 423**	**0.13%**	**$ 132**	**0.15%**	**$ 148**	**0.18%**	**$ 58**	**0.07%**	**$ 85**	**0.10%**
Real estate mortgage	**(28)**	**(0.02)**	**(12)**	**(0.04)**	**(1)**	**—**	**—**	**—**	**(15)**	**(0.05)**
Real estate construction	**(13)**	**(0.05)**	**(1)**	**(0.01)**	**(2)**	**(0.04)**	**(6)**	**(0.09)**	**(4)**	**(0.07)**
Lease financing	**47**	**0.24**	**13**	**0.26**	**7**	**0.14**	**15**	**0.32**	**12**	**0.25**
Total commercial	**429**	**0.09**	**132**	**0.10**	**152**	**0.12**	**67**	**0.05**	**78**	**0.06**
Consumer:										
Real estate 1-4 family first mortgage	**(88)**	**(0.03)**	**(22)**	**(0.03)**	**(25)**	**(0.04)**	**(23)**	**(0.03)**	**(18)**	**(0.03)**
Real estate 1-4 family junior lien mortgage	**(40)**	**(0.11)**	**(10)**	**(0.11)**	**(9)**	**(0.10)**	**(13)**	**(0.13)**	**(8)**	**(0.09)**
Credit card	**1,292**	**3.51**	**338**	**3.54**	**299**	**3.22**	**323**	**3.61**	**332**	**3.69**
Automobile	**584**	**1.21**	**133**	**1.16**	**130**	**1.10**	**113**	**0.93**	**208**	**1.64**
Other revolving credit and installment	**567**	**1.53**	**150**	**1.64**	**133**	**1.44**	**135**	**1.44**	**149**	**1.60**
Total consumer	**2,315**	**0.52**	**589**	**0.53**	**528**	**0.47**	**535**	**0.49**	**663**	**0.60**
Total	**$ 2,744**	**0.29%**	**$ 721**	**0.30%**	**$ 680**	**0.29%**	**$ 602**	**0.26%**	**$ 741**	**0.32%**
2017										
Commercial:										
Commercial and industrial	$ 492	0.15 %	$ 118	0.14 %	$ 125	0.15 %	$ 78	0.10 %	$ 171	0.21 %
Real estate mortgage	(44)	(0.03)	(10)	(0.03)	(3)	(0.01)	(6)	(0.02)	(25)	(0.08)
Real estate construction	(30)	(0.12)	(3)	(0.05)	(15)	(0.24)	(4)	(0.05)	(8)	(0.15)
Lease financing	28	0.15	10	0.20	6	0.12	7	0.15	5	0.11
Total commercial	446	0.09	115	0.09	113	0.09	75	0.06	143	0.11
Consumer:										
Real estate 1-4 family first mortgage	(48)	(0.02)	(23)	(0.03)	(16)	(0.02)	(16)	(0.02)	7	0.01
Real estate 1-4 family junior lien mortgage	13	0.03	(7)	(0.06)	1	—	(4)	(0.03)	23	0.21
Credit card	1,242	3.49	336	3.66	277	3.08	320	3.67	309	3.54
Automobile	683	1.18	188	1.38	202	1.41	126	0.86	167	1.10
Other revolving credit and installment	592	1.52	142	1.46	140	1.44	154	1.58	156	1.60
Total consumer	2,482	0.55	636	0.56	604	0.53	580	0.51	662	0.59
Total	$ 2,928	0.31 %	$ 751	0.31 %	$ 717	0.30 %	$ 655	0.27 %	$ 805	0.34 %

(1) Quarterly net charge-offs (recoveries) as a percentage of average respective loans are annualized.

Table 35 presents net charge-offs for the four quarters and full year of 2018 and 2017. Net charge-offs in 2018 were $2.7 billion (0.29% of average total loans outstanding), compared with $2.9 billion (0.31%) in 2017.

The decrease in commercial and industrial net charge-offs in 2018 reflected continued improvement in our oil and gas portfolio. Our commercial real estate portfolios were in a net recovery position every quarter in 2018 and 2017. Total net charge-offs decreased from the prior year across all consumer portfolios, except for the credit card portfolio, which had a slight increase.

ALLOWANCE FOR CREDIT LOSSES The allowance for credit losses, which consists of the allowance for loan losses and the allowance for unfunded credit commitments, is management's estimate of credit losses inherent in the loan portfolio and unfunded credit commitments at the balance sheet date, excluding loans carried at fair value. The detail of the changes in the allowance for credit losses by portfolio segment (including charge-offs and recoveries by loan class) is in Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

We apply a disciplined process and methodology to establish our allowance for credit losses each quarter. This process takes into consideration many factors, including historical and forecasted loss trends, loan-level credit quality ratings and loan grade-specific characteristics. The process involves subjective and complex judgments. In addition, we review a variety of credit metrics and trends. These credit metrics and trends, however, do not solely determine the amount of the allowance as we use several analytical tools. Our estimation approach for the commercial portfolio reflects the estimated probability of default in accordance with the borrower's financial strength, and the severity of loss in the event of default, considering the quality of any underlying collateral. Probability of default and severity at the time of default are statistically derived through historical observations of defaults and losses after default within each credit risk rating. Our estimation approach for the consumer portfolio uses forecasted losses that represent our best estimate of inherent loss based on historical experience, quantitative and other mathematical techniques. For additional information on our allowance for credit losses, see the "Critical Accounting Policies – Allowance for Credit Losses" section and Note 1 (Summary of Significant Accounting Policies) and Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

Table 36 presents the allocation of the allowance for credit losses by loan segment and class for the last five years.

Table 36: Allocation of the Allowance for Credit Losses (ACL)

	Dec 31, 2018		Dec 31, 2017		Dec 31, 2016		Dec 31, 2015		Dec 31, 2014	
(in millions)	**ACL**	**Loans as % of total loans**	ACL	Loans as % of total loans	ACL	Loans as % of total loans	ACL	Loans as % of total loans	ACL	Loans as % of total loans
Commercial:										
Commercial and industrial	**$ 3,628**	**37%**	$ 3,752	35%	$ 4,560	34%	$ 4,231	33%	$ 3,506	32%
Real estate mortgage	**1,282**	**13**	1,374	13	1,320	14	1,264	13	1,576	13
Real estate construction	**1,200**	**2**	1,238	3	1,294	2	1,210	3	1,097	2
Lease financing	**307**	**2**	268	2	220	2	167	1	198	1
Total commercial	**6,417**	**54**	6,632	53	7,394	52	6,872	50	6,377	48
Consumer:										
Real estate 1-4 family first mortgage	**750**	**30**	1,085	30	1,270	29	1,895	30	2,878	31
Real estate 1-4 family junior lien mortgage	**431**	**3**	608	4	815	5	1,223	6	1,566	7
Credit card	**2,064**	**4**	1,944	4	1,605	4	1,412	4	1,271	4
Automobile	**475**	**5**	1,039	5	817	6	529	6	516	6
Other revolving credit and installment	**570**	**4**	652	4	639	4	581	4	561	4
Total consumer	**4,290**	**46**	5,328	47	5,146	48	5,640	50	6,792	52
Total	**$10,707**	**100%**	$11,960	100%	$12,540	100%	$12,512	100%	$13,169	100%

	Dec 31, 2018	Dec 31, 2017	Dec 31, 2016	Dec 31, 2015	Dec 31, 2014
Components:					
Allowance for loan losses	**$ 9,775**	11,004	11,419	11,545	12,319
Allowance for unfunded credit commitments	**932**	956	1,121	967	850
Allowance for credit losses	**$ 10,707**	11,960	12,540	12,512	13,169
Allowance for loan losses as a percentage of total loans	**1.03%**	1.15	1.18	1.26	1.43
Allowance for loan losses as a percentage of total net charge-offs	**356**	376	324	399	418
Allowance for credit losses as a percentage of total loans	**1.12**	1.25	1.30	1.37	1.53
Allowance for credit losses as a percentage of total nonaccrual loans (1)	**165**	156	126	115	107

(1) Financial information for periods prior to December 31, 2018, has been revised to exclude MLHFS, LHFS and loans held at fair value from nonaccrual loans.

In addition to the allowance for credit losses, there was $480 million at December 31, 2018, and $474 million at December 31, 2017, of nonaccretable difference to absorb losses for PCI loans, which totaled $5.0 billion at December 31, 2018. The allowance for credit losses is lower than otherwise would have been required without PCI loan accounting. As a result of PCI loans, certain ratios of the Company may not be directly comparable with credit-related metrics for other financial institutions. Additionally, loans purchased at fair value, including loans from the GE Capital business acquisitions in 2016, generally reflect a lifetime credit loss adjustment and therefore do not initially require additions to the allowance as is typically associated with loan growth. For additional information on PCI loans, see the "Risk Management – Credit Risk Management – Purchased Credit-Impaired Loans" section, Note 1 (Summary of Significant Accounting Policies) and Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

The ratio of the allowance for credit losses to total nonaccrual loans may fluctuate significantly from period to period due to such factors as the mix of loan types in the portfolio, borrower credit strength and the value and marketability of collateral.

The allowance for credit losses decreased $1.3 billion, or 10%, in 2018, due to continued improvement in the credit quality of our residential real estate portfolios and a decrease in allowance for our automobile portfolio reflecting an improvement in our outlook for hurricane-related losses in Puerto Rico, partially offset by an increase in allowance for the credit card portfolio. Total provision for credit losses was $1.7 billion in 2018, $2.5 billion in 2017, and $3.8 billion in 2016. The provision for credit losses was $1.0 billion less than net charge-offs in 2018, reflecting the same changes mentioned above for the allowance for credit losses, compared with $400 million less than net charge-offs in 2017. The 2016 provision was $250 million more than net charge-offs.

We believe the allowance for credit losses of $10.7 billion at December 31, 2018, was appropriate to cover credit losses inherent in the loan portfolio, including unfunded credit commitments, at that date. The entire allowance is available to absorb credit losses inherent in the total loan portfolio. The allowance for credit losses is subject to change and reflects existing factors as of the date of determination, including economic or market conditions and ongoing internal and external examination processes. Due to the sensitivity of the allowance for credit losses to changes in the economic and business environment, it is possible that we will incur incremental credit losses not anticipated as of the balance sheet date. Future allowance levels will be based on a variety of factors, including loan growth, portfolio performance and general economic conditions. Our process for determining the allowance for credit losses is discussed in the "Critical Accounting Policies – Allowance for Credit Losses" section and Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report.

LIABILITY FOR MORTGAGE LOAN REPURCHASE LOSSES We sell residential mortgage loans to various parties, including (1) government-sponsored entities (GSEs) Federal Home Loan Mortgage Corporation (FHLMC) and Federal National Mortgage Association (FNMA) who include the mortgage loans in GSE-guaranteed mortgage securitizations, (2) SPEs that issue private label MBS, and (3) other financial institutions that purchase mortgage loans for investment or private label securitization. In addition, we pool FHA-insured and VA-guaranteed mortgage loans that are then used to back securities guaranteed by the Government National Mortgage Association (GNMA). We may be required to repurchase these mortgage loans, indemnify the securitization trust, investor or insurer, or reimburse the securitization trust, investor or insurer for credit losses incurred on loans (collectively, repurchase) in the event of a breach of contractual representations or warranties that is not remedied within a period (usually 90 days or less) after we receive notice of the breach.

In connection with our sales and securitization of residential mortgage loans to various parties, we have established a mortgage repurchase liability, initially at fair value, related to various representations and warranties that reflect management's estimate of losses for loans for which we could have a repurchase obligation, whether or not we currently service those loans, based on a combination of factors. Our mortgage repurchase liability estimation process also incorporates a forecast of repurchase demands associated with mortgage insurance rescission activity.

The overall level of unresolved repurchase demands and mortgage insurance rescissions outstanding at December 31, 2018, was $49 million, representing 230 loans, down from $108 million, or 482 loans, a year ago both in number of outstanding loans and in total dollar balances. The decrease was predominantly due to private investor demands resolved in third quarter 2018.

Customary with industry practice, we have the right of recourse against correspondent lenders from whom we have purchased loans with respect to representations and warranties. Historical recovery rates as well as projected lender performance are incorporated in the establishment of our mortgage repurchase liability.

We do not typically receive repurchase requests from GNMA, FHA and the Department of Housing and Urban Development (HUD) or VA. As an originator of an FHA-insured or VA-guaranteed loan, we are responsible for obtaining the insurance with the FHA or the guarantee with the VA. To the extent we are not able to obtain the insurance or the guarantee we must request permission to repurchase the loan from the GNMA pool. Such repurchases from GNMA pools typically represent a self-initiated process upon discovery of the uninsurable loan (usually within 180 days from funding of the loan). Alternatively, in lieu of repurchasing loans from GNMA pools, we may be asked by FHA/HUD or the VA to indemnify them (as applicable) for defects found in the Post Endorsement Technical Review process or audits performed by FHA/HUD or the VA. The Post Endorsement Technical Review is a process whereby HUD performs underwriting audits of closed/insured FHA loans for potential deficiencies. Our liability for mortgage loan repurchase losses incorporates probable losses associated with such indemnification.

RISKS RELATING TO SERVICING ACTIVITIES In addition to servicing loans in our portfolio, we act as servicer and/or master servicer of residential mortgage loans included in GSE-guaranteed mortgage securitizations, GNMA-guaranteed mortgage securitizations of FHA-insured/VA-guaranteed mortgages and private label mortgage securitizations, as well as for unsecuritized loans owned by institutional investors. The following discussion summarizes the primary duties and requirements of servicing and related industry developments.

The loans we service were originated by us or by other mortgage loan originators. As servicer, our primary duties are typically to (1) collect payments due from borrowers, (2) advance certain delinquent payments of principal and interest on the mortgage loans, (3) maintain and administer any hazard, title or primary mortgage insurance policies relating to the mortgage loans, (4) maintain any required escrow accounts for payment of taxes and insurance and administer escrow payments, (5) foreclose on defaulted mortgage loans or, to the extent consistent with the related servicing agreement, consider alternatives to foreclosure, such as loan modifications or short sales, and (6) for loans sold into private label securitizations, manage the foreclosed property through liquidation. As master servicer, our primary duties are typically to (1) supervise, monitor and oversee the servicing of the mortgage loans by the servicer, (2) consult with each servicer and use reasonable efforts to cause the servicer to observe its servicing obligations, (3) prepare monthly distribution statements to security holders and, if required by the securitization documents, certain periodic reports required to be filed with the SEC, (4) if required by the securitization documents, calculate distributions and loss allocations on the mortgage-backed securities, (5) prepare tax and information returns of the securitization trust, and (6) advance amounts required by non-affiliated servicers who fail to perform their advancing obligations.

Each agreement under which we act as servicer or master servicer generally specifies a standard of responsibility for actions we take in such capacity and provides protection against expenses and liabilities we incur when acting in compliance with the specified standard. For example, private label securitization agreements under which we act as servicer or master servicer typically provide that the servicer and the master servicer are entitled to indemnification by the securitization trust for taking action or refraining from taking action in good faith or for errors in judgment. However, we are not indemnified, but rather are required to indemnify the securitization trustee, against any failure by us, as servicer or master servicer, to perform our servicing obligations or against any of our acts or omissions that involve willful misfeasance, bad faith or gross negligence in the performance of, or reckless disregard of, our duties. In addition, if we commit a material breach of our obligations as servicer or master servicer, we may be subject to termination if the breach is not cured within a specified period following notice, which can generally be given by the securitization trustee or a specified percentage of security holders. Whole loan sale contracts under which we act as servicer generally include similar provisions with respect to our actions as servicer. The standards governing servicing in GSE-guaranteed securitizations, and the possible remedies for violations of such standards, vary, and those standards and remedies are determined by servicing guides maintained by the GSEs, contracts between the GSEs and individual servicers and topical guides published by the GSEs from time to time. Such remedies could include indemnification or repurchase of an affected mortgage loan. In addition, in connection with our servicing activities, we could become subject to consent orders and settlement agreements with federal and state regulators for alleged servicing issues and practices. In general, these can require us to provide customers with loan modification relief, refinancing relief, and foreclosure prevention and assistance, as well as can impose certain monetary penalties on us.

Asset/Liability Management

Asset/liability management involves evaluating, monitoring and managing interest rate risk, market risk, liquidity and funding. Primary oversight of interest rate risk and market risk resides with the Finance Committee of our Board of Directors (Board), which oversees the administration and effectiveness of financial risk management policies and processes used to assess and manage these risks. Primary oversight of liquidity and funding resides with the Risk Committee of the Board. At the management level we utilize a Corporate Asset/Liability Management Committee (Corporate ALCO), which consists of senior financial, risk, and business executives, to oversee these risks and report on them periodically to the Board's Finance Committee and Risk Committee as appropriate. As discussed in more detail for market risk activities below, we employ separate management level oversight specific to market risk.

INTEREST RATE RISK Interest rate risk, which potentially can have a significant earnings impact, is an integral part of being a financial intermediary. We are subject to interest rate risk because:

- assets and liabilities may mature or reprice at different times (for example, if assets reprice faster than liabilities and interest rates are generally rising, earnings will initially increase);
- assets and liabilities may reprice at the same time but by different amounts (for example, when the general level of interest rates is rising, we may increase rates paid on checking and savings deposit accounts by an amount that is less than the general rise in market interest rates);
- short-term and long-term market interest rates may change by different amounts (for example, the shape of the yield curve may affect new loan yields and funding costs differently);
- the remaining maturity of various assets or liabilities may shorten or lengthen as interest rates change (for example, if long-term mortgage interest rates increase sharply, MBS held in the debt securities portfolio may pay down slower than anticipated, which could impact portfolio income); or
- interest rates may also have a direct or indirect effect on loan demand, collateral values, credit losses, mortgage origination volume, the fair value of MSRs and other financial instruments, the value of the pension liability and other items affecting earnings.

We assess interest rate risk by comparing outcomes under various net interest income simulations using many interest rate scenarios that differ in the direction of interest rate changes, the degree of change over time, the speed of change and the projected shape of the yield curve. These simulations require assumptions regarding drivers of earnings and balance sheet composition such as loan originations, prepayment speeds on loans and debt securities, deposit flows and mix, as well as pricing strategies.

Currently, our profile is such that we project net interest income will benefit modestly from higher interest rates as our assets would reprice faster and to a greater degree than our liabilities, while in the case of lower interest rates, our assets would reprice downward and to a greater degree than our liabilities.

Our most recent simulations estimate net interest income sensitivity over the next two years under a range of both lower and higher interest rates. Measured impacts from standardized ramps (gradual changes) and shocks (instantaneous changes) are summarized in Table 37, indicating net interest income sensitivity relative to the Company's base net interest income plan. Ramp scenarios assume interest rates move gradually in parallel across the yield curve relative to the base scenario in year one, and the full amount of the ramp is held as a constant differential to the base scenario in year two. The following describes the simulation assumptions for the scenarios presented in Table 37:

- Simulations are dynamic and reflect anticipated growth across assets and liabilities.
- Other macroeconomic variables that could be correlated with the changes in interest rates are held constant.
- Mortgage prepayment and origination assumptions vary across scenarios and reflect only the impact of the higher or lower interest rates.
- Our base scenario deposit forecast incorporates mix changes consistent with the base interest rate trajectory. Deposit mix is modeled to be the same as in the base scenario across the alternative scenarios. In higher interest rate scenarios, customer activity that shifts balances into higher-yielding products could reduce expected net interest income.
- We hold the size of the projected debt and equity securities portfolios constant across scenarios.

Table 37: Net Interest Income Sensitivity Over Next Two-Year Horizon Relative to Base Expectation

		Lower Rates	Higher Rates	
($ in billions)	Base	100 bps Ramp Parallel Decrease	100 bps Instantaneous Parallel Increase	200 bps Ramp Parallel Increase
First Year of Forecasting Horizon				
Net Interest Income Sensitivity to Base Scenario	$	(0.9) - (0.4)	0.9 - 1.4	0.9 - 1.4
Key Rates at Horizon End				
Fed Funds Target	3.00 %	2.00	4.00	5.00
10-year CMT (1)	3.72	2.72	4.72	5.72
Second Year of Forecasting Horizon				
Net Interest Income Sensitivity to Base Scenario	$	(1.7) - (1.2)	1.4 - 1.9	2.3 - 2.8
Key Rates at Horizon End				
Fed Funds Target	3.00 %	2.00	4.00	5.00
10-year CMT (1)	4.01	3.01	5.01	6.01

(1) U.S. Constant Maturity Treasury Rate

The sensitivity results above do not capture interest rate sensitive noninterest income and expense impacts. Our interest rate sensitive noninterest income and expense is predominantly driven by mortgage activity, and may move in the opposite direction of our net interest income. Typically, in response to higher interest rates, mortgage activity, primarily refinancing activity, generally declines. And in response to lower interest rates, mortgage activity generally increases. Mortgage results are also impacted by the valuation of MSRs and related hedge positions. See the "Risk Management – Asset/Liability Management – Mortgage Banking Interest Rate and Market Risk" section in this Report for more information.

Interest rate sensitive noninterest income also results from changes in earnings credit for noninterest-bearing deposits that reduce treasury management deposit service fees. Furthermore, for the trading portfolio, interest rate changes may result in net interest income compression (generally as interest rates rise) or expansion (generally as interest rates fall) that does not reflect the offsetting effects of certain economic hedges. Instead, as a result of GAAP requirements, the effects of such economic hedges are recorded in noninterest income.

We use the debt securities portfolio and exchange-traded and over-the-counter (OTC) interest rate derivatives to hedge our interest rate exposures. See the "Balance Sheet Analysis – Available-for-Sale and Held-to-Maturity Debt Securities" section in this Report for more information on the use of the available-for-sale and held-to-maturity securities portfolios. The notional or contractual amount, credit risk amount and fair value of the derivatives used to hedge our interest rate risk exposures as of December 31, 2018, and December 31, 2017, are presented in Note 17 (Derivatives) to Financial Statements in this Report. We use derivatives for asset/liability management in two main ways:

- to convert the cash flows from selected asset and/or liability instruments/portfolios including investments, commercial loans and long-term debt, from fixed-rate payments to floating-rate payments, or vice versa; and
- to economically hedge our mortgage origination pipeline, funded mortgage loans and MSRs using interest rate swaps, swaptions, futures, forwards and options.

MORTGAGE BANKING INTEREST RATE AND MARKET RISK
We originate, fund and service mortgage loans, which subjects us to various risks, including credit, liquidity and interest rate risks. Based on market conditions and other factors, we reduce credit and liquidity risks by selling or securitizing a majority of the long-term fixed-rate mortgage and ARM loans we originate. On the other hand, we may hold originated ARMs and fixed-rate mortgage loans in our loan portfolio as an investment for our deposits. We determine whether the loans will be held for investment or held for sale at the time of commitment. We may subsequently change our intent to hold loans for investment and sell some or all of our ARMs or fixed-rate mortgages as part of our corporate asset/liability management. We may also acquire and add to our securities available for sale a portion of the securities issued at the time we securitize MLHFS.

Interest rate and market risk can be substantial in the mortgage business. Changes in interest rates may potentially reduce total origination and servicing fees, the value of our residential MSRs measured at fair value, the value of MLHFS and the associated income and loss reflected in mortgage banking noninterest income, the income and expense associated with instruments (economic hedges) used to hedge changes in the fair value of MSRs and MLHFS, and the value of derivative loan commitments (interest rate "locks") extended to mortgage applicants.

Interest rates affect the amount and timing of origination and servicing fees because consumer demand for new mortgages and the level of refinancing activity are sensitive to changes in mortgage interest rates. Typically, a decline in mortgage interest rates will lead to an increase in mortgage originations and fees and may also lead to an increase in servicing fee income, depending on the level of new loans added to the servicing portfolio and prepayments. Given the time it takes for consumer behavior to fully react to interest rate changes, as well as the time required for processing a new application, providing the commitment, and securitizing and selling the loan, interest rate changes will affect origination and servicing fees with a lag. The amount and timing of the impact on origination and servicing fees will depend on the magnitude, speed and duration of the change in interest rates.

We measure originations of MLHFS at fair value where an active secondary market and readily available market prices exist to reliably support fair value pricing models used for these loans. Loan origination fees on these loans are recorded when earned, and related direct loan origination costs are recognized when incurred. We also measure at fair value certain of our other interests held related to residential loan sales and securitizations. We believe fair value measurement for MLHFS and other interests held, which we hedge with free-standing derivatives (economic hedges) along with our MSRs measured at fair value, reduces certain timing differences and better matches changes in the value of these assets with changes in the value of derivatives used as economic hedges for these assets. During 2016, 2017, and 2018, in response to continued secondary market illiquidity, as well as our desire to retain high quality loans on our balance sheet, we continued to originate certain prime non-agency loans to be substantially held for investment. We did however designate a small portion of our non-agency originations in 2018 to MLHFS in support of future issuances of private label residential mortgage backed securities (RMBS). We issued $441 million of RMBS in fourth quarter 2018.

We initially measure all of our MSRs at fair value and carry substantially all of them at fair value depending on our strategy for managing interest rate risk. Under this method, the MSRs are recorded at fair value at the time we sell or securitize the related mortgage loans. The carrying value of MSRs carried at fair value reflects changes in fair value at the end of each quarter and changes are included in net servicing income, a component of mortgage banking noninterest income. If the fair value of the MSRs increases, income is recognized; if the fair value of the MSRs decreases, a loss is recognized. We use a dynamic and sophisticated model to estimate the fair value of our MSRs and periodically benchmark our estimates to independent appraisals. The valuation of MSRs can be highly subjective and involve complex judgments by management about matters that are inherently unpredictable. See "Critical Accounting Policies – Valuation of Residential Mortgage Servicing Rights" section in this Report for additional information. Changes in interest rates influence a variety of significant assumptions included in the periodic valuation of MSRs, including prepayment speeds, expected returns and potential risks on the servicing asset portfolio, the value of escrow balances and other servicing valuation elements.

An increase in interest rates generally reduces the propensity for refinancing, extends the expected duration of the servicing portfolio and, therefore, increases the estimated fair value of the MSRs. However, an increase in interest rates can also reduce mortgage loan demand and, therefore, reduce origination income. A decline in interest rates generally increases the propensity for refinancing, reduces the expected duration of the servicing portfolio and therefore reduces the estimated fair value of MSRs. This reduction in fair value causes a charge to income for MSRs carried at fair value, net of any gains on free-standing derivatives (economic hedges) used to hedge MSRs. We may choose not to fully hedge the entire potential decline in the value of our MSRs resulting from a decline in interest rates because the potential increase in origination/servicing fees in that scenario provides a partial "natural business hedge."

The price risk associated with our MSRs is economically hedged with a combination of highly liquid interest rate forward instruments including mortgage forward contracts, interest rate swaps and interest rate options. All of the instruments included in the hedge are marked to fair value daily. Because the hedging instruments are traded in predominantly highly liquid markets, their prices are readily observable and are fully reflected in each quarter's mark to market. Quarterly MSR hedging results include a combination of directional gain or loss due to market changes as well as any carry income generated. If the economic hedge is effective, its overall directional hedge gain or loss will offset the change in the valuation of the underlying MSR asset. Gains or losses associated with these economic hedges are included in mortgage banking noninterest income. Consistent with our longstanding approach to hedging interest rate risk in the mortgage business, the size of the hedge and the particular combination of forward hedging instruments at any point in time is designed to reduce the volatility of the mortgage business's earnings over various time frames within a range of mortgage interest rates. Because market factors, the composition of the mortgage servicing portfolio and the relationship between the origination and servicing sides of our mortgage business change continually, the types of instruments used in our hedging are reviewed daily and rebalanced based on our evaluation of current market factors and the interest rate risk inherent in our MSRs portfolio. Throughout 2018, our economic hedging strategy generally used forward mortgage purchase contracts that were effective at offsetting the impact of interest rates on the value of the MSR asset.

Mortgage forward contracts are designed to pass the full economics of the underlying reference mortgage securities to the holder of the contract, including both the directional gain and loss from the forward delivery of the reference securities and the corresponding carry income. Carry income represents the contract's price accretion from the forward delivery price to the spot price including both the yield earned on the reference securities and the market implied cost of financing during the period. The actual amount of carry income earned on the hedge each quarter will depend on the amount of the underlying asset that is hedged and the particular instruments included in the hedge. The level of carry income is driven by the slope of the yield curve and other market driven supply and demand factors affecting the specific reference securities. A steep yield curve generally produces higher carry income while a flat or inverted yield curve can result in lower or potentially negative carry income. The level of carry income is also affected by the type of instrument used. In general, mortgage forward contracts tend to produce higher carry income than interest rate swap contracts. Carry income is recognized over the life of the mortgage forward as a component of the contract's mark to market gain or loss.

Hedging the various sources of interest rate risk in mortgage banking is a complex process that requires sophisticated modeling and constant monitoring. While we attempt to balance these various aspects of the mortgage business, there are several potential risks to earnings:

- Valuation changes for MSRs associated with interest rate changes are recorded in earnings immediately within the accounting period in which those interest rate changes occur, whereas the impact of those same changes in interest rates on origination and servicing fees occur with a lag and over time. Thus, the mortgage business could be protected from adverse changes in interest rates over a period of time on a cumulative basis but still display large variations in income from one accounting period to the next.
- The degree to which our net gains on loan originations offsets valuation changes for MSRs is imperfect, varies at different points in the interest rate cycle, and depends not just on the direction of interest rates but on the pattern of quarterly interest rate changes.
- Origination volumes, the valuation of MSRs and hedging results and associated costs are also affected by many factors. Such factors include the mix of new business between ARMs and fixed-rate mortgages, the relationship between short-term and long-term interest rates, the degree of volatility in interest rates, the relationship between mortgage interest rates and other interest rate markets, and other interest rate factors. Additional factors that can impact the valuation of the MSRs include changes in servicing and foreclosure costs due to changes in investor or regulatory guidelines, as well as individual state foreclosure legislation, and changes in discount rates due to market participants requiring a higher return due to updated market expectations on costs and risks associated with investing in MSRs. Many of these factors are hard to predict and we may not be able to directly or perfectly hedge their effect.
- While our hedging activities are designed to balance our mortgage banking interest rate risks, the financial instruments we use may not perfectly correlate with the values and income being hedged. For example, the change in the value of ARM production held for sale from changes in mortgage interest rates may or may not be fully offset by index-based financial instruments used as economic hedges for such ARMs. Additionally, hedge-carry income on our economic hedges for the MSRs may not continue at recent levels if the spread between short-term and long-term

interest rates decreases, the overall level of hedges changes as interest rates change, or there are other changes in the market for mortgage forwards that affect the implied carry.

The total carrying value of our residential and commercial MSRs was $16.1 billion and $15.0 billion at December 31, 2018 and 2017, respectively. The weighted-average note rate on our portfolio of loans serviced for others was 4.32% and 4.23% at December 31, 2018 and 2017, respectively. The carrying value of our total MSRs represented 0.94% and 0.88% of mortgage loans serviced for others at December 31, 2018 and 2017, respectively.

As part of our mortgage banking activities, we enter into commitments to fund residential mortgage loans at specified times in the future. A mortgage loan commitment can be either a floating rate commitment, where the interest rate is not yet determined, or it can be an interest rate lock that binds us to lend funds to a potential borrower at a specified interest rate and within a specified period of time, generally up to 60 days after inception of the rate lock. These loan commitments are derivative loan commitments if the loans that will result from the exercise of the commitments will be held for sale. These derivative loan commitments are recognized at fair value on the balance sheet with changes in their fair values recorded as part of mortgage banking noninterest income. The fair value of these commitments include, at inception and during the life of the loan commitment, the expected net future cash flows related to the associated servicing of the loan as part of the fair value measurement of derivative loan commitments. Changes subsequent to inception are based on changes in fair value of the underlying loan resulting from the exercise of the commitment and changes in the probability that the loan will not fund within the terms of the commitment, referred to as a fall-out factor. The value of the underlying loan commitment is affected by changes in interest rates and the passage of time.

Outstanding derivative loan commitments (interest rate "locks") expose us to the risk that the price of the mortgage loans underlying the commitments might decline due to increases in mortgage interest rates from inception of the rate lock to the funding of the loan. To minimize this risk, we employ mortgage forwards and options and Eurodollar futures and options contracts as economic hedges against the potential decreases in the values of the loans. We expect that these derivative financial instruments will experience changes in fair value that will either fully or partially offset the changes in fair value of the derivative loan commitments. However, changes in investor demand, such as concerns about credit risk, can also cause changes in the spread relationships between underlying loan value and the derivative financial instruments that cannot be hedged.

MARKET RISK Market risk is the risk of possible economic loss from adverse changes in market risk factors such as interest rates, credit spreads, foreign exchange rates, equity and commodity prices, and the risk of possible loss due to counterparty risk. This includes implied volatility risk, basis risk, and market liquidity risk. Market risk also includes counterparty credit risk, price risk in the trading book, mortgage servicing rights and the associated hedge effectiveness risk associated with the mortgage book, and impairment on private equity investments.

The Board's Finance Committee has primary oversight responsibility for market risk and oversees the Company's market risk exposure and market risk management strategies. In addition, the Board's Risk Committee has certain oversight responsibilities with respect to market risk, including adjusting the Company's market risk appetite with input from the Finance Committee. The Finance Committee also reports key market risk matters to the Risk Committee.

At the management level, the Market and Counterparty Risk Management function, which is part of Corporate Risk, has primary oversight responsibility for market risk. The Market and Counterparty Risk Management function reports into the CRO and also provides periodic reporting related to market risk to the Board's Finance Committee. In addition, the Risk & Control Committee for each business group and enterprise function reports market risk matters to the Enterprise Risk & Control Committee.

MARKET RISK – TRADING ACTIVITIES We engage in trading activities to accommodate the investment and risk management activities of our customers and to execute economic hedging to manage certain balance sheet risks. These trading activities predominantly occur within our Wholesale Banking businesses and to a lesser extent other divisions of the Company. Debt securities held for trading, equity securities held for trading, trading loans and trading derivatives are financial instruments used in our trading activities, and all are carried at fair value. Income earned on the financial instruments used in our trading activities include net interest income, changes in fair value and realized gains and losses. Net interest income earned from our trading activities is reflected in the interest income and interest expense components of our income statement. Changes in fair value of the financial instruments used in our trading activities are reflected in net gains on trading activities, a component of noninterest income in our income statement. For more information on the financial instruments used in our trading activities and the income from these trading activities, see Note 4 (Trading Activities) to Financial Statements in this Report.

Value-at-risk (VaR) is a statistical measure used to estimate the potential loss from adverse moves in the financial markets. The Company uses VaR metrics complemented with sensitivity analysis and stress testing in measuring and monitoring market risk. These market risk measures are monitored at both the business unit level and at aggregated levels on a daily basis. Our corporate market risk management function aggregates and monitors all exposures to ensure risk measures are within our established risk appetite. Changes to the market risk profile are analyzed and reported on a daily basis. The Company monitors various market risk exposure measures from a variety of perspectives, including line of business, product, risk type, and legal entity.

Trading VaR is the measure used to provide insight into the market risk exhibited by the Company's trading positions. The Company calculates Trading VaR for risk management purposes to establish line of business and Company-wide risk limits. Trading VaR is calculated based on all trading positions on our balance sheet.

Table 38 shows the Company's Trading General VaR by risk category. As presented in Table 38, average Company Trading General VaR was $16 million for the quarter ended December 31, 2018, compared with $12 million for the quarter ended September 30, 2018, and $13 million for the quarter ended December 31, 2017. The increase in average Company Trading General VaR for the quarter ended December 31, 2018, was mainly driven by changes in portfolio composition.

Table 38: Trading 1-Day 99% General VaR by Risk Category

												Quarter ended
	December 31, 2018				September 30, 2018				December 31, 2017			
(in millions)	**Period end**	**Average**	**Low**	**High**	Period end	Average	Low	High	Period end	Average	Low	High
Company Trading General VaR Risk Categories												
Credit	**$ 18**	**16**	**13**	**24**	13	17	11	55	12	16	11	28
Interest rate	**28**	**20**	**14**	**28**	18	18	6	52	13	10	6	17
Equity	**5**	**5**	**2**	**7**	5	5	4	7	10	11	10	14
Commodity	**2**	**2**	**1**	**4**	2	1	1	2	1	1	1	2
Foreign exchange	**1**	**1**	**0**	**2**	0	1	0	1	0	0	0	1
Diversification benefit (1)	**(33)**	**(28)**			(25)	(30)			(24)	(25)		
Company Trading General VaR	**$ 21**	**16**			13	12			12	13		

(1) The period-end VaR was less than the sum of the VaR components described above, which is due to portfolio diversification. The diversification effect arises because the risks are not perfectly correlated causing a portfolio of positions to usually be less risky than the sum of the risks of the positions alone. The diversification benefit is not meaningful for low and high metrics since they may occur on different days.

Sensitivity Analysis Given the inherent limitations of the VaR models, the Company uses other measures, including sensitivity analysis, to measure and monitor risk. Sensitivity analysis is the measure of exposure to a single risk factor, such as a 0.01% increase in interest rates or a 1% increase in equity prices. We conduct and monitor sensitivity on interest rates, credit spreads, volatility, equity, commodity, and foreign exchange exposure. Sensitivity analysis complements VaR as it provides an indication of risk relative to each factor irrespective of historical market moves.

Stress Testing While VaR captures the risk of loss due to adverse changes in markets using recent historical market data, stress testing is designed to capture the Company's exposure to extreme but low probability market movements. Stress scenarios estimate the risk of losses based on management's assumptions of abnormal but severe market movements such as severe credit spread widening or a large decline in equity prices. These scenarios assume that the market moves happen instantaneously and no repositioning or hedging activity takes place to mitigate losses as events unfold (a conservative approach since experience demonstrates otherwise).

An inventory of scenarios is maintained representing both historical and hypothetical stress events that affect a broad range of market risk factors with varying degrees of correlation and differing time horizons. Hypothetical scenarios assess the impact of large movements in financial variables on portfolio values. Typical examples include a 1% (100 basis point) increase across the yield curve or a 10% decline in equity market indexes. Historical scenarios utilize an event-driven approach: the stress scenarios are based on plausible but rare events, and the analysis addresses how these events might affect the risk factors relevant to a portfolio.

The Company's stress testing framework is also used in calculating results in support of the Federal Reserve Board's Comprehensive Capital Analysis and Review (CCAR) and internal stress tests. Stress scenarios are regularly reviewed and updated to address potential market events or concerns. For more detail on the CCAR process, see the "Capital Management" section in this Report.

MARKET RISK – EQUITY SECURITIES We are directly and indirectly affected by changes in the equity markets. We make and manage direct investments in start-up businesses, emerging growth companies, management buy-outs, acquisitions and corporate recapitalizations. We also invest in non-affiliated funds that make similar private equity investments. These private equity investments are made within capital allocations approved by management and the Board. The Board's policy is to review business developments, key risks and historical returns for the private equity investment portfolio at least annually. Management reviews these investments at least quarterly and assesses them for possible OTTI. For nonmarketable equity securities, the analysis is based on facts and circumstances of each individual investment and the expectations for that investment's cash flows and capital needs, the viability of its business model and our exit strategy. Investments in nonmarketable equity securities include private equity investments accounted for under the equity method, fair value through net income, and the measurement alternative.

In conjunction with the March 2008 initial public offering (IPO) of Visa, Inc. (Visa), we received approximately 20.7 million shares of Visa Class B common stock, the class which was apportioned to member banks of Visa at the time of the IPO. To manage our exposure to Visa and realize the value of the appreciated Visa shares, we incrementally sold these shares through a series of sales, thereby eliminating this position as of September 30, 2015. As part of these sales, we agreed to compensate the buyer for any additional contributions to a litigation settlement fund for the litigation matters associated with the Class B shares we sold. Our exposure to this retained litigation risk has been updated quarterly and is reflected on our balance sheet. For additional information about the associated litigation matters, see the "Interchange Litigation" section in Note 16 (Legal Actions) to Financial Statements in this Report.

As part of our business to support our customers, we trade public equities, listed/OTC equity derivatives and convertible bonds. We have parameters that govern these activities. We also have marketable equity securities that include investments relating to our venture capital activities. We manage these marketable equity securities within capital risk limits approved by management and the Board and monitored by Corporate ALCO and the Market Risk Committee. The fair value changes in these marketable equity securities are recognized in net income. For more information, see Note 8 (Equity Securities) to Financial Statements in this Report.

Changes in equity market prices may also indirectly affect our net income by (1) the value of third-party assets under management and, hence, fee income, (2) borrowers whose ability to repay principal and/or interest may be affected by the stock market, or (3) brokerage activity, related commission income and other business activities. Each business line monitors and manages these indirect risks.

LIQUIDITY AND FUNDING The objective of effective liquidity management is to ensure that we can meet customer loan requests, customer deposit maturities/withdrawals and other cash commitments efficiently under both normal operating conditions and under periods of Wells Fargo-specific and/or market stress. To achieve this objective, the Board of Directors establishes liquidity guidelines that require sufficient asset-based liquidity to cover potential funding requirements and to avoid over-dependence on volatile, less reliable funding markets. These guidelines are monitored on a monthly basis by the Corporate ALCO and on a quarterly basis by the Board of Directors. These guidelines are established and monitored for both the consolidated company and for the Parent on a stand-alone basis to ensure that the Parent is a source of strength for its regulated, deposit-taking banking subsidiaries.

Liquidity Standards In September 2014, the FRB, OCC and FDIC issued a final rule that implements a quantitative liquidity requirement consistent with the liquidity coverage ratio (LCR) established by the Basel Committee on Banking Supervision (BCBS). The rule requires banking institutions, such as Wells Fargo, to hold high-quality liquid assets (HQLA), such as central bank reserves and government and corporate debt that can be converted easily and quickly into cash, in an amount equal to or greater than its projected net cash outflows during a 30-day stress period. The rule is applicable to the Company on a consolidated basis and to our insured depository institutions with total assets greater than $10 billion. In addition, the FRB finalized rules imposing enhanced liquidity management standards on large bank holding companies (BHC) such as Wells Fargo, and has finalized a rule that requires large bank holding companies to publicly disclose on a quarterly basis certain quantitative and qualitative information regarding their LCR calculations.

The FRB, OCC and FDIC have proposed a rule that would implement a stable funding requirement, the net stable funding ratio (NSFR), which would require large banking organizations, such as Wells Fargo, to maintain a sufficient amount of stable funding in relation to their assets, derivative exposures and commitments over a one-year horizon period.

Liquidity Coverage Ratio As of December 31, 2018, the consolidated Company and Wells Fargo Bank, N.A. were above the minimum LCR requirement of 100%, which is calculated as HQLA divided by projected net cash outflows, as each is defined under the LCR rule. Table 39 presents the Company's quarterly average values for the daily-calculated LCR and its components calculated pursuant to the LCR rule requirements.

Table 39: Liquidity Coverage Ratio

(in millions, except ratio)	Average for Quarter ended December 31, 2018
HQLA (1)(2)	$ 366,578
Projected net cash outflows	303,158
LCR	121%

(1) Excludes excess HQLA at Wells Fargo Bank, N.A.
(2) Net of applicable haircuts required under the LCR rule.

Liquidity Sources We maintain liquidity in the form of cash, cash equivalents and unencumbered high-quality, liquid debt securities. These assets make up our primary sources of liquidity which are presented in Table 40. Our primary sources of liquidity are substantially the same in composition as HQLA under the LCR rule; however, our primary sources of liquidity will generally exceed HQLA calculated under the LCR rule due to the applicable haircuts to HQLA and the exclusion of excess HQLA at our subsidiary insured depository institutions required under the LCR rule.

Our cash is predominantly on deposit with the Federal Reserve. Debt securities included as part of our primary sources of liquidity are comprised of U.S. Treasury and federal agency debt, and mortgage-backed securities issued by federal agencies within our debt securities portfolio. We believe these debt securities provide quick sources of liquidity through sales or by pledging to obtain financing, regardless of market conditions. Some of these debt securities are within the held-to-maturity portion of our debt securities portfolio and as such are not intended for sale but may be pledged to obtain financing. Some of the legal entities within our consolidated group of companies are subject to various regulatory, tax, legal and other restrictions that can limit the transferability of their funds. We believe we maintain adequate liquidity for these entities in consideration of such funds transfer restrictions.

Table 40: Primary Sources of Liquidity

	December 31, 2018			December 31, 2017		
(in millions)	Total	Encumbered	Unencumbered	Total	Encumbered	Unencumbered
Interest-earning deposits with banks	$ 149,736	—	149,736	192,580	—	192,580
Debt securities of U.S. Treasury and federal agencies	57,688	1,504	56,184	51,125	964	50,161
Mortgage-backed securities of federal agencies (1)	244,211	35,656	208,555	246,894	46,062	200,832
Total	$ 451,635	37,160	414,475	490,599	47,026	443,573

(1) Included in encumbered securities at December 31, 2018, were securities with a fair value of $261 million which were purchased in December 2018, but settled in January 2019.

In addition to our primary sources of liquidity shown in Table 40, liquidity is also available through the sale or financing of other debt securities including trading and/or available-for-sale debt securities, as well as through the sale, securitization or financing of loans, to the extent such debt securities and loans are not encumbered. In addition, other debt securities in our held-to-maturity portfolio, to the extent not encumbered, may be pledged to obtain financing.

Deposits have historically provided a sizable source of relatively low-cost funds. Deposits were 135% of total loans at December 31, 2018, and 140% at December 31, 2017.

Additional funding is provided by long-term debt and short-term borrowings. We access domestic and international capital markets for long-term funding (generally greater than one year) through issuances of registered debt securities, private placements and asset-backed secured funding.

Table 41 shows selected information for short-term borrowings, which generally mature in less than 30 days.

Table 41: Short-Term Borrowings

	Quarter ended				
(in millions)	Dec 31, 2018	Sep 30, 2018	Jun 30, 2018	Mar 31, 2018	Dec 31, 2017
Balance, period end					
Federal funds purchased and securities sold under agreements to repurchase	$ 92,430	92,418	89,307	80,916	88,684
Other short-term borrowings	13,357	13,033	15,189	16,291	14,572
Total	$ 105,787	105,451	104,496	97,207	103,256
Average daily balance for period					
Federal funds purchased and securities sold under agreements to repurchase	$ 93,483	92,141	89,138	86,535	88,197
Other short-term borrowings	12,479	13,331	14,657	15,244	13,945
Total	$ 105,962	105,472	103,795	101,779	102,142
Maximum month-end balance for period					
Federal funds purchased and securities sold under agreements to repurchase (1)	$ 93,918	92,531	92,103	88,121	91,604
Other short-term borrowings (2)	13,357	14,270	15,272	16,924	14,948

(1) Highest month-end balance in each of the last five quarters was in November, July, May and January 2018, and November 2017.
(2) Highest month-end balance in each of the last five quarters was in December, July, May and January 2018, and November 2017.

Parent In February 2017, the Parent filed a registration statement with the SEC for the issuance of senior and subordinated notes, preferred stock and other securities. The Parent's ability to issue debt and other securities under this registration statement is limited by the debt issuance authority granted by the Board. As of December 31, 2018, the Parent was authorized by the Board to issue up to $180 billion in outstanding long-term debt. The Parent's long-term debt issuance authority granted by the Board includes debt issued to affiliates and others. At December 31, 2018, the Parent had available $38.1 billion in long-term debt issuance authority. In 2018, the Parent issued $2.0 billion of senior notes, of which $1.5 billion were registered with the SEC. In addition, the Parent issued $5.5 billion of registered senior notes in January 2019 and issued CAD $1.0 billion of senior notes in February 2019 that were registered in the U.S. and distributed on a private placement basis in Canada. The Parent's short-term debt issuance authority granted by the Board was limited to debt issued to affiliates, and was revoked by the Board at management's request in January 2018.

The Parent's proceeds from securities issued were used for general corporate purposes, and, unless otherwise specified in the applicable prospectus or prospectus supplement, we expect the proceeds from securities issued in the future will be used for the same purposes. Depending on market conditions, we may purchase our outstanding debt securities from time to time in privately negotiated or open market transactions, by tender offer, or otherwise.

Wells Fargo Bank, N.A. As of December 31, 2018, Wells Fargo Bank, N.A. was authorized by its board of directors to issue $100 billion in outstanding short-term debt and $175 billion in outstanding long-term debt and had available $99.1 billion in short-term debt issuance authority and $96.4 billion in long-term debt issuance authority. In April 2018, Wells Fargo Bank, N.A. established a new $100 billion bank note program under which, subject to any other debt outstanding under the limits described above, it may issue $50 billion in outstanding short-term senior notes and $50 billion in outstanding long-term senior or subordinated notes. At December 31, 2018, Wells Fargo Bank, N.A. had remaining issuance capacity under the new bank note program of $50.0 billion in short-term senior notes and $39.8 billion in long-term senior or subordinated notes. In 2018, Wells Fargo

Bank, N.A. issued $17.8 billion of unregistered senior notes, including $1.0 billion of senior redeemable floating rate notes issued in September 2018 with an interest rate indexed to the new Secured Overnight Financing Rate (SOFR) published by the Federal Reserve Bank of New York, and $6.0 billion of which were issued under a prior bank note program. SOFR is an alternative to the London Interbank Offered Rate (LIBOR) and is a broad measure of the cost of borrowing cash overnight collateralized by U.S. Treasury securities. Due to the uncertainty surrounding the future of LIBOR, it is expected that a transition away from the widespread use of LIBOR to alternative benchmark rates will occur by the end of 2021. Accordingly, the FASB recently issued a pronouncement that includes SOFR, among others, as a permitted benchmark interest rate for the application of hedge accounting. We have a significant amount of assets and liabilities referenced to LIBOR such as commercial loans, adjustable rate mortgage loans, derivatives, securities, and long-term debt. We have established a LIBOR Transition Office to develop and direct a coordinated strategy to transition numerous products and exposures away from LIBOR. The LIBOR Transition Office has initiated a comprehensive, company-wide process to address certain challenges and risks associated with the transition away from the widespread use of LIBOR and has directed an evaluation of the provisions in our contracts that could apply in connection with any discontinuation of, or change to, LIBOR, as well as the operational issues that could arise. In addition, regulators and trade associations periodically issue guidance, consultations and recommendations relating to LIBOR-transition matters, which will inform our overall planning. See the "Risk Factors" section in this Report for additional information regarding the potential impact of a benchmark rate, such as LIBOR, or other referenced financial metric being significantly changed, replaced or discontinued.

In addition, during 2018, Wells Fargo Bank, N.A. executed advances of $29.2 billion with the Federal Home Loan Bank of Des Moines, and as of December 31, 2018, Wells Fargo Bank, N.A. had outstanding advances of $49.6 billion across the Federal Home Loan Bank System. In addition, Wells Fargo Bank, N.A. executed $3.0 billion in Federal Home Loan Bank advances in February 2019.

Credit Ratings Investors in the long-term capital markets, as well as other market participants, generally will consider, among other factors, a company's debt rating in making investment decisions. Rating agencies base their ratings on many quantitative and qualitative factors, including capital adequacy, liquidity, asset quality, business mix, the level and quality of earnings, and rating agency assumptions regarding the probability and extent of federal financial assistance or support for certain large financial institutions. Adverse changes in these factors could result in a reduction of our credit rating; however, our debt securities do not contain credit rating covenants.

There were no actions undertaken by the rating agencies with regard to our credit ratings during fourth quarter 2018. Both the Parent and Wells Fargo Bank, N.A. remain among the highest-rated financial firms in the U.S.

See the "Risk Factors" section in this Report for additional information regarding our credit ratings and the potential impact a credit rating downgrade would have on our liquidity and operations, as well as Note 17 (Derivatives) to Financial Statements in this Report for information regarding additional collateral and funding obligations required for certain derivative instruments in the event our credit ratings were to fall below investment grade.

The credit ratings of the Parent and Wells Fargo Bank, N.A. as of December 31, 2018, are presented in Table 42.

Table 42: Credit Ratings as of December 31, 2018

	Wells Fargo & Company		Wells Fargo Bank, N.A.	
	Senior debt	Short-term borrowings	Long-term deposits	Short-term borrowings
Moody's	A2	P-1	Aa1	P-1
S&P Global Ratings	A-	A-2	A+	A-1
Fitch Ratings, Inc.	A+	F1	AA	F1+
DBRS	AA(low)	R-1(middle)	AA	R-1(high)

FEDERAL HOME LOAN BANK MEMBERSHIP The Federal Home Loan Banks (the FHLBs) are a group of cooperatives that lending institutions use to finance housing and economic development in local communities. We are a member of the FHLBs based in Dallas, Des Moines and San Francisco. Each member of the FHLBs is required to maintain a minimum investment in capital stock of the applicable FHLB. The board of directors of each FHLB can increase the minimum investment requirements in the event it has concluded that additional capital is required to allow it to meet its own regulatory capital requirements. Any increase in the minimum investment requirements outside of specified ranges requires the approval of the Federal Housing Finance Agency. Because the extent of any obligation to increase our investment in any of the FHLBs depends entirely upon the occurrence of a future event, potential future payments to the FHLBs are not determinable.

Capital Management

We have an active program for managing capital through a comprehensive process for assessing the Company's overall capital adequacy. Our objective is to maintain capital at an amount commensurate with our risk profile and risk tolerance objectives, and to meet both regulatory and market expectations. We primarily fund our working capital needs through the retention of earnings net of both dividends and share repurchases, as well as through the issuance of preferred stock and long and short-term debt. Retained earnings increased $12.9 billion from December 31, 2017, predominantly from Wells Fargo net income of $22.4 billion, less common and preferred stock dividends of $9.5 billion. During 2018, we issued 65.1 million shares of common stock. During 2018, we repurchased 375.5 million shares of common stock in open market transactions, including through forward repurchase transactions, and from employee benefit plans, at a cost of $20.6 billion. The amount of our repurchases are subject to various factors as discussed in the "Securities Repurchases" section below. For additional information about our forward repurchase agreements, see Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report.

On September 17, 2018, we redeemed all of our 8.00% Non-Cumulative Perpetual Class A Preferred Stock, Series J, at a redemption price equal to $1,000 per share.

Regulatory Capital Guidelines

The Company and each of our insured depository institutions are subject to various regulatory capital adequacy requirements administered by the FRB and the OCC. Risk-based capital (RBC) guidelines establish a risk-adjusted ratio relating capital to different categories of assets and off-balance sheet exposures as discussed below.

RISK-BASED CAPITAL AND RISK-WEIGHTED ASSETS The Company is subject to final and interim final rules issued by federal banking regulators to implement Basel III capital requirements for U.S. banking organizations. These rules are based on international guidelines for determining regulatory capital issued by the Basel Committee on Banking Supervision (BCBS). The federal banking regulators' capital rules, among other things, require on a fully phased-in basis:

- a minimum Common Equity Tier 1 (CET1) ratio of 9.0%, comprised of a 4.5% minimum requirement plus a capital conservation buffer of 2.5% and for us, as a global systemically important bank (G-SIB), a capital surcharge to be calculated annually, which is 2.0% based on our year-end 2017 data;
- a minimum tier 1 capital ratio of 10.5%, comprised of a 6.0% minimum requirement plus the capital conservation buffer of 2.5% and the G-SIB capital surcharge of 2.0%;
- a minimum total capital ratio of 12.5%, comprised of a 8.0% minimum requirement plus the capital conservation buffer of 2.5% and the G-SIB capital surcharge of 2.0%;
- a potential countercyclical buffer of up to 2.5% to be added to the minimum capital ratios, which is currently not in effect but could be imposed by regulators at their discretion if it is determined that a period of excessive credit growth is contributing to an increase in systemic risk;
- a minimum tier 1 leverage ratio of 4.0%; and
- a minimum supplementary leverage ratio (SLR) of 5.0% (comprised of a 3.0% minimum requirement plus a supplementary leverage buffer of 2.0%) for large and internationally active bank holding companies (BHCs).

We were required to comply with the final Basel III capital rules beginning January 2014, with certain provisions subject to phase-in periods. Beginning January 1, 2018, the requirements for calculating CET1 and tier 1 capital, along with RWAs, became fully phased-in. However, the requirements for calculating tier 2 and total capital are still in accordance with Transition Requirements. The entire Basel III capital rules are scheduled to be fully phased in by the end of 2021. The Basel III capital rules contain two frameworks for calculating capital requirements, a Standardized Approach, which replaced Basel I, and an Advanced Approach applicable to certain institutions, including Wells Fargo. Accordingly, in the assessment of our capital adequacy, we must report the lower of our CET1, tier 1 and total capital ratios calculated under the Standardized Approach and under the Advanced Approach.

On April 10, 2018, the FRB issued a proposed rule that would add a stress capital buffer and a stress leverage buffer to the minimum capital and tier 1 leverage ratio requirements. The buffers would be calculated based on the decrease in a financial institution's risk-based capital and tier 1 leverage ratios under the supervisory severely adverse scenario in CCAR, plus four quarters of planned common stock dividends. The stress capital buffer would replace the 2.5% capital conservation buffer under the Standardized Approach, whereas the stress leverage buffer would be added to the current 4% minimum tier 1 leverage ratio.

Because the Company has been designated as a G-SIB, we are also subject to the FRB's rule implementing the additional capital surcharge of between 1.0-4.5% on G-SIBs. Under the rule, we must annually calculate our surcharge under two methods and use the higher of the two surcharges. The first method (method one) considers our size, interconnectedness, cross-jurisdictional activity, substitutability, and complexity, consistent with the methodology developed by the BCBS and the Financial Stability Board (FSB). The second (method two) uses similar inputs, but replaces substitutability with use of short-term wholesale funding and will generally result in higher surcharges than the BCBS methodology. The G-SIB surcharge became fully effective on January 1, 2019. Based on year-end 2017 data, our 2019 G-SIB surcharge under method two is 2.0% of the Company's RWAs, which is the higher of method one and method two. Because the G-SIB surcharge is calculated annually based on data that can differ over time, the amount of the surcharge is subject to change in future years. Under the Standardized Approach (fully phased-in), our CET1 ratio of 11.74% exceeded the minimum of 9.0% by 274 basis points at December 31, 2018.

The tables that follow provide information about our risk-based capital and related ratios as calculated under Basel III capital guidelines. For banking industry regulatory reporting purposes, we continue to report our tier 2 and total capital in accordance with Transition Requirements but are managing our capital based on a fully phased-in calculation. For information about our capital requirements calculated in accordance with Transition Requirements, see Note 28 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report.

Table 43 summarizes our CET1, tier 1 capital, total capital, risk-weighted assets and capital ratios on a fully phased-in basis at December 31, 2018 and December 31, 2017. As of December 31, 2018, our CET1, tier 1, and total capital ratios were lower using RWAs calculated under the Standardized Approach.

Table 43: Capital Components and Ratios (Fully Phased-In) (1)

		December 31, 2018			December 31, 2017	
(in millions, except ratios)		**Advanced Approach**	**Standardized Approach**		Advanced Approach	Standardized Approach	
Common Equity Tier 1	(A)	**$ 146,363**	**146,363**		154,022	154,022
Tier 1 Capital	(B)	**167,866**	**167,866**		177,466	177,466
Total Capital	(C)	**198,103**	**206,346**		208,395	218,159
Risk-Weighted Assets	(D)	**1,177,350**	**1,247,210**		1,225,939	1,285,563
Common Equity Tier 1 Capital Ratio	(A)/(D)	**12.43%**	**11.74**	*	12.56	11.98 *
Tier 1 Capital Ratio	(B)/(D)	**14.26**	**13.46**	*	14.48	13.80 *
Total Capital Ratio	(C)/(D)	**16.83**	**16.54**	*	17.00	16.97 *

* Denotes the lowest capital ratio as determined under the Advanced and Standardized Approaches.

(1) Beginning January 1, 2018, the requirements for calculating CET1 and tier 1 capital, along with RWAs, became fully phased-in. However, the requirements for calculating tier 2 and total capital are still in accordance with Transition Requirements. Accordingly, fully phased-in total capital amounts and ratios are considered non-GAAP financial measures that are used by management, bank regulatory agencies, investors and analysts to assess and monitor the Company's capital position. See Table 44 for information regarding the calculation and components of CET1, tier 1 capital, total capital and RWAs, as well as the corresponding reconciliation of our fully phased-in regulatory capital amounts to GAAP financial measures.

Table 44 provides information regarding the calculation and composition of our risk-based capital under the Advanced and Standardized Approaches at December 31, 2018 and December 31, 2017.

Table 44: Risk-Based Capital Calculation and Components

			December 31, 2018		December 31, 2017	
(in millions)			**Advanced Approach**	**Standardized Approach**	Advanced Approach	Standardized Approach
Total equity		$	**197,066**	**197,066**	208,079	208,079
Adjustments:						
Preferred stock			**(23,214)**	**(23,214)**	(25,358)	(25,358)
Additional paid-in capital on ESOP preferred stock			**(95)**	**(95)**	(122)	(122)
Unearned ESOP shares			**1,502**	**1,502**	1,678	1,678
Noncontrolling interests			**(900)**	**(900)**	(1,143)	(1,143)
Total common stockholders' equity			**174,359**	**174,359**	183,134	183,134
Adjustments:						
Goodwill			**(26,418)**	**(26,418)**	(26,587)	(26,587)
Certain identifiable intangible assets (other than MSRs)			**(559)**	**(559)**	(1,624)	(1,624)
Other assets (1)			**(2,187)**	**(2,187)**	(2,155)	(2,155)
Applicable deferred taxes (2)			**785**	**785**	962	962
Investment in certain subsidiaries and other			**383**	**383**	292	292
Common Equity Tier 1 (Fully Phased-In)			**146,363**	**146,363**	154,022	154,022
Effect of Transition Requirements (3)			**—**	**—**	743	743
Common Equity Tier 1 (Transition Requirements)		$	**146,363**	**146,363**	154,765	154,765
Common Equity Tier 1 (Fully Phased-In)		$	**146,363**	**146,363**	154,022	154,022
Preferred stock			**23,214**	**23,214**	25,358	25,358
Additional paid-in capital on ESOP preferred stock			**95**	**95**	122	122
Unearned ESOP shares			**(1,502)**	**(1,502)**	(1,678)	(1,678)
Other			**(304)**	**(304)**	(358)	(358)
Total Tier 1 capital (Fully Phased-In)	(A)		**167,866**	**167,866**	177,466	177,466
Effect of Transition Requirements (3)			**—**	**—**	743	743
Total Tier 1 capital (Transition Requirements)		$	**167,866**	**167,866**	178,209	178,209
Total Tier 1 capital (Fully Phased-In)		$	**167,866**	**167,866**	177,466	177,466
Long-term debt and other instruments qualifying as Tier 2			**27,946**	**27,946**	28,994	28,994
Qualifying allowance for credit losses (4)			**2,463**	**10,706**	2,196	11,960
Other			**(172)**	**(172)**	(261)	(261)
Total Tier 2 capital (Fully Phased-In)	(B)		**30,237**	**38,480**	30,929	40,693
Effect of Transition Requirements			**695**	**695**	1,195	1,195
Total Tier 2 capital (Transition Requirements)		$	**30,932**	**39,175**	32,124	41,888
Total qualifying capital (Fully Phased-In)	(A)+(B)	$	**198,103**	**206,346**	208,395	218,159
Total Effect of Transition Requirements			**695**	**695**	1,938	1,938
Total qualifying capital (Transition Requirements)		$	**198,798**	**207,041**	210,333	220,097
Risk-Weighted Assets (RWAs) (5)(6):						
Credit risk		$	**803,273**	**1,201,246**	890,171	1,249,395
Market risk			**45,964**	**45,964**	36,168	36,168
Operational risk			**328,113**	**N/A**	299,600	N/A
Total RWAs (Fully Phased-In) (3)		$	**1,177,350**	**1,247,210**	1,225,939	1,285,563

(1) Represents goodwill and other intangibles on nonmarketable equity securities, which are included in other assets.
(2) Applicable deferred taxes relate to goodwill and other intangible assets. They were determined by applying the combined federal statutory rate and composite state income tax rates to the difference between book and tax basis of the respective goodwill and intangible assets at period end.
(3) Beginning January 1, 2018, the requirements for calculating CET1 and tier 1 capital, along with RWAs, became fully phased-in, so the effect of the transition requirements was $0 at December 31, 2018.
(4) Under the Advanced Approach the allowance for credit losses that exceeds expected credit losses is eligible for inclusion in Tier 2 Capital, to the extent the excess allowance does not exceed 0.6% of Advanced credit RWAs, and under the Standardized Approach, the allowance for credit losses is includable in Tier 2 Capital up to 1.25% of Standardized credit RWAs, with any excess allowance for credit losses being deducted from total RWAs.
(5) RWAs calculated under the Advanced Approach utilize a risk-sensitive methodology, which relies upon the use of internal credit models based upon our experience with internal rating grades. Advanced Approach also includes an operational risk component, which reflects the risk of operating loss resulting from inadequate or failed internal processes or systems.
(6) Under the regulatory guidelines for risk-based capital, on-balance sheet assets and credit equivalent amounts of derivatives and off-balance sheet items are assigned to one of several broad risk categories according to the obligor, or, if relevant, the guarantor or the nature of any collateral. The aggregate dollar amount in each risk category is then multiplied by the risk weight associated with that category. The resulting weighted values from each of the risk categories are aggregated for determining total RWAs.

Table 45 presents the changes in Common Equity Tier 1 under the Advanced Approach for the year ended December 31, 2018.

Table 45: Analysis of Changes in Common Equity Tier 1

(in millions)		
Common Equity Tier 1 (Fully Phased-In) at December 31, 2017	$	154,022
Net income applicable to common stock		20,689
Common stock dividends		(7,889)
Common stock issued, repurchased, and stock compensation-related items		(17,881)
Goodwill		170
Certain identifiable intangible assets (other than MSRs)		1,065
Other assets (1)		(32)
Applicable deferred taxes (2)		(177)
Investment in certain subsidiaries and other		(3,604)
Change in Common Equity Tier 1		(7,659)
Common Equity Tier 1 (Fully Phased-In) at December 31, 2018	$	146,363

(1) Represents goodwill and other intangibles on nonmarketable equity securities, which are included in other assets.
(2) Applicable deferred taxes relate to goodwill and other intangible assets. They were determined by applying the combined federal statutory rate and composite state income tax rates to the difference between book and tax basis of the respective goodwill and intangible assets at period end.

Table 46 presents net changes in the components of RWAs under the Advanced and Standardized Approaches for the year ended December 31, 2018.

Table 46: Analysis of Changes in RWAs

(in millions)		Advanced Approach	Standardized Approach
RWAs (Fully Phased-In) at December 31, 2017	$	1,225,939	1,285,563
Net change in credit risk RWAs		(86,898)	(48,149)
Net change in market risk RWAs		9,796	9,796
Net change in operational risk RWAs		28,513	N/A
Total change in RWAs		(48,589)	(38,353)
RWAs (Fully Phased-In) at December 31, 2018	$	1,177,350	1,247,210

TANGIBLE COMMON EQUITY We also evaluate our business based on certain ratios that utilize tangible common equity. Tangible common equity is a non-GAAP financial measure and represents total equity less preferred equity, noncontrolling interests, and goodwill and certain identifiable intangible assets (including goodwill and intangible assets associated with certain of our nonmarketable equity securities, but excluding mortgage servicing rights), net of applicable deferred taxes. These tangible common equity ratios are as follows:

- Tangible book value per common share, which represents tangible common equity divided by common shares outstanding.
- Return on average tangible common equity (ROTCE), which represents our annualized earnings contribution as a percentage of tangible common equity.

The methodology of determining tangible common equity may differ among companies. Management believes that tangible book value per common share and return on average tangible common equity, which utilize tangible common equity, are useful financial measures because they enable investors and others to assess the Company's use of equity.

Table 47 provides a reconciliation of these non-GAAP financial measures to GAAP financial measures.

Table 47: Tangible Common Equity

		Balance at period end			Average balance for the year ended		
(in millions, except ratios)		**Dec 31, 2018**	Dec 31, 2017	Dec 31, 2016	**Dec 31, 2018**	Dec 31, 2017	Dec 31, 2016
Total equity		**$ 197,066**	208,079	200,497	**203,356**	205,654	200,690
Adjustments:							
Preferred stock		**(23,214)**	(25,358)	(24,551)	**(24,956)**	(25,592)	(24,363)
Additional paid-in capital on ESOP preferred stock		**(95)**	(122)	(126)	**(125)**	(139)	(161)
Unearned ESOP shares		**1,502**	1,678	1,565	**2,159**	2,143	2,011
Noncontrolling interests		**(900)**	(1,143)	(916)	**(929)**	(948)	(936)
Total common stockholders' equity	(A)	**174,359**	183,134	176,469	**179,505**	181,118	177,241
Adjustments:							
Goodwill		**(26,418)**	(26,587)	(26,693)	**(26,453)**	(26,629)	(26,700)
Certain identifiable intangible assets (other than MSRs)		**(559)**	(1,624)	(2,723)	**(1,088)**	(2,176)	(3,254)
Other assets (1)		**(2,187)**	(2,155)	(2,088)	**(2,197)**	(2,184)	(2,117)
Applicable deferred taxes (2)		**785**	962	1,772	**866**	1,570	1,897
Tangible common equity	(B)	**$ 145,980**	153,730	146,737	**150,633**	151,699	147,067
Common shares outstanding	(C)	**4,581.3**	4,891.6	5,016.1	**N/A**	N/A	N/A
Net income applicable to common stock	(D)	**N/A**	N/A	N/A	**$ 20,689**	20,554	20,373
Book value per common share	(A)/(C)	**$ 38.06**	37.44	35.18	**N/A**	N/A	N/A
Tangible book value per common share	(B)/(C)	**31.86**	31.43	29.25	**N/A**	N/A	N/A
Return on average common stockholders' equity (ROE)	(D)/(A)	**N/A**	N/A	N/A	**11.53 %**	11.35	11.49
Return on average tangible common equity (ROTCE)	(D)/(B)	**N/A**	N/A	N/A	**13.73**	13.55	13.85

(1) Represents goodwill and other intangibles on nonmarketable equity securities, which are included in other assets.
(2) Applicable deferred taxes relate to goodwill and other intangible assets. They were determined by applying the combined federal statutory rate and composite state income tax rates to the difference between book and tax basis of the respective goodwill and intangible assets at period end.

SUPPLEMENTARY LEVERAGE RATIO In April 2014, federal banking regulators finalized a rule that enhances the SLR requirements for BHCs, like Wells Fargo, and their insured depository institutions. The SLR consists of Tier 1 capital divided by the Company's total leverage exposure. Total leverage exposure consists of the total average on-balance sheet assets, plus off-balance sheet exposures, such as undrawn commitments and derivative exposures, less amounts permitted to be deducted from Tier 1 capital. The rule, which became effective on January 1, 2018, requires a covered BHC to maintain a SLR of at least 5.0% (comprised of the 3.0% minimum requirement plus a supplementary leverage buffer of 2.0%) to avoid restrictions on capital distributions and discretionary bonus payments. The rule also requires that all of our insured depository institutions maintain a SLR of 6.0% under applicable regulatory capital adequacy guidelines. In April 2018, the FRB and OCC proposed rules (the "Proposed SLR Rules") that would replace the 2% supplementary leverage buffer with a buffer equal to one-half of the firm's G-SIB capital surcharge. The Proposed SLR Rules would similarly tailor the current 6% SLR requirement for our insured depository institutions. At December 31, 2018, our SLR for the Company was 7.7% calculated under the Advanced Approach capital framework. Based on our review, our current leverage levels would exceed the applicable requirements for each of our insured depository institutions as well. See Table 48 for information regarding the calculation and components of the SLR.

Table 48: Supplementary Leverage Ratio

(in millions, except ratio)		Quarter ended December 31, 2018
Tier 1 capital	$	167,866
Total average assets		1,879,047
Less: deductions from Tier 1 capital (1)		28,748
Total adjusted average assets		1,850,299
Adjustments:		
Derivative exposures (2)		68,753
Repo-style transactions (3)		5,350
Other off-balance sheet exposures (4)		250,162
Total adjustments		324,265
Total leverage exposure	$	2,174,564
Supplementary leverage ratio		7.7%

(1) Amounts permitted to be deducted from Tier 1 capital primarily include goodwill and other intangible assets, net of associated deferred tax liabilities.
(2) Represents adjustments for off balance sheet derivative exposures, and derivative collateral netting as defined for supplementary leverage ratio determination purposes.
(3) Adjustments for repo-style transactions represent counterparty credit risk for all repo-style transactions where Wells Fargo & Company is the principal (i.e., principal counterparty facing the client).
(4) Adjustments for other off-balance sheet exposures represent the notional amounts of all off-balance sheet exposures (excluding off balance sheet exposures associated with derivative and repo-style transactions) less the adjustments for conversion to credit equivalent amounts under the regulatory capital rule.

OTHER REGULATORY CAPITAL MATTERS In December 2016, the FRB finalized rules to address the amount of equity and unsecured long-term debt a U.S. G-SIB must hold to improve its resolvability and resiliency, often referred to as Total Loss Absorbing Capacity (TLAC). Under the rules, which became effective on January 1, 2019, U.S. G-SIBs are required to have a minimum TLAC amount (consisting of CET1 capital and additional tier 1 capital issued directly by the top-tier or covered BHC plus eligible external long-term debt) equal to the greater of (i) 18% of RWAs and (ii) 7.5% of total leverage exposure (the denominator of the SLR calculation). Additionally, U.S. G-SIBs are required to maintain (i) a TLAC buffer equal to 2.5% of RWAs plus the firm's applicable G-SIB capital surcharge calculated under method one plus any applicable countercyclical buffer to be added to the 18% minimum and (ii) an external TLAC leverage buffer equal to 2.0% of total leverage exposure to be added to the 7.5% minimum, in order to avoid restrictions on capital distributions and discretionary bonus payments. The rules also require U.S. G-SIBs to have a minimum amount of eligible unsecured long-term debt equal to the greater of (i) 6.0% of RWAs plus the firm's applicable G-SIB capital surcharge calculated under method two and (ii) 4.5% of the total leverage exposure. In addition, the rules impose certain restrictions on the operations and liabilities of the top-tier or covered BHC in order to further facilitate an orderly resolution, including prohibitions on the issuance of short-term debt to external investors and on entering into derivatives and certain other types of financial contracts with external counterparties. While the rules permit permanent grandfathering of a significant portion of otherwise ineligible long-term debt that was issued prior to December 31, 2016, long-term debt issued after that date must be fully compliant with the eligibility requirements of the rules in order to count toward the minimum TLAC amount. As a result of the rules, we will need to issue additional long-term debt to remain compliant with the requirements. Under the Proposed SLR Rules, the 2% external TLAC leverage buffer would be replaced with a buffer equal to one-half of the firm's G-SIB capital surcharge. Additionally, the Proposed SLR Rules would modify the leverage component for calculating the minimum amount of eligible unsecured long-term debt from 4.5% of total leverage exposure to 2.5% of total leverage exposure plus one-half of the firm's G-SIB capital surcharge. As of December 31, 2018, our eligible external TLAC as a percentage of total risk-weighted assets was 23.35% compared with a required minimum of 22.0%. Similar to the risk-based capital requirements, we determine minimum required TLAC based on the greater of RWAs determined under the Standardized and Advanced approaches.

In addition, as discussed in the "Risk Management – Asset/Liability Management – Liquidity and Funding – Liquidity Standards" section in this Report, federal banking regulators have issued a final rule regarding the U.S. implementation of the Basel III LCR and a proposed rule regarding the NSFR.

Capital Planning and Stress Testing

Our planned long-term capital structure is designed to meet regulatory and market expectations. We believe that our long-term targeted capital structure enables us to invest in and grow our business, satisfy our customers' financial needs in varying environments, access markets, and maintain flexibility to return capital to our shareholders. Our long-term targeted capital structure also considers capital levels sufficient to exceed capital requirements including the G-SIB surcharge. Accordingly, based on the final Basel III capital rules under the lower of the Standardized or Advanced Approaches CET1 capital ratios, we currently target a long-term CET1 capital ratio at or in excess of 10%, which includes a 2% G-SIB surcharge. Our capital targets are subject to change based on various factors, including changes to the regulatory capital framework and expectations for large banks promulgated by bank regulatory agencies, planned capital actions, changes in our risk profile and other factors. As discussed above in "Regulatory Capital Guidelines", the FRB has proposed including a stress capital buffer (SCB) to replace the current capital conservation buffer as part of the capital requirements for large U.S. banks. The proposal is not final, but it is expected that the adoption of CECL accounting would be included in the SCB calculation. We expect that implementation of the SCB may increase the level and volatility of minimum capital requirements, which may cause our current 10% CET1 long-term target ratio to increase.

Under the FRB's capital plan rule, large BHCs are required to submit capital plans annually for review to determine if the FRB has any objections before making any capital distributions. The rule requires updates to capital plans in the event of material changes in a BHC's risk profile, including as a result of any significant acquisitions. The FRB assesses the overall financial condition, risk profile, and capital adequacy of BHCs while considering both quantitative and qualitative factors when evaluating capital plans.

Our 2018 capital plan, which was submitted on April 4, 2018, as part of CCAR, included a comprehensive capital outlook supported by an assessment of expected sources and uses of capital over a given planning horizon under a range of expected and stress scenarios. As part of the 2018 CCAR, the FRB also generated a supervisory stress test, which assumed a sharp decline in the economy and significant decline in asset pricing using the information provided by the Company to estimate performance. The FRB reviewed the supervisory stress results both as required under the Dodd-Frank Act using a common set of capital actions for all large BHCs and by taking into account the Company's proposed capital actions. The FRB published its supervisory stress test results as required under the Dodd-Frank Act on June 21, 2018. On June 28, 2018, the FRB notified us that it did not object to our capital plan included in the 2018 CCAR.

Federal banking regulators require stress tests to evaluate whether an institution has sufficient capital to continue to operate during periods of adverse economic and financial conditions. These stress testing requirements set forth the timing and type of stress test activities large BHCs and banks must undertake as well as rules governing stress testing controls, oversight and disclosure requirements. The rules also limit a large BHC's ability to make capital distributions to the extent its actual capital issuances were less than amounts indicated in its capital plan. As required under the FRB's stress testing rule, we must submit a mid-cycle stress test based on second quarter data and scenarios developed by the Company. We submitted the results of the mid-cycle stress test to the FRB and disclosed a summary of the results in October 2018. In October 2018, the FRB proposed a rule that would, among other things, eliminate the mid-cycle stress test requirement for banks beginning in 2020.

Securities Repurchases

From time to time the Board authorizes the Company to repurchase shares of our common stock. Although we announce when the Board authorizes share repurchases, we typically do not give any public notice before we repurchase our shares. Future stock repurchases may be private or open-market repurchases, including block transactions, accelerated or delayed block transactions, forward repurchase transactions, and similar transactions. Additionally, we may enter into plans to purchase stock that satisfy the conditions of Rule 10b5-1 of the Securities Exchange Act of 1934. Various factors determine the amount of our share repurchases, including our capital requirements, the number of shares we expect to issue for employee benefit plans and acquisitions, market conditions (including the trading price of our stock), and regulatory and legal considerations, including the FRB's response to our capital plan and to changes in our risk profile. Due to the various factors impacting the amount of our share repurchases and the fact that we tend to be in the market regularly to satisfy repurchase considerations under our capital plan, our repurchases occur at various price levels. We may suspend repurchase activity at any time.

In January 2018, the Board authorized the repurchase of 350 million shares of our common stock. In October 2018, the Board authorized the repurchase of an additional 350 million shares of our common stock. At December 31, 2018, we had remaining authority to repurchase approximately 395 million shares, subject to regulatory and legal conditions. For more information about share repurchases during fourth quarter 2018, see Part II, Item 5 in our 2018 Form 10-K.

Historically, our policy has been to repurchase shares under the "safe harbor" conditions of Rule 10b-18 of the Securities Exchange Act of 1934 including a limitation on the daily volume of repurchases. Rule 10b-18 imposes an additional daily volume limitation on share repurchases during a pending merger or acquisition in which shares of our stock will constitute some or all of the consideration. Our management may determine that during a pending stock merger or acquisition when the safe harbor would otherwise be available, it is in our best interest to repurchase shares in excess of this additional daily volume limitation. In such cases, we intend to repurchase shares in compliance with the other conditions of the safe harbor, including the standing daily volume limitation that applies whether or not there is a pending stock merger or acquisition.

In connection with our participation in the Capital Purchase Program (CPP), a part of the Troubled Asset Relief Program (TARP), we issued to the U.S. Treasury Department warrants to purchase 110,261,688 shares of our common stock with an original exercise price of $34.01 per share. The warrants expired on October 29, 2018, and the holders of 110,646 unexercised warrants as of the expiration date are no longer entitled to receive any shares of our common stock.

Regulatory Matters

Since the enactment of the Dodd-Frank Act in 2010, the U.S. financial services industry has been subject to a significant increase in regulation and regulatory oversight initiatives. This increased regulation and oversight has substantially changed how most U.S. financial services companies conduct business and has increased their regulatory compliance costs. The following highlights the more significant regulations and regulatory oversight initiatives that have affected or may affect our business. For additional information about the regulatory matters discussed below and other regulations and regulatory oversight matters, see Part I, Item 1 "Regulation and Supervision" of our 2018 Form 10-K, and the "Capital Management," "Forward-Looking Statements" and "Risk Factors" sections and Note 28 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report.

Dodd-Frank Act

The Dodd-Frank Act is the most significant financial reform legislation since the 1930s and is driving much of the current U.S. regulatory reform efforts. The Dodd-Frank Act and many of its provisions became effective in July 2010 and July 2011. The following provides additional information on the Dodd-Frank Act, including the current status of certain of its rulemaking initiatives.

- *Enhanced supervision and regulation of systemically important firms.* The Dodd-Frank Act grants broad authority to federal banking regulators to establish enhanced supervisory and regulatory requirements for systemically important firms. The FRB has finalized a number of regulations implementing enhanced prudential requirements for large bank holding companies (BHCs) like Wells Fargo regarding risk-based capital and leverage, risk and liquidity management, and imposing debt-to-equity limits on any BHC that regulators determine poses a grave threat to the financial stability of the United States. The FRB and OCC have also finalized rules implementing stress testing requirements for large BHCs and national banks. The FRB has also finalized enhanced prudential standards that implement single counterparty credit limits, and has proposed a rule to establish remediation requirements for large BHCs experiencing financial distress. Similarly, the FRB has proposed additional requirements regarding effective risk management practices at large BHCs, including its expectations for boards of directors and senior management. In addition to the authorization of enhanced supervisory and regulatory requirements for systemically important firms, the Dodd-Frank Act also established the Financial Stability Oversight Council and the Office of Financial Research, which may recommend new systemic risk management requirements and require new reporting of systemic risks. The OCC, under separate authority, has also finalized guidelines establishing heightened governance and risk management standards for large national banks such as Wells Fargo Bank, N.A. The OCC guidelines require covered banks to establish and adhere to a written risk governance framework in order to manage and control their risk-taking activities. The guidelines also formalize roles and responsibilities for risk management practices within covered banks and create certain risk oversight responsibilities for their boards of directors.
- *Regulation of consumer financial products.* The Dodd-Frank Act established the Consumer Financial Protection Bureau (CFPB) to ensure consumers receive clear and accurate disclosures regarding financial products and to protect them from hidden fees and unfair, deceptive or abusive practices. With respect to residential mortgage lending, the CFPB issued a number of final rules implementing new origination, notification, disclosure and other requirements, as well as additional limitations on the fees and charges that may be increased from the estimates provided by lenders. The CFPB finalized amendments to the rule implementing the Home Mortgage Disclosure Act, resulting in a significant expansion of the data points lenders are required to collect and report to the CFPB. The CFPB also expanded the transactions covered by the rule and increased the reporting frequency from annual to quarterly for large volume lenders, such as Wells Fargo, beginning January 1, 2020. With respect to other financial products, the CFPB finalized rules, most of which become effective on April 1, 2019, to make prepaid cards subject to similar consumer protections as those provided by more traditional debit and credit cards such as fraud protection and expanded access to account information. In addition to these rulemaking activities, the CFPB is continuing its on-going supervisory examination activities of the financial services industry with respect to a number of consumer businesses and products, including mortgage lending and servicing, fair lending requirements, student lending activities, and automobile finance.
- *Volcker Rule.* The Volcker Rule, with limited exceptions, prohibits banking entities from engaging in proprietary trading or owning any interest in or sponsoring or having certain relationships with a hedge fund, a private equity fund or certain structured transactions that are deemed covered funds. Federal banking regulators, the SEC and the Commodity Futures Trading Commission (CFTC) (collectively, the Volcker supervisory regulators) jointly released a final rule to implement the Volcker Rule's restrictions, and the FRB has proposed further rules to streamline and modify compliance with the Volcker Rule's requirements. As a banking entity with more than $50 billion in consolidated assets, we are also subject to enhanced compliance program requirements.
- *Regulation of swaps and other derivatives activities.* The Dodd-Frank Act established a comprehensive framework for regulating over-the-counter derivatives and authorized the CFTC and the SEC to regulate swaps and security-based swaps, respectively. The CFTC has adopted rules applicable to our provisionally registered swap dealer, Wells Fargo Bank, N.A., that require, among other things, extensive regulatory and public reporting of swaps, central clearing and trading of swaps on exchanges or other multilateral platforms, and compliance with comprehensive internal and external business conduct standards. The SEC is expected to implement parallel rules applicable to security-based swaps. In addition, federal regulators have adopted final rules establishing initial and variation margin requirements for swaps and security-based swaps not centrally cleared, rules placing restrictions on a party's right to exercise default rights under derivatives and other qualified financial contracts against applicable banking organizations, and record-keeping requirements for qualified financial contracts. All of these new rules, as well as others being considered by regulators in other jurisdictions, may

negatively impact customer demand for over-the-counter derivatives, impact our ability to offer customers new derivatives or amendments to existing derivatives, and may increase our costs for engaging in swaps, security-based swaps, and other derivatives activities.

- *Regulation of interchange transaction fees (the Durbin Amendment).* On October 1, 2011, the FRB rule enacted to implement the Durbin Amendment to the Dodd-Frank Act that limits debit card interchange transaction fees to those reasonable and proportional to the cost of the transaction became effective. The rule generally established that the maximum allowable interchange fee that an issuer may receive or charge for an electronic debit transaction is the sum of 21 cents per transaction and 5 basis points multiplied by the value of the transaction. On July 31, 2013, the U.S. District Court for the District of Columbia ruled that the approach used by the FRB in setting the maximum allowable interchange transaction fee impermissibly included costs that were specifically excluded from consideration under the Durbin Amendment. In August 2013, the FRB filed a notice of appeal of the decision to the United States Court of Appeals for the District of Columbia. In March 2014, the Court of Appeals reversed the District Court's decision, but did direct the FRB to provide further explanation regarding its treatment of the costs of monitoring transactions, which the FRB published in August 2015. The plaintiffs did not file a petition for rehearing with the Court of Appeals but filed a petition for writ of certiorari with the U.S. Supreme Court. In January 2015, the U.S. Supreme Court denied the petition for writ of certiorari.

Regulatory Capital Guidelines and Capital Plans
During 2013, federal banking regulators issued final rules that substantially amended the risk-based capital rules for banking organizations. The rules implement the Basel III regulatory capital reforms in the U.S., comply with changes required by the Dodd-Frank Act, and replace the existing Basel I-based capital requirements. We were required to begin complying with the rules on January 1, 2014, subject to phase-in periods that are scheduled to be fully phased in by January 1, 2022. In 2014, federal banking regulators also finalized rules to impose a supplementary leverage ratio on large BHCs like Wells Fargo and our insured depository institutions and to implement the Basel III liquidity coverage ratio. For more information on the final capital, leverage and liquidity rules, and additional capital requirements applicable to us, see the "Capital Management" section in this Report.

"Living Will" Requirements and Related Matters
Rules adopted by the FRB and the FDIC under the Dodd-Frank Act require large financial institutions, including Wells Fargo, to prepare and periodically revise resolution plans, so-called "living-wills", that would facilitate their resolution in the event of material distress or failure. Under the rules, resolution plans are required to provide strategies for resolution under the Bankruptcy Code and other applicable insolvency regimes that can be accomplished in a reasonable period of time and in a manner that mitigates the risk that failure would have serious adverse effects on the financial stability of the United States. On December 19, 2017, the FRB and FDIC announced that Wells Fargo's 2017 resolution plan submission did not have any deficiencies; however, they identified a specific shortcoming that would need to be addressed in the Company's next submission. Our national bank subsidiary, Wells Fargo Bank, N.A. (the "Bank"), is also required to prepare a resolution plan and submitted its 2018 resolution plan to the FDIC on June 29, 2018. If the FRB or FDIC determines that our resolution plan has deficiencies, they may impose more stringent capital, leverage or liquidity requirements on us or restrict our growth, activities or operations until we adequately remedy the deficiencies. If the FRB or FDIC ultimately determines that we have been unable to remedy any deficiencies, they could require us to divest certain assets or operations.

We must also prepare and submit to the FRB a recovery plan that identifies a range of options that we may consider during times of idiosyncratic or systemic economic stress to remedy any financial weaknesses and restore market confidence without extraordinary government support. Recovery options include the possible sale, transfer or disposal of assets, securities, loan portfolios or businesses. The Bank must also prepare and submit to the OCC a recovery plan that sets forth the bank's plan to remain a going concern when the bank is experiencing considerable financial or operational stress, but has not yet deteriorated to the point where liquidation or resolution is imminent. If either the FRB or the OCC determine that our recovery plan is deficient, they may impose fines, restrictions on our business or ultimately require us to divest assets.

If Wells Fargo were to fail, it may be resolved in a bankruptcy proceeding or, if certain conditions are met, under the resolution regime created by the Dodd-Frank Act known as the "orderly liquidation authority." The orderly liquidation authority allows for the appointment of the FDIC as receiver for a systemically important financial institution that is in default or in danger of default if, among other things, the resolution of the institution under the U.S. Bankruptcy Code would have serious adverse effects on financial stability in the United States. If the FDIC is appointed as receiver for Wells Fargo & Company (the "Parent"), then the orderly liquidation authority, rather than the U.S. Bankruptcy Code, would determine the powers of the receiver and the rights and obligations of our security holders. The FDIC's orderly liquidation authority requires that security holders of a company in receivership bear all losses before U.S. taxpayers are exposed to any losses, and allows the FDIC to disregard the strict priority of creditor claims under the U.S. Bankruptcy Code in certain circumstances.

Whether under the U.S. Bankruptcy Code or by the FDIC under the orderly liquidation authority, Wells Fargo could be resolved using a "multiple point of entry" strategy, in which the Parent and one or more of its subsidiaries would each undergo separate resolution proceedings, or a "single point of entry" strategy, in which the Parent would likely be the only material legal entity to enter resolution proceedings. The FDIC has announced that a single point of entry strategy may be a desirable strategy under its implementation of the orderly liquidation authority, but not all aspects of how the FDIC might exercise this authority are known and additional rulemaking is possible.

The strategy described in our most recent resolution plan submission is a multiple point of entry strategy; however, we have made a decision to move to a single point of entry strategy for our next resolution plan submission. We are not obligated to maintain either a single point of entry or multiple point of entry strategy, and the strategies reflected in our resolution plan submissions are not binding in the event of an actual resolution of Wells Fargo, whether conducted under the U.S. Bankruptcy Code or by the FDIC under the orderly liquidation authority.

To facilitate the orderly resolution of systemically important financial institutions in case of material distress or failure, federal banking regulations require that institutions, such as Wells Fargo, maintain a minimum amount of equity and unsecured debt to absorb losses and recapitalize operating subsidiaries. Federal banking regulators have also required measures to facilitate the continued operation of operating subsidiaries notwithstanding the failure of their parent companies, such as limitations on parent guarantees, and have issued guidance encouraging institutions to take legally binding measures to provide capital and liquidity resources to certain subsidiaries in order to facilitate an orderly resolution. In response to the regulators' guidance and to facilitate the orderly resolution of the Company using either a single point of entry or multiple point of entry resolution strategy, on June 28, 2017, the Parent entered into a support agreement (the "Support Agreement") with WFC Holdings, LLC, an intermediate holding company and subsidiary of the Parent (the "IHC"), and the Bank, Wells Fargo Securities, LLC ("WFS"), and Wells Fargo Clearing Services, LLC ("WFCS"), each an indirect subsidiary of the Parent. Pursuant to the Support Agreement, the Parent transferred a significant amount of its assets, including the majority of its cash, deposits, liquid securities and intercompany loans (but excluding its equity interests in its subsidiaries and certain other assets), to the IHC and will continue to transfer those types of assets to the IHC from time to time. In the event of our material financial distress or failure, the IHC will be obligated to use the transferred assets to provide capital and/or liquidity to the Bank pursuant to the Support Agreement and to WFS and WFCS through repurchase facilities entered into in connection with the Support Agreement. Under the Support Agreement, the IHC will also provide funding and liquidity to the Parent through subordinated notes and a committed line of credit, which, together with the issuance of dividends, is expected to provide the Parent, during business as usual operating conditions, with the same access to cash necessary to service its debts, pay dividends, repurchase its shares, and perform its other obligations as it would have had if it had not entered into these arrangements and transferred any assets. If certain liquidity and/or capital metrics fall below defined triggers, the subordinated notes would be forgiven and the committed line of credit would terminate, which could materially and adversely impact the Parent's liquidity and its ability to satisfy its debts and other obligations, and could result in the commencement of bankruptcy proceedings by the Parent at an earlier time than might have otherwise occurred if the Support Agreement were not implemented. The Parent's and the IHC's respective obligations under the Support Agreement are secured pursuant to a related security agreement.

Other Regulatory Related Matters

- *Broker-dealer standards of conduct.* In April 2018, the SEC proposed a rule that would require broker-dealers to act in the best interest of a retail customer when making a recommendation of any securities transaction or investment strategy involving securities. This rule may impact the manner in which business is conducted with customers seeking investment advice and may affect certain investment product offerings.
- *OCC revocation of relief.* On November 18, 2016, the OCC revoked provisions of certain consent orders that provided Wells Fargo Bank, N.A. relief from specific requirements and limitations regarding rules, policies, and procedures for corporate activities; OCC approval of changes in directors and senior executive officers; and golden parachute payments. As a result, Wells Fargo Bank, N.A. is no longer eligible for expedited treatment for certain applications; is now required to provide prior written notice to the OCC of a change in directors and senior executive officers; and is now subject to certain regulatory limitations on golden parachute payments.
- *Community Reinvestment Act (CRA) rating.* In March 2017, we announced that the OCC had downgraded our most recent CRA rating, which covers the years 2009 – 2012, to "Needs to Improve" due to previously issued regulatory consent orders. A "Needs to Improve" rating imposes regulatory restrictions and limitations on certain of the Company's nonbank activities, including its ability to engage in certain nonbank mergers and acquisitions or undertake new financial in nature activities, and CRA performance is taken into account by regulators in reviewing applications to establish bank branches and for approving proposed bank mergers and acquisitions. The rating also results in the loss of expedited processing of applications to undertake certain activities, and requires the Company to receive prior regulatory approval for certain activities, including to issue or prepay certain subordinated debt obligations, open or relocate bank branches, or make certain public welfare investments. In addition, a "Needs to Improve" rating could have an impact on the Company's relationships with certain states, counties, municipalities or other public agencies to the extent applicable law, regulation or policy limits, restricts or influences whether such entity may do business with a company that has a below "Satisfactory" rating.
- *FRB consent order regarding governance oversight and compliance and operational risk management.* On February 2, 2018, the Company entered into a consent order with the FRB. As required by the consent order, the Board submitted to the FRB a plan to further enhance the Board's governance and oversight of the Company, and the Company submitted to the FRB a plan to further improve the Company's compliance and operational risk management program. The consent order requires the Company, following the FRB's acceptance and approval of the plans and the Company's adoption and implementation of the plans, to complete third-party reviews of the enhancements and improvements provided for in the plans. Until these third-party reviews are complete and the plans are approved and implemented to the satisfaction of the FRB, the Company's total consolidated assets will be limited to the level as of December 31, 2017. Compliance with this asset cap will be measured on a two-quarter daily average basis to allow for management of temporary fluctuations. The Company continues to have constructive dialogue with the FRB on an ongoing basis to clarify expectations, receive feedback, and assess progress under the consent order. In order to have enough time to incorporate this feedback into the Company's plans in a thoughtful manner, adopt and implement the final plans as accepted by the FRB, and complete the required third-party reviews, the Company is planning to operate under the asset cap through the end of 2019. Additionally, after removal of the asset cap, a second third-party review must also be conducted to assess the efficacy and sustainability of the enhancements and improvements.
- *Consent orders with the CFPB and OCC regarding compliance risk management program, automobile collateral protection insurance policies, and mortgage interest rate lock extensions.* On April 20, 2018, the Company entered into consent orders with the CFPB and OCC to pay an aggregate of $1 billion in civil money

penalties to resolve matters regarding the Company's compliance risk management program and past practices involving certain automobile collateral protection insurance policies and certain mortgage interest rate lock extensions. As required by the consent orders, the Company submitted to the CFPB and OCC an enterprise-wide compliance risk management plan and a plan to enhance the Company's internal audit program with respect to federal consumer financial law and the terms of the consent orders. In addition, as required by the consent orders, the Company submitted for non-objection plans to remediate customers affected by the automobile collateral protection insurance and mortgage interest rate lock matters, as well as a plan for the management of remediation activities conducted by the Company.

Critical Accounting Policies

Our significant accounting policies (see Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report) are fundamental to understanding our results of operations and financial condition because they require that we use estimates and assumptions that may affect the value of our assets or liabilities and financial results. Five of these policies are critical because they require management to make difficult, subjective and complex judgments about matters that are inherently uncertain and because it is likely that materially different amounts would be reported under different conditions or using different assumptions. These policies govern:

- the allowance for credit losses;
- the valuation of residential MSRs;
- the fair value of financial instruments;
- income taxes; and
- liability for contingent litigation losses.

Management and the Board's Audit and Examination Committee have reviewed and approved these critical accounting policies.

Allowance for Credit Losses

We maintain an allowance for credit losses, which consists of the allowance for loan losses and the allowance for unfunded credit commitments, which is management's estimate of credit losses inherent in the loan portfolio, including unfunded credit commitments, at the balance sheet date, excluding loans carried at fair value. For a description of our related accounting policies, see Note 1 (Summary of Significant Accounting Policies) to Financial Statements in this Report.

Changes in the allowance for credit losses and, therefore, in the related provision for credit losses can materially affect net income. In applying the judgment and review required to determine the allowance for credit losses, management considers changes in economic conditions, customer behavior, and collateral value, among other influences. From time to time, economic factors or business decisions, such as the addition or liquidation of a loan product or business unit, may affect the loan portfolio, causing management to provide for or release amounts from the allowance for credit losses. While our methodology attributes portions of the allowance to specific portfolio segments (commercial and consumer), the entire allowance for credit losses is available to absorb credit losses inherent in the total loan portfolio and unfunded credit commitments.

Judgment is specifically applied in:

- *Credit risk ratings applied to individual commercial loans and unfunded credit commitments.* We estimate the probability of default in accordance with the borrower's financial strength using a borrower quality rating and the severity of loss in the event of default using a collateral quality rating. Collectively, these ratings are referred to as credit risk ratings and are assigned to our commercial loans. Probability of default and severity at the time of default are statistically derived through historical observations of defaults and losses after default within each credit risk rating. Commercial loan risk ratings are evaluated based on each situation by experienced senior credit officers and are subject to periodic review by an internal team of credit specialists.
- *Economic assumptions applied to pools of consumer loans (statistically modeled).* Losses are estimated using economic variables to represent our best estimate of inherent loss. Our forecasted losses are modeled using a range of economic scenarios.
- *Selection of a credit loss estimation model that fits the credit risk characteristics of its portfolio.* We use both internally developed and vendor supplied models in this process. We often use expected loss, transition rate, flow rate, competing hazard, vintage maturation, and time series or statistical trend models, most with economic correlations. Management must use judgment in establishing additional input metrics for the modeling processes, considering further stratification into reference data time series, sub-product, origination channel, vintage, loss type, geographic location and other predictive characteristics. The models used to determine the allowance for credit losses are validated in accordance with Company policies by an internal model validation group.
- *Assessment of limitations to credit loss estimation models.* We apply our judgment to adjust our modeled estimates to reflect other risks that may be identified from current conditions and developments in selected portfolios.
- *Identification and measurement of impaired loans, including loans modified in a TDR.* Our experienced senior credit officers may consider a loan impaired based on their evaluation of current information and events, including loans modified in a TDR. The measurement of impairment is typically based on an analysis of the present value of expected future cash flows. The development of these expectations requires significant management judgment and review.
- *An amount for imprecision or uncertainty which reflects management's overall estimate of the effect of quantitative and qualitative factors on inherent credit losses.* This amount represents management's judgment of risks inherent in the processes and assumptions used in establishing the allowance for credit losses. This imprecision considers economic environmental factors, modeling assumptions and performance, process risk, and other subjective factors, including industry trends and emerging risk assessments.

SENSITIVITY TO CHANGES Table 49 demonstrates the impact of the sensitivity of our estimates on our allowance for credit losses.

Table 49: Allowance Sensitivity Summary

		December 31, 2018
(in billions)		Estimated increase/(decrease) in allowance
Assumption:		
Favorable (1)	$	(3.2)
Adverse (2)		6.9

(1) Represents a one risk rating upgrade throughout our commercial portfolio segment and a more optimistic economic outlook for modeled losses on our consumer portfolio segment.
(2) Represents a one risk rating downgrade throughout our commercial portfolio segment, a more pessimistic economic outlook for modeled losses on our consumer portfolio segment, and incremental deterioration for PCI loans.

The sensitivity analyses provided in the previous table are hypothetical scenarios and are not considered probable. They do not represent management's view of inherent losses in the portfolio as of the balance sheet date. Because significant judgment is used, it is possible that others performing similar analyses could reach different conclusions. See the "Risk Management – Credit Risk Management – Allowance for Credit Losses" section and Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report for further discussion of our allowance for credit losses.

Valuation of Residential Mortgage Servicing Rights (MSRs)

MSRs are assets that represent the rights to service mortgage loans for others. We recognize MSRs when we purchase servicing rights from third parties, or retain servicing rights in connection with the sale or securitization of loans we originate (asset transfers). We also have MSRs acquired in the past under co-issuer agreements that provide for us to service loans that were originated and securitized by third-party correspondents.

We carry our MSRs related to residential mortgage loans at fair value. Periodic changes in our residential MSRs and the economic hedges used to hedge our residential MSRs are reflected in earnings.

We use a model to estimate the fair value of our residential MSRs. The model is validated by an internal model validation group operating in accordance with Company policies. The model calculates the present value of estimated future net servicing income and incorporates inputs and assumptions that market participants use in estimating fair value. Certain significant inputs and assumptions generally are not observable in the market and require judgment to determine. If observable market indications do become available, these are factored into the estimates as appropriate:

- *The mortgage loan prepayment speed used to estimate future net servicing income.* The prepayment speed is the annual rate at which borrowers are forecasted to repay their mortgage loan principal; this rate also includes estimated borrower defaults. We use models to estimate prepayment speeds and borrower defaults which are influenced by changes in mortgage interest rates and borrower behavior.
- *The discount rate used to present value estimated future net servicing income.* The discount rate is the required rate of return investors in the market would expect for an asset with similar risk. To determine the discount rate, we consider the risk premium for uncertainties from servicing operations (e.g., possible changes in future servicing costs, ancillary income and earnings on escrow accounts).
- *The expected cost to service loans used to estimate future net servicing income.* The cost to service loans includes estimates for unreimbursed expenses, such as delinquency and foreclosure costs, which considers the number of defaulted loans as well as changes in servicing processes associated with default and foreclosure management.

Both prepayment speed and discount rate assumptions can, and generally will, change quarterly as market conditions and mortgage interest rates change. For example, an increase in either the prepayment speed or discount rate assumption results in a decrease in the fair value of the MSRs, while a decrease in either assumption would result in an increase in the fair value of the MSRs. In recent years, there have been significant market-driven fluctuations in loan prepayment speeds and the discount rate. These fluctuations can be rapid and may be significant in the future. Additionally, while our current valuation reflects our best estimate of servicing costs, future regulatory or investor changes in servicing standards, as well as changes in individual state foreclosure legislation or additional market participant information regarding servicing cost assumptions, may have an impact on our servicing cost assumption and our MSR valuation in future periods.

For a description of our valuation and sensitivity of MSRs, see Note 1 (Summary of Significant Accounting Policies), Note 9 (Securitizations and Variable Interest Entities), Note 10 (Mortgage Banking Activities) and Note 18 (Fair Values of Assets and Liabilities) to Financial Statements in this Report.

Fair Value of Financial Instruments

Fair value represents the price that would be received to sell the financial asset or paid to transfer the financial liability in an orderly transaction between market participants at the measurement date.

We use fair value measurements to record fair value adjustments to certain financial instruments and to determine fair value disclosures. For example, assets and liabilities held for trading purposes, marketable equity securities not held for trading purposes, debt securities available for sale, derivatives and substantially all of our residential MLHFS are carried at fair value each period. Other financial instruments, such as certain MLHFS, nonmarketable equity securities and substantially all of our loans held for investment, are not carried at fair value each period but may require nonrecurring fair value adjustments due to application of lower-of-cost-or-market accounting, measurement alternative accounting or write-downs of individual assets. We also disclose our estimate of fair value for financial instruments not recorded at fair value, such as loans held for investment or issuances of long-term debt.

The accounting provisions for fair value measurements include a three-level hierarchy for disclosure of assets and liabilities recorded at fair value. The classification of assets and liabilities within the hierarchy is based on whether the inputs to the valuation methodology used for measurement are observable or unobservable. Observable inputs reflect market-derived or market-based information obtained from independent sources, while unobservable inputs reflect our estimates about market data. For additional information on fair value levels, see Note 18 (Fair Values of Assets and Liabilities) to Financial Statements in this Report.

When developing fair value measurements, we maximize the use of observable inputs and minimize the use of unobservable inputs. When available, we use quoted prices in active markets to measure fair value. If quoted prices in active markets are not available, fair value measurement is based upon models that use primarily market-based or independently sourced market parameters, including interest rate yield curves, prepayment speeds, option volatilities and currency rates. However, when observable market data is limited or not available, fair value estimates are typically determined using internally-developed models based on unobservable inputs. In these instances, management judgment is necessary as we are required to make judgments about significant assumptions market participants would use to estimate fair value. Determination of these assumptions includes consideration of market conditions and liquidity levels. Changes in the market conditions, such as reduced liquidity in the capital markets or changes in secondary market activities, may reduce the availability and reliability of quoted prices or observable data used to determine fair value. In such cases, it may be appropriate to adjust available quoted prices or observable market data. When significant adjustments are required to price quotes or other observable market data, it may be appropriate to utilize an estimate of fair value based primarily on unobservable inputs. Internal models used to determine fair value are validated in accordance with company policies by an internal model validation group. Additionally, we use third-party pricing services to obtain fair values, which are used to either record the price of an instrument or to corroborate internally developed prices. Third-party price validation procedures are performed over the reasonableness of the fair value measurements. For additional information on our use of pricing services, see Note 1 (Summary of Significant Accounting Policies) and Note 18 (Fair Value of Assets and Liabilities) to Financial Statements in this Report.

Significant judgment is also required to determine whether certain assets measured at fair value are classified as Level 2 or Level 3 of the fair value hierarchy as described in Note 18 (Fair Value of Assets and Liabilities) to Financial Statements in this Report. When making this judgment, we consider available information, including observable market data, indications of market liquidity and orderliness, and our understanding of the valuation techniques and significant inputs used. The classification of Level 2 or Level 3 is based upon the specific facts and circumstances of each instrument or instrument category and judgments are made regarding the significance of the Level 3 inputs to the instruments' fair value measurement in its entirety. If Level 3 inputs are considered significant, the instrument is classified as Level 3.

Table 50 presents the summary of the fair value of financial instruments recorded at fair value on a recurring basis, and the amounts of Level 3 assets and liabilities (before derivative netting adjustments). The fair value of the remaining assets and liabilities were measured using valuation methodologies involving market-based or market-derived information (collectively Level 1 and 2 measurements).

Table 50: Fair Value Level 3 Summary

	December 31, 2018		December 31, 2017	
($ in billions)	**Total balance**	**Level 3 (1)**	Total balance	Level 3 (1)
Assets carried at fair value	**$ 408.4**	**25.3**	416.6	24.9
As a percentage of total assets	**22%**	**1**	21	1
Liabilities carried at fair value	**$ 28.2**	**1.6**	27.3	2.0
As a percentage of total liabilities	**2%**	*****	2	*

* Less than 1%.
(1) Before derivative netting adjustments.

See Note 18 (Fair Values of Assets and Liabilities) to Financial Statements in this Report for a complete discussion on our fair value of financial instruments, our related measurement techniques and the impact to our financial statements.

Income Taxes

We file consolidated and separate company U.S. federal income tax returns, foreign tax returns and various combined and separate company state tax returns. We evaluate two components of income tax expense: current and deferred income tax expense. Current income tax expense represents our estimated taxes to be paid or refunded for the current period and includes income tax expense related to our uncertain tax positions. Deferred income tax expense results from changes in deferred tax assets and liabilities between periods. We determine deferred income taxes using the balance sheet method. Under this method, the net deferred tax asset or liability is based on the tax effects of the differences between the book and tax bases of assets and liabilities, and recognizes enacted changes in tax rates and laws in the period in which they occur. Deferred tax assets are recognized subject to management's judgment that realization is "more likely than not." Uncertain tax positions that meet the more likely than not recognition threshold are measured to determine the amount of benefit to recognize. An uncertain tax position is measured at the largest amount of benefit that management believes has a greater than 50% likelihood of realization upon settlement. Tax benefits not meeting our realization criteria represent unrecognized tax benefits. We account for interest and penalties as a component of income tax expense. In 2018, we finalized the recognition of the U.S. tax expense associated with a deemed repatriation of undistributed earnings of certain non-U.S. subsidiaries as required under the 2017 Tax Act. We do not intend to distribute these earnings in a taxable manner, and therefore intend to limit distributions of foreign earnings previously taxed in the U.S., that would qualify for the 100% dividends received deduction, and that would not result in any significant state or foreign taxes. All other undistributed foreign earnings will continue to be permanently reinvested outside the U.S.

The income tax laws of the jurisdictions in which we operate are complex and subject to different interpretations by the taxpayer and the relevant government taxing authorities. In establishing a provision for income tax expense, we must make judgments and interpretations about the application of these inherently complex tax laws. We must also make estimates about when in the future certain items will affect taxable income in the various tax jurisdictions, both domestic and foreign. Our interpretations may be subjected to review during examination by taxing authorities and disputes may arise over the respective tax positions. We attempt to resolve these disputes during the tax examination and audit process and ultimately through the court systems when applicable.

We monitor relevant tax authorities and revise our estimate of accrued income taxes due to changes in income tax laws and their interpretation by the courts and regulatory authorities on a quarterly basis. Revisions of our estimate of accrued income taxes also may result from our own income tax planning and from the resolution of income tax controversies. Such revisions in our estimates may be material to our operating results for any given quarter.

See Note 23 (Income Taxes) to Financial Statements in this Report for a further description of our provision for income taxes and related income tax assets and liabilities.

Liability for Contingent Litigation Losses

The Company is involved in a number of judicial, regulatory, arbitration and other proceedings concerning matters arising from the conduct of its business activities, and many of those proceedings expose the Company to potential financial loss. We establish accruals for these legal actions when potential losses associated with the actions become probable and the costs can be reasonably estimated. For such accruals, we record the amount we consider to be the best estimate within a range of potential losses that are both probable and estimable; however, if we cannot determine a best estimate, then we record the low end of the range of those potential losses. The actual costs of resolving legal actions may be substantially higher or lower than the amounts accrued for those actions.

We apply judgment when establishing an accrual for potential losses associated with legal actions and in establishing the range of reasonably possible losses in excess of the accrual. Our judgment in establishing accruals and the range of reasonably possible losses in excess of the Company's accrual for probable and estimable losses is influenced by our understanding of information currently available related to the legal evaluation and potential outcome of actions, including input and advice on these matters from our internal counsel, external counsel and senior management. These matters may be in various stages of investigation, discovery or proceedings. They may also involve a wide variety of claims across our businesses, legal entities and jurisdictions. The eventual outcome may be a scenario that was not considered or was considered remote in anticipated occurrence. Accordingly, our estimate of potential losses will change over time and the actual losses may vary significantly.

The outcomes of legal actions are unpredictable and subject to significant uncertainties, and it is inherently difficult to determine whether any loss is probable or even possible. It is also inherently difficult to estimate the amount of any loss and there may be matters for which a loss is probable or reasonably possible but not currently estimable. Accordingly, actual losses may be in excess of the established accrual or the range of reasonably possible loss.

See Note 16 (Legal Actions) to Financial Statements in this Report for further information.

Current Accounting Developments

Table 51 provides the significant accounting updates applicable to us that have been issued by the FASB but are not yet effective.

Table 51: Current Accounting Developments – Issued Standards

Standard	Description	Effective date and financial statement impact
Accounting Standard Update (ASU or Update) 2018-16 - Derivatives and Hedging (Topic 815): *Inclusion of the Secured Overnight Financing Rate (SOFR) Overnight Index Swap (OIS) Rate as a Benchmark Interest Rate for Hedge Accounting Purposes*	The Update expands the list of U.S. benchmark interest rates permitted in the application of hedge accounting. The Update adds the OIS rate based on SOFR as a U.S. benchmark interest rate to facilitate the LIBOR to SOFR transition and provide sufficient lead time for entities to prepare for changes to interest rate risk hedging strategies for both risk management and hedge accounting purposes.	We adopted the guidance in first quarter 2019. The adoption did not impact existing hedges, but may impact new hedge relationships if we designate the SOFR OIS rate as the designated hedged benchmark interest rate for the Company's fixed-rate financial instruments and forecasted issuances or purchases of fixed-rate financial instruments.
ASU 2018-12 – Financial Services – Insurance (Topic 944): *Targeted Improvements to the Accounting for Long-Duration Contracts*	The Update requires all features in long-duration insurance contracts that meet the definition of a market risk benefit to be measured at fair value through earnings with changes in fair value attributable to our own credit risk recognized in other comprehensive income. Currently, two measurement models exist for these features, fair value and insurance accrual. The Update requires the use of a standardized discount rate and routine updates for insurance assumptions used in valuing the liability for future policy benefits for traditional long-duration contracts. The Update also simplifies the amortization of deferred acquisition costs.	The guidance becomes effective on January 1, 2021. Certain of our variable annuity reinsurance products meet the definition of market risk benefits and will be measured at fair value as of the earliest period presented. The cumulative effect of changes attributable to the market risk benefit of the liability's instrument-specific credit risk (i.e., the Company's own credit risk) will be recognized in the beginning balance of accumulated other comprehensive income. The cumulative effect of the difference between fair value and carrying value, excluding the effect of our own credit, will be recognized in the opening balance of retained earnings. Changes to the liability for future policy benefits for traditional long-duration contracts and deferred acquisition costs will be applied to all outstanding contracts on the basis of their existing carrying amounts at the beginning of the earliest period presented. The impact of the Update on our consolidated financial statements is still being evaluated.
ASU 2017-08 – Receivables – Nonrefundable Fees and Other Costs (Subtopic 310-20): *Premium Amortization on Purchased Callable Debt Securities*	The Update changes the accounting for certain purchased callable debt securities held at a premium to shorten the amortization period for the premium to the earliest call date rather than to the maturity date. Accounting for purchased callable debt securities held at a discount does not change. The discount would continue to amortize to the maturity date.	We adopted the guidance in first quarter 2019 and recorded a cumulative-effect adjustment as of January 1, 2019, that reduced retained earnings by $592 million and increased other comprehensive income by $481 million. The guidance impacted our investments in purchased callable debt securities held at a premium classified as available-for-sale (AFS) and held-to-maturity (HTM), which primarily consist of obligations of U.S. states and political subdivisions. In future periods, interest income recognized prior to the call date will be reduced because the premium will be amortized over a shorter time period.

Standard	Description	Effective date and financial statement impact
ASU 2016-13 – Financial Instruments – Credit Losses (Topic 326): *Measurement of Credit Losses on Financial Instruments*	The Update changes the accounting for credit losses measurement on loans and debt securities. For loans and held-to-maturity debt securities, the Update requires a current expected credit loss (CECL) measurement to estimate the allowance for credit losses (ACL) for the remaining estimated life of the financial asset (including off-balance sheet credit exposures) using historical experience, current conditions, and reasonable and supportable forecasts. The Update eliminates the existing guidance for PCI loans, but requires an allowance for purchased financial assets with more than insignificant deterioration since origination. In addition, the Update modifies the other-than-temporary impairment model for available-for-sale debt securities to require an allowance for credit impairment instead of a direct write-down, which allows for reversal of credit impairments in future periods based on improvements in credit.	We expect to adopt the guidance in first quarter 2020. Our implementation process includes loss forecasting model development, evaluation of technical accounting topics, updates to our allowance documentation, reporting processes and related internal controls, and overall operational readiness for our adoption of the Update, which will continue throughout 2019, including parallel runs for CECL alongside our current allowance process. We are in the process of developing, validating, and implementing models used to estimate credit losses under CECL. We have substantially completed a significant majority of our loss forecasting models, and we expect to complete the validation process for our loan models during 2019. Our current planned approach for estimating expected life-time credit losses for loans and debt securities includes the following key components: • An initial forecast period of one year for all portfolio segments and classes of financing receivables and off-balance-sheet credit exposures. This period reflects management's expectation of losses based on forward-looking economic scenarios over that time. • A historical loss forecast period covering the remaining contractual life, adjusted for prepayments, by portfolio segment and class of financing receivables based on the change in key historic economic variables during representative historical expansionary and recessionary periods. • A reversion period of up to 2 years connecting the initial loss forecast to the historical loss forecast based on economic conditions at the measurement date. • We will utilize discounted cash flow (DCF) methods to measure credit impairment for loans modified in a TDR, unless they are collateral dependent and measured at the fair value of collateral. The DCF methods would obtain estimated life-time credit losses using the conceptual components described above. • For available-for-sale debt securities and certain beneficial interests classified as held-to-maturity, we plan to utilize the DCF methods to measure the ACL, which will incorporate expected credit losses using the conceptual components described above. We expect an overall increase in the ACL for loans, with an expected increase for longer duration consumer portfolios and an expected decrease for commercial loans given short contractual maturities with conditional renewal options. The expected impact on our ACL does not include the impact of the FASB's recently proposed change to consider recoveries of previously charged off loans or subsequent increases in fair value of collateral for collateral dependent loans in the ACL measurement. If finalized, the proposed changes would reduce the expected change in our ACL. We continue to evaluate the results of our modeled loss estimates and will continue to make refinements to our approach, including evaluating an amount for imprecision or uncertainty, based on management's judgment of the risk inherent in the processes and assumptions used in estimating the ACL. We will recognize an ACL for held-to-maturity and available-for-sale debt securities. The ACL on available-for-sale debt securities will be subject to a limitation based on the fair value of the security. Based on the credit quality of our existing debt securities portfolio, we do not expect the ACL for held-to-maturity and available-for-sale debt securities to be significant. The amount of the change in our ACL will be impacted by our portfolio composition and credit quality at the adoption date as well as economic conditions and forecasts at that time. At adoption, we expect to have a cumulative-effect adjustment to retained earnings for our change in the ACL, which will impact our capital. Federal banking regulatory agencies have agreed to limit the initial capital impact of the Update by allowing a phased adoption over three years, on a straight-line basis. An increase in our ACL will result in a reduction to our regulatory capital amounts and ratios; however, at this point in implementation, we are not able to provide a more precise estimate of the impact.

Standard	Description	Effective date and financial statement impact
ASU 2016-02 – Leases (Topic 842) and subsequent related Updates	The Update requires lessees to recognize operating leases on the balance sheet with lease liabilities and related right-of-use assets based on the present value of future lease payments. Lessor accounting activities are largely unchanged from existing lease accounting. The Update also eliminates leveraged lease accounting but allows existing leveraged leases to continue their current accounting until maturity, termination or modification.	We adopted the guidance in first quarter 2019 and have elected not to provide a comparative presentation for 2018 and 2017 financial statements. At adoption, we recognized a cumulative effect adjustment of approximately $100 million that increased retained earnings related to deferred gains on our prior sale-leaseback transactions. Our operating lease right-of-use assets and liabilities, for approximately 7,000 leases, were $5 billion and $5.6 billion, respectively. There were no material changes to the timing of expense recognition on these operating leases or in the recognition and measurement of our lessor accounting. While the increase to our consolidated total assets related to operating lease right-of-use assets increases our risk-weighted assets and decreases our capital ratios, we do not expect these changes to be material.

In addition to the list above, the following Updates are applicable to us but are not expected to have a material impact on our consolidated financial statements:

- ASU 2018-17 – Consolidation (Topic 810): *Targeted Improvements to Related Party Guidance for Variable Interest Entities*
- ASU 2018-15 – Intangibles – Goodwill and Other – Internal-Use Software (Subtopic 350-40): *Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract (a consensus of the FASB Emerging Issues Task Force)*
- ASU 2018-13 – Fair Value Measurement (Topic 820): *Disclosure Framework – Changes to the Disclosure Requirements for Fair Value Measurement*
- ASU 2018-09 – Codification Improvements
- ASU 2018-03 – Technical Corrections and Improvements to Financial Instruments – Overall (Subtopic 825-10): *Financial Instruments – Overall*
- ASU 2017-04 – Intangibles – Goodwill and Other (Topic 350): *Simplifying the Test for Goodwill Impairment*

Forward-Looking Statements

This document contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. In addition, we may make forward-looking statements in our other documents filed or furnished with the SEC, and our management may make forward-looking statements orally to analysts, investors, representatives of the media and others. Forward-looking statements can be identified by words such as "anticipates," "intends," "plans," "seeks," "believes," "estimates," "expects," "target," "projects," "outlook," "forecast," "will," "may," "could," "should," "can" and similar references to future periods. In particular, forward-looking statements include, but are not limited to, statements we make about: (i) the future operating or financial performance of the Company, including our outlook for future growth; (ii) our noninterest expense and efficiency ratio; (iii) future credit quality and performance, including our expectations regarding future loan losses and allowance levels; (iv) the appropriateness of the allowance for credit losses; (v) our expectations regarding net interest income and net interest margin; (vi) loan growth or the reduction or mitigation of risk in our loan portfolios; (vii) future capital or liquidity levels or targets and our estimated Common Equity Tier 1 ratio under Basel III capital standards; (viii) the performance of our mortgage business and any related exposures; (ix) the expected outcome and impact of legal, regulatory and legislative developments, as well as our expectations regarding compliance therewith; (x) future common stock dividends, common share repurchases and other uses of capital; (xi) our targeted range for return on assets, return on equity, and return on tangible common equity; (xii) the outcome of contingencies, such as legal proceedings; and (xiii) the Company's plans, objectives and strategies.

Forward-looking statements are not based on historical facts but instead represent our current expectations and assumptions regarding our business, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict. Our actual results may differ materially from those contemplated by the forward-looking statements. We caution you, therefore, against relying on any of these forward-looking statements. They are neither statements of historical fact nor guarantees or assurances of future performance. While there is no assurance that any list of risks and uncertainties or risk factors is complete, important factors that could cause actual results to differ materially from those in the forward-looking statements include the following, without limitation:

- current and future economic and market conditions, including the effects of declines in housing prices, high unemployment rates, U.S. fiscal debt, budget and tax matters, geopolitical matters, and any slowdown in global economic growth;
- our capital and liquidity requirements (including under regulatory capital standards, such as the Basel III capital standards) and our ability to generate capital internally or raise capital on favorable terms;
- financial services reform and other current, pending or future legislation or regulation that could have a negative effect on our revenue and businesses, including the Dodd-Frank Act and other legislation and regulation relating to bank products and services;
- developments in our mortgage banking business, including the extent of the success of our mortgage loan modification efforts, the amount of mortgage loan repurchase demands that we receive, any negative effects relating to our mortgage servicing, loan modification or foreclosure practices, and the effects of regulatory or judicial requirements or guidance impacting our mortgage banking business and any changes in industry standards;
- our ability to realize any efficiency ratio or expense target as part of our expense management initiatives, including as a result of business and economic cyclicality, seasonality, changes in our business composition and operating

environment, growth in our businesses and/or acquisitions, and unexpected expenses relating to, among other things, litigation and regulatory matters;
- the effect of the current interest rate environment or changes in interest rates on our net interest income, net interest margin and our mortgage originations, mortgage servicing rights and mortgage loans held for sale;
- significant turbulence or a disruption in the capital or financial markets, which could result in, among other things, reduced investor demand for mortgage loans, a reduction in the availability of funding or increased funding costs, and declines in asset values and/or recognition of other-than-temporary impairment on securities held in our debt securities and equity securities portfolios;
- the effect of a fall in stock market prices on our investment banking business and our fee income from our brokerage, asset and wealth management businesses;
- negative effects from the retail banking sales practices matter and from other instances where customers may have experienced financial harm, including on our legal, operational and compliance costs, our ability to engage in certain business activities or offer certain products or services, our ability to keep and attract customers, our ability to attract and retain qualified team members, and our reputation;
- resolution of regulatory matters, litigation, or other legal actions, which may result in, among other things, additional costs, fines, penalties, restrictions on our business activities, reputational harm, or other adverse consequences;
- a failure in or breach of our operational or security systems or infrastructure, or those of our third-party vendors or other service providers, including as a result of cyber attacks;
- the effect of changes in the level of checking or savings account deposits on our funding costs and net interest margin;
- fiscal and monetary policies of the Federal Reserve Board; and
- the other risk factors and uncertainties described under “Risk Factors” in this Report.

In addition to the above factors, we also caution that the amount and timing of any future common stock dividends or repurchases will depend on the earnings, cash requirements and financial condition of the Company, market conditions, capital requirements (including under Basel capital standards), common stock issuance requirements, applicable law and regulations (including federal securities laws and federal banking regulations), and other factors deemed relevant by the Company’s Board of Directors, and may be subject to regulatory approval or conditions.

For more information about factors that could cause actual results to differ materially from our expectations, refer to our reports filed with the Securities and Exchange Commission, including the discussion under “Risk Factors” in this Report, as filed with the Securities and Exchange Commission and available on its website at www.sec.gov.

Any forward-looking statement made by us speaks only as of the date on which it is made. Factors or events that could cause our actual results to differ may emerge from time to time, and it is not possible for us to predict all of them. We undertake no obligation to publicly update any forward-looking statement, whether as a result of new information, future developments or otherwise, except as may be required by law.

Forward-looking Non-GAAP Financial Measures. From time to time management may discuss forward-looking non-GAAP financial measures, such as forward-looking estimates or targets for return on average tangible common equity. We are unable to provide a reconciliation of forward-looking non-GAAP financial measures to their most directly comparable GAAP financial measures because we are unable to provide, without unreasonable effort, a meaningful or accurate calculation or estimation of amounts that would be necessary for the reconciliation due to the complexity and inherent difficulty in forecasting and quantifying future amounts or when they may occur. Such unavailable information could be significant to future results.

Risk Factors

An investment in the Company involves risk, including the possibility that the value of the investment could fall substantially and that dividends or other distributions on the investment could be reduced or eliminated. We discuss below risk factors that could adversely affect our financial results and condition, and the value of, and return on, an investment in the Company.

RISKS RELATED TO THE ECONOMY, FINANCIAL MARKETS, INTEREST RATES AND LIQUIDITY

As one of the largest lenders in the U.S. and a provider of financial products and services to consumers and businesses across the U.S. and internationally, our financial results have been, and will continue to be, materially affected by general economic conditions, and a deterioration in economic conditions or in the financial markets may materially adversely affect our lending and other businesses and our financial results and condition. We generate revenue from the interest and fees we charge on the loans and other products and services we sell, and a substantial amount of our revenue and earnings comes from the net interest income and fee income that we earn from our consumer and commercial lending and banking businesses, including our mortgage banking business. These businesses have been, and will continue to be, materially affected by the state of the U.S. economy, particularly unemployment levels and home prices. Although the U.S. economy has continued to gradually improve from the depressed levels of 2008 and early 2009, economic growth has at times been slow and uneven. In addition, the negative effects and continued uncertainty stemming from U.S. fiscal and political matters, including concerns about deficit levels, taxes and U.S. debt ratings, have impacted and may continue to impact the global economic recovery. Moreover, geopolitical matters, including international political unrest or disturbances, Britain’s vote to withdraw from the European Union, as well as continued concerns over commodity prices, restrictions on international trade, and global economic difficulties, may impact the stability of financial markets and the global economy. In particular, Britain’s vote to withdraw from the European Union, including the terms of its exit, could increase economic barriers between

Britain and the European Union, limit our ability to conduct business in the European Union, impose additional costs on us, subject us to different laws, regulations and/or regulatory authorities, or adversely impact our business, financial results and operating model. For example, certain operations of our broker-dealer in London may be impacted by the terms and conditions of Britain's withdrawal. Although we are transitioning certain of these operations to other European countries, there is no guarantee that we will be able to operate or conduct business in the European Union in the same manner following Britain's withdrawal. A prolonged period of slow growth in the global economy, particularly in the U.S., or any deterioration in general economic conditions and/or the financial markets resulting from the above matters or any other events or factors that may disrupt or dampen the global economic recovery**,** could materially adversely affect our financial results and condition.

A weakening in business or economic conditions, including higher unemployment levels or declines in home prices, can also adversely affect our borrowers' ability to repay their loans, which can negatively impact our credit performance. If unemployment levels worsen or if home prices fall we would expect to incur elevated charge-offs and provision expense from increases in our allowance for credit losses. These conditions may adversely affect not only consumer loan performance but also commercial and CRE loans, especially for those business borrowers that rely on the health of industries that may experience deteriorating economic conditions. The ability of these and other borrowers to repay their loans may deteriorate, causing us, as one of the largest commercial and CRE lenders in the U.S., to incur significantly higher credit losses. In addition, weak or deteriorating economic conditions make it more challenging for us to increase our consumer and commercial loan portfolios by making loans to creditworthy borrowers at attractive yields. Furthermore, weak economic conditions, as well as competition and/or increases in interest rates, could soften demand for our loans resulting in our retaining a much higher amount of lower yielding liquid assets on our balance sheet. If economic conditions do not continue to improve or if the economy worsens and unemployment rises, which also would likely result in a decrease in consumer and business confidence and spending, the demand for our credit products, including our mortgages, may fall, reducing our interest and noninterest income and our earnings.

A deterioration in business and economic conditions, which may erode consumer and investor confidence levels, and/or increased volatility of financial markets, also could adversely affect financial results for our fee-based businesses, including our investment advisory, mutual fund, securities brokerage, wealth management, and investment banking businesses. In 2018, approximately 25% of our revenue was fee income, which included trust and investment fees, card fees and other fees. We earn fee income from managing assets for others and providing brokerage and other investment advisory and wealth management services. Because investment management fees are often based on the value of assets under management, a fall in the market prices of those assets could reduce our fee income. Changes in stock market prices could affect the trading activity of investors, reducing commissions and other fees we earn from our brokerage business. In addition, adverse market conditions may negatively affect the performance of products we have provided to customers, which may expose us to legal actions or additional costs. The U.S. stock market experienced all-time highs in 2018, but also experienced significant volatility and there is no guarantee that high price levels will continue or that price levels will stabilize. Poor economic conditions and volatile or unstable financial markets also can negatively affect our debt and equity underwriting and advisory businesses, as well as our trading activities and venture capital businesses. Any deterioration in global financial markets and economies, including as a result of any international political unrest or disturbances, may adversely affect the revenues and earnings of our international operations, particularly our global financial institution and correspondent banking services.

For more information, refer to the "Risk Management – Asset/Liability Management" and "– Credit Risk Management" sections in this Report.

Changes in interest rates and financial market values could reduce our net interest income and earnings, as well as our other comprehensive income, including as a result of recognizing losses on the debt and equity securities that we hold in our portfolio or trade for our customers. Our net interest income is the interest we earn on loans, debt securities and other assets we hold less the interest we pay on our deposits, long-term and short-term debt, and other liabilities. Net interest income is a measure of both our net interest margin – the difference between the yield we earn on our assets and the interest rate we pay for deposits and our other sources of funding – and the amount of earning assets we hold. Changes in either our net interest margin or the amount or mix of earning assets we hold could affect our net interest income and our earnings. Changes in interest rates can affect our net interest margin. Although the yield we earn on our assets and our funding costs tend to move in the same direction in response to changes in interest rates, one can rise or fall faster than the other, causing our net interest margin to expand or contract. If our funding costs rise faster than the yield we earn on our assets or if the yield we earn on our assets falls faster than our funding costs, our net interest margin could contract.

The amount and type of earning assets we hold can affect our yield and net interest margin. We hold earning assets in the form of loans and debt and equity securities, among other assets. As noted above, if the economy worsens we may see lower demand for loans by creditworthy customers, reducing our net interest income and yield. In addition, our net interest income and net interest margin can be negatively affected by a prolonged low interest rate environment as it may result in us holding lower yielding loans and securities on our balance sheet, particularly if we are unable to replace the maturing higher yielding assets with similar higher yielding assets. Increases in interest rates, however, may negatively affect loan demand and could result in higher credit losses as borrowers may have more difficulty making higher interest payments. As described below, changes in interest rates also affect our mortgage business, including the value of our MSRs.

Changes in the slope of the "yield curve" – or the spread between short-term and long-term interest rates – could also reduce our net interest margin. Normally, the yield curve is upward sloping, meaning short-term rates are lower than long-term rates. When the yield curve flattens, or even inverts, our net interest margin could decrease if the cost of our short-term funding increases relative to the yield we can earn on our long-term assets.

The interest we earn on our loans may be tied to U.S.-denominated interest rates such as the federal funds rate while the interest we pay on our debt may be based on international rates such as LIBOR. If the federal funds rate were to fall without a corresponding decrease in LIBOR, we might earn less on our loans without any offsetting decrease in our funding costs. This could lower our net interest margin and our net interest income.

In addition, our floating rate funding, certain hedging transactions, and certain of the products that we offer, such as floating rate loans and derivatives in connection with customer accommodation activities, reference a benchmark rate, such as LIBOR, or other financial metric in order to determine the applicable interest rate or payment amount. In the event any such benchmark rate or other referenced financial metric is significantly changed, replaced or discontinued, or ceases to be recognized as an acceptable market benchmark rate or financial metric (for example, if LIBOR is discontinued after 2021 as contemplated by the U.K. Financial Conduct Authority), there may be uncertainty or differences in the calculation of the applicable interest rate or payment amount depending on the terms of the governing instrument and there may be significant work required to transition to using any new benchmark rate or other financial metric. This could result in different financial performance for previously booked transactions, require different hedging strategies, require renegotiation of previously booked transactions, or affect our capital and liquidity planning and management. In addition, the transition to using any new benchmark rate or other financial metric may impact our existing transaction data, products, systems, models, operations and pricing processes, and could result in significant operational, systems, or other practical challenges, increased compliance, legal and operational costs, losses on financial instruments we hold, or other adverse consequences. Furthermore, the transition from a widely-used benchmark rate like LIBOR to any new benchmark rate could have a significant impact on the overall interest rate environment and could result in customers challenging the determination of their interest payments or entering into fewer transactions or postponing their financing needs, which could reduce our revenue and adversely affect our business. Moreover, to the extent borrowers with loans referenced to LIBOR, such as adjustable rate mortgage loans, experience higher interest payments as a result of the transition to a new benchmark rate, our customers' ability to repay their loans may be adversely affected, which can negatively impact our credit performance.

We assess our interest rate risk by estimating the effect on our earnings under various scenarios that differ based on assumptions about the direction, magnitude and speed of interest rate changes and the slope of the yield curve. We hedge some of that interest rate risk with interest rate derivatives. We also rely on the "natural hedge" that our mortgage loan originations and servicing rights can provide.

We generally do not hedge all of our interest rate risk. There is always the risk that changes in interest rates, credit spreads or option volatility could reduce our net interest income and earnings, as well as our other comprehensive income, in material amounts, especially if actual conditions turn out to be materially different than what we assumed. For example, if interest rates rise or fall faster than we assumed or the slope of the yield curve changes, we may incur significant losses on debt securities we hold as investments. To reduce our interest rate risk, we may rebalance our portfolios of debt securities, equity securities and loans, refinance our debt and take other strategic actions. We may incur losses when we take such actions.

We hold debt and equity securities, including U.S. Treasury and federal agency securities and federal agency MBS, securities of U.S. states and political subdivisions, residential and commercial MBS, corporate debt securities, other asset-backed securities and marketable equity securities, including securities relating to our venture capital activities. Because of changing economic and market conditions, as well as credit ratings, affecting issuers and the performance of any collateral underlying the securities, we may be required to recognize OTTI in future periods on the securities we hold. In particular, economic difficulties in the oil and gas industry resulting from volatile or prolonged low energy prices may further impact our energy sector investments and require us to recognize OTTI in these investments in future periods. Furthermore, the value of the debt securities we hold can fluctuate due to changes in interest rates, issuer creditworthiness, and other factors. Our net income also is exposed to changes in interest rates, credit spreads, foreign exchange rates, and equity and commodity prices in connection with our trading activities, which are conducted primarily to accommodate the investment and risk management activities of our customers, as well as when we execute economic hedging to manage certain balance sheet risks. Trading debt securities and equity securities held for trading are carried at fair value with realized and unrealized gains and losses recorded in noninterest income. As part of our business to support our customers, we trade public debt and equity securities that are subject to market fluctuations with gains and losses recognized in net income. In addition, although high market volatility can increase our exposure to trading-related losses, periods of low volatility may have an adverse effect on our businesses as a result of reduced customer activity levels. Although we have processes in place to measure and monitor the risks associated with our trading activities, including stress testing and hedging strategies, there can be no assurance that our processes and strategies will be effective in avoiding losses that could have a material adverse effect on our financial results.

The value of our marketable and nonmarketable equity securities can fluctuate from quarter to quarter. Marketable equity securities are carried at fair value with unrealized gains and losses reflected in earnings. Nonmarketable equity securities are carried under the cost method, equity method, or measurement alternative, while others are carried at fair value with unrealized gains and losses reflected in earnings. Earnings from our equity securities portfolio may be volatile and hard to predict, and may have a significant effect on our earnings from period to period. When, and if, we recognize gains may depend on a number of factors, including general economic and market conditions, the prospects of the companies in which we invest, when a company goes public, the size of our position relative to the public float, and whether we are subject to any resale restrictions.

Nonmarketable equity securities include our private equity and venture capital investments that could result in significant OTTI losses for those investments carried under the measurement alternative or equity method. If we determine there is OTTI for an investment, we write-down the carrying value of the investment, resulting in a charge to earnings, which could be significant.

For more information, refer to the "Risk Management – Asset/Liability Management – Interest Rate Risk", "– Mortgage Banking Interest Rate and Market Risk", "– Market Risk – Trading Activities", and "– Market Risk – Equity Securities" and the "Balance Sheet Analysis – Available-for-Sale and Held-to-Maturity Debt Securities" sections in this Report and Note 4 (Trading Activities), Note 5 (Available-for-Sale and Held-to-Maturity Debt Securities) and Note 8 (Equity Securities) to Financial Statements in this Report.

Effective liquidity management, which ensures that we can meet customer loan requests, customer deposit maturities/withdrawals and other cash commitments, including principal and interest payments on our debt, efficiently under both normal operating conditions and

other unpredictable circumstances of industry or financial market stress, is essential for the operation of our business, and our financial results and condition could be materially adversely affected if we do not effectively manage our liquidity. Our liquidity is essential for the operation of our business. We primarily rely on bank deposits to be a low cost and stable source of funding for the loans we make and the operation of our business. Customer deposits, which include noninterest-bearing deposits, interest-bearing checking, savings certificates, certain market rate and other savings, and certain foreign deposits, have historically provided us with a sizable source of relatively stable and low-cost funds. In addition to customer deposits, our sources of liquidity include certain debt and equity securities, our ability to sell or securitize loans in secondary markets and to pledge loans to access secured borrowing facilities through the FHLB and the FRB, and our ability to raise funds in domestic and international money through capital markets.

Our liquidity and our ability to fund and run our business could be materially adversely affected by a variety of conditions and factors, including financial and credit market disruption and volatility or a lack of market or customer confidence in financial markets in general similar to what occurred during the financial crisis in 2008 and early 2009, which may result in a loss of customer deposits or outflows of cash or collateral and/or our inability to access capital markets on favorable terms. Market disruption and volatility could impact our credit spreads, which are the amount in excess of the interest rate of U.S. Treasury securities, or other benchmark securities, of the same maturity that we need to pay to our funding providers. Increases in interest rates and our credit spreads could significantly increase our funding costs. Other conditions and factors that could materially adversely affect our liquidity and funding include a lack of market or customer confidence in the Company or negative news about the Company or the financial services industry generally which also may result in a loss of deposits and/or negatively affect our ability to access the capital markets; our inability to sell or securitize loans or other assets; and, as described below, reductions in one or more of our credit ratings. Many of the above conditions and factors may be caused by events over which we have little or no control. While market conditions have improved since the financial crisis, there can be no assurance that significant disruption and volatility in the financial markets will not occur in the future. For example, concerns over geopolitical issues, commodity and currency prices, as well as global economic conditions, may cause financial market volatility.

In addition, concerns regarding U.S. government debt levels and any associated downgrade of U.S. government debt ratings may cause uncertainty and volatility as well. A downgrade of the sovereign debt ratings of the U.S. government or the debt ratings of related institutions, agencies or instrumentalities, as well as other fiscal or political events could, in addition to causing economic and financial market disruptions, materially adversely affect the market value of the U.S. government securities that we hold, the availability of those securities as collateral for borrowing, and our ability to access capital markets on favorable terms, as well as have other material adverse effects on the operation of our business and our financial results and condition.

As noted above, we rely heavily on bank deposits for our funding and liquidity. We compete with banks and other financial services companies for deposits. If our competitors raise the rates they pay on deposits our funding costs may increase, either because we raise our rates to avoid losing deposits or because we lose deposits and must rely on more expensive sources of funding. Higher funding costs reduce our net interest margin and net interest income. Checking and savings account balances and other forms of customer deposits may decrease when customers perceive alternative investments, such as the stock market, as providing a better risk/return tradeoff. When customers move money out of bank deposits and into other investments, we may lose a relatively low-cost source of funds, increasing our funding costs and negatively affecting our liquidity.

If we are unable to continue to fund our assets through customer bank deposits or access capital markets on favorable terms or if we suffer an increase in our borrowing costs or otherwise fail to manage our liquidity effectively (including on an intraday basis), our liquidity, net interest margin, financial results and condition may be materially adversely affected. As we did during the financial crisis, we may also need, or be required by our regulators, to raise additional capital through the issuance of common stock, which could dilute the ownership of existing stockholders, or reduce or even eliminate our common stock dividend to preserve capital or in order to raise additional capital.

For more information, refer to the "Risk Management – Asset/Liability Management" section in this Report.

Adverse changes in our credit ratings could have a material adverse effect on our liquidity, cash flows, financial results and condition. Our borrowing costs and ability to obtain funding are influenced by our credit ratings. Reductions in one or more of our credit ratings could adversely affect our ability to borrow funds and raise the costs of our borrowings substantially and could cause creditors and business counterparties to raise collateral requirements or take other actions that could adversely affect our ability to raise funding. Credit ratings and credit ratings agencies' outlooks are based on the ratings agencies' analysis of many quantitative and qualitative factors, such as our capital adequacy, liquidity, asset quality, business mix, the level and quality of our earnings, rating agency assumptions regarding the probability and extent of federal financial assistance or support, and other rating agency specific criteria. In addition to credit ratings, our borrowing costs are affected by various other external factors, including market volatility and concerns or perceptions about the financial services industry generally. There can be no assurance that we will maintain our credit ratings and outlooks and that credit ratings downgrades in the future would not materially affect our ability to borrow funds and borrowing costs.

Downgrades in our credit ratings also may trigger additional collateral or funding obligations which could negatively affect our liquidity, including as a result of credit-related contingent features in certain of our derivative contracts. Although a one or two notch downgrade in our current credit ratings would not be expected to trigger a material increase in our collateral or funding obligations, a more severe credit rating downgrade of our long-term and short-term credit ratings could increase our collateral or funding obligations and the effect on our liquidity could be material.

For information on our credit ratings, see the "Risk Management – Asset/Liability Management – Liquidity and Funding – Credit Ratings" section and for information regarding additional collateral and funding obligations required of certain derivative instruments in the event our credit ratings were to fall below investment grade, see Note 17 (Derivatives) to Financial Statements in this Report.

We rely on dividends from our subsidiaries for liquidity, and federal and state law, as well as certain contractual arrangements, can limit those dividends. Wells Fargo & Company, the parent holding company (the "Parent"), is a separate and distinct legal entity from its subsidiaries. It receives substantially all of its funding and liquidity from dividends and other distributions from its subsidiaries. We generally use these dividends and distributions, among other things, to pay dividends on our common and preferred stock and interest and principal on our debt. Federal and state laws limit the amount of dividends and distributions that our bank and some of our nonbank subsidiaries, including our broker-dealer subsidiaries, may pay to the Parent. In addition, under a Support Agreement (the "Support Agreement") dated June 28, 2017 among the Parent, WFC Holdings, LLC, an intermediate holding company and subsidiary of the Parent (the "IHC"), and Wells Fargo Bank, N.A., Wells Fargo Securities, LLC, and Wells Fargo Clearing Services, LLC, each an indirect subsidiary of the Parent, the IHC may be restricted from making dividend payments to the Parent if certain liquidity and/or capital metrics fall below defined triggers. Also, our right to participate in a distribution of assets upon a subsidiary's liquidation or reorganization is subject to the prior claims of the subsidiary's creditors.

For more information, refer to the "Regulation and Supervision – Dividend Restrictions" and "– Holding Company Structure" sections in our 2018 Form 10-K and to Note 3 (Cash, Loan and Dividend Restrictions) and Note 28 (Regulatory and Agency Capital Requirements) to Financial Statements in this Report.

RISKS RELATED TO FINANCIAL REGULATORY REFORM AND OTHER LEGISLATION AND REGULATIONS

Enacted legislation and regulation, including the Dodd-Frank Act, as well as future legislation and/or regulation, could require us to change certain of our business practices, reduce our revenue and earnings, impose additional costs on us or otherwise adversely affect our business operations and/or competitive position. Our parent company, our subsidiary banks and many of our nonbank subsidiaries such as those related to our brokerage and mutual fund businesses, are subject to significant and extensive regulation under state and federal laws in the U.S., as well as the applicable laws of the various jurisdictions outside of the U.S. where we conduct business. These regulations protect depositors, federal deposit insurance funds, consumers, investors, team members, and the banking and financial system as a whole, not necessarily our security holders. Economic, market and political conditions during the past few years have led to a significant amount of legislation and regulation in the U.S. and abroad affecting the financial services industry, as well as heightened expectations and scrutiny of financial services companies from banking regulators. These laws and regulations may affect the manner in which we do business and the products and services that we provide, affect or restrict our ability to compete in our current businesses or our ability to enter into or acquire new businesses, reduce or limit our revenue in businesses or impose additional fees, assessments or taxes on us, intensify the regulatory supervision of us and the financial services industry, and adversely affect our business operations or have other negative consequences. Our businesses and revenues in non-U.S. jurisdictions are also subject to risks from political, economic and social developments in those jurisdictions, including sanctions or business restrictions, asset freezes or confiscation, unfavorable political or diplomatic developments, or financial or social instability. In addition, greater government oversight and scrutiny of financial services companies has increased our operational and compliance costs as we must continue to devote substantial resources to enhancing our procedures and controls and meeting heightened regulatory standards and expectations. Any failure to meet regulatory requirements, standards or expectations, either in the U.S. or in foreign jurisdictions, could result in fees, penalties, restrictions on our ability to engage in certain business activities, or other adverse consequences.

On July 21, 2010, the Dodd-Frank Act, the most significant financial reform legislation since the 1930s, became law. The Dodd-Frank Act, among other things, imposes significant requirements and restrictions impacting the financial services industry. The Dodd-Frank Act, including current and future rules implementing its provisions and the interpretation of those rules, could result in a loss of revenue, require us to change certain of our business practices, limit our ability to pursue certain business opportunities, increase our capital requirements and impose additional assessments and costs on us and otherwise adversely affect our business operations and have other negative consequences.

Our consumer businesses, including our mortgage, automobile, credit card and other consumer lending and non-lending businesses, are subject to numerous and, in many cases, highly complex consumer protection laws and regulations, as well as enhanced regulatory scrutiny and more and expanded regulatory examinations and/or investigations. In particular, we may be negatively affected by the activities of the Consumer Financial Protection Bureau (CFPB), which has broad rulemaking powers and supervisory authority over consumer financial products and services. The CFPB's activities may increase our compliance costs and require changes in our business practices as a result of regulations and requirements which could limit or negatively affect the products and services that we offer our customers. For example, the CFPB has issued a number of rules impacting residential mortgage lending practices and prepaid cards. If we fail to meet enhanced regulatory requirements and expectations with respect to our consumer businesses, we may be subject to increased costs, fines, penalties, restrictions on our business activities including the products and services we can provide, and/or harm to our reputation.

The Dodd-Frank Act's proposed prohibitions or limitations on proprietary trading and private fund investment activities, known as the "Volcker Rule," also may reduce our revenue. Final rules to implement the requirements of the Volcker Rule were issued in December 2013. The FRB has proposed further rules to streamline and modify compliance with the Volcker Rule's requirements. Wells Fargo is also subject to enhanced compliance program requirements.

In addition, the Dodd-Frank Act established a comprehensive framework for regulating over-the-counter derivatives and authorized the CFTC and SEC to regulate swaps and security-based swaps, respectively. The CFTC has adopted rules applicable to our provisionally registered swap dealer, Wells Fargo Bank, N.A., that require, among other things, extensive regulatory and public reporting of swaps, central clearing and trading of swaps on exchanges or other multilateral platforms, and compliance with comprehensive internal and external business conduct standards. The SEC is expected to implement parallel rules applicable to security-based swaps. In addition, federal regulators have adopted final rules establishing initial and variation margin requirements for swaps and security-based swaps not centrally cleared, rules placing restrictions on a party's right to exercise default rights under derivatives and other qualified financial contracts against applicable banking organizations, and record-keeping requirements for qualified financial contracts. All of these new rules, as well as others being considered by regulators in other jurisdictions, may negatively impact customer demand for over-the-counter derivatives, impact our ability to offer customers new derivatives or amendments to existing derivatives, and may increase our costs for engaging in swaps, security-based swaps, and other derivatives activities.

We are also subject to various rules and regulations related to the prevention of financial crimes and combating terrorism, including the U.S. Patriot Act of 2001. These rules and regulations require us to, among other things, implement policies and procedures related to anti-money laundering, anti-bribery and corruption, fraud, compliance, suspicious activities, currency transaction reporting and due diligence on customers. Although we have policies and procedures designed to comply with these rules and regulations, to the extent they are not fully effective or do not meet heightened regulatory standards or expectations, we may be subject to fines, penalties, restrictions on certain activities, reputational harm, or other adverse consequences.

Our businesses are also subject to laws and regulations enacted by U.S. and non-U.S. regulators and governmental authorities relating to the privacy of the information of customers, team members and others. These laws and regulations, among other things, increase our compliance obligations; have a significant impact on our businesses' collection, processing, sharing, use, and retention of personal data and reporting of data breaches; and provide for significantly increased penalties for non-compliance.

In April 2018, the SEC proposed a rule that would require broker-dealers to act in the best interest of a retail customer when making a recommendation of any securities transaction or investment strategy involving securities. This rule may impact the manner in which business is conducted with customers seeking investment advice and may affect certain investment product offerings.

On November 18, 2016, the OCC revoked provisions of certain consent orders that provided Wells Fargo Bank, N.A. relief from specific requirements and limitations regarding rules, policies, and procedures for corporate activities; OCC approval of changes in directors and senior executive officers; and golden parachute payments. As a result, Wells Fargo Bank, N.A. is no longer eligible for expedited treatment for certain applications; is now required to provide prior written notice to the OCC of a change in directors and senior executive officers; and is now subject to certain regulatory limitations on golden parachute payments.

In March 2017, we announced that the OCC had downgraded our most recent Community Reinvestment Act (CRA) rating, which covers the years 2009-2012, to "Needs to Improve" due to previously issued regulatory consent orders. A "Needs to Improve" rating imposes regulatory restrictions and limitations on certain of the Company's nonbank activities, including its ability to engage in certain nonbank mergers and acquisitions or undertake new financial in nature activities, and CRA performance is taken into account by regulators in reviewing applications to establish bank branches and for approving proposed bank mergers and acquisitions. The rating also results in the loss of expedited processing of applications to undertake certain activities, and requires the Company to receive prior regulatory approval for certain activities, including to issue or prepay certain subordinated debt obligations, open or relocate bank branches, or make certain public welfare investments. In addition, a "Needs to Improve" rating could have an impact on the Company's relationships with certain states, counties, municipalities or other public agencies to the extent applicable law, regulation or policy limits, restricts or influences whether such entity may do business with a company that has a below "Satisfactory" rating.

On February 2, 2018, the Company entered into a consent order with the FRB. As required by the consent order, the Board submitted to the FRB a plan to further enhance the Board's governance and oversight of the Company, and the Company submitted to the FRB a plan to further improve the Company's compliance and operational risk management program. The consent order requires the Company, following the FRB's acceptance and approval of the plans and the Company's adoption and implementation of the plans, to complete third-party reviews of the enhancements and improvements provided for in the plans. Until these third-party reviews are complete and the plans are approved and implemented to the satisfaction of the FRB, the Company's total consolidated assets will be limited to the level as of December 31, 2017, which could adversely affect our results of operations or financial condition. Compliance with this asset cap will be measured on a two-quarter daily average basis to allow for management of temporary fluctuations. Additionally, after removal of the asset cap, a second third-party review must also be conducted to assess the efficacy and sustainability of the enhancements and improvements.

On April 20, 2018, the Company entered into consent orders with the CFPB and OCC to pay an aggregate of $1 billion in civil money penalties to resolve matters regarding the Company's compliance risk management program and past practices involving certain automobile collateral protection insurance policies and certain mortgage interest rate lock extensions. As required by the consent orders, the Company submitted to the CFPB and OCC an enterprise-wide compliance risk management plan and a plan to enhance the Company's internal audit program with respect to federal consumer financial law and the terms of the consent orders. In addition, as required by the consent orders, the Company submitted for non-objection plans to remediate customers affected by the automobile collateral protection insurance and mortgage interest rate lock matters, as well as a plan for the management of remediation activities conducted by the Company.

The Company may be subject to further actions, including the imposition of consent orders or similar regulatory agreements or civil money penalties, by other federal regulators regarding similar issues, including the Company's risk management policies and procedures. Compliance with the FRB consent order, the CFPB and OCC consent orders, and any other consent orders or regulatory actions, as well as the implementation of their requirements, may increase the Company's costs and require the Company to undergo significant changes to its business, products and services.

Other future regulatory initiatives that could significantly affect our business include proposals to reform the housing finance market in the United States. These proposals, among other things, consider winding down the GSEs and reducing or eliminating over time the role of the GSEs in guaranteeing mortgages and providing funding for mortgage loans, as well as the implementation of reforms relating to borrowers, lenders, and investors in the mortgage market, including reducing the maximum size of a loan that the GSEs can guarantee, phasing in a minimum down payment requirement for borrowers, improving underwriting standards, and increasing accountability and transparency in the securitization process. Congress also may consider the adoption of legislation to reform the mortgage financing market in an effort to assist borrowers experiencing difficulty in making mortgage payments or refinancing their mortgages. The extent and timing of any regulatory reform or the adoption of any legislation regarding the GSEs and/or the home mortgage market, as well as any effect on the Company's business and financial results, are uncertain.

Any other future legislation and/or regulation, if adopted, also could significantly change our regulatory environment and increase our cost of doing business, limit the activities we may pursue or affect the competitive balance among banks, savings associations, credit unions, and other financial services companies, and have a material adverse effect on our financial results and condition.

For more information, refer to the "Regulatory Matters" section in this Report and the "Regulation and Supervision" section in our 2018 Form 10-K.

We could be subject to more stringent capital, leverage or liquidity requirements or restrictions on our growth, activities or operations if regulators determine that our resolution or recovery plan is deficient. Pursuant to rules adopted by the FRB and the FDIC, Wells Fargo has prepared and filed a resolution plan, a so-called "living will," that is designed to facilitate our resolution in the event of material distress or failure. There can be no assurance that the FRB or FDIC will respond favorably to the Company's resolution plans. If the FRB or FDIC determines that our resolution plan has deficiencies, they may impose more stringent capital, leverage or liquidity requirements on us or restrict our growth, activities or operations until we adequately remedy the deficiencies. If the FRB or FDIC ultimately determines that we have been unable to remedy any deficiencies, they could require us to divest certain assets or operations.

We must also prepare and submit to the FRB a recovery plan that identifies a range of options that we may consider during times of idiosyncratic or systemic economic stress to remedy any financial weaknesses and restore market confidence without extraordinary government support. Recovery options include the possible sale, transfer or disposal of assets, securities, loan portfolios or businesses. Our insured national bank subsidiary, Wells Fargo Bank, N.A. (the "Bank"), must also prepare and submit to the OCC a recovery plan that sets forth the Bank's plan to remain a going concern when the Bank is experiencing considerable financial or operational stress, but has not yet deteriorated to the point where liquidation or resolution is imminent. If the FRB or the OCC determines that our recovery plan is deficient, they may impose fines, restrictions on our business or ultimately require us to divest assets.

Our security holders may suffer losses in a resolution of Wells Fargo, whether in a bankruptcy proceeding or under the orderly liquidation authority of the FDIC, even if creditors of our subsidiaries are paid in full. If Wells Fargo were to fail, it may be resolved in a bankruptcy proceeding or, if certain conditions are met, under the resolution regime created by the Dodd-Frank Act known as the "orderly liquidation authority." The orderly liquidation authority allows for the appointment of the FDIC as receiver for a systemically important financial institution that is in default or in danger of default if, among other things, the resolution of the institution under the U.S. Bankruptcy Code would have serious adverse effects on financial stability in the United States. If the FDIC is appointed as receiver for Wells Fargo & Company (the "Parent"), then the orderly liquidation authority, rather than the U.S. Bankruptcy Code, would determine the powers of the receiver and the rights and obligations of our security holders. The FDIC's orderly liquidation authority requires that security holders of a company in receivership bear all losses before U.S. taxpayers are exposed to any losses, and allows the FDIC to disregard the strict priority of creditor claims under the U.S. Bankruptcy Code in certain circumstances.

Whether under the U.S. Bankruptcy Code or by the FDIC under the orderly liquidation authority, Wells Fargo could be resolved using a "multiple point of entry" strategy, in which the Parent and one or more of its subsidiaries would each undergo separate resolution proceedings, or a "single point of entry" strategy, in which the Parent would likely be the only material legal entity to enter resolution proceedings. The FDIC has announced that a single point of entry strategy may be a desirable strategy under its implementation of the orderly liquidation authority, but not all aspects of how the FDIC might exercise this authority are known and additional rulemaking is possible.

The strategy described in our most recent resolution plan submission is a multiple point of entry strategy; however, we have made a decision to move to a single point of entry strategy for our next resolution plan submission. We are not obligated to maintain either a single point of entry or multiple point of entry strategy, and the strategies reflected in our resolution plan submissions are not binding in the event of an actual resolution of Wells Fargo, whether conducted under the U.S. Bankruptcy Code or by the FDIC under the orderly liquidation authority.

To facilitate the orderly resolution of systemically important financial institutions in case of material distress or failure, federal banking regulations require that institutions, such as Wells Fargo, maintain a minimum amount of equity and unsecured debt to absorb losses and recapitalize operating subsidiaries. Federal banking regulators have also required measures to facilitate the continued operation of operating subsidiaries notwithstanding the failure of their parent companies, such as limitations on parent guarantees, and have issued guidance encouraging institutions to take legally binding measures to provide capital and liquidity resources to certain subsidiaries in order to facilitate an orderly resolution. In response to the regulators' guidance and to facilitate the orderly resolution of the Company using either a single point of entry or multiple point of entry resolution strategy, on June 28, 2017, the Parent entered into the Support Agreement with WFC Holdings, LLC, an intermediate holding company and subsidiary of the Parent (the "IHC"), and the Bank, Wells Fargo Securities, LLC ("WFS"), and Wells Fargo Clearing Services, LLC ("WFCS"), each an indirect subsidiary of the Parent. Pursuant to the Support Agreement, the Parent transferred a significant amount of its assets, including the majority of its cash, deposits, liquid securities and intercompany loans (but excluding its equity interests in its subsidiaries and certain other assets), to the IHC and will continue to transfer those types of assets to the IHC from time to time. In the event of our material financial distress or failure, the IHC will be obligated to use the transferred assets to provide capital and/or liquidity to the Bank pursuant to the Support Agreement and to WFS and WFCS through repurchase facilities entered into in connection with the Support Agreement. Under the Support Agreement, the IHC will also provide funding and liquidity to the Parent through subordinated notes and a committed line of credit, which, together with the issuance of dividends, is expected to provide the Parent, during business as usual operating conditions, with the same access to cash necessary to service its debts, pay dividends, repurchase its shares, and perform its other obligations as it would have had if it had not entered into these arrangements and transferred any assets. If certain liquidity and/or capital metrics fall below defined triggers, the subordinated notes would be forgiven and the committed line of credit would terminate, which could materially and adversely impact the Parent's liquidity and its ability to satisfy its debts and other obligations, and could result in the commencement of bankruptcy proceedings by the Parent at an earlier time than might have otherwise occurred if the Support Agreement were not implemented. The Parent's and the IHC's respective obligations under the Support Agreement are secured pursuant to a related security agreement.

Any resolution of the Company will likely impose losses on shareholders, unsecured debt holders and other creditors of the Parent, while the Parent's subsidiaries may continue to operate. Creditors of some or all of our subsidiaries may receive significant or full recoveries on their claims, while the Parent's security holders could face significant or complete losses. This outcome may arise whether the Company is resolved under the U.S. Bankruptcy Code or by the FDIC under the orderly liquidation authority, and whether the resolution is conducted using a multiple point of entry or a single point of entry strategy. Furthermore, in a multiple point of entry or single point of entry strategy, losses at some or all of our subsidiaries could be transferred to the Parent and borne by the Parent's security holders. Moreover, if either resolution strategy proved to be unsuccessful, our security holders could face greater losses than if the strategy had not been implemented.

Bank regulations, including Basel capital and liquidity standards and FRB guidelines and rules, may require higher capital and liquidity levels, limiting our ability to pay common stock dividends, repurchase our common stock, invest in our business, or provide loans or other products and services to our customers. The Company and each of our insured depository institutions are subject to various regulatory capital adequacy requirements administered by federal banking regulators. In particular, the Company is subject to final and interim final rules issued by federal banking regulators to implement Basel III capital requirements for U.S. banking organizations. These rules are based on international guidelines for determining regulatory capital issued by the Basel Committee on Banking Supervision (BCBS). The federal banking regulators' capital rules, among other things, require on a fully phased-in basis:

- a minimum Common Equity Tier 1 (CET1) ratio of 9.0%, comprised of a 4.5% minimum requirement plus a capital conservation buffer of 2.5% and for us, as a global systemically important bank (G-SIB), a capital surcharge to be calculated annually, which is 2.0% based on our year-end 2017 data;
- a minimum tier 1 capital ratio of 10.5%, comprised of a 6.0% minimum requirement plus the capital conservation buffer of 2.5% and the G-SIB capital surcharge of 2.0%;
- a minimum total capital ratio of 12.5%, comprised of a 8.0% minimum requirement plus the capital conservation buffer of 2.5% and the G-SIB capital surcharge of 2.0%;
- a potential countercyclical buffer of up to 2.5% to be added to the minimum capital ratios, which is currently not in effect but could be imposed by regulators at their discretion if it is determined that a period of excessive credit growth is contributing to an increase in systemic risk;
- a minimum tier 1 leverage ratio of 4.0%; and
- a minimum supplementary leverage ratio (SLR) of 5.0% (comprised of a 3.0% minimum requirement plus a supplementary leverage buffer of 2.0%) for large and internationally active bank holding companies (BHCs).

We were required to comply with the final Basel III capital rules beginning January 2014, with certain provisions subject to phase-in periods. Beginning January 1, 2018, the requirements for calculating CET1 and tier 1 capital, along with RWAs, became fully phased-in. However, the requirements for calculating tier 2 and total capital are still in accordance with Transition Requirements. The entire Basel III capital rules are scheduled to be fully phased in by the end of 2021.

On April 10, 2018, the FRB issued a proposed rule that would add a stress capital buffer and a stress leverage buffer to the minimum capital and tier 1 leverage ratio requirements. The buffers would be calculated based on the decrease in a financial institution's risk-based capital and tier 1 leverage ratios under the supervisory severely adverse scenario in CCAR, plus four quarters of planned common stock dividends. The stress capital buffer would replace the 2.5% capital conservation buffer under the Standardized Approach, whereas the stress leverage buffer would be added to the current 4% minimum tier 1 leverage ratio.

Because the Company has been designated as a G-SIB, we are also subject to the FRB's rule implementing the additional capital surcharge of between 1.0-4.5% on G-SIBs. Under the rule, we must annually calculate our surcharge under two prescribed methods and use the higher of the two surcharges. The G-SIB surcharge became fully effective on January 1, 2019. Based on year-end 2017 data, our 2019 G-SIB surcharge is 2.0% of the Company's RWAs. However, because the G-SIB surcharge is calculated annually based on data that can differ over time, the amount of the surcharge is subject to change in future years.

In April 2014, federal banking regulators finalized a rule that enhances the SLR requirements for BHCs, like Wells Fargo, and their insured depository institutions. The SLR consists of tier 1 capital under Basel III divided by the Company's total leverage exposure. Total leverage exposure consists of the total average on-balance sheet assets, plus off-balance sheet exposures, such as undrawn commitments and derivative exposures, less amounts permitted to be deducted from tier 1 capital. The rule, which became effective on January 1, 2018, requires a covered BHC to maintain a SLR of at least 5.0% (comprised of the 3.0% minimum requirement plus a supplementary leverage buffer of 2.0%) to avoid restrictions on capital distributions and discretionary bonus payments. The rule also requires that all of our insured depository institutions maintain a SLR of 6.0% under applicable regulatory capital adequacy guidelines. In April 2018, the FRB and OCC proposed rules (the "Proposed SLR Rules") that would replace the 2% supplementary leverage buffer with a buffer equal to one-half of the firm's G-SIB capital surcharge. The Proposed SLR Rules would similarly tailor the current 6% SLR requirement for our insured depository institutions.

In December 2016, the FRB finalized rules to address the amount of equity and unsecured long-term debt a U.S. G-SIB must hold to improve its resolvability and resiliency, often referred to as Total Loss Absorbing Capacity (TLAC). Under the rules, which became effective on January 1, 2019, U.S. G-SIBs are required to have a minimum TLAC amount (consisting of CET1 capital and additional tier 1 capital issued directly by the top-tier or covered BHC plus eligible external long-term debt) equal to the greater of (i) 18% of RWAs and (ii) 7.5% of total leverage exposure (the denominator of the SLR calculation). Additionally, U.S. G-SIBs are required to maintain (i) a TLAC buffer equal to 2.5% of RWAs plus the firm's applicable G-SIB capital surcharge calculated under method one of the G-SIB calculation plus any applicable countercyclical buffer to be added to the 18% minimum and (ii) an external TLAC leverage buffer equal to 2.0% of total leverage exposure to be added to the 7.5% minimum, in order to avoid restrictions on capital distributions and discretionary bonus payments. The rules also require U.S. G-SIBs to have a minimum amount of eligible unsecured long-term debt equal to the greater of (i) 6.0% of RWAs plus the firm's applicable G-SIB capital surcharge calculated under method two of the G-SIB calculation and (ii) 4.5% of the total leverage exposure. In addition, the rules impose certain restrictions on the operations and liabilities of the top-tier or covered BHC in order to further facilitate an orderly resolution, including prohibitions on the issuance of short-term debt to external investors and on entering into derivatives and certain other types of financial contracts with external counterparties. While the rules permit permanent grandfathering of a significant portion of otherwise ineligible long-term debt that was issued prior to December 31, 2016, long-term debt issued after that date must be fully compliant with the eligibility requirements of the rules in order to count toward the minimum TLAC amount. As a result of the rules, we will need to issue additional long-term debt to remain compliant with the requirements. Under the Proposed SLR Rules, the 2% external TLAC leverage buffer would be replaced with a buffer equal to one-half of the firm's G-SIB capital surcharge. Additionally, the Proposed SLR Rules would modify the leverage component for calculating the minimum amount of eligible unsecured long-term debt from 4.5% of total leverage exposure to 2.5% of total leverage exposure plus one-half of the firm's G-SIB capital surcharge.

In September 2014, federal banking regulators issued a final rule that implements a quantitative liquidity requirement consistent with the liquidity coverage ratio (LCR) established by the BCBS. The rule requires banking institutions, such as Wells Fargo, to hold high-quality liquid assets, such as central bank reserves and government and corporate debt that can be converted easily and quickly into cash, in an amount equal to or greater than its projected net cash outflows during a 30-day stress period. The FRB also finalized rules imposing enhanced liquidity management standards on large BHCs such as Wells Fargo, and has finalized a rule that requires large bank holding companies to publicly disclose on a quarterly basis certain quantitative and qualitative information regarding their LCR calculations.

As part of its obligation to impose enhanced capital and risk-management standards on large financial firms pursuant to the Dodd-Frank Act, the FRB issued a final capital plan rule that requires large BHCs, including the Company, to submit annual capital plans for review and to obtain regulatory approval before making capital distributions. There can be no assurance that the FRB would respond favorably to the Company's future capital plans. The FRB has also finalized a number of regulations implementing enhanced prudential requirements for large BHCs like Wells Fargo regarding risk-based capital and leverage, risk and liquidity management, and imposing debt-to-equity limits on any BHC that regulators determine poses a grave threat to the financial stability of the United States. The FRB and OCC have also finalized rules implementing stress testing requirements for large BHCs and national banks. The FRB has also finalized enhanced prudential standards that implement single counterparty credit limits, and has proposed a rule to establish remediation requirements for large BHCs experiencing financial distress. The OCC, under separate authority, has also established heightened governance and risk management standards for large national banks, such as Wells Fargo Bank, N.A.

The Basel standards and federal regulatory capital and liquidity requirements may limit or otherwise restrict how we utilize our capital, including common stock dividends and stock repurchases, and may require us to increase our capital and/or liquidity. Any requirement that we increase our regulatory capital, regulatory capital ratios or liquidity, including as a result of business growth, acquisitions or a change in our risk profile, could require us to liquidate assets or otherwise change our business, product offerings and/or investment plans, which may negatively affect our financial results. Although not currently anticipated, proposed capital requirements and/or our regulators may require us to raise additional capital in the future. Issuing additional common stock may dilute the ownership of existing stockholders. In addition, federal banking regulations may increase our compliance costs as well as limit our ability to invest in our business or provide loans or other products and services to our customers.

For more information, refer to the "Capital Management" and "Regulatory Matters" sections in this Report and the "Regulation and Supervision" section of our 2018 Form 10-K.

FRB policies, including policies on interest rates, can significantly affect business and economic conditions and our financial results and condition. The FRB regulates the supply of money in the United States. Its policies determine in large part our cost of funds for lending and investing and the return we earn on those loans and investments, both of which affect our net interest income and net interest margin. The FRB's interest rate policies also can materially affect the value of financial instruments we hold, such as debt securities and MSRs. In addition, its policies can affect our borrowers, potentially increasing the risk that they may fail to repay their loans. Changes in FRB policies are beyond our control and can be hard to predict. The FRB has stated that in determining the timing and size of any adjustments to the target range for the federal funds rate, the FRB will assess realized and expected economic conditions relative to its objectives of maximum employment and 2% inflation. As noted above, a declining or low interest rate environment and a flattening yield curve which may result from the FRB's actions could negatively affect our net interest income and net interest margin as it may result in us holding lower yielding loans and debt securities on our balance sheet.

CREDIT RISK

As one of the largest lenders in the U.S., increased credit risk, including as a result of a deterioration in economic conditions or changes in market conditions, could require us to increase our provision for credit losses and allowance for credit losses and could have a material adverse effect on our results of operations and financial condition. When we loan money or commit to loan money we incur credit risk, or the risk of losses if our borrowers do not repay their loans. As one of the largest lenders in the U.S., the credit performance of our loan portfolios significantly affects our financial results and condition. As noted above, if the current economic environment were to deteriorate, more of our customers may have difficulty in repaying their loans or other obligations which could result in a higher level of credit losses and provision for credit losses. We reserve for credit losses by establishing an allowance through a charge to earnings. The amount of this allowance is based on our assessment of credit losses inherent in our loan portfolio (including unfunded credit commitments). The process for determining the amount of the allowance is critical to our financial results and condition. It requires difficult, subjective and complex judgments about the future, including forecasts of economic or market conditions that might impair the ability of our borrowers to repay their loans. We might increase the allowance because of changing economic conditions, including falling home prices and higher unemployment, significant loan growth, changes in consumer behavior or other market conditions that adversely affect borrowers, or other factors. Additionally, the regulatory environment or external factors, such as natural disasters, also can influence recognition of credit losses in our loan portfolios and impact our allowance for credit losses.

Our provision for credit losses was $1.0 billion less than net charge-offs in 2018, which had a positive effect on our earnings. Future allowance levels may increase or decrease based on a variety of factors, including loan growth, portfolio performance and general economic conditions. While we believe that our allowance for credit losses was appropriate at December 31, 2018, there is no assurance that it will be sufficient to cover future credit losses, especially if housing and employment conditions worsen. In the event of significant deterioration in economic conditions or if we experience significant loan growth, we may be required to build reserves in future periods, which would reduce our earnings.

For more information, refer to the “Risk Management – Credit Risk Management” and “Critical Accounting Policies – Allowance for Credit Losses” sections in this Report.

We may have more credit risk and higher credit losses to the extent our loans are concentrated by loan type, industry segment, borrower type, or location of the borrower or collateral. Our credit risk and credit losses can increase if our loans are concentrated to borrowers engaged in the same or similar activities or to borrowers who individually or as a group may be uniquely or disproportionately affected by economic or market conditions. Similarly, challenging economic or market conditions, or trade policies, affecting a particular industry or geography may also impact related or dependent industries or the ability of borrowers living in such affected areas or working in such industries to meet their financial obligations. We experienced the effect of concentration risk in 2009 and 2010 when we incurred greater than expected losses in our residential real estate loan portfolio due to a housing slowdown and greater than expected deterioration in residential real estate values in many markets, including the Central Valley California market and several Southern California metropolitan statistical areas. As California is our largest banking state in terms of loans and deposits, deterioration in real estate values and underlying economic conditions in those markets or elsewhere in California could result in materially higher credit losses. In addition, deterioration in macro-economic conditions generally across the country could result in materially higher credit losses, including for our residential real estate loan portfolio, which includes nonconforming mortgage loans we retain on our balance sheet. We may experience higher delinquencies and higher loss rates as our consumer real estate secured lines of credit reach their contractual end of draw period and begin to amortize or our consumer Pick-a-Pay loans reach their recast trigger.

We are currently one of the largest CRE lenders in the U.S. A deterioration in economic conditions that negatively affects the business performance of our CRE borrowers, including increases in interest rates, declines in commercial property values, and/or changes in consumer behavior or other market conditions, could result in materially higher credit losses and have a material adverse effect on our financial results and condition.

Challenges and/or changes in foreign economic conditions may increase our foreign credit risk. Our foreign loan exposure represented approximately 8% of our total consolidated outstanding loans and 4% of our total assets at December 31, 2018. Economic difficulties in foreign jurisdictions could also indirectly have a material adverse effect on our credit performance and results of operations and financial condition to the extent they negatively affect the U.S. economy and/or our borrowers who have foreign operations.

In order to reduce credit risk and obtain additional funding, from time to time we may securitize or sell similar types or categories of loans that we originate, such as mortgage loans and automobile loans. The agreements under which we do this generally contain various representations and warranties regarding the origination and characteristics of the loans. We may be required to repurchase the loans, reimburse investors and others, or incur other losses, including regulatory fines and penalties, as a result of any breaches in these contractual representations and warranties. For more information about our repurchase obligations with respect to mortgage loans, refer to the “Risk Factors – Risks Related to Our Mortgage Business” section in this Report.

For more information regarding credit risk, refer to the “Risk Management – Credit Risk Management” section and Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report.

We may incur losses on loans, securities and other acquired assets of Wachovia that are materially greater than reflected in our fair value adjustments. We accounted for the Wachovia merger under the purchase method of accounting, recording the acquired assets and liabilities of Wachovia at fair value. All PCI loans acquired in the merger were recorded at fair value based on the present value of their expected cash flows. We estimated cash flows using internal credit, interest rate and prepayment risk models using assumptions about matters that are inherently uncertain. We may not realize the estimated cash flows or fair value of these loans. In addition, although the difference between the pre-merger carrying value of the credit-impaired loans and their expected cash flows – the “nonaccretable difference” – is available to absorb future charge-offs, we may be required to increase our allowance for credit losses and related provision expense because of subsequent additional credit deterioration in these loans.

For more information, refer to the “Risk Management – Credit Risk Management” section in this Report.

OPERATIONAL AND LEGAL RISK

A failure in or breach of our operational or security systems, controls or infrastructure, or those of our third-party vendors and other service providers, could disrupt our businesses, damage our reputation, increase our costs and cause losses. As a large financial institution that serves customers through numerous physical locations, ATMs, the internet, mobile banking and other distribution channels across the U.S. and internationally, we depend on our ability to process, record and monitor a large number of customer transactions on a continuous basis. As our customer base and locations have expanded throughout the U.S. and internationally, as we have increasingly used the internet and mobile banking to provide products and services to our customers, and as customer, public, legislative and regulatory expectations regarding operational and information security have increased, our operational systems, controls and infrastructure must continue to be safeguarded and monitored for potential failures, disruptions and breakdowns. Our business, financial, accounting, data processing systems or other operating systems and facilities may stop operating properly, become insufficient based on our evolving business needs, or become disabled or damaged as a result of a number of factors including events that are wholly or partially beyond our control. For example, there could be sudden increases in customer transaction volume; electrical or telecommunications outages; degradation or loss of internet, website or mobile banking availability; climate change related impacts and natural disasters such as earthquakes, tornados, and hurricanes; disease pandemics; events arising from local or larger scale political or social matters, including terrorist acts; and, as described below, cyber attacks or other information security breaches. Furthermore, enhancements and upgrades to our infrastructure or operating systems may be time-consuming, entail significant costs, and create risks associated with implementing new systems and integrating them with existing ones. Due to the complexity and interconnectedness of our systems, the process of enhancing our infrastructure and operating systems, including their security measures and controls, can itself create a risk of system disruptions and security issues. Although we have business continuity plans and other safeguards in place, our business operations may be adversely affected by significant and widespread disruption to our physical infrastructure or operating systems that support our businesses and customers. For example, on February 7, 2019, we experienced system issues caused by an automatic power shutdown at one of our main data center facilities, which was triggered by a smoke alarm that resulted from a steam condition created by routine maintenance activities in the building. Although applications and related workloads were systematically re-routed to back-up data centers throughout the day, certain of our services experienced disruptions that delayed service to our customers. For instance, our online and mobile banking systems and certain ATM functions experienced disruptions for several hours, and certain critical mortgage origination systems experienced disruptions for several days.

As a result of financial institutions and technology systems becoming more interconnected and complex, any operational incident at a third party may increase the risk of loss or material impact to us or the financial industry as a whole. Furthermore, third parties on which we rely, including those that facilitate our business activities or to which we outsource operations, such as exchanges, clearing houses, financial intermediaries or vendors that provide services or security solutions for our operations, could also be sources of operational risk to us, including from information breaches or loss, breakdowns, disruptions or failures of their own systems or infrastructure, or any deficiencies in the performance of their responsibilities. We are also exposed to the risk that a disruption or other operational incident at a common service provider to those third parties could impede their ability to provide services or perform their responsibilities for us. In addition, we must meet regulatory requirements and expectations regarding our use of third-party service providers, and any failure by our third-party service providers to meet their obligations to us or to comply with applicable laws, rules, regulations, or Wells Fargo policies could result in fines, penalties, restrictions on our business, or other negative consequences.

Disruptions or failures in the physical infrastructure, controls or operating systems that support our businesses and customers, failures of the third parties on which we rely to adequately or appropriately provide their services or perform their responsibilities, or our failure to effectively manage or oversee our third-party relationships, could result in business disruptions, loss of revenue or customers, legal or regulatory proceedings, compliance and other costs, violations of applicable privacy and other laws, reputational damage, or other adverse consequences, any of which could materially adversely affect our results of operations or financial condition.

A cyber attack or other information security breach of our technologies, computer systems or networks, or those of our third-party vendors and other service providers, could disrupt our businesses, result in the disclosure or misuse of confidential or proprietary information, damage our reputation, increase our costs and cause losses. Information security risks for large financial institutions such as Wells Fargo have generally increased in recent years in part because of the proliferation of new technologies, the use of the internet, mobile devices, and cloud technologies to conduct financial transactions, and the increased sophistication and activities of organized crime, hackers, terrorists, activists, and other external parties, including foreign state-sponsored parties. Those parties also may attempt to misrepresent personal or financial information to obtain loans or other financial products from us or attempt to fraudulently induce employees, customers, or other users of our systems to disclose confidential information in order to gain access to our data or that of our customers. As noted above, our operations rely on the secure processing, transmission and storage of confidential information in our computer systems and networks. Our banking, brokerage, investment advisory, and capital markets businesses rely on our digital technologies, computer and email systems, software, hardware, and networks to conduct their operations. In addition, to access our products and services, our customers may use personal smartphones, tablets, and other mobile devices that are beyond our control systems. Although we believe we have robust information security procedures and controls, our technologies, systems, networks, and our customers' devices may become the target of cyber attacks or other information security breaches that could result in the unauthorized release, gathering, monitoring, misuse, loss or destruction of Wells Fargo's or our customers' confidential, proprietary and other information, or otherwise disrupt Wells Fargo's or its customers' or other third parties' business operations. For example, various retailers have reported they were victims of cyber attacks in which large amounts of their customers' data, including debit and credit card information, was obtained. In these situations, we generally incur costs to replace compromised cards and address fraudulent transaction activity affecting our customers. We are also exposed to the risk that a team member or other person acting on behalf of the Company fails to comply with applicable policies and procedures and inappropriately circumvents controls for personal gain or other improper purposes.

Due to the increasing interconnectedness and complexity of financial institutions and technology systems, an information security incident at a third party may increase the risk of loss or material impact to us or the financial industry as a whole. In addition, third parties on which we rely, including those that facilitate our business activities or to which we outsource operations, such as internet, mobile technology and cloud service providers, could be sources of information security risk to us. If those third parties fail to adequately or appropriately safeguard their technologies, systems, and networks, we may suffer material harm, including business disruptions, losses or remediation costs, reputational damage, legal or regulatory proceedings, or other adverse consequences.

To date we have not experienced any material losses relating to cyber attacks or other information security breaches, but there can be no assurance that we will not suffer such losses in the future. Our risk and exposure to these matters remains heightened because of, among other things, the evolving nature of these threats, the prominent size and scale of Wells Fargo and its role in the financial services industry, our plans to continue to implement our digital and mobile banking channel strategies and develop additional remote connectivity solutions to serve our customers when and how they want to be served, our expanded geographic footprint and international presence, the outsourcing of some of our business operations, and the current global economic and political environment. For example, Wells Fargo and other financial institutions continue to be the target of various evolving and adaptive cyber attacks, including malware and denial-of-service, as part of an effort to disrupt the operations of financial institutions, potentially test their cybersecurity capabilities, commit fraud, or obtain confidential, proprietary or other information. Cyber attacks have also focused on targeting online applications and services, such as online banking, as well as cloud-based services provided by third parties, and have targeted the infrastructure of the internet, causing the widespread unavailability of websites and degrading website performance. As a result, information security and the continued development and enhancement of our controls, processes and systems designed to protect our networks, computers, software and data from attack, damage or unauthorized access remain a priority for Wells Fargo. We are also proactively involved in industry cybersecurity efforts and working with other parties, including our third-party service providers and governmental agencies, to continue to enhance defenses and improve resiliency to cybersecurity and other information security threats. As these threats continue to evolve, we may be required to expend significant additional resources to continue to modify or enhance our protective measures or to investigate and remediate any information security vulnerabilities or incidents. Because the investigation of any information security breach is inherently unpredictable and would require time to complete, we may not be able to immediately address the consequences of a breach, which may further increase any associated costs and consequences. Moreover, to the extent our insurance covers aspects of information security risk, such insurance may not be sufficient to cover all losses associated with an information security breach.

Cyber attacks or other information security breaches affecting us or third parties on which we rely, including those that facilitate our business activities or to which we outsource operations, or security breaches of the networks, systems or devices that our customers use to access our products and services, could result in business disruptions, loss of revenue or customers, legal or regulatory proceedings, compliance and other costs, violations of applicable privacy and other laws, reputational damage, or other adverse consequences, any of which could materially adversely affect our results of operations or financial condition.

Our framework for managing risks may not be fully effective in mitigating risk and loss to us. Our risk management framework seeks to mitigate risk and loss to us. We have established processes and procedures intended to identify, measure, monitor, report and analyze the types of risk to which we are subject, including liquidity risk, credit risk, market risk, interest rate risk, operational risk, legal and compliance risk, and reputational risk, among others. However, as with any risk management framework, there are inherent limitations to our risk management strategies as there may exist, or develop in the future, risks that we have not appropriately anticipated, identified or managed. Our risk management framework is also dependent on ensuring that effective operational controls and a sound culture exist throughout the Company. The inability to develop effective operational controls or to foster the appropriate culture in each of our lines of business, including the inability to align performance management and compensation to achieve the desired culture, could adversely impact the effectiveness of our risk management framework. Similarly, if we are unable to effectively manage our business or operations, we may be exposed to increased risks or unexpected losses. We are also exposed to risks if we do not accurately or completely execute a process or transaction, whether due to human error or otherwise. In certain instances, we rely on models to measure, monitor and predict risks, such as market and interest rate risks, as well as to help inform business decisions; however, there is no assurance that these models will appropriately or sufficiently capture all relevant risks or accurately predict future events or exposures. In addition, we rely on data to aggregate and assess our various risk exposures and business activities, and any issues with the quality or effectiveness of our data, including our aggregation, management, and validation procedures, could result in ineffective risk management practices, business decisions or customer service, inefficient use of resources, or inaccurate regulatory or other risk reporting. We also use artificial intelligence to help further inform our business decisions and risk management practices, but there is no assurance that artificial intelligence will appropriately or sufficiently replicate certain outcomes or accurately predict future events or exposures. The recent financial and credit crisis and resulting regulatory reform highlighted both the importance and some of the limitations of managing unanticipated risks, and our regulators remain focused on ensuring that financial institutions build and maintain robust risk management policies and practices. If our risk management framework proves ineffective, we could suffer unexpected losses which could materially adversely affect our results of operations or financial condition.

Risks related to sales practices and other instances where customers may have experienced financial harm. Various government entities and offices have undertaken formal or informal inquiries, investigations or examinations arising out of certain sales practices of the Company that were the subject of settlements with the CFPB, the Office of the Comptroller of the Currency, and the Office of the Los Angeles City Attorney announced by the Company on September 8, 2016. In addition to imposing monetary penalties and other sanctions, regulatory authorities may require admissions of wrongdoing and compliance with other conditions in connection with such matters, which can lead to restrictions on our ability to engage in certain business activities or offer certain products or services, limitations on our ability to access capital markets, limitations on capital distributions, the loss of customers, and/or other direct and indirect adverse consequences. A number of lawsuits have also been filed by non-governmental parties seeking damages or other remedies related to these sales practices. The ultimate resolution of any of these pending legal proceedings or government investigations, depending on the sanctions and remedy sought and granted, could materially adversely affect our results of operations and financial condition. We may also incur additional costs and expenses in order to address and defend these pending legal proceedings and government investigations, and we may have increased compliance and other costs related to these matters. Furthermore, negative publicity or public opinion resulting from these matters may increase the risk of reputational harm to our business, which can impact our ability to keep and attract customers, affect our ability to attract and retain qualified team members, result in the loss of revenue, or have other material adverse effects on our results of operations and financial condition. In addition, the ultimate results and conclusions of our company-wide review of sales practices issues are still pending and could lead to an increase in the identified number of potentially impacted customers, additional legal or regulatory proceedings, compliance and other costs, reputational damage, the identification of issues in our practices or methodologies that were used to identify, prevent or remediate sales practices related matters, the loss of additional team members, or further changes in policies and procedures that may impact our business.

Furthermore, our priority of rebuilding trust has included an ongoing effort to identify other areas or instances where customers may have experienced financial harm. For example, we have identified certain issues related to historical practices concerning the origination, servicing, and/or collection of consumer automobile loans, including matters related to certain insurance products. The identification of such other areas or instances where customers may have experienced financial harm could lead to, and in some cases has already resulted in, additional remediation costs, loss of revenue or customers, legal or regulatory proceedings, compliance and other costs, reputational damage, or other adverse consequences.

For more information, refer to the "Overview – Retail Sales Practices Matters" and "– Additional Efforts to Rebuild Trust" sections and Note 16 (Legal Actions) to Financial Statements in this Report.

We may incur fines, penalties and other negative consequences from regulatory violations, possibly even inadvertent or unintentional violations, or from any failure to meet regulatory standards or expectations. We maintain systems and procedures designed to ensure that we comply with applicable laws and regulations. However, we are subject to heightened compliance and regulatory oversight and expectations, particularly due to the evolving and increasing regulatory landscape we operate in. We are also subject to consent orders with regulators that subject us to various conditions and restrictions. In addition, a single event or issue may give rise to numerous and overlapping investigations and proceedings, either by multiple federal and state agencies in the U.S. or by multiple regulators and other governmental entities in different jurisdictions. Also, the laws and regulations in jurisdictions in which we operate may be different or even conflict with each other, such as differences between U.S. federal and state law or differences between U.S. and foreign laws as to the products and services we may offer or other business activities we may engage in, which can lead to compliance difficulties or issues. Furthermore, many legal and regulatory regimes require us to report transactions and other information to regulators and other governmental authorities, self-regulatory organizations, exchanges, clearing houses and customers. We are also required to withhold funds and make various tax-related payments, relating to our own tax obligations and those of our customers. We may be subject to fines, penalties, restrictions on our business, or other negative consequences if we do not timely, completely, or accurately provide regulatory reports, customer notices or disclosures, or make tax-related withholdings or payments, on behalf of ourselves or our customers. Moreover, some legal/regulatory frameworks provide for the imposition of fines or penalties for noncompliance even though the noncompliance was inadvertent or unintentional and even though there was in place at the time systems and procedures designed to ensure compliance. For example, we are subject to regulations issued by the Office of Foreign Assets Control (OFAC) that prohibit financial institutions from participating in the transfer of property belonging to the governments of certain foreign countries and designated nationals of those countries. OFAC may impose penalties or restrictions on certain activities for inadvertent or unintentional violations even if reasonable processes are in place to prevent the violations. Any violation of these or other applicable laws or regulatory requirements, even if inadvertent or unintentional, or any failure to meet regulatory standards or expectations, including any failure to satisfy the conditions of any consent orders, could result in fees, penalties, restrictions on our ability to engage in certain business activities, reputational harm, loss of customers or other negative consequences.

Negative publicity, including as a result of our actual or alleged conduct or public opinion of the financial services industry generally, could damage our reputation and business. Reputation risk, or the risk to our business, earnings and capital from negative public opinion, is inherent in our business and has increased substantially because of the financial crisis, our size and profile in the financial services industry, and sales practices related matters and other instances where customers may have experienced financial harm. Negative public opinion about the financial services industry generally or Wells Fargo specifically could adversely affect our ability to keep and attract customers. Negative public opinion could result from our actual or alleged conduct in any number of activities, including sales practices; mortgage, automobile or other consumer lending practices; loan origination or servicing activities; mortgage foreclosure actions; management of client accounts or investments; lending, investing or other business relationships; identification and management of potential conflicts of interest from transactions, obligations and interests with and among our customers; corporate governance; regulatory compliance; risk management; incentive compensation practices; and disclosure, sharing or inadequate protection or improper use of customer information, and from actions taken by government regulators and community or other organizations in response to that conduct. Although we have policies and procedures in place intended to detect and prevent conduct by team members and third-party service providers that could potentially harm customers or our reputation, there is no assurance that such policies and procedures will be fully effective in preventing such conduct. Furthermore, our actual or perceived failure to address or prevent any such conduct or otherwise to effectively manage our business or operations could result in significant reputational harm. In addition, because we conduct most of our businesses under the "Wells Fargo" brand, negative public opinion about one business also could affect our other businesses. Moreover, actions by the financial services industry generally or by certain members or individuals in the industry also can adversely affect our reputation. The proliferation of social media websites utilized by Wells Fargo and other third parties, as well as the personal use of social media by our team members and others, including personal blogs and social network profiles, also may increase the risk that negative, inappropriate or unauthorized information may be posted or released publicly that could harm our reputation or have other negative consequences, including as a result of our team members interacting with our customers in an unauthorized manner in various social media outlets.

Wells Fargo and other financial institutions have been targeted from time to time by protests and demonstrations, which have included disrupting the operation of our retail banking locations and have resulted in negative public commentary about financial institutions, including the fees charged for various products and services. Wells Fargo and other financial institutions have also been subject to negative publicity as a result of providing financial services to or making investments in industries or organizations subject to stakeholder concerns. There can be no assurance that continued protests or negative publicity for the Company specifically or large financial institutions generally will not harm our reputation and adversely affect our business and financial results.

Risks related to legal actions. Wells Fargo and some of its subsidiaries are involved in judicial, regulatory, arbitration, and other proceedings or investigations concerning matters arising from the conduct of our business activities. Although we believe we have a meritorious defense in all significant legal actions pending against us, there can be no assurance as to the ultimate outcome. We establish accruals for legal actions when potential losses associated with the actions become probable and the costs can be reasonably estimated. We may still incur costs for a legal action even if we have not established an accrual. In addition, the actual cost of resolving a legal action may be substantially higher than any amounts accrued for that action. The ultimate resolution of a pending legal proceeding or investigation, depending on the remedy sought and granted, could materially adversely affect our results of operations and financial condition.

As noted above, we are subject to heightened regulatory oversight and scrutiny, which may lead to regulatory investigations, proceedings or enforcement actions. In addition to imposing monetary penalties and other sanctions, regulatory authorities may require criminal pleas or other admissions of wrongdoing and compliance with other conditions in connection with settling such matters, which can lead to reputational harm, loss of customers, restrictions on the ability to access capital markets, limitations on capital distributions, the inability to engage in certain business activities or offer certain products or services, and/or other direct and indirect adverse effects.

For more information, refer to Note 16 (Legal Actions) to Financial Statements in this Report.

RISKS RELATED TO OUR MORTGAGE BUSINESS

Our mortgage banking revenue can be volatile from quarter to quarter, including from the impact of changes in interest rates on our origination activity and on the value of our MSRs, MLHFS and associated economic hedges, and we rely on the GSEs to purchase our conforming loans to reduce our credit risk and provide liquidity to fund new mortgage loans. We are one of the largest mortgage originators and residential mortgage servicers in the U.S., and we earn revenue from fees we receive for originating mortgage loans and for servicing mortgage loans. As a result of our mortgage servicing business, we have a sizable portfolio of MSRs. An MSR is the right to service a mortgage loan – collect principal, interest and escrow amounts – for a fee. We acquire MSRs when we retain the servicing rights after we sell or securitize the loans we have originated or when we purchase the servicing rights to mortgage loans originated by other lenders. We initially measure and carry all our residential MSRs using the fair value measurement method. Fair value is the present value of estimated future net servicing income, calculated based on a number of variables, including assumptions about the likelihood of prepayment by borrowers. Changes in interest rates can affect prepayment assumptions and thus fair value. When interest rates fall, borrowers are usually more likely to prepay their mortgage loans by refinancing them at a lower rate. As the likelihood of prepayment increases, the fair value of our MSRs can decrease. Each quarter we evaluate the fair value of our MSRs, and any decrease in fair value reduces earnings in the period in which the decrease occurs. We also measure at fair value MLHFS for which an active secondary market and readily available market prices exist. In addition, we measure at fair value certain other interests we hold related to residential loan sales and securitizations. Similar to other interest-bearing securities, the value of these MLHFS and other interests may be negatively affected by changes in interest rates. For example, if market interest rates increase relative to the yield on these MLHFS and other interests, their fair value may fall.

When rates rise, the demand for mortgage loans usually tends to fall, reducing the revenue we receive from loan originations. Under the same conditions, revenue from our MSRs can increase through increases in fair value. When rates fall, mortgage originations usually tend to increase and the value of our MSRs usually tends to decline, also with some offsetting revenue effect. Even though they can act as a “natural hedge,” the hedge is not perfect, either in amount or timing. For example, the negative effect on revenue from a decrease in the fair value of residential MSRs is generally immediate, but any offsetting revenue benefit from more originations and the MSRs relating to the new loans would generally accrue over time. It is also possible that, because of economic conditions and/or a weak or deteriorating housing market, even if interest rates were to fall or remain low, mortgage originations may also fall or any increase in mortgage originations may not be enough to offset the decrease in the MSRs value caused by the lower rates.

We typically use derivatives and other instruments to hedge our mortgage banking interest rate risk. We may not hedge all of our risk, and we may not be successful in hedging any of the risk. Hedging is a complex process, requiring sophisticated models and constant monitoring, and is not a perfect science. We may use hedging instruments tied to U.S. Treasury rates, LIBOR or Eurodollars that may not perfectly correlate with the value or income being hedged. We could incur significant losses from our hedging activities. There may be periods where we elect not to use derivatives and other instruments to hedge mortgage banking interest rate risk.

We rely on GSEs to purchase mortgage loans that meet their conforming loan requirements and on the Federal Housing Authority (FHA) to insure loans that meet their policy requirements. These loans are then securitized into either GSE or GNMA securities that are sold to investors. In order to meet customer needs, we also originate loans that do not conform to either GSE or FHA standards, which are referred to as “nonconforming” loans. We generally retain these nonconforming loans on our balance sheet. When we retain a loan on our balance sheet not only do we forgo fee revenue and keep the credit risk of the loan but we also do not receive any sale proceeds that could be used to generate new loans. If we were unable or unwilling to continue retaining nonconforming loans on our balance sheet, whether due to regulatory, business or other reasons, our ability to originate new nonconforming loans may be reduced, thereby reducing the interest income we earn from originating these loans. Similarly, if the GSEs or the FHA were to limit or reduce their purchases or insuring of loans, our ability to fund, and thus originate new mortgage loans, could also be reduced. We cannot assure that the GSEs or the FHA will not materially limit their purchases or insuring of conforming loans or change their criteria for what constitutes a conforming loan (e.g., maximum loan amount or borrower eligibility). Each of the GSEs is currently in conservatorship, with its primary regulator, the Federal Housing Finance Agency acting as conservator. We cannot predict if, when or how the conservatorship will end, or any associated changes to the GSEs business structure and operations that could result. As noted above, there are various proposals to reform the housing finance market in the U.S., including the role of the GSEs in the housing finance market. The impact of any such regulatory reform regarding the housing finance market and the GSEs, including whether the GSEs will continue to exist in their current form, as well as any effect on the Company's business and financial results, are uncertain.

For more information, refer to the "Risk Management – Asset/Liability Management – Mortgage Banking Interest Rate and Market Risk" and "Critical Accounting Policies" sections in this Report.

We may be required to repurchase mortgage loans or reimburse investors and others as a result of breaches in contractual representations and warranties, and we may incur other losses as a result of real or alleged violations of statutes or regulations applicable to the origination of our residential mortgage loans. The origination of residential mortgage loans is governed by a variety of federal and state laws and regulations, including the Truth in Lending Act of 1968 and various anti-fraud and consumer protection statutes, which are complex and frequently changing. We often sell residential mortgage loans that we originate to various parties, including GSEs, SPEs that issue private label MBS, and other financial institutions that purchase mortgage loans for investment or private label securitization. We may also pool FHA-insured and VA-guaranteed mortgage loans which back securities guaranteed by GNMA. The agreements under which we sell mortgage loans and the insurance or guaranty agreements with the FHA and VA contain various representations and warranties regarding the origination and characteristics of the mortgage loans. We may be required to repurchase mortgage loans, indemnify the securitization trust, investor or insurer, or reimburse the securitization trust, investor or insurer for credit losses incurred on loans in the event of a breach of contractual representations or warranties that is not remedied within a period (usually 90 days or less) after we receive notice of the breach. We establish a mortgage repurchase liability related to the various representations and warranties that reflect management's estimate of losses for loans which we have a repurchase obligation. Because the level of mortgage loan repurchase losses depends upon economic factors, investor demand strategies and other external conditions that may change over the life of the underlying loans, the level of the liability for mortgage loan repurchase losses is difficult to estimate, requires considerable management judgment, and is subject to change. If economic conditions or the housing market worsen or future investor repurchase demand and our success at appealing repurchase requests differ from past experience, we could have increased repurchase obligations and increased loss severity on repurchases, requiring significant additions to the repurchase liability.

Additionally, for residential mortgage loans that we originate, borrowers may allege that the origination of the loans did not comply with applicable laws or regulations in one or more respects and assert such violation as an affirmative defense to payment or to the exercise by us of our remedies, including foreclosure proceedings, or in an action seeking statutory and other damages in connection with such violation. If we are not successful in demonstrating that the loans in dispute were originated in accordance with applicable statutes and regulations, we could become subject to monetary damages and other civil penalties, including the loss of certain contractual payments or the inability to exercise certain remedies under the loans.

For more information, refer to the "Risk Management – Credit Risk Management – Liability for Mortgage Loan Repurchase Losses" section in this Report.

We may be terminated as a servicer or master servicer, be required to repurchase a mortgage loan or reimburse investors for credit losses on a mortgage loan, or incur costs, liabilities, fines and other sanctions if we fail to satisfy our servicing obligations, including our obligations with respect to mortgage loan foreclosure actions. We act as servicer and/or master servicer for mortgage loans included in securitizations and for unsecuritized mortgage loans owned by investors. As a servicer or master servicer for those loans we have certain contractual obligations to the securitization trusts, investors or other third parties, including, in our capacity as a servicer, foreclosing on defaulted mortgage loans or, to the extent consistent with the applicable securitization or other investor agreement, considering alternatives to foreclosure such as loan modifications or short sales and, in our capacity as a master servicer, overseeing the servicing of mortgage loans by the servicer. In addition, we may have certain servicing obligations for properties that fall within a flood zone. If we commit a material breach of our obligations as servicer or master servicer, we may be subject to termination if the breach is not cured within a specified period of time following notice, which can generally be given by the securitization trustee or a specified percentage of security holders, causing us to lose servicing income. In addition, we may be required to indemnify the securitization trustee against losses from any failure by us, as a servicer or master servicer, to perform our servicing obligations or any act or omission on our part that involves willful misfeasance, bad faith or gross negligence. Furthermore, if any of the companies that insure the mortgage loans in our servicing portfolio experience financial difficulties or credit downgrades, we may incur additional costs to obtain replacement insurance coverage with another provider, possibly at a higher cost than the coverage we would replace. In some cases, if we do not satisfy our servicing obligations, we may be contractually obligated to repurchase a mortgage loan or reimburse the investor for credit losses, which could significantly reduce our net servicing income.

We may incur costs, liabilities to borrowers, title insurers and/or securitization investors, legal proceedings, or other adverse consequences if we fail to meet our obligations with respect to mortgage foreclosure actions or we experience delays in the foreclosure process. The fair value of our MSRs may be negatively affected to the extent our servicing costs increase because of higher foreclosure or other servicing related costs. We may be subject to fines and other sanctions imposed by federal or state regulators as a result of actual or perceived deficiencies in our mortgage servicing practices, including with respect to our foreclosure practices or our servicing of flood zone properties. Any of these actions may harm our reputation, negatively affect our residential mortgage origination or servicing business, or result in material fines, penalties, equitable remedies, or other enforcement actions.

For more information, refer to the "Risk Management – Credit Risk Management – Liability for Mortgage Loan Repurchase Losses" and "– Risks Relating to Servicing Activities," and "Critical Accounting Policies – Valuation of Residential Mortgage Servicing Rights" sections and Note 15 (Guarantees, Pledged Assets and Collateral, and Other Commitments) and Note 16 (Legal Actions) to Financial Statements in this Report.

RISKS RELATED TO OUR INDUSTRY'S COMPETITIVE OPERATING ENVIRONMENT

We face significant and increasing competition in the rapidly evolving financial services industry. We compete with other financial institutions in a highly competitive industry that is undergoing significant changes as a result of financial regulatory reform, technological advances, increased public scrutiny stemming from the financial crisis, and current economic conditions. Our success depends on our ability to develop and maintain deep and enduring relationships with our customers based on the quality of our customer service, the wide variety of products and services that we can offer our customers and the ability of those products and services to satisfy our customers' needs, the pricing of our products and services, the extensive distribution channels available for our customers, our innovation, and our reputation. Continued or increased competition in any one or all of these areas may negatively affect our customer relationships, market share and results of operations and/or cause us to increase our capital investment in our businesses in order to remain competitive. In addition, our ability to reposition or reprice our products and services from time to time may be limited and could be influenced significantly by the current economic, regulatory and political environment for large financial institutions as well as by the actions of our competitors. Furthermore, any changes in the types of products and services that we offer our customers and/or the pricing for those products and services could result in a loss of customer relationships and market share and could materially adversely affect our results of operations.

Continued technological advances and the growth of e-commerce have made it possible for non-depository institutions to offer products and services that traditionally were banking products, and for financial institutions and other companies to provide electronic and internet-based financial solutions, including electronic securities trading, lending and payment solutions. In addition, technological advances, including digital currencies, may diminish the importance of depository institutions and other financial intermediaries in the transfer of funds between parties. We may not respond effectively to these and other competitive threats from existing and new competitors and may be forced to sell products at lower prices, increase our investment in our business to modify or adapt our existing products and services, and/or develop new products and services to respond to our customers' needs. To the extent we are not successful in developing and introducing new products and services or responding or adapting to the competitive landscape or to changes in customer preferences, we may lose customer relationships and our revenue growth and results of operations may be materially adversely affected.

Our ability to attract and retain qualified team members is critical to the success of our business and failure to do so could adversely affect our business performance, competitive position and future prospects. The success of Wells Fargo is heavily dependent on the talents and efforts of our team members, including our senior leaders, and in many areas of our business, including commercial banking, brokerage, investment advisory, capital markets, risk management and technology, the competition for highly qualified personnel is intense. We also seek to retain a pipeline of team members to provide continuity of succession for our senior leadership positions. In order to attract and retain highly qualified team members, we must provide competitive compensation and effectively manage team member performance and development. As a large financial institution and additionally to the extent we remain subject to consent orders we may be subject to limitations on compensation by our regulators that may adversely affect our ability to attract and retain these qualified team members, especially if some of our competitors may not be subject to these same compensation limitations. If we are unable to continue to attract and retain qualified team members, including successors for senior leadership positions, our business performance, competitive position and future prospects may be adversely affected.

RISKS RELATED TO OUR FINANCIAL STATEMENTS

Changes in accounting policies or accounting standards, and changes in how accounting standards are interpreted or applied, could materially affect how we report our financial results and condition. Our accounting policies are fundamental to determining and understanding our financial results and condition. As described below, some of these policies require use of estimates and assumptions that may affect the value of our assets or liabilities and financial results. Any changes in our accounting policies could materially affect our financial statements.

From time to time the FASB and the SEC change the financial accounting and reporting standards that govern the preparation of our external financial statements. For example, Accounting Standards Update 2016-13 - *Financial Instruments-Credit Losses* (Topic 326), which becomes effective in first quarter 2020, will replace the current "incurred loss" model for the allowance for credit losses with an "expected loss" model referred to as the Current Expected Credit Loss model, or CECL. CECL could materially affect how we determine our allowance and report our financial results and condition.

In addition, accounting standard setters and those who interpret the accounting standards (such as the FASB, SEC, banking regulators and our outside auditors) may change or even reverse their previous interpretations or positions on how these standards should be applied. Changes in financial accounting and reporting standards and changes in current interpretations may be beyond our control, can be hard to predict and could materially affect how we report our financial results and condition. We may be required to apply a new or revised standard retroactively or apply an existing standard differently, also retroactively, in each case potentially resulting in our restating prior period financial statements in material amounts.

For more information, refer to the "Current Accounting Developments" section in this Report.

Our financial statements are based in part on assumptions and estimates which, if wrong, could cause unexpected losses in the future, and our financial statements depend on our internal controls over financial reporting. Pursuant to U.S. GAAP, we are required to use certain assumptions and estimates in preparing our financial statements, including in determining credit loss reserves, reserves for mortgage repurchases, reserves related to litigation and the fair value of certain assets and liabilities, among other items. Several of our accounting policies are critical because they require management to make difficult, subjective and complex judgments about matters that are inherently uncertain and because it is likely that materially different amounts would be reported under different conditions or using different assumptions. For a description of these policies, refer to the "Critical Accounting Policies" section in this Report. If assumptions or estimates underlying our financial statements are incorrect, we may experience material losses.

Certain of our financial instruments, including derivative assets and liabilities, debt securities, certain loans, MSRs, private equity investments, structured notes and certain repurchase and resale agreements, among other items, require a determination of their fair value in order to prepare our financial statements. Where quoted market prices are not available, we may make fair value determinations based on internally developed models or other means which ultimately rely to some degree on management judgment, and there is no assurance that our models will capture or appropriately reflect all relevant inputs required to accurately determine fair value. Some of these and other assets and liabilities may have no direct observable price levels, making their valuation particularly subjective, being based on significant estimation and judgment. In addition, sudden illiquidity in markets or declines in prices of certain loans and securities may make it more difficult to value certain balance sheet items, which may lead to the possibility that such valuations will be subject to further change or adjustment and could lead to declines in our earnings.

The Sarbanes-Oxley Act of 2002 (Sarbanes-Oxley) requires our management to evaluate the Company's disclosure controls and procedures and its internal control over financial reporting and requires our auditors to issue a report on our internal control over financial reporting. We are required to disclose, in our annual report on Form 10-K, the existence of any "material weaknesses" in our internal controls. We cannot assure that we will not identify one or more material weaknesses as of the end of any given quarter or year, nor can we predict the effect on our stock price of disclosure of a material weakness. In addition, our customers may rely on the effectiveness of our internal controls as a service provider, and any deficiency in those controls could affect our customers and damage our reputation or business. Sarbanes-Oxley also limits the types of non-audit services our outside auditors may provide to us in order to preserve their independence from us. If our auditors were found not to be "independent" of us under SEC rules, we could be required to engage new auditors and re-file financial statements and audit reports with the SEC. We could be out of compliance with SEC rules until new financial statements and audit reports were filed, limiting our ability to raise capital and resulting in other adverse consequences.

RISKS RELATED TO STRATEGIC DECISIONS

If we are unable to develop and execute effective business plans or strategies, our competitive standing and results of operations could suffer. We are subject to rapid changes in technology, regulation, and product innovation, and face intense competition for customers, sources of revenue, capital, services, qualified team members, and other essential business resources. In order to meet these challenges, we may undertake business plans or strategies related to, among other things, our organizational structure and risk management framework, our expenses and efficiency, the types of products and services we offer, the geographies in which we operate, the manner in which we serve our clients and customers, the third parties with which we do business, and the methods and distribution channels by which we offer our products and services. Accomplishing these business plans or strategies may be complex, time intensive, and require significant financial, technological, management and other resources, and there is no guarantee that any business plans or strategies will ultimately be successful. To the extent we are unable to develop or execute effective business plans or strategies, our competitive position, reputation, prospects for growth, and results of operations may be adversely affected.

In addition, we regularly explore opportunities to expand our products, services, and assets through strategic acquisitions of companies or businesses in the financial services industry. We generally must receive federal regulatory approvals before we can acquire a bank, bank holding company, or certain other financial services businesses. We cannot be certain when or if, or on what terms and conditions, any required regulatory approvals will be granted. We might be required to sell banks, branches and/or business units or assets or issue additional equity as a condition to receiving regulatory approval for an acquisition. When we do announce an acquisition, our stock price may fall depending on the size of the acquisition, the type of business to be acquired, the purchase price, and the potential dilution to existing stockholders or our earnings per share if we issue common stock in connection with the acquisition. Furthermore, difficulty in integrating an acquired company or business may cause us not to realize expected revenue increases, cost savings, increases in geographic or product presence, and other projected benefits from the acquisition. The integration could result in higher than expected deposit attrition, loss of key team members, an increase in our compliance costs or risk profile, disruption of our business or the acquired business, or otherwise harm our ability to retain customers and team members or achieve the anticipated benefits of the acquisition. Time and resources spent on integration may also impair our ability to grow our existing businesses. Many of the foregoing risks may be increased if the acquired company or business operates internationally or in a geographic location where we do not already have significant business operations and/or team members.

* * *

Any factor described in this Report or in any of our other SEC filings could by itself, or together with other factors, adversely affect our financial results and condition. Refer to our quarterly reports on Form 10-Q filed with the SEC in 2019 for material changes to the above discussion of risk factors. There are factors not discussed above or elsewhere in this Report that could adversely affect our financial results and condition.

Controls and Procedures

Disclosure Controls and Procedures

The Company's management evaluated the effectiveness, as of December 31, 2018, of the Company's disclosure controls and procedures. The Company's chief executive officer and chief financial officer participated in the evaluation. Based on this evaluation, the Company's chief executive officer and chief financial officer concluded that the Company's disclosure controls and procedures were effective as of December 31, 2018.

Internal Control Over Financial Reporting

Internal control over financial reporting is defined in Rule 13a-15(f) promulgated under the Securities Exchange Act of 1934 as a process designed by, or under the supervision of, the Company's principal executive and principal financial officers and effected by the Company's Board, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. generally accepted accounting principles (GAAP) and includes those policies and procedures that:

- pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of assets of the Company;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. No change occurred during any quarter in 2018 that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting. Management's report on internal control over financial reporting is set forth below and should be read with these limitations in mind.

Management's Report on Internal Control over Financial Reporting

The Company's management is responsible for establishing and maintaining adequate internal control over financial reporting for the Company. Management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2018, using the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control – Integrated Framework (2013)*. Based on this assessment, management concluded that as of December 31, 2018, the Company's internal control over financial reporting was effective.

KPMG LLP, the independent registered public accounting firm that audited the Company's financial statements included in this Annual Report, issued an audit report on the Company's internal control over financial reporting. KPMG's audit report appears on the following page.

Report of Independent Registered Public Accounting Firm

The Stockholders and Board of Directors
Wells Fargo & Company:

Opinion on Internal Control Over Financial Reporting

We have audited Wells Fargo & Company and Subsidiaries' (the Company) internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2018 and 2017, the related consolidated statements of income, comprehensive income, changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2018, and the related notes (collectively, the consolidated financial statements), and our report dated February 27, 2019 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate

KPMG LLP

San Francisco, California
February 27, 2019

Financial Statements

Wells Fargo & Company and Subsidiaries

Consolidated Statement of Income

(in millions, except per share amounts)	Year ended December 31, 2018	2017	2016
Interest income			
Debt securities (1)	**$ 14,406**	12,946	11,244
Mortgage loans held for sale	**777**	786	784
Loans held for sale (1)	**140**	50	38
Loans	**43,974**	41,388	39,505
Equity securities (1)	**992**	799	635
Other interest income (1)	**4,358**	2,940	1,457
Total interest income	**64,647**	58,909	53,663
Interest expense			
Deposits	**5,622**	3,013	1,395
Short-term borrowings	**1,717**	758	330
Long-term debt	**6,703**	5,157	3,830
Other interest expense	**610**	424	354
Total interest expense	**14,652**	9,352	5,909
Net interest income	**49,995**	49,557	47,754
Provision for credit losses	**1,744**	2,528	3,770
Net interest income after provision for credit losses	**48,251**	47,029	43,984
Noninterest income			
Service charges on deposit accounts	**4,716**	5,111	5,372
Trust and investment fees	**14,509**	14,495	14,243
Card fees	**3,907**	3,960	3,936
Other fees	**3,384**	3,557	3,727
Mortgage banking	**3,017**	4,350	6,096
Insurance	**429**	1,049	1,268
Net gains from trading activities (1)	**602**	542	610
Net gains on debt securities (2)	**108**	479	942
Net gains from equity securities (1)(3)	**1,515**	1,779	1,103
Lease income	**1,753**	1,907	1,927
Other	**2,473**	1,603	1,289
Total noninterest income	**36,413**	38,832	40,513
Noninterest expense			
Salaries	**17,834**	17,363	16,552
Commission and incentive compensation	**10,264**	10,442	10,247
Employee benefits	**4,926**	5,566	5,094
Equipment	**2,444**	2,237	2,154
Net occupancy	**2,888**	2,849	2,855
Core deposit and other intangibles	**1,058**	1,152	1,192
FDIC and other deposit assessments	**1,110**	1,287	1,168
Other	**15,602**	17,588	13,115
Total noninterest expense	**56,126**	58,484	52,377
Income before income tax expense	**28,538**	27,377	32,120
Income tax expense	**5,662**	4,917	10,075
Net income before noncontrolling interests	**22,876**	22,460	22,045
Less: Net income from noncontrolling interests	**483**	277	107
Wells Fargo net income	**$ 22,393**	22,183	21,938
Less: Preferred stock dividends and other	**1,704**	1,629	1,565
Wells Fargo net income applicable to common stock	**$ 20,689**	20,554	20,373
Per share information			
Earnings per common share	**$ 4.31**	4.14	4.03
Diluted earnings per common share	**4.28**	4.10	3.99
Average common shares outstanding	**4,799.7**	4,964.6	5,052.8
Diluted average common shares outstanding	**4,838.4**	5,017.3	5,108.3

(1) Financial information for the prior periods has been revised to reflect presentation changes made in connection with our adoption in first quarter 2018 of Accounting Standards Update (ASU) 2016-01 – Financial Instruments – Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities. See Note 1 (Summary of Significant Accounting Policies) for more information.
(2) Total other-than-temporary impairment (OTTI) losses were $17 million, $205 million and $207 million for the years ended December 31, 2018, 2017 and 2016, respectively. Of total OTTI, losses of $28 million, $262 million and $189 million were recognized in earnings, and losses (reversal of losses) of $(11) million, $(57) million and $18 million were recognized as non-credit-related OTTI in other comprehensive income for the years ended December 31, 2018, 2017 and 2016, respectively.
(3) Includes OTTI losses of $352 million, $344 million and $453 million for the years ended December 31, 2018, 2017 and 2016, respectively.

The accompanying notes are an integral part of these statements.

Consolidated Statement of Comprehensive Income

			Year ended December 31,
(in millions)	**2018**	2017	2016
Wells Fargo net income	**$ 22,393**	22,183	21,938
Other comprehensive income (loss), before tax:			
Debt securities (1):			
Net unrealized gains (losses) arising during the period	**(4,493)**	2,719	(3,458)
Reclassification of net (gains) losses to net income	**248**	(737)	(1,240)
Derivatives and hedging activities:			
Net unrealized gains (losses) arising during the period	**(532)**	(540)	177
Reclassification of net (gains) losses on cash flow hedges to net income	**294**	(543)	(1,029)
Defined benefit plans adjustments:			
Net actuarial and prior service gains (losses) arising during the period	**(434)**	49	(52)
Amortization of net actuarial loss, settlements and other to net income	**253**	153	158
Foreign currency translation adjustments:			
Net unrealized gains (losses) arising during the period	**(156)**	96	(3)
Other comprehensive income (loss), before tax	**(4,820)**	1,197	(5,447)
Income tax benefit (expense) related to other comprehensive income	**1,144**	(434)	1,996
Other comprehensive income (loss), net of tax	**(3,676)**	763	(3,451)
Less: Other comprehensive loss from noncontrolling interests	**(2)**	(62)	(17)
Wells Fargo other comprehensive income (loss), net of tax	**(3,674)**	825	(3,434)
Wells Fargo comprehensive income	**18,719**	23,008	18,504
Comprehensive income from noncontrolling interests	**481**	215	90
Total comprehensive income	**$ 19,200**	23,223	18,594

(1) The year ended December 31, 2017, and December 31, 2016, includes net unrealized gains (losses) arising during the period from equity securities of $81 million and $259 million and reclassification of net (gains) losses to net income related to equity securities of $(456) million and $(300) million, respectively. In connection with our adoption in first quarter 2018 of ASU 2016-01, the year ended December 31, 2018, reflects net unrealized gains (losses) arising during the period and reclassification of net (gains) losses to net income from only debt securities.

The accompanying notes are an integral part of these statements.

Wells Fargo & Company and Subsidiaries

Consolidated Balance Sheet

(in millions, except shares)		Dec 31, 2018	Dec 31, 2017
Assets			
Cash and due from banks	$	**23,551**	23,367
Interest-earning deposits with banks (1)		**149,736**	192,580
Total cash, cash equivalents, and restricted cash (1)		**173,287**	215,947
Federal funds sold and securities purchased under resale agreements (1)		**80,207**	80,025
Debt securities:			
Trading, at fair value (2)		**69,989**	57,624
Available-for-sale, at fair value (2)		**269,912**	276,407
Held-to-maturity, at cost (fair value $142,115 and $138,985)		**144,788**	139,335
Mortgage loans held for sale (includes $11,771 and $16,116 carried at fair value) (3)		**15,126**	20,070
Loans held for sale (includes $1,469 and $1,023 carried at fair value) (2)(3)		**2,041**	1,131
Loans (includes $244 and $376 carried at fair value) (3)		**953,110**	956,770
Allowance for loan losses		**(9,775)**	(11,004)
Net loans		**943,335**	945,766
Mortgage servicing rights:			
Measured at fair value		**14,649**	13,625
Amortized		**1,443**	1,424
Premises and equipment, net		**8,920**	8,847
Goodwill		**26,418**	26,587
Derivative assets		**10,770**	12,228
Equity securities (includes $29,556 and $39,227 carried at fair value) (2)(3)		**55,148**	62,497
Other assets (2)		**79,850**	90,244
Total assets (4)	$	**1,895,883**	1,951,757
Liabilities			
Noninterest-bearing deposits	$	**349,534**	373,722
Interest-bearing deposits		**936,636**	962,269
Total deposits		**1,286,170**	1,335,991
Short-term borrowings		**105,787**	103,256
Derivative liabilities		**8,499**	8,796
Accrued expenses and other liabilities		**69,317**	70,615
Long-term debt		**229,044**	225,020
Total liabilities (5)		**1,698,817**	1,743,678
Equity			
Wells Fargo stockholders' equity:			
Preferred stock		**23,214**	25,358
Common stock – $1-2/3 par value, authorized 9,000,000,000 shares; issued 5,481,811,474 shares		**9,136**	9,136
Additional paid-in capital		**60,685**	60,893
Retained earnings		**158,163**	145,263
Cumulative other comprehensive income (loss)		**(6,336)**	(2,144)
Treasury stock – 900,557,866 shares and 590,194,846 shares		**(47,194)**	(29,892)
Unearned ESOP shares		**(1,502)**	(1,678)
Total Wells Fargo stockholders' equity		**196,166**	206,936
Noncontrolling interests		**900**	1,143
Total equity		**197,066**	208,079
Total liabilities and equity	$	**1,895,883**	1,951,757

(1) Financial information has been revised to reflect the impact of our adoption in first quarter 2018 of ASU 2016-18 – Statement of Cash Flows (Topic 230): *Restricted Cash* in which we changed the presentation of our cash and cash equivalents to include both cash and due from banks as well as interest-earning deposits with banks, which are inclusive of any restricted cash. See Note 1 (Summary of Significant Accounting Policies) for more information.
(2) Financial information for the prior period has been revised to reflect presentation changes in connection with our adoption in first quarter 2018 of ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities*. See Note 1 (Summary of Significant Accounting Policies) for more information.
(3) Parenthetical amounts represent assets and liabilities that we are required to carry at fair value or have elected the fair value option.
(4) Our consolidated assets at December 31, 2018 and 2017, include the following assets of certain variable interest entities (VIEs) that can only be used to settle the liabilities of those VIEs: Cash and due from banks, $139 million and $116 million; Interest-bearing deposits with banks, $8 million and $371 million; Debt securities, $45 million and $0 million; Net loans, $13.6 billion and $12.5 billion; Derivative assets, $0 million and $0 million; Equity securities, $85 million and $306 million; Other assets, $221 million and $342 million; and Total assets, $14.1 billion and $13.6 billion, respectively.
(5) Our consolidated liabilities at December 31, 2018 and 2017, include the following VIE liabilities for which the VIE creditors do not have recourse to Wells Fargo: Derivative liabilities, $0 million and $5 million; Accrued expenses and other liabilities, $191 million and $132 million; Long-term debt, $816 million and $1.5 billion; and Total liabilities, $1.0 billion and $1.6 billion, respectively.

The accompanying notes are an integral part of these statements.

Consolidated Statement of Changes in Equity

	Preferred stock		Common stock	
(in millions, except shares)	*Shares*	Amount	*Shares*	Amount
Balance December 31, 2015	*11,259,917*	$ 22,214	*5,092,128,810*	$ 9,136
Cumulative effect from change in consolidation accounting (1)				
Balance January 1, 2016	*11,259,917*	22,214	*5,092,128,810*	9,136
Net income				
Other comprehensive income (loss), net of tax				
Noncontrolling interests				
Common stock issued			*63,441,805*	
Common stock repurchased (2)			*(159,647,152)*	
Preferred stock issued to ESOP	*1,150,000*	1,150		
Preferred stock released by ESOP				
Preferred stock converted to common shares	*(963,205)*	(963)	*20,185,863*	
Common stock warrants repurchased/exercised				
Preferred stock issued	*86,000*	2,150		
Common stock dividends				
Preferred stock dividends				
Tax benefit from stock incentive compensation				
Stock incentive compensation expense				
Net change in deferred compensation and related plans				
Net change	*272,795*	2,337	*(76,019,484)*	—
Balance December 31, 2016	*11,532,712*	$ 24,551	*5,016,109,326*	$ 9,136
Cumulative effect from change in hedge accounting (3)				
Balance January 1, 2017	*11,532,712*	24,551	*5,016,109,326*	9,136
Net income				
Other comprehensive income (loss), net of tax				
Noncontrolling interests				
Common stock issued			*57,257,564*	
Common stock repurchased (2)			*(196,519,707)*	
Preferred stock issued to ESOP	*950,000*	950		
Preferred stock released by ESOP				
Preferred stock converted to common shares	*(833,077)*	(833)	*14,769,445*	
Common stock warrants repurchased/exercised				
Preferred stock issued	*27,600*	690		
Common stock dividends				
Preferred stock dividends				
Tax benefit from stock incentive compensation (4)				
Stock incentive compensation expense				
Net change in deferred compensation and related plans				
Net change	*144,523*	807	*(124,492,698)*	—
Balance December 31, 2017	*11,677,235*	$ 25,358	*4,891,616,628*	$ 9,136

(1) Effective January 1, 2016, we adopted changes in consolidation accounting pursuant to Accounting Standards Update (ASU) 2015-02: *Amendments to the Consolidation Analysis*. Accordingly, we recorded a $121 million net increase to beginning noncontrolling interests as a cumulative-effect adjustment.
(2) For the year ended December 31, 2016, includes $750 million related to a private forward repurchase transaction that settled in first quarter 2017 for 14.7 million shares of common stock. See Note 1 (Summary of Significant Accounting Policies) for additional information.
(3) Effective January 1, 2017, we adopted changes in hedge accounting pursuant to ASU 2017-12 – Derivatives and Hedging (Topic 815): *Targeted Improvements to Accounting for Hedging Activities*.
(4) Effective January 1, 2017, we adopted Accounting Standards Update 2016-09 (*Improvements to Employee Share-Based Payment Accounting*). Accordingly, tax benefit from stock incentive compensation is reported in income tax expense in the consolidated statement of income.

The accompanying notes are an integral part of these statements.

(continued on following pages)

Wells Fargo stockholders’ equity							
Additional paid-in capital	Retained earnings	Cumulative other comprehensive income (loss)	Treasury stock	Unearned ESOP shares	Total Wells Fargo stockholders’ equity	Noncontrolling interests	Total equity
60,714	120,866	297	(18,867)	(1,362)	192,998	893	193,891
						121	121
60,714	120,866	297	(18,867)	(1,362)	192,998	1,014	194,012
	21,938				21,938	107	22,045
		(3,434)			(3,434)	(17)	(3,451)
2					2	(188)	(186)
(203)	(451)		3,040		2,386		2,386
(250)			(7,866)		(8,116)		(8,116)
99				(1,249)	—		—
(83)				1,046	963		963
(11)			974		—		—
(17)					(17)		(17)
(49)					2,101		2,101
51	(7,712)				(7,661)		(7,661)
	(1,566)				(1,566)		(1,566)
277					277		277
779					779		779
(1,075)			6		(1,069)		(1,069)
(480)	12,209	(3,434)	(3,846)	(203)	6,583	(98)	6,485
60,234	133,075	(3,137)	(22,713)	(1,565)	199,581	916	200,497
	(381)	168			(213)		(213)
60,234	132,694	(2,969)	(22,713)	(1,565)	199,368	916	200,284
	22,183				22,183	277	22,460
		825			825	(62)	763
—					—	12	12
(133)	(277)		2,758		2,348		2,348
750			(10,658)		(9,908)		(9,908)
31				(981)	—		—
(35)				868	833		833
97			736		—		—
(133)					(133)		(133)
(13)					677		677
50	(7,708)				(7,658)		(7,658)
	(1,629)				(1,629)		(1,629)
—					—		—
875					875		875
(830)			(15)		(845)		(845)
659	12,569	825	(7,179)	(113)	7,568	227	7,795
60,893	145,263	(2,144)	(29,892)	(1,678)	206,936	1,143	208,079

(continued from previous pages)

Wells Fargo & Company and Subsidiaries

Consolidated Statement of Changes in Equity

	Preferred stock		Common stock	
(in millions, except shares)	*Shares*	Amount	*Shares*	Amount
Balance December 31, 2017	***11,677,235***	**$ 25,358**	***4,891,616,628***	**$ 9,136**
Cumulative effect from change in accounting policies (1)				
Balance January 1, 2018	***11,677,235***	**25,358**	***4,891,616,628***	**9,136**
Adoption of accounting standard related to certain tax effects stranded in accumulated other comprehensive income (loss)(2)				
Net income				
Other comprehensive income (loss), net of tax				
Noncontrolling interests				
Common stock issued			***41,082,047***	
Common stock repurchased			***(375,477,998)***	
Preferred stock redeemed (3)	***(2,150,375)***	**(1,995)**		
Preferred stock issued to ESOP	***1,100,000***	**1,100**		
Preferred stock released by ESOP				
Preferred stock converted to common shares	***(1,249,644)***	**(1,249)**	***24,032,931***	
Common stock warrants repurchased/exercised				
Preferred stock issued	**—**	**—**		
Common stock dividends				
Preferred stock dividends				
Stock incentive compensation expense				
Net change in deferred compensation and related plans				
Net change	***(2,300,019)***	**(2,144)**	***(310,363,020)***	**—**
Balance December 31, 2018	***9,377,216***	**$ 23,214**	***4,581,253,608***	**$ 9,136**

(1) Effective January 1, 2018, we adopted ASU 2016-04 – Liabilities – Extinguishments of Liabilities (Subtopic 405-20): *Recognition of Breakage for Certain Prepaid Stored-Value Products,* ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities*, and ASU 2014-09 – Revenue from Contracts With Customers (Topic 606) and subsequent related Updates. See Note 1 (Summary of Significant Accounting Policies) in this Report for more information.

(2) Represents the reclassification from other comprehensive income to retained earnings as a result of our adoption of ASU 2018-02 – *Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income,* in the third quarter of 2018. For additional information, see Note 1.

(3) Represents the impact of the redemption of preferred stock, series J, in third quarter 2018.

The accompanying notes are an integral part of these statements.

Wells Fargo stockholders' equity							
Additional paid-in capital	Retained earnings	Cumulative other comprehensive income (loss)	Treasury stock	Unearned ESOP shares	Total Wells Fargo stockholders' equity	Noncontrolling interests	Total equity
60,893	145,263	(2,144)	(29,892)	(1,678)	206,936	1,143	208,079
	94	(118)			(24)		(24)
60,893	145,357	(2,262)	(29,892)	(1,678)	206,912	1,143	208,055
	400	(400)			—		—
	22,393				22,393	483	22,876
		(3,674)			(3,674)	(2)	(3,676)
7					7	(724)	(717)
(76)	(321)		2,073		1,676		1,676
—			(20,633)		(20,633)		(20,633)
	(155)				(2,150)		(2,150)
43				(1,143)	—		—
(70)				1,319	1,249		1,249
6			1,243		—		—
(325)					(325)		(325)
—					—		—
66	(7,955)				(7,889)		(7,889)
	(1,556)				(1,556)		(1,556)
1,041					1,041		1,041
(900)			15		(885)		(885)
(208)	12,806	(4,074)	(17,302)	176	(10,746)	(243)	(10,989)
60,685	158,163	(6,336)	(47,194)	(1,502)	196,166	900	197,066

Consolidated Statement of Cash Flows

		Year ended December 31,	
(in millions)	**2018**	2017	2016
Cash flows from operating activities:			
Net income before noncontrolling interests	$ **22,876**	22,460	22,045
Adjustments to reconcile net income to net cash provided by operating activities:			
Provision for credit losses	**1,744**	2,528	3,770
Changes in fair value of MSRs, MLHFS and LHFS carried at fair value	**453**	886	139
Depreciation, amortization and accretion	**5,593**	5,406	4,970
Other net gains (1)	**(7,630)**	(1,518)	(6,337)
Stock-based compensation	**2,255**	2,046	1,945
Originations and purchases of mortgage loans held for sale (1)	**(152,832)**	(181,269)	(205,300)
Proceeds from sales of and paydowns on mortgages loans held for sale (1)	**119,097**	134,984	127,479
Net change in:			
Debt and equity securities, held for trading (1)	**35,054**	33,505	63,309
Loans held for sale (1)	**(960)**	327	(451)
Deferred income taxes	**1,970**	666	1,793
Derivative assets and liabilities	**1,513**	(5,025)	2,089
Other assets (1)	**7,805**	(1,214)	(14,232)
Other accrued expenses and liabilities	**(865)**	4,837	(211)
Net cash provided by operating activities	**36,073**	18,619	1,008
Cash flows from investing activities:			
Net change in:			
Federal funds sold and securities purchased under resale agreements (2)	**(1,184)**	(21,497)	(15,747)
Available-for-sale debt securities:			
Proceeds from sales (1)	**7,320**	42,067	30,958
Prepayments and maturities (1)	**36,725**	45,688	40,998
Purchases (1)	**(60,067)**	(103,656)	(120,978)
Held-to-maturity securities:			
Paydowns and maturities	**10,934**	10,673	7,957
Purchases	**—**	—	(23,593)
Equity securities, not held for trading:			
Proceeds from sales and capital returns (1)	**6,242**	5,451	3,711
Purchases (1)	**(6,433)**	(3,735)	(5,383)
Loans:			
Loans originated by banking subsidiaries, net of principal collected	**(18,619)**	317	(39,002)
Proceeds from sales (including participations) of loans held for investment	**16,294**	10,439	10,061
Purchases (including participations) of loans	**(2,088)**	(3,702)	(6,221)
Principal collected on nonbank entities' loans	**6,791**	7,448	6,844
Loans originated by nonbank entities	**(6,482)**	(6,814)	(7,743)
Net cash paid for acquisitions	**(10)**	(320)	(30,584)
Proceeds from sales of foreclosed assets and short sales	**3,592**	5,198	7,311
Other, net (2)	**(769)**	(709)	(508)
Net cash used by investing activities	**(7,754)**	(13,152)	(141,919)
Cash flows from financing activities:			
Net change in:			
Deposits	**(48,034)**	29,912	82,767
Short-term borrowings	**2,531**	14,020	(1,198)
Long-term debt:			
Proceeds from issuance	**47,595**	43,575	90,111
Repayment	**(40,565)**	(80,802)	(34,462)
Preferred stock:			
Proceeds from issuance	**—**	677	2,101
Redeemed	**(2,150)**	—	—
Cash dividends paid	**(1,622)**	(1,629)	(1,566)
Common stock:			
Proceeds from issuance	**632**	1,211	1,415
Stock tendered for payment of withholding taxes	**(331)**	(393)	(494)
Repurchased	**(20,633)**	(9,908)	(8,116)
Cash dividends paid	**(7,692)**	(7,480)	(7,472)
Net change in noncontrolling interests	**(462)**	30	(188)
Other, net	**(248)**	(133)	(107)
Net cash provided (used) by financing activities	**(70,979)**	(10,920)	122,791
Net change in cash, cash equivalents, and restricted cash (2)	**(42,660)**	(5,453)	(18,120)
Cash, cash equivalents, and restricted cash at beginning of year (2)	**215,947**	221,400	239,520
Cash, cash equivalents, and restricted cash at end of year (2)	$ **173,287**	215,947	221,400
Supplemental cash flow disclosures:			
Cash paid for interest	$ **14,366**	9,103	5,573
Cash paid for income taxes	**1,977**	6,592	8,446

(1) Financial information for the prior periods has been revised to reflect presentation changes made in connection with our adoption in first quarter 2018 of ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities*. See Note 1 (Summary of Significant Accounting Policies) for more information.

(2) Financial information has been revised to reflect the impact of our adoption in first quarter 2018 of ASU 2016-18 – Statement of Cash Flows (Topic 230): *Restricted Cash* in which we changed the presentation of our cash and cash equivalents to include both cash and due from banks as well as interest-earning deposits with banks, which are inclusive of any restricted cash. See Note 1 (Summary of Significant Accounting Policies) for more information.

The accompanying notes are an integral part of these statements. See Note 1 (Summary of Significant Accounting Policies) for noncash activities.

Notes to Financial Statements

See the Glossary of Acronyms at the end of this Report for terms used throughout the Financial Statements and related Notes.

Note 1: Summary of Significant Accounting Policies

Wells Fargo & Company is a diversified financial services company. We provide banking, trust and investments, mortgage banking, investment banking, retail banking, brokerage, and consumer and commercial finance through banking locations, the internet and other distribution channels to consumers, businesses and institutions in all 50 states, the District of Columbia, and in foreign countries. When we refer to "Wells Fargo," "the Company," "we," "our" or "us," we mean Wells Fargo & Company and Subsidiaries (consolidated). Wells Fargo & Company (the Parent) is a financial holding company and a bank holding company. We also hold a majority interest in a real estate investment trust, which has publicly traded preferred stock outstanding.

Our accounting and reporting policies conform with U.S. generally accepted accounting principles (GAAP) and practices in the financial services industry. To prepare the financial statements in conformity with GAAP, management must make estimates based on assumptions about future economic and market conditions (for example, unemployment, market liquidity, real estate prices, etc.) that affect the reported amounts of assets and liabilities at the date of the financial statements, income and expenses during the reporting period and the related disclosures. Although our estimates contemplate current conditions and how we expect them to change in the future, it is reasonably possible that actual conditions could be worse than anticipated in those estimates, which could materially affect our results of operations and financial condition. Management has made significant estimates in several areas, including:

- allowance for credit losses (Note 6 (Loans and Allowance for Credit Losses));
- valuations of residential mortgage servicing rights (MSRs) (Note 9 (Securitizations and Variable Interest Entities) and Note 10 (Mortgage Banking Activities)) and financial instruments (Note 18 (Fair Values of Assets and Liabilities));
- liabilities for contingent litigation losses (Note 16 (Legal Actions)); and
- income taxes (Note 23 (Income Taxes)).

Actual results could differ from those estimates.

Accounting Standards Adopted in 2018

In 2018, we adopted the following new accounting guidance:

- Accounting Standards Update (ASU or Update) 2018-14 – Compensation – Retirement Benefits – Defined Benefit Plans—General (Subtopic 715-20): *Disclosure Framework – Changes to the Disclosure Requirements for Defined Benefit Plans*
- ASU 2018-02 – Income Statement-Reporting Comprehensive Income (Topic 220): *Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*
- ASU 2017-09 – Compensation – Stock Compensation (Topic 718): *Scope of Modification Accounting;*
- ASU 2017-07 – *Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost;*
- ASU 2017-05 – Other Income – Gains and Losses from the Derecognition of Nonfinancial Assets (Subtopic 610-20): *Clarifying the Scope of Asset Derecognition Guidance and Accounting for Partial Sales of Nonfinancial Assets;*
- ASU 2017-01 – Business Combinations (Topic 805): *Clarifying the Definition of a Business;*
- ASU 2016-18 – Statement of Cash Flows (Topic 230): *Restricted Cash;*
- ASU 2016-16 – Income Taxes (Topic 740): *Intra-Entity Transfers of Assets Other Than Inventory;*
- ASU 2016-15 – Statement of Cash Flows (Topic 230): *Classification of Certain Cash Receipts and Cash Payments;*
- ASU 2016-04 – Liabilities – Extinguishments of Liabilities (Subtopic 405-20): *Recognition of Breakage for Certain Prepaid Stored-Value Products;*
- ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities;* and
- ASU 2014-09 – *Revenue from Contracts With Customers (Topic 606) and subsequent related Updates.*

ASU 2018-14 changes the disclosure requirements for our defined benefit pension and postretirement plans. We are eliminating two disclosures that are no longer considered beneficial: (1) information related to amounts in accumulated other comprehensive income to be recognized in the next year as benefit cost and (2) the effect of one-percentage point change on assumed health care cost trend rates. We have added two disclosures: (1) the weighted-average interest crediting rates for plans with promised interest crediting rates, and (2) explanations for significant gain and losses related to changes in the benefit obligation. We early adopted this change in fourth quarter 2018.

ASU 2018-02 allows a reclassification to update amounts in accumulated other comprehensive income to an appropriate tax rate under the Tax Cuts & Jobs Act. In 2018, we reclassified $400 million resulting in a reduction of accumulated other comprehensive income and an increase to retained earnings. For additional information, see Note 25 (Other Comprehensive Income). We have finalized our provisional tax estimates based on the completion of our U.S. tax filings in fourth quarter 2018.

ASU 2017-09 clarifies when to account for a change to the terms or conditions of a share-based payment award as a modification. Under the ASU, modification accounting is required only if the fair value, the vesting conditions, or the classification of the award (as equity or liability) changes as a result of the change in terms or conditions. The Update is applied to awards modified on or after the adoption date and accordingly, did not have a material impact on our consolidated financial statements.

ASU 2017-07 requires that the service cost component of net benefit cost be reported in the same line item as other compensation costs arising from services rendered by employees during the period, and the other pension cost components (interest cost, expected return on plan assets and amortization of actuarial gains and losses) be presented in the income statement separate from the service cost component. The income statement line item used to present the other pension cost components must be disclosed. We adopted this change in first quarter 2018. The Update did not have a material impact on our consolidated financial statements.

ASU 2017-05 provides guidance for recognizing gains and losses from the transfer of nonfinancial assets in contracts with non-customers. The ASU applies to nonfinancial assets, including real estate (e.g., buildings, land, windmills, solar farms), ships and intellectual property. We adopted this change in first quarter 2018. The Update did not have a material impact on our consolidated financial statements.

ASU 2017-01 requires that when substantially all of the fair value of gross assets acquired is concentrated in a single asset (or a group of similar assets), the assets acquired would not represent a business. We adopted this change in first quarter 2018. The Update is applied prospectively and did not have a material impact on our consolidated financial statements.

ASU 2016-18 requires that restricted cash and cash equivalents are included with the total cash and cash equivalents in the consolidated statement of cash flows. In addition, the nature of any restrictions will be disclosed in the footnotes to the financial statements. We adopted this change in first quarter 2018. Our retrospective adoption includes changes to our presentation of cash and cash equivalents in our consolidated statement of cash flows to include both cash and due from banks as well as interest-earning deposits with banks. In addition, we had corresponding changes on our consolidated balance sheets.

ASU 2016-16 requires us to recognize the income tax effects of intercompany sales and transfers of assets other than inventory in the period in which the transfer occurs. We adopted this change in first quarter 2018. The Update did not have a material impact on our consolidated financial statements.

ASU 2016-15 addresses eight specific cash flow issues with the objective of reducing the existing diversity in practice for reporting in the statement of cash flows. We adopted this change in first quarter 2018. The Update did not have a material impact on our consolidated financial statements.

ASU 2016-04 modifies the accounting for certain prepaid card products to require the recognition of breakage. Breakage represents the estimated amount that will not be redeemed by the cardholder for goods or services. We adopted this change in first quarter 2018. Upon adoption, we recorded a cumulative-effect adjustment that increased retained earnings, given estimated breakage, by $20 million.

ASU 2016-01 changes the accounting for certain equity securities to record at fair value with unrealized gains or losses reflected in earnings, as well as improve the disclosures of equity securities and the fair value of financial instruments. The Update also requires that for purposes of disclosing the fair value of financial instruments recorded at amortized cost, including loans and long-term debt, the valuation methodology is based on an exit price notion.

We adopted the Update in first quarter 2018 and recorded a cumulative-effect adjustment as of January 1, 2018, that increased retained earnings by $106 million as a result of a transition adjustment to reclassify $118 million in net unrealized gains from other comprehensive income to retained earnings, partially offset by a transition adjustment to decrease retained earnings by $12 million primarily to adjust the carrying value of our auction rate securities from cost to fair value. No transition adjustment was recorded for investments changed to the measurement alternative (described below), which was applied prospectively.

As a result of adopting this ASU, our investments in marketable equity securities, including those previously classified as available-for-sale, are accounted for at fair value with unrealized gains or losses reflected in earnings. Additionally, our share of unrealized gains or losses related to marketable equity securities held by our equity method investees are reflected in earnings. Prior to adoption, such unrealized gains and losses were reflected in other comprehensive income. Our investments in nonmarketable equity securities previously accounted for under the cost method of accounting, except for Federal Reserve Bank stock, are now accounted for either at fair value with unrealized gains and losses reflected in earnings or using the measurement alternative. The measurement alternative is similar to the cost method of accounting, except the carrying value is adjusted through earnings for impairment, if any, and changes in observable and orderly transactions in the same or similar investment. We account for substantially all of our private equity investments, previously using the cost method of accounting, now under the measurement alternative. Our auction rate securities portfolio is now accounted for at fair value with unrealized gains or losses reflected in earnings.

In connection with our adoption of this Update, we have modified our balance sheet and income statement presentation to report marketable and nonmarketable equity securities and their results separately from debt securities by now reporting all equity securities in a new line labeled "Equity securities" in both the balance sheet and income statement. Additionally we now report loans held for trading purposes in loans held for sale and have reclassified net gains and losses on marketable equity securities used as economic hedges of deferred compensation obligations from "Net gains for trading activities" to "Net gains from equity securities". All prior periods have been revised to conform to these changes in reporting.

Table 1.1 provides a summary of our reporting changes implemented in connection with our adoption of ASU 2016-01 in first quarter 2018.

Table 1.1: Summary of Reporting Changes

Financial instrument or transaction type	As previously reported	Revised reporting
Balance Sheet		
Marketable equity securities	Trading assets and available for sale investment securities	Equity securities (new caption)
Nonmarketable equity securities	Other assets	Equity securities (new caption)
Loans held for trading	Trading assets	Loans held for sale
Debt securities held for trading	Trading assets	Debt securities (formerly "Investment securities")
Income Statement		
Interest income:		
Marketable equity securities	Trading assets and investment securities	Equity securities (new caption)
Nonmarketable equity securities	Other	Equity securities (new caption)
Loans held for trading	Trading assets	Loans held for sale
Debt securities held for trading	Trading assets	Debt securities (formerly "Investment securities")
Noninterest income:		
Deferred compensation gains (1)	Net gains from trading activities	Net gains from equity securities

(1) Reclassification of net gains and losses on marketable equity securities economically hedging our deferred compensation obligations.

Table 1.2 summarizes financial assets and liabilities by form and measurement accounting model.

Table 1.2: Accounting Model for Financial Assets and Liabilities

Balance sheet caption	Measurement model(s)	Financial statement Note reference
Cash and due from banks	Cost	N/A
Interest-earning deposits with banks	Cost	N/A
Federal funds sold and securities purchased under resale agreements	Amortized cost	N/A
Debt securities:		
Trading	FV-NI (1)	Note 4: Trading Activities Note 18: Fair Values of Assets and Liabilities
Available-for-sale	FV-OCI (2)	Note 5: Available-for-Sale and Held-to-Maturity Debt Securities Note 18: Fair Values of Assets and Liabilities
Held-to-maturity	Amortized cost	Note 5: Available-for-Sale and Held-to-Maturity Debt Securities
Mortgage loans held for sale	FV-NI (1) LOCOM (3)	Note 18: Fair Values of Assets and Liabilities
Loans held for sale	FV-NI (1) LOCOM (3)	Note 18: Fair Values of Assets and Liabilities
Loans	Amortized cost FV-NI (1)	Note 6: Loans and Allowance for Credit Losses Note 18: Fair Values of Assets and Liabilities
Derivative assets and liabilities	FV-NI (1) FV-OCI (2)	Note 4: Trading Activities Note 17: Derivatives Note 18: Fair Values of Assets and Liabilities
Equity securities:		
Marketable	FV-NI (1)	Note 4: Trading Activities Note 8: Equity Securities Note 18: Fair Values of Assets and Liabilities
Nonmarketable	FV-NI (1) Cost method Equity method MA (4)	Note 4: Trading Activities Note 8: Equity Securities Note 18: Fair Values of Assets and Liabilities
Other assets	Amortized cost (5)	Note 7: Premises, Equipment, Lease Commitments and Other Assets
Deposits	Amortized cost	N/A
Short-term borrowings	Amortized cost	N/A
Long-term debt	Amortized cost	N/A

(1) FV-NI represents the fair value through net income accounting model.
(2) FV-OCI represents the fair value through other comprehensive income accounting model.
(3) LOCOM represents the lower of cost or fair value accounting model.
(4) MA represents the measurement alternative accounting model.
(5) Other assets are generally carried at amortized cost, except for bank-owned life insurance which is carried at cash surrender value.

ASU 2014-09 modifies the guidance used to recognize revenue from contracts with customers for transfers of goods or services and transfers of non-financial assets, unless those contracts are within the scope of other guidance. We adopted the Update in first quarter 2018, and upon a modified retrospective adoption, we recorded a cumulative-effect adjustment as of January 1, 2018, that decreased retained earnings by $32 million, due to changes in the timing of revenue for corporate trust services that are provided over the life of the associated trust. In addition, we changed the presentation of some costs such that underwriting expenses of our broker-dealer business that were previously netted against revenue are now included in noninterest expense, and card payment network charges that were previously included in noninterest expense are now netted against card fee revenue.

Consolidation

Our consolidated financial statements include the accounts of the Parent and our subsidiaries in which we have a controlling interest.

We are also a variable interest holder in certain entities in which equity investors do not have the characteristics of a controlling financial interest or where the entity does not have enough equity at risk to finance its activities without additional subordinated financial support from other parties (referred to as variable interest entities (VIEs)). Our variable interest arises from contractual, ownership or other monetary interests in the entity, which change with fluctuations in the fair value of the entity's net assets. We consolidate a VIE if we are the primary beneficiary. We are the primary beneficiary if we have a controlling financial interest, which includes both the power to direct the activities that most significantly impact the VIE and a variable interest that potentially could be significant to the VIE. To determine whether or not a variable interest we hold could potentially be significant to the VIE, we consider both qualitative and quantitative factors regarding the nature, size and form of our involvement with the VIE. We assess whether or not we are the primary beneficiary of a VIE on an ongoing basis.

Significant intercompany accounts and transactions are eliminated in consolidation. When we have significant influence over operating and financing decisions for a company but do not own a majority of the voting equity interests, we account for the investment using the equity method of accounting, which requires us to recognize our proportionate share of the company's earnings. If we do not have significant influence, we account for the equity security under the fair value method, cost method or measurement alternative.

Cash, Cash Equivalents and Restricted Cash

Cash, cash equivalents and restricted cash include cash on hand, cash items in transit, and amounts due from or held with other depository institutions. See Note 3 (Cash, Loan and Dividend Restrictions) for the nature of our restrictions on cash and cash equivalents.

Trading Activities

We engage in trading activities to accommodate the investment and risk management activities of our customers. These activities predominantly occur in our Wholesale Banking businesses and to a lesser extent other divisions of the Company. The assets and liabilities classified as trading include debt securities, loans, equity securities, derivatives and short sales, which are reported within the balance sheet line item based on the form of the instrument. In addition, debt securities that are held for investment purposes that we have elected to account for under the fair value method, are classified as trading.

Our trading assets and liabilities are carried on the balance sheet at fair value with changes in fair value recognized in net gains from trading activities and interest income and interest expense recognized in net interest income.

Customer accommodation trading activities include our actions as an intermediary to buy and sell financial instruments and market-making activities. We also take positions to manage our exposure to customer accommodation activities. We hold financial instruments for trading in long positions (assets), as well as short positions where we sold financial instruments we have not yet purchased (liabilities), to facilitate our trading activities. As an intermediary we interact with market buyers and sellers to facilitate the purchase and sale of financial instruments to meet the anticipated or current needs of our customers. For example, we may purchase or sell a derivative to a customer who wants to manage interest rate risk exposure. We typically enter into an offsetting derivative or security position to manage our exposure to the customer transaction. We earn income based on the transaction price difference between the customer transaction and the offsetting position, which is reflected in the fair value changes of the positions recorded in the net gains from trading activities.

Our market-making activities include taking long and short trading positions to facilitate customer order flow. These activities are typically executed on a short-term basis. As a market-maker we earn income due to: (1) difference between the price paid or received for the purchase and sale of the security (bid-ask spread), (2) the net interest income of the positions, and (3) the changes in fair value of the trading positions held on our balance sheet. Additionally, we may enter into separate derivative or security positions to manage our exposure related to our long and short trading positions taken in our market-making activities. Income earned on these market-making activities are reflected in the fair value changes of these positions recorded in net gains from trading activities.

Debt Securities

Our investments in debt securities that are not held for trading purposes are classified as either debt securities available-for-sale (AFS) or held-to-maturity (HTM).

AVAILABLE-FOR-SALE DEBT SECURITIES

Debt securities for which the Company does not have the postitive intent and ability to hold to maturity are classified as AFS. These AFS debt securities are reported at fair value with unrealized gains and losses, net of applicable income taxes, reported in cumulative OCI.

We conduct other-than-temporary impairment (OTTI) analysis on a quarterly basis or more often if a potential loss-triggering event occurs. The initial indicator of OTTI is a decline in fair value below the amortized cost of the debt security.

An AFS debt security that has a decline in the fair value below the security's amortized cost records OTTI if we (1) have the intent to sell the security, (2) it is more likely than not that we will be required to sell the security before recovery of its amortized cost basis, or (3) we do not expect to recover the entire amortized cost basis of the security.

Estimating recovery of the amortized cost basis of an AFS debt security is based upon an assessment of the cash flows expected to be collected. If the present value of cash flows expected to be collected, discounted at the security's effective yield, is less than amortized cost, OTTI is considered to have occurred. In performing an assessment of the cash flows expected to be collected, we consider all relevant information including:

- the length of time and the extent to which the fair value has been less than the amortized cost basis;
- the historical and implied volatility of the fair value of the security;
- the cause of the price decline, such as the general level of interest rates or adverse conditions specifically related to the security, an industry or a geographic area;
- the issuer's financial condition, near-term prospects and ability to service the debt;
- the payment structure of the debt security and the likelihood of the issuer being able to make payments that increase in the future;
- for asset-backed securities, the credit performance of the underlying collateral, including delinquency rates, level of non-performing assets, cumulative losses to date, collateral value and the remaining credit enhancement compared with expected credit losses;
- any change in rating agencies' credit ratings at evaluation date from acquisition date and any likely imminent action;
- independent analyst reports and forecasts, sector credit ratings and other independent market data; and
- recoveries or additional declines in fair value subsequent to the balance sheet date.

If we intend to sell the security, or if it is more likely than not we will be required to sell the security before recovery of amortized cost basis, an OTTI write-down is recognized in earnings equal to the entire difference between the amortized cost basis and fair value of the security. For debt security that is considered other-than-temporarily impaired that we do not intend to sell or it is more likely than not that we will not be required to sell before recovery, the OTTI write-down is separated into an amount representing the credit loss, which is recognized in earnings, and the amount related to all other factors, which is recognized in OCI. The measurement of the credit loss component is equal to the difference between the debt security's amortized cost basis and the present value of its expected future cash flows discounted at the security's effective yield. The remaining difference between the security's fair value and the present value of expected future cash flows is due to all other factors. We believe that we will fully collect the carrying value of securities on which we have recorded a non-credit-related impairment in OCI.

Following the recognition of OTTI, the security's new amortized cost basis is the previous basis minus the OTTI amount recognized in earnings.

We recognize realized gains and losses on the sale of AFS debt securities in net gains (losses) on debt securities using the specific identification method.

Unamortized premiums and discounts are recognized in interest income over the contractual life of the security using the interest method. As principal repayments are received on securities (i.e., primarily mortgage-backed securities (MBS)) a proportionate amount of the related premium or discount is recognized in income so that the effective interest rate on the remaining portion of the security continues unchanged.

HELD-TO-MATURITY DEBT SECURITIES Debt securities for which the Company has the positive intent and ability to hold to maturity are classified as held-to-maturity (HTM). These HTM debt securities are reported at historical cost adjusted for amortization of premiums and accretion of discounts. We recognize OTTI when there is a decline in fair value and we do not expect to recover the entire amortized cost basis of the debt security. The amortized cost is written-down to fair value with the credit loss component recorded to earnings and the remaining component recognized in OCI. The OTTI assessment related to intent to sell, required to sell, whether we expect recovery of the amortized cost basis and determination of any credit loss component recognized in earnings for HTM debt securities is the same as described for AFS debt securities. AFS debt securities transferred to the HTM classification are recorded at fair value and the unrealized gains or losses resulting from the transfer of these securities continue to be reported in cumulative OCI. The unamortized OCI balance is amortized into earnings over the remaining life of the security using the effective interest method. The HTM amortized cost basis used in the OTTI analysis includes the unamortized OCI balances related to previous security transfers.

Securities Purchased and Sold Agreements

Securities purchased under resale agreements and securities sold under repurchase agreements are accounted for as collateralized financing transactions and are recorded at the acquisition or sale price plus accrued interest. We monitor the fair value of securities purchased and sold and obtain collateral from or return it to counterparties when appropriate. These financing transactions do not create material credit risk given the collateral provided and the related monitoring process.

Mortgage Loans and Loans Held for Sale

Mortgage loans held for sale (MLHFS) include commercial and residential mortgages originated for sale and securitization in the secondary market, which is our principal market, or for sale as whole loans. We have elected the fair value option for substantially all residential MLHFS (see Note 18 (Fair Values of Assets and Liabilities)). The remaining residential MLHFS are held at the lower of cost or fair value (LOCOM) and are valued on an aggregate portfolio basis. Commercial MLHFS are held at LOCOM and are valued on an individual loan basis.

Loans held for sale (LHFS) includes commercial loans originated for sale in the secondary market and loans used in market-making activities in our trading business. The loans held for trading purposes are carried at fair value, with the remainder of LHFS recorded at LOCOM.

Gains and losses on MLHFS are recorded in mortgage banking noninterest income. Gains and losses on LHFS used in trading activities are recognized in net gains from trading activities, with gains and losses on LHFS not used in trading activities recognized in other noninterest income. Direct loan origination costs and fees for MLHFS and LHFS under the fair value option are recognized in income at origination. For MLHFS and LHFS recorded at LOCOM, loan costs and fees are deferred at origination and are recognized in income at time of sale. Interest income on MLHFS and LHFS is calculated based upon the note rate of the loan and is recorded in interest income.

Our lines of business are authorized to originate held-for-investment loans that meet or exceed established loan product profitability criteria, including minimum positive net interest margin spreads in excess of funding costs. When a determination is made at the time of commitment to originate loans as held for investment, it is our intent to hold these loans to maturity or for the "foreseeable future," subject to periodic review under our management evaluation processes, including corporate asset/liability management. In determining the "foreseeable future" for loans, management considers (1) the current economic environment and market conditions, (2) our business strategy and current business plans, (3) the nature and type of the loan receivable, including its expected life, and (4) our current financial condition and liquidity demands. If subsequent changes, including changes in interest rates, significantly impact the ongoing profitability of certain loan products, we may subsequently change our intent to hold these loans, and we would take actions to sell such loans. Upon such management determination, we immediately transfer these loans to the MLHFS or LHFS portfolio at LOCOM.

Loans

Loans are reported at their outstanding principal balances net of any unearned income, cumulative charge-offs, unamortized deferred fees and costs on originated loans and unamortized premiums or discounts on purchased loans. PCI loans are reported net of any remaining purchase accounting adjustments. See the "Purchased Credit-Impaired Loans" section in this Note for our accounting policy for PCI loans.

Unearned income, deferred fees and costs, and discounts and premiums are amortized to interest income over the contractual life of the loan using the interest method. Loan commitment fees are generally deferred and amortized into noninterest income on a straight-line basis over the commitment period.

We have certain private label and co-brand credit card loans through a program agreement that involves our active participation in the operating activity of the program with a third party. We share in the economic results of the loans subject to this agreement. We consider the program to be a collaborative arrangement and therefore report our share of revenue and losses on a net basis in interest income for loans, other noninterest income and provision for credit losses as applicable. Our net share of revenue from this activity represented less than 1% of our total revenues for 2018.

Loans also include direct financing leases that are recorded at the aggregate of minimum lease payments receivable plus the estimated residual value of the leased property, less unearned income. Leveraged leases, which are a form of direct financing leases, are recorded net of related non-recourse debt. Leasing income is recognized as a constant percentage of outstanding lease financing balances over the lease terms in interest income.

NONACCRUAL AND PAST DUE LOANS We generally place loans on nonaccrual status when:

- the full and timely collection of interest or principal becomes uncertain (generally based on an assessment of the borrower's financial condition and the adequacy of collateral, if any), such as in bankruptcy or other circumstances;
- they are 90 days (120 days with respect to real estate 1-4 family first and junior lien mortgages) past due for interest or principal, unless both well-secured and in the process of collection;
- part of the principal balance has been charged off, except for credit card loans, which are generally not placed on nonaccrual status, but are generally fully charged off when the loan reaches 180 days past due; or
- for junior lien mortgages, we have evidence that the related first lien mortgage may be 120 days past due or in the process of foreclosure regardless of the junior lien delinquency status.

PCI loans are written down at acquisition to fair value using an estimate of cash flows deemed to be collectible and an accretable yield is established. Accordingly, such loans are not classified as nonaccrual because they continue to earn interest from accretable yield, independent of performance in accordance of their contractual terms, and we expect to fully collect the new carrying values of such loans (that is, the new cost basis arising out of purchase accounting).

When we place a loan on nonaccrual status, we reverse the accrued unpaid interest receivable against interest income and suspend amortization of any net deferred fees. If the ultimate collectability of the recorded loan balance is in doubt on a nonaccrual loan, the cost recovery method is used and cash collected is applied to first reduce the carrying value of the loan. Otherwise, interest income may be recognized to the extent cash is received. Generally, we return a loan to accrual status when all delinquent interest and principal become current under the terms of the loan agreement and collectability of remaining principal and interest is no longer doubtful.

We typically re-underwrite modified loans at the time of a restructuring to determine if there is sufficient evidence of sustained repayment capacity based on the borrower's financial strength, including documented income, debt to income ratios and other factors. If the borrower has demonstrated performance under the previous terms and the underwriting process shows the capacity to continue to perform under the restructured terms, the loan will generally remain in accruing status. When a loan classified as a troubled debt restructuring (TDR) performs in accordance with its modified terms, the loan either continues to accrue interest (for performing loans) or will return to accrual status after the borrower demonstrates a sustained period of performance (generally six consecutive months of payments, or equivalent, inclusive of consecutive payments made prior to the modification). Loans will be placed on nonaccrual status and a corresponding charge-off is recorded if we believe it is probable that principal and interest contractually due under the modified terms of the agreement will not be collectible.

Our loans are considered past due when contractually required principal or interest payments have not been made on the due dates.

LOAN CHARGE-OFF POLICIES For commercial loans, we generally fully charge off or charge down to net realizable value (fair value of collateral, less estimated costs to sell) for loans secured by collateral when:

- management judges the loan to be uncollectible;
- repayment is deemed to be protracted beyond reasonable time frames;
- the loan has been classified as a loss by either our internal loan review process or our banking regulatory agencies;
- the customer has filed bankruptcy and the loss becomes evident owing to a lack of assets; or
- the loan is 180 days past due unless both well-secured and in the process of collection.

For consumer loans, we fully charge off or charge down to net realizable value when deemed uncollectible due to bankruptcy or other factors, or no later than reaching a defined number of days past due, as follows:

- 1-4 family first and junior lien mortgages – We generally charge down to net realizable value when the loan is 180 days past due.
- Automobile loans – We generally fully charge off when the loan is 120 days past due.
- Credit card loans – We generally fully charge off when the loan is 180 days past due.
- Unsecured loans (closed end) – We generally fully charge off when the loan is 120 days past due.

- Unsecured loans (open end) – We generally fully charge off when the loan is 180 days past due.
- Other secured loans – We generally fully or partially charge down to net realizable value when the loan is 120 days past due.

IMPAIRED LOANS We consider a loan to be impaired when, based on current information and events, we determine that we will not be able to collect all amounts due according to the loan contract, including scheduled interest payments. This evaluation is generally based on delinquency information, an assessment of the borrower's financial condition and the adequacy of collateral, if any. Our impaired loans predominantly include loans on nonaccrual status in the commercial portfolio segment and loans modified in a TDR, whether on accrual or nonaccrual status.

When we identify a loan as impaired, we generally measure the impairment, if any, based on the difference between the recorded investment in the loan (net of previous charge-offs, deferred loan fees or costs and unamortized premium or discount) and the present value of expected future cash flows, discounted at the loan's effective interest rate. When the value of an impaired loan is calculated by discounting expected cash flows, interest income is recognized using the loan's effective interest rate over the remaining life of the loan. When collateral is the sole source of repayment for the impaired loan, rather than the borrower's income or other sources of repayment, we charge down to net realizable value.

TROUBLED DEBT RESTRUCTURINGS In situations where, for economic or legal reasons related to a borrower's financial difficulties, we grant a concession for other than an insignificant period of time to the borrower that we would not otherwise consider, the related loan is classified as a TDR. These modified terms may include rate reductions, principal forgiveness, term extensions, payment forbearance and other actions intended to minimize our economic loss and to avoid foreclosure or repossession of the collateral, if applicable. For modifications where we forgive principal, the entire amount of such principal forgiveness is immediately charged off. Loans classified as TDRs, including loans in trial payment periods (trial modifications), are considered impaired loans. Other than resolutions such as foreclosures, sales and transfers to held-for-sale, we may remove loans held for investment from TDR classification, but only if they have been refinanced or restructured at market terms and qualify as a new loan.

PURCHASED CREDIT-IMPAIRED LOANS Loans acquired with evidence of credit deterioration since their origination and where it is probable that we will not collect all contractually required principal and interest payments are PCI loans. PCI loans are recorded at fair value at the date of acquisition, and the historical allowance for credit losses related to these loans is not carried over. Fair value at date of acquisition is generally determined using a discounted cash flow method and any excess cash flow expected to be collected over the carrying value (estimated fair value at acquisition date) is referred to as the accretable yield and is recognized in interest income using an effective yield method over the remaining life of the loan, or pool of loans if aggregated based on common risk characteristics. The difference between contractually required payments and the cash flows expected to be collected at acquisition, considering the impact of prepayments, is referred to as the nonaccretable difference. Based on quarterly evaluations of remaining cash flows expected to be collected, expected decreases may result in recording a provision for loss and expected increases may result in a prospective yield adjustment after first reversing any allowance for losses related to the loan, or pool of loans.

Resolutions of loans may include sales of loans to third parties, receipt of payments in settlement with the borrower, or foreclosure of the collateral. For individual PCI loans, gains or losses on sales to third parties are included in other noninterest income, and gains or losses as a result of a settlement with the borrower are included in interest income. Our policy is to remove an individual loan from a pool based on comparing the amount received from its resolution with its contractual amount. Any difference between these amounts is absorbed by the nonaccretable difference for the entire pool, which assumes that the amount received from resolution approximates pool performance expectations. Any material change in remaining effective yield caused by this removal method is addressed by our quarterly cash flow evaluation process for each pool. We may also sell groups of loans from a pool and include any gains or losses on sales to third parties in other noninterest income. Any difference between the amount received from the buyer and the contractual amount due from the customer is absorbed by the nonaccretable difference for the entire pool. We maintain the effective yield for the remaining loans in the pool consistent with the yield immediately prior to the sale.

Modified PCI loans are not removed from a pool even if those loans would otherwise be deemed TDRs. Modified PCI loans that are accounted for individually are considered TDRs and removed from PCI accounting if there has been a concession granted in excess of the original nonaccretable difference. We include these TDRs in our impaired loans.

FORECLOSED ASSETS Foreclosed assets obtained through our lending activities primarily include real estate. Generally, loans have been written down to their net realizable value prior to foreclosure. Any further reduction to their net realizable value is recorded with a charge to the allowance for credit losses at foreclosure. We allow up to 90 days after foreclosure to finalize determination of net realizable value. Thereafter, changes in net realizable value are recorded to noninterest expense. The net realizable value of these assets is reviewed and updated periodically depending on the type of property. Certain government-guaranteed mortgage loans upon foreclosure are included in accounts receivable, not foreclosed assets. These receivables were loans predominantly insured by the FHA or guaranteed by the VA and are measured based on the balance expected to be recovered from the FHA or VA.

ALLOWANCE FOR CREDIT LOSSES (ACL) The allowance for credit losses is management's estimate of credit losses inherent in the loan portfolio, including unfunded credit commitments, at the balance sheet date. We have an established process to determine the appropriateness of the allowance for credit losses that assesses the losses inherent in our portfolio and related unfunded credit commitments. We develop and document our allowance methodology at the portfolio segment level – commercial loan portfolio and consumer loan portfolio. While we attribute portions of the allowance to our respective commercial and consumer portfolio segments, the entire allowance is available to absorb credit losses inherent in the total loan portfolio and unfunded credit commitments.

Our process involves procedures to appropriately consider the unique risk characteristics of our commercial and consumer loan portfolio segments. For each portfolio segment, losses are estimated collectively for groups of loans with similar characteristics, individually or pooled for impaired loans or, for

PCI loans, based on the changes in cash flows expected to be collected.

Our allowance levels are influenced by loan volumes, loan grade migration or delinquency status, historic loss experience and other conditions influencing loss expectations, such as economic conditions.

COMMERCIAL PORTFOLIO SEGMENT ACL METHODOLOGY
Generally, commercial loans are assessed for estimated losses by grading each loan using various risk factors as identified through periodic reviews. Our estimation approach for the commercial portfolio reflects the estimated probability of default in accordance with the borrower's financial strength and the severity of loss in the event of default, considering the quality of any underlying collateral. Probability of default and severity at the time of default are statistically derived through historical observations of default and losses after default within each credit risk rating. These estimates are adjusted as appropriate based on additional analysis of long-term average loss experience compared to previously forecasted losses, external loss data or other risks identified from current economic conditions and credit quality trends. The estimated probability of default and severity at the time of default are applied to loan equivalent exposures to estimate losses for unfunded credit commitments.

The allowance also includes an amount for the estimated impairment on nonaccrual commercial loans and commercial loans modified in a TDR, whether on accrual or nonaccrual status.

CONSUMER PORTFOLIO SEGMENT ACL METHODOLOGY
For consumer loans that are not identified as a TDR, we generally determine the allowance on a collective basis utilizing forecasted losses to represent our best estimate of inherent loss. We pool loans, generally by product types with similar risk characteristics, such as residential real estate mortgages and credit cards. As appropriate and to achieve greater accuracy, we may further stratify selected portfolios by sub-product, origination channel, vintage, loss type, geographic location and other predictive characteristics. Models designed for each pool are utilized to develop the loss estimates. We use assumptions for these pools in our forecast models, such as historic delinquency and default, loss severity, home price trends, unemployment trends, and other key economic variables that may influence the frequency and severity of losses in the pool.

In determining the appropriate allowance attributable to our residential mortgage portfolio, we take into consideration portfolios determined to be at elevated risk, such as junior lien mortgages behind delinquent first lien mortgages and junior lien lines of credit subject to near term significant payment increases. We incorporate the default rates and severity of loss for these higher risk portfolios, including the impact of our established loan modification programs. Accordingly, the loss content associated with the effects of loan modifications and higher risk portfolios has been captured in our ACL methodology.

We separately estimate impairment for consumer loans that have been modified in a TDR (including trial modifications), whether on accrual or nonaccrual status.

OTHER ACL MATTERS The allowance for credit losses for both portfolio segments includes an amount for imprecision or uncertainty that may change from period to period. This amount represents management's judgment of risks inherent in the processes and assumptions used in establishing the allowance. This imprecision considers economic environmental factors, modeling assumptions and performance, process risk, and other subjective factors, including industry trends and emerging risk assessments.

Securitizations and Beneficial Interests

In certain asset securitization transactions that meet the applicable criteria to be accounted for as a sale, assets are sold to an entity referred to as a Special Purpose Entity (SPE), which then issues beneficial interests in the form of senior and subordinated interests collateralized by the assets. In some cases, we may retain beneficial interests issued by the entity. Additionally, from time to time, we may also re-securitize certain assets in a new securitization transaction.

The assets and liabilities transferred to an SPE are excluded from our consolidated balance sheet if the transfer qualifies as a sale and we are not required to consolidate the SPE.

For transfers of financial assets recorded as sales, we recognize and initially measure at fair value all assets obtained (including beneficial interests) and liabilities incurred. We record a gain or loss in noninterest income for the difference between the carrying amount and the fair value of the assets sold. Fair values are based on quoted market prices, quoted market prices for similar assets, or if market prices are not available, then the fair value is estimated using discounted cash flow analyses with assumptions for credit losses, prepayments and discount rates that are corroborated by and verified against market observable data, where possible. Interests retained from and liabilities incurred in securitizations with off-balance sheet entities include debt and equity securities, loans, MSRs, derivative assets and liabilities, other assets, other liabilities, such as liabilities for mortgage repurchase losses or long-term debt and are accounted for as described within this Note.

Mortgage Servicing Rights (MSRs)

We recognize the rights to service mortgage loans for others, or MSRs, as assets whether we purchase the MSRs or the MSRs result from a sale or securitization of loans we originate (asset transfers). We initially record all of our MSRs at fair value. Subsequently, residential loan MSRs are carried at fair value. All of our MSRs related to our commercial mortgage loans are subsequently measured at LOCOM. The valuation and sensitivity of MSRs is discussed further in Note 9 (Securitizations and Variable Interest Entities), Note 10 (Mortgage Banking Activities) and Note 18 (Fair Values of Assets and Liabilities).

For MSRs carried at fair value, changes in fair value are reported in mortgage banking noninterest income in the period in which the change occurs. MSRs subsequently measured at LOCOM are amortized in proportion to, and over the period of, estimated net servicing income. The amortization of MSRs is reported in mortgage banking noninterest income, analyzed monthly and adjusted to reflect changes in prepayment speeds, as well as other factors.

MSRs accounted for at LOCOM are periodically evaluated for impairment based on the fair value of those assets. For purposes of impairment evaluation and measurement, we stratify MSRs based on the predominant risk characteristics of the underlying loans, including investor and product type. If, by individual stratum, the carrying amount of these MSRs exceeds fair value, a valuation allowance is established. The valuation allowance is adjusted as the fair value changes.

Premises and Equipment

Premises and equipment are carried at cost less accumulated depreciation and amortization. Capital leases, where we are the lessee, are included in premises and equipment at the capitalized amount less accumulated amortization.

We primarily use the straight-line method of depreciation and amortization. Estimated useful lives range up to 40 years for buildings, up to 10 years for furniture and equipment, and the shorter of the estimated useful life (up to 8 years) or the lease term for leasehold improvements. We amortize capitalized leased assets on a straight-line basis over the lives of the respective leases.

Goodwill and Identifiable Intangible Assets

Goodwill is recorded in business combinations under the purchase method of accounting when the purchase price is higher than the fair value of net assets, including identifiable intangible assets.

We assess goodwill for impairment at a reporting unit level on an annual basis or more frequently in certain circumstances. We have determined that our reporting units are one level below the operating segments and distinguish these reporting units based on how the segments and reporting units are managed, taking into consideration the economic characteristics, nature of the products, and customers of the segments and reporting units. At the time we acquire a business, we allocate goodwill to applicable reporting units based on their relative fair value, and if we have a significant business reorganization, we may reallocate the goodwill. If we sell a business, a portion of goodwill is included with the carrying amount of the divested business.

We have the option of performing a qualitative assessment of goodwill. We may also elect to bypass the qualitative test and proceed directly to a quantitative test. If we perform a qualitative assessment of goodwill to test for impairment and conclude it is more likely than not that a reporting unit's fair value is greater than its carrying amount, quantitative tests are not required. However, if we determine it is more likely than not that a reporting unit's fair value is less than its carrying amount, then we complete a quantitative assessment to determine if there is goodwill impairment. We apply various quantitative valuation methodologies, including discounted cash flow and earnings multiple approaches, to determine the estimated fair value, which is compared to the carrying value of each reporting unit. If the fair value is less than the carrying amount, an additional test is required to measure the amount of impairment. We recognize impairment losses as a charge to other noninterest expense (unless related to discontinued operations) and an adjustment to the carrying value of the goodwill asset. Subsequent reversals of goodwill impairment are prohibited.

We amortize core deposit and other customer relationship intangibles on an accelerated basis over useful lives not exceeding 10 years. We review such intangibles for impairment whenever events or changes in circumstances indicate that their carrying amounts may not be recoverable. Impairment is indicated if the sum of undiscounted estimated future net cash flows is less than the carrying value of the asset. Impairment is permanently recognized by writing down the asset to the extent that the carrying value exceeds the estimated fair value.

Derivatives and Hedging Activities

DERIVATIVES We recognize all derivatives on the balance sheet at fair value. On the date we enter into a derivative contract, we designate the derivative as (1) qualifying for hedge accounting in a hedge of the fair value of a recognized asset or liability or an unrecognized firm commitment, including hedges of foreign currency exposure ("fair value hedge"), (2) qualifying for hedge accounting in a hedge of a forecasted transaction or of the variability of cash flows to be received or paid related to a recognized asset or liability ("cash flow hedge"), or (3) held for customer accommodation trading or asset/liability risk management or other purposes, including economic hedges not qualifying for hedge accounting. For derivatives not designated as a fair value or cash flow hedge, we report changes in the fair values in current period noninterest income. For additional information on derivative assets and liabilities used in our trading business, see Note 4 (Trading Activities).

DOCUMENTATION AND EFFECTIVENESS ASSESSMENT FOR ACCOUNTING HEDGES For fair value and cash flow hedges qualifying for hedge accounting, we formally document at inception the relationship between hedging instruments and hedged items, our risk management objective, strategy and our evaluation of effectiveness for our hedge transactions. This process includes linking all derivatives designated as fair value or cash flow hedges to specific assets and liabilities on the balance sheet or to specific forecasted transactions. We assess hedge effectiveness using regression analysis, both at inception of the hedging relationship and on an ongoing basis. For fair value hedges, the regression analysis involves regressing the periodic change in fair value of the hedging instrument against the periodic changes in fair value of the asset or liability being hedged due to changes in the hedged risk(s). For cash flow hedges, the regression analysis involves regressing the periodic changes in fair value of the hedging instrument against the periodic changes in fair value of the hypothetical derivative. The hypothetical derivative has terms that identically match and offset the cash flows of the forecasted transaction being hedged due to changes in the hedged risk(s). The initial assessment for fair value and cash flow hedges includes an evaluation of the quantitative measures of the regression results used to validate the conclusion of high effectiveness. Periodically, as required, we also formally assess whether the derivative we designated in each hedging relationship is expected to be and has been highly effective in offsetting changes in fair values or cash flows of the hedged item using the regression analysis method.

FAIR VALUE HEDGES For a fair value hedge, we record changes in the fair value of the derivative in current period income, except for certain derivatives in which a portion is recorded to OCI. We record basis adjustments to the amortized cost of the hedged asset or liability due to the changes in fair value related to the hedged risk with the offset recorded in current period net income. We present derivative gains or losses in the same income statement category as the hedged asset or liability, as follows:

- For fair value hedges of interest rate risk, amounts are reflected in net interest income;
- For hedges of foreign currency risk, amounts representing the fair value changes less the accrual for periodic cash flow settlements are reflected in noninterest income. The periodic cash flow settlements are reflected in net interest income;
- For hedges of both interest rate risk and foreign currency risk, amounts representing the fair value change less the accrual for periodic cash flow settlements is attributed to both net interest income and noninterest income. The periodic cash flow settlements are reflected in net interest income.

The entire derivative gain or loss is included in the assessment of hedge effectiveness for all fair value hedge relationships, except for hedges of foreign-currency denominated available-for-sale debt securities and long-term debt liabilities, as follows:

- When hedged with cross-currency swaps, the change in fair value of the derivative attributable to cross-currency basis spread changes component is excluded from the assessment of hedge effectiveness. The initial fair value of the excluded component is amortized to net interest income. For these hedges, the difference between changes in fair value of the excluded component and the amount recorded in earnings is recorded in OCI;
- When hedged with foreign currency forward derivatives, the change in fair value of the derivative attributable to the time value component related to the changes in the difference between the spot and forward price is excluded from the assessment of hedge effectiveness. For these hedges, the changes in fair value of the excluded component are recorded in net interest income.

CASH FLOW HEDGES For a cash flow hedge, we record changes in the fair value of the derivative in OCI. We subsequently reclassify gains and losses from these changes in fair value from OCI to net income in the same period(s) that the hedged transaction affects net income and in the same income statement category as the hedged item, thus to net interest income. The entire gain or loss on these derivatives is included in the assessment of hedge effectiveness.

DISCONTINUING HEDGE ACCOUNTING We discontinue hedge accounting prospectively when (1) a derivative is no longer highly effective in offsetting changes in the fair value or cash flows of a hedged item, (2) a derivative expires or is sold, terminated or exercised, (3) we elect to discontinue the designation of a derivative as a hedge, or (4) in a cash flow hedge, a derivative is de-designated because it is no longer probable that a forecasted transaction will occur.

When we discontinue fair value hedge accounting, we no longer adjust the previously hedged asset or liability for changes in fair value, and remaining cumulative adjustments to the hedged item and accumulated amounts reported in OCI are accounted for in the same manner as other components of the carrying amount of the asset or liability. If the hedged item is derecognized, the accumulated amounts reported in OCI are immediately reclassified to net income. If the derivative continues to be held after fair value hedge accounting ceases, we carry the derivative on the balance sheet at its fair value with changes in fair value included in noninterest income.

When we discontinue cash flow hedge accounting and it is probable that the forecasted transaction will occur, the accumulated amount reported in OCI at the de-designation date continues to be reported in OCI until the forecasted transaction affects net income at which point the related OCI amount is reclassified to net income. If cash flow hedge accounting is discontinued and it is probable the forecasted transaction will no longer occur, the accumulated gains and losses reported in OCI at the de-designation date is immediately reclassified to net income. If the derivative continues to be held after cash flow hedge accounting ceases, we carry the derivative on the balance sheet at its fair value with changes in fair value included in noninterest income.

EMBEDDED DERIVATIVES We may purchase or originate financial instruments that contain an embedded derivative. At inception of the financial instrument, we assess (1) if the economic characteristics of the embedded derivative are not clearly and closely related to the economic characteristics of the financial instrument (host contract), (2) if the financial instrument that embodies both the embedded derivative and the host contract is not measured at fair value with changes in fair value reported in net income, and (3) if a separate instrument with the same terms as the embedded instrument would meet the definition of a derivative. If the embedded derivative meets all of these conditions, we separate it from the host contract by recording the bifurcated derivative at fair value and the remaining host contract at the difference between the basis of the hybrid instrument and the fair value of the bifurcated derivative. The bifurcated derivative is carried at fair value with changes recorded in current period noninterest income.

COUNTERPARTY CREDIT RISK AND NETTING By using derivatives, we are exposed to counterparty credit risk, which is the risk that counterparties to the derivative contracts do not perform as expected. If a counterparty fails to perform, our counterparty credit risk is equal to the amount reported as a derivative asset on our balance sheet. The amounts reported as a derivative asset are derivative contracts in a gain position, and to the extent subject to legally enforceable master netting arrangements, net of derivatives in a loss position with the same counterparty and cash collateral received. We minimize counterparty credit risk through credit approvals, limits, monitoring procedures, executing master netting arrangements and obtaining collateral, where appropriate. Counterparty credit risk related to derivatives is considered in determining fair value and our assessment of hedge effectiveness. To the extent derivatives subject to master netting arrangements meet the applicable requirements, including determining the legal enforceability of the arrangement, it is our policy to present derivative balances and related cash collateral amounts net on the balance sheet. In the second quarter of 2017, we adopted Settlement to Market treatment for the cash collateralizing our interest rate derivative contracts with certain centrally cleared counterparties. As a result of this adoption, derivative balances with these counterparties are considered settled by the collateral.

For additional information on our derivatives and hedging activities, see Note 17 (Derivatives).

Equity Securities

Marketable equity securities have readily determinable fair values and include, but are not limited to securities used in our trading activities. Marketable equity securities are recorded at fair value with unrealized gains and losses, due to changes in fair value, reflected in earnings. Unrealized gains and losses are recognized in net gains from trading activities for equity securities related to our trading activities and net gains from equity securities for the remaining securities. Realized gains and losses are recognized in net gains from trading activities for equity securities related to our trading activities and net gains from equity securities for the remaining securities. Interest and dividend income from marketable equity securities is recognized in interest income.

Nonmarketable equity securities do not have readily determinable fair values, and do not include investments for which we hold a controlling interest in the investee. These securities are accounted for under one of the following accounting methods:

- Fair Value: This method is an election. The securities are recorded at fair value with unrealized gains or losses reflected in earnings;
- Equity Method: We use this method when we have the ability to exert significant influence over the investee. These

securities are carried at cost and adjusted for our share of the investee's earnings or losses, less any impairments;

- Cost Method: This method is required for specific securities, such as Federal Reserve Bank stock and Federal Home Loan Bank stock. These investments are held at their cost minus impairment. If impaired, the carrying value is written down to the fair value of the security;
- Measurement Alternative: This method is followed by all remaining nonmarketable equity securities. These securities are carried at cost less impairment, and adjusted up or down to fair value upon the occurrence of orderly observable transactions of the same or similar security of the same issuer.

Our review for impairment for equity method, cost method and measurement alternative securities typically includes an analysis of the facts and circumstances of each security, the intent or requirement to sell the security, the expectations of cash flows, capital needs and the viability of its business model. For equity method and cost method investments, we reduce the asset's carrying value when we consider declines in value to be other than temporary. For securities accounted for under the measurement alternative, we reduce the asset value when the fair value is less than carrying value, without the consideration of recovery. We recognize all estimated impairment losses as an unrealized loss recorded in net gains on equity securities.

Realized gains and losses on the sale of nonmarketable equity securities are recognized in net gains on equity securities.

Operating Lease Assets

Operating lease rental income for leased assets is recognized in other income on a straight-line basis over the lease term. Related depreciation expense is recorded on a straight-line basis over the estimated useful life, considering the estimated residual value of the leased asset. The useful life may be adjusted to the term of the lease depending on our plans for the asset after the lease term. On a periodic basis, leased assets are reviewed for impairment. Impairment loss is recognized if the carrying amount of leased assets exceeds fair value and is not recoverable. The carrying amount of leased assets is not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the lease payments and the estimated residual value upon the eventual disposition of the equipment.

Pension Accounting

We account for our defined benefit pension plans using an actuarial model. Two principal assumptions in determining net periodic pension cost are the discount rate and the expected long-term rate of return on plan assets.

A discount rate is used to estimate the present value of our future pension benefit obligations. We use a consistent methodology to determine the discount rate using a yield curve with maturity dates that closely match the estimated timing of the expected benefit payments for our plans. The yield curve is derived from a broad-based universe of high quality corporate bonds as of the measurement date.

Our determination of the reasonableness of our expected long-term rate of return on plan assets is highly quantitative by nature. We evaluate the current asset allocations and expected returns under two sets of conditions: (1) projected returns using several forward-looking capital market assumptions, and (2) historical returns for the main asset classes dating back to 1970 or the earliest period for which historical data was readily available for the asset classes included. Using long-term historical data allows us to capture multiple economic environments, which we believe is relevant when using historical returns. We place greater emphasis on the forward-looking return and risk assumptions than on historical results. We use the resulting projections to derive a base line expected rate of return and risk level for the Cash Balance Plan's prescribed asset mix. We evaluate the portfolio based on: (1) the established target asset allocations over short term (one-year) and longer term (ten-year) investment horizons, and (2) the range of potential outcomes over these horizons within specific standard deviations. We perform the above analyses to assess the reasonableness of our expected long-term rate of return on plan assets. We consider the expected rate of return to be a long-term average view of expected returns.

At year end, we re-measure our defined benefit plan liabilities and related plan assets and recognize any resulting actuarial gain or loss in other comprehensive income. We generally amortize net actuarial gain or loss in excess of a 5% corridor from accumulated OCI into net periodic pension cost over the estimated average remaining participation period, which at December 31, 2018, is 19 years. See Note 22 (Employee Benefits and Other Expenses) for additional information on our pension accounting.

Income Taxes

We file consolidated and separate company U.S. federal income tax returns, foreign tax returns and various combined and separate company state tax returns.

We evaluate two components of income tax expense: current and deferred income tax expense. Current income tax expense represents our estimated taxes to be paid or refunded for the current period and includes income tax expense related to our uncertain tax positions. Deferred income tax expense results from changes in deferred tax assets and liabilities between periods. We determine deferred income taxes using the balance sheet method. Under this method, the net deferred tax asset or liability is based on the tax effects of the differences between the book and tax bases of assets and liabilities, and recognizes enacted changes in tax rates and laws in the period in which they occur. Deferred tax assets are recognized subject to management's judgment that realization is "more likely than not." Uncertain tax positions that meet the more likely than not recognition threshold are measured to determine the amount of benefit to recognize. An uncertain tax position is measured at the largest amount of benefit that management believes has a greater than 50% likelihood of realization upon settlement. Tax benefits not meeting our realization criteria represent unrecognized tax benefits. We account for interest and penalties as a component of income tax expense. In 2018, we finalized the recognition of the U.S. tax expense associated with a deemed repatriation of undistributed earnings of certain non-U.S. subsidiaries as required under the 2017 Tax Act. We do not intend to distribute these earnings in a taxable manner, and therefore intend to limit distributions to foreign earnings previously taxed in the U.S., that would qualify for the 100% dividends received deduction, and that would not result in any significant state or foreign taxes. All other undistributed foreign earnings will continue to be permanently reinvested outside the U.S.

See Note 23 (Income Taxes) to Financial Statements in this Report for a further description of our provision for income taxes and related income tax assets and liabilities.

Stock-Based Compensation

We have stock-based employee compensation plans as more fully discussed in Note 20 (Common Stock and Stock Plans). Our

Long-Term Incentive Compensation Plan provides for awards of incentive and nonqualified stock options, stock appreciation rights, restricted shares, restricted share rights (RSRs), performance share awards (PSAs) and stock awards without restrictions. For most awards, we measure the cost of employee services received in exchange for an award of equity instruments, such as stock options, RSRs or PSAs, based on the fair value of the award on the grant date. The cost is normally recognized in our income statement over the vesting period of the award; awards with graded vesting are expensed on a straight-line method. Awards that continue to vest after retirement are expensed over the shorter of the period of time between the grant date and the final vesting period or between the grant date and when a team member becomes retirement eligible; awards to team members who are retirement eligible at the grant date are subject to immediate expensing upon grant.

Beginning in 2013, certain RSRs and all PSAs granted include discretionary conditions that can result in forfeiture and are subject to variable accounting. For these awards, the associated compensation expense fluctuates with changes in our stock price. For PSAs, compensation expense also fluctuates based on the estimated outcome of meeting the performance conditions.

Earnings Per Common Share

We compute earnings per common share by dividing net income (after deducting dividends on preferred stock) by the average number of common shares outstanding during the year. We compute diluted earnings per common share by dividing net income (after deducting dividends on preferred stock) by the average number of common shares outstanding during the year plus the effect of common stock equivalents (for example, stock options, restricted share rights, convertible debentures and warrants) that are dilutive.

Fair Value of Financial Instruments

We use fair value measurements in our fair value disclosures and to record certain assets and liabilities at fair value on a recurring basis, such as instruments used in our trading activities, or on a nonrecurring basis, such as measuring impairment on assets carried at amortized cost. We base our fair values on the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. These fair value measurements are based on the exit price notion and are determined by maximizing the use of observable inputs. However, for certain instruments, we must utilize unobservable inputs in determining fair value due to the lack of observable inputs in the market, which requires greater judgment in the measurement of fair value.

In instances where there is limited or no observable market data for the asset or liability, fair value measurements are based on internal models, third-party vendor pricing, broker pricing or a combination of these sources. The valuation models utilize external market information and vendor or broker pricing where available, and consider the economic and competitive environment, the characteristics of the asset or liability, recent prices for products we offer or issue, and other relevant internal and external factors. As with any valuation technique used to estimate fair value, changes in underlying assumptions used, including discount rates and estimates of future cash flows, could significantly affect the results of current or future values. Accordingly, these fair value estimates may not be realized in an actual sale or immediate settlement of the asset or liability.

Our fair value measurements are adjusted, where necessary, to incorporate the lack of market liquidity. Fair value measurements based on vendor or broker prices may reflect exit prices that inherently consider the lack of market liquidity. When the impact of illiquid markets has not already been incorporated in the fair value measurement, we adjust the vendor or broker price using internal models based on discounted cash flows. For certain residential MLHFS and certain securities where the significant inputs have become unobservable due to illiquid markets and vendor or broker pricing is not used, our discounted cash flow model uses a discount rate that reflects what we believe a market participant would require in light of the illiquid market.

Where markets are inactive and transactions are not orderly, transaction or quoted prices for assets or liabilities in inactive markets may require adjustment due to the uncertainty of whether the underlying transactions are orderly. For items that use price quotes in inactive markets, we analyze the degree of market inactivity and distressed transactions to determine the appropriate adjustment to the price quotes.

We continually assess the level and volume of market activity in our debt and equity security classes in determining adjustments, if any, to price quotes. Given market conditions can change over time, our determination of which securities markets are considered active or inactive can change. If we determine a market to be inactive, the degree to which price quotes require adjustment, can also change. See Note 18 (Fair Values of Assets and Liabilities) for discussion of the fair value hierarchy and valuation methodologies applied to financial instruments to determine fair value.

Private Share Repurchases

During 2018 and 2017, we repurchased approximately 94 million shares and approximately 89 million shares of our common stock, respectively, under private forward repurchase contracts and a written repurchase plan pursuant to Rule 10b5-1 of the Securities Exchange Act of 1934 that we executed in fourth quarter 2018. We enter into these stock repurchase transactions to complement our open-market common stock repurchase strategies, to allow us to manage our share repurchases in a manner consistent with our capital plans, currently submitted under the Comprehensive Capital Analysis and Review (CCAR), and to provide an economic benefit to the Company.

Our payments to the counterparties for the private forward repurchase contracts are recorded in permanent equity in the quarter paid and are not subject to re-measurement. The classification of the up-front payments as permanent equity assures that we have appropriate repurchase timing consistent with our capital plans, which contemplated a fixed dollar amount available per quarter for share repurchases pursuant to Federal Reserve Board (FRB) supervisory guidance. In return, the counterparty agrees to deliver a variable number of shares based on a per share discount to the volume-weighted average stock price over the contract period. There are no scenarios where the contracts would not either physically settle in shares or allow us to choose the settlement method. Our total number of outstanding shares of common stock is not reduced until settlement of the private forward repurchase contract. We had no unsettled private forward repurchase contracts at December 31, 2018, or December 31, 2017.

Under the Rule 10b5-1 repurchase plan, payments and receipt of repurchased shares settle on the same day and the shares repurchased reduce the total number of outstanding shares of common stock upon the settlement of each trade under the plan.

SUPPLEMENTAL CASH FLOW INFORMATION Noncash activities are presented in Table 1.3, including information on transfers affecting MLHFS and debt securities.

Table 1.3: Supplemental Cash Flow Information

		Year ended December 31,	
(in millions)	**2018**	2017	2016
Trading debt securities retained from securitizations of MLHFS	$ **37,265**	52,435	72,399
Transfers from loans to MLHFS	**5,366**	5,500	6,894
Transfers from available-for-sale debt securities to held-to-maturity debt securities	**16,479**	50,405	4,161
Deconsolidation of reverse mortgages previously sold:			
Loans	**—**	—	3,807
Long-term debt	**—**	—	3,769

SUBSEQUENT EVENTS We have evaluated the effects of events that have occurred subsequent to December 31, 2018, and there have been no material events that would require recognition in our 2018 consolidated financial statements or disclosure in the Notes to the consolidated financial statements. On February 7, 2019, we experienced system issues caused by an automatic power shutdown at one of our main data center facilities. This power shutdown was triggered by a smoke alarm that resulted from a steam condition created by routine maintenance activities in the building. Although applications and related workloads were systematically re-routed to back-up data centers throughout the day, certain of our services experienced disruptions that delayed service to our customers. As an example, our online and mobile banking systems and certain ATM functions experienced disruptions for several hours, and certain critical mortgage origination systems experienced disruptions for several days. We are currently assessing these system issues and expect that the Company will incur costs associated with system enhancements that may be necessary to improve the speed of re-routing applications and related workloads to back-up data centers, help ensure that applications are fully operational to the extent an incident occurs, and reduce the likelihood of similar issues occurring in the future.

Note 2: Business Combinations

We regularly explore opportunities to acquire financial services companies and businesses. Generally, we do not make a public announcement about an acquisition opportunity until a definitive agreement has been signed. For information on additional contingent consideration related to acquisitions, which is considered to be a guarantee, see Note 15 (Guarantees, Pledged Assets and Collateral, and Other Commitments). Business combinations completed in 2017 and 2016 are presented in Table 2.1. There were no new acquisitions during 2018. As of December 31, 2018, we had no pending acquisitions.

Table 2.1: Business Combinations Activity

Name of acquisition	Location	Type of business	Date	Total assets (in millions)
2017:				
Golden Capital Management, LLC	Charlotte, NC	Asset Management	July 1	$ 83
2016:				
GE Railcar Services	Chicago, IL	Railcar and locomotive leasing	January 1	$ 4,339
GE Capital's Commercial Distribution Finance and Vendor Finance Businesses	North America, Asia, Australia / New Zealand and EMEA	Specialty Lending	March 1, July 1, August 1 & October 1	32,531
Analytic Investors, LLC	Los Angeles, CA	Asset Management	October 1	106
				$ 36,976

During 2018, we completed the sale of Wells Fargo Shareowner Services in February, the sale of the automobile lending business of Reliable Financial Services, Inc. and Reliable Finance Holding Company in August, and the sale of 52 branches in Indiana, Ohio, Michigan and part of Wisconsin in November. Included with the branches sale were approximately $2.0 billion of deposits.

Note 3: Cash, Loan and Dividend Restrictions

Cash and cash equivalents may be restricted as to usage or withdrawal. Federal Reserve Board (FRB) regulations require that each of our subsidiary banks maintain reserve balances on deposit with the Federal Reserve Banks. Table 3.1 provides a summary of restrictions on cash equivalents in addition to the FRB reserve cash balance requirements.

Table 3.1: Nature of Restrictions on Cash Equivalents

(in millions)	Dec 31, 2018	Dec 31, 2017
Average required reserve balance for FRB (1)	**$ 12,428**	12,306
Reserve balance for non-U.S. central banks	**517**	617
Segregated for benefit of brokerage customers under federal and other brokerage regulations	**1,135**	666
Related to consolidated variable interest entities (VIEs) that can only be used to settle liabilities of VIEs	**147**	487

(1) FRB required reserve balance represents average for the years ended December 31, 2018, and December 31, 2017.

Federal law restricts the amount and the terms of both credit and non-credit transactions between a bank and its nonbank affiliates. These covered transactions may not exceed 10% of the bank's capital and surplus (which for this purpose represents Tier 1 and Tier 2 capital, as calculated under the risk-based capital (RBC) guidelines, plus the balance of the allowance for credit losses excluded from Tier 2 capital) with any single nonbank affiliate and 20% of the bank's capital and surplus with all its nonbank affiliates. Transactions that are extensions of credit may require collateral to be held to provide added security to the bank. For further discussion of RBC, see Note 28 (Regulatory and Agency Capital Requirements) in this Report.

Dividends paid by our subsidiary banks are subject to various federal and state regulatory limitations. Dividends that may be paid by a national bank without the express approval of the Office of the Comptroller of the Currency (OCC) are limited to that bank's retained net profits for the preceding two calendar years plus retained net profits up to the date of any dividend declaration in the current calendar year. Retained net profits, as defined by the OCC, consist of net income less dividends declared during the period.

We also have a state-chartered subsidiary bank that is subject to state regulations that limit dividends. Under these provisions and regulatory limitations, our national and state-chartered subsidiary banks could have declared additional dividends of $15.2 billion at December 31, 2018, without obtaining prior regulatory approval. We have elected to retain higher capital at our national and state-chartered subsidiary banks in order to meet internal capital policy minimums and regulatory requirements. Our nonbank subsidiaries are also limited by certain federal and state statutory provisions and regulations covering the amount of dividends that may be paid in any given year. In addition, under a Support Agreement dated June 28, 2017, among Wells Fargo & Company, the parent holding company (the "Parent"), WFC Holdings, LLC, an intermediate holding company and subsidiary of the Parent (the "IHC"), and Wells Fargo Bank, N.A., Wells Fargo Securities, LLC, and Wells Fargo Clearing Services, LLC, each an indirect subsidiary of the Parent, the IHC may be restricted from making dividend payments to the Parent if certain liquidity and/or capital metrics fall below defined triggers. Based on retained earnings at December 31, 2018, our nonbank subsidiaries could have declared additional dividends of $24.4 billion at December 31, 2018, without obtaining prior approval.

The FRB's Capital Plan Rule (codified at 12 CFR 225.8 of Regulation Y) establishes capital planning and prior notice and approval requirements for capital distributions including dividends by certain large bank holding companies. The FRB has also published guidance regarding its supervisory expectations for capital planning, including capital policies regarding the process relating to common stock dividend and repurchase decisions in the FRB's SR Letter 15-18. The effect of this guidance is to require the approval of the FRB (or specifically under the Capital Plan Rule, a notice of non-objection) for the Company to repurchase or redeem common or perpetual preferred stock as well as to raise the per share quarterly dividend from its current level of $0.45 per share as declared by the Company's Board of Directors on January 22, 2019, payable on March 1, 2019.

Note 4: Trading Activities

Table 4.1 presents a summary of our trading assets and liabilities measured at fair value through earnings.

Table 4.1: Trading Activities and Liabilities

(in millions)		Dec 31, 2018	Dec 31, 2017
Trading assets:			
Debt securities	$	**69,989**	57,624
Equity securities		**19,449**	30,004
Loans held for sale		**1,469**	1,023
Gross trading derivative assets		**29,216**	31,340
Netting (1)		**(19,807)**	(19,629)
Total trading derivative assets		**9,409**	11,711
Total trading assets		**100,316**	100,362
Trading liabilities:			
Short sale		**19,720**	18,472
Gross trading derivative liabilities		**28,717**	31,386
Netting (1)		**(21,178)**	(23,062)
Total trading derivative liabilities		**7,539**	8,324
Total trading liabilities	$	**27,259**	26,796

(1) Represents balance sheet netting for trading derivative asset and liability balances, and trading portfolio level counterparty valuation adjustments.

Table 4.2 provides a summary of the net interest income earned from trading securities, and net gains and losses due to the realized and unrealized gains and losses from trading activities.

Table 4.2: Net Interest Income and Net Gains (Losses) on Trading Activities

		Year ended December 31,		
(in millions)		2018	2017	2016
Interest income (1):				
Debt securities	$	**2,831**	2,313	2,047
Equity securities		**587**	515	383
Loans held for sale		**62**	38	29
Total interest income		**3,480**	2,866	2,459
Less: Interest expense (2)		**587**	416	353
Net interest income		**2,893**	2,450	2,106
Net gains (losses) from trading activities:				
Debt securities		**(824)**	125	(444)
Equity securities		**(4,240)**	3,394	1,213
Loans held for sale		**(1)**	45	55
Derivatives (3)		**5,667**	(3,022)	(214)
Total net gains from trading activities (4)		**602**	542	610
Total trading-related net interest and noninterest income	$	**3,495**	2,992	2,716

(1) Represents interest and dividend income earned on trading securities.
(2) Represents interest and dividend expense incurred on trading securities we have sold but have not yet purchased.
(3) Excludes economic hedging of mortgage banking and asset/liability management activities, for which hedge results (realized and unrealized) are reported with the respective hedged activities.
(4) Represents realized gains (losses) from our trading activities and unrealized gains (losses) due to changes in fair value of our trading positions, attributable to the type of asset or liability.

Note 5: Available-for-Sale and Held-to-Maturity Debt Securities

Table 5.1 provides the amortized cost and fair value by major categories of available-for-sale debt securities, which are carried at fair value, and held-to-maturity debt securities, which are carried at amortized cost. The net unrealized gains (losses) for available-for-sale debt securities are reported on an after-tax basis as a component of cumulative OCI. Information on debt securities held for trading is included in Note 4 (Trading Activities) to Financial Statements in this Report.

Table 5.1: Amortized Cost and Fair Value

(in millions)		Amortized Cost	Gross unrealized gains	Gross unrealized losses	Fair value
December 31, 2018					
Available-for-sale debt securities:					
Securities of U.S. Treasury and federal agencies	**$**	**13,451**	**3**	**(106)**	**13,348**
Securities of U.S. states and political subdivisions (1)		**48,994**	**716**	**(446)**	**49,264**
Mortgage-backed securities:					
Federal agencies		**155,974**	**369**	**(3,140)**	**153,203**
Residential		**2,638**	**142**	**(5)**	**2,775**
Commercial		**4,207**	**40**	**(22)**	**4,225**
Total mortgage-backed securities		**162,819**	**551**	**(3,167)**	**160,203**
Corporate debt securities		**6,230**	**131**	**(90)**	**6,271**
Collateralized loan and other debt obligations (2)		**35,581**	**158**	**(396)**	**35,343**
Other (3)		**5,396**	**100**	**(13)**	**5,483**
Total available-for-sale debt securities		**272,471**	**1,659**	**(4,218)**	**269,912**
Held-to-maturity debt securities:					
Securities of U.S. Treasury and federal agencies		**44,751**	**4**	**(415)**	**44,340**
Securities of U.S. states and political subdivisions		**6,286**	**30**	**(116)**	**6,200**
Federal agency and other mortgage-backed securities (4)		**93,685**	**112**	**(2,288)**	**91,509**
Collateralized loan obligations		**66**	**—**	**—**	**66**
Other (3)		**—**	**—**	**—**	**—**
Total held-to-maturity debt securities		**144,788**	**146**	**(2,819)**	**142,115**
Total (5)	**$**	**417,259**	**1,805**	**(7,037)**	**412,027**
December 31, 2017					
Available-for-sale debt securities:					
Securities of U.S. Treasury and federal agencies	$	6,425	2	(108)	6,319
Securities of U.S. states and political subdivisions (1)		50,733	1,032	(439)	51,326
Mortgage-backed securities:					
Federal agencies		160,561	930	(1,272)	160,219
Residential		4,356	254	(2)	4,608
Commercial		4,487	80	(2)	4,565
Total mortgage-backed securities		169,404	1,264	(1,276)	169,392
Corporate debt securities		7,343	363	(40)	7,666
Collateralized loan and other debt obligations (2)		35,675	384	(3)	36,056
Other (3)		5,516	137	(5)	5,648
Total available-for-sale debt securities		275,096	3,182	(1,871)	276,407
Held-to-maturity debt securities:					
Securities of U.S. Treasury and federal agencies		44,720	189	(103)	44,806
Securities of U.S. states and political subdivisions		6,313	84	(43)	6,354
Federal agency and other mortgage-backed securities (4)		87,527	201	(682)	87,046
Collateralized loan obligations		661	4	—	665
Other (3)		114	—	—	114
Total held-to-maturity debt securities		139,335	478	(828)	138,985
Total (5)	$	414,431	3,660	(2,699)	415,392

(1) Available-for-sale debt securities include investments in tax-exempt preferred debt securities issued by investment funds or trusts that predominantly invest in tax-exempt municipal securities. The cost basis and fair value of these types of securities was $6.3 billion each at December 31, 2018, and $5.2 billion each at December 31, 2017.
(2) Available-for-sale debt securities include collateralized debt obligations (CDOs) with a cost basis and fair value of $662 million and $800 million, respectively, at December 31, 2018, and $887 million and $1.0 billion, respectively, at December 31, 2017.
(3) The "Other" category of available-for-sale debt securities largely includes asset-backed securities collateralized by student loans. Included in the "Other" category of held-to-maturity debt securities are asset-backed securities collateralized by automobile leases or loans and cash with a cost basis and fair value of $0 million each at December 31, 2018, and $114 million each at December 31, 2017.
(4) Predominantly consists of federal agency mortgage-backed securities at both December 31, 2018, and December 31, 2017.
(5) At December 31, 2018 and 2017, we held no securities of any single issuer (excluding the U.S. Treasury and federal agencies and government-sponsored entities (GSEs)) with a book value that exceeded 10% of stockholder's equity.

Gross Unrealized Losses and Fair Value

Table 5.2 shows the gross unrealized losses and fair value of available-for-sale and held-to-maturity debt securities by length of time those individual securities in each category have been in a continuous loss position. Debt securities on which we have taken credit-related OTTI write-downs are categorized as being "less than 12 months" or "12 months or more" in a continuous loss position based on the point in time that the fair value declined to below the cost basis and not the period of time since the credit-related OTTI write-down.

Table 5.2: Gross Unrealized Losses and Fair Value

	Less than 12 months		12 months or more		Total	
(in millions)	Gross unrealized losses	Fair value	Gross unrealized losses	Fair value	Gross unrealized losses	Fair value
December 31, 2018						
Available-for-sale debt securities:						
Securities of U.S. Treasury and federal agencies	**$ (1)**	**498**	**(105)**	**6,204**	**(106)**	**6,702**
Securities of U.S. states and political subdivisions	**(73)**	**9,746**	**(373)**	**9,017**	**(446)**	**18,763**
Mortgage-backed securities:						
Federal agencies	**(42)**	**10,979**	**(3,098)**	**112,252**	**(3,140)**	**123,231**
Residential	**(3)**	**398**	**(2)**	**69**	**(5)**	**467**
Commercial	**(20)**	**1,972**	**(2)**	**79**	**(22)**	**2,051**
Total mortgage-backed securities	**(65)**	**13,349**	**(3,102)**	**112,400**	**(3,167)**	**125,749**
Corporate debt securities	**(64)**	**1,965**	**(26)**	**298**	**(90)**	**2,263**
Collateralized loan and other debt obligations	**(388)**	**28,306**	**(8)**	**553**	**(396)**	**28,859**
Other	**(7)**	**819**	**(6)**	**159**	**(13)**	**978**
Total available-for-sale debt securities	**(598)**	**54,683**	**(3,620)**	**128,631**	**(4,218)**	**183,314**
Held-to-maturity debt securities:						
Securities of U.S. Treasury and federal agencies	**(3)**	**895**	**(412)**	**41,083**	**(415)**	**41,978**
Securities of U.S. states and political subdivisions	**(4)**	**598**	**(112)**	**3,992**	**(116)**	**4,590**
Federal agency and other mortgage-backed securities	**(5)**	**4,635**	**(2,283)**	**77,741**	**(2,288)**	**82,376**
Collateralized loan obligations	**—**	**—**	**—**	**—**	**—**	**—**
Total held-to-maturity debt securities	**(12)**	**6,128**	**(2,807)**	**122,816**	**(2,819)**	**128,944**
Total	**$ (610)**	**60,811**	**(6,427)**	**251,447**	**(7,037)**	**312,258**
December 31, 2017						
Available-for-sale debt securities:						
Securities of U.S. Treasury and federal agencies	$ (27)	4,065	(81)	2,209	(108)	6,274
Securities of U.S. states and political subdivisions	(17)	6,179	(422)	11,766	(439)	17,945
Mortgage-backed securities:						
Federal agencies	(243)	52,559	(1,029)	44,691	(1,272)	97,250
Residential	(1)	47	(1)	58	(2)	105
Commercial	(1)	101	(1)	133	(2)	234
Total mortgage-backed securities	(245)	52,707	(1,031)	44,882	(1,276)	97,589
Corporate debt securities	(4)	239	(36)	503	(40)	742
Collateralized loan and other debt obligations	(1)	373	(2)	146	(3)	519
Other	(1)	37	(4)	483	(5)	520
Total available-for-sale debt securities	(295)	63,600	(1,576)	59,989	(1,871)	123,589
Held-to-maturity debt securities:						
Securities of U.S. Treasury and federal agencies	(69)	11,255	(34)	1,490	(103)	12,745
Securities of U.S. states and political subdivisions	(5)	500	(38)	1,683	(43)	2,183
Federal agency and other mortgage-backed securities	(198)	29,713	(484)	28,244	(682)	57,957
Collateralized loan obligations	—	—	—	—	—	—
Total held-to-maturity debt securities	(272)	41,468	(556)	31,417	(828)	72,885
Total	$ (567)	105,068	(2,132)	91,406	(2,699)	196,474

We have assessed each debt security with gross unrealized losses included in the previous table for credit impairment. As part of that assessment we evaluated and concluded that we do not intend to sell any of the debt securities and that it is more likely than not that we will not be required to sell prior to recovery of the amortized cost basis. We evaluate, where necessary, whether credit impairment exists by comparing the present value of the expected cash flows to the debt securities' amortized cost basis.

For descriptions of the factors we consider when analyzing debt securities for impairment, see Note 1 (Summary of Significant Accounting Policies) and below.

SECURITIES OF U.S. TREASURY AND FEDERAL AGENCIES AND FEDERAL AGENCY MORTGAGE-BACKED SECURITIES (MBS) The unrealized losses associated with U.S. Treasury and federal agency securities and federal agency MBS are generally driven by changes in interest rates and not due to credit losses given the explicit or implicit guarantees provided by the U.S. government.

SECURITIES OF U.S. STATES AND POLITICAL SUBDIVISIONS The unrealized losses associated with securities of U.S. states and political subdivisions are usually driven by changes in the relationship between municipal and term funding credit curves rather than by changes to the credit quality of the underlying securities. Substantially all of these investments with unrealized losses are investment grade. The securities were generally underwritten in accordance with our own investment standards prior to the decision to purchase. Some of these securities are guaranteed by a bond insurer, but we did not rely on this guarantee when making our investment decision. These investments will continue to be monitored as part of our ongoing impairment analysis but are expected to perform, even if the rating agencies reduce the credit rating of the bond insurers. As a result, we expect to recover the entire amortized cost basis of these securities.

RESIDENTIAL AND COMMERCIAL MBS The unrealized losses associated with private residential MBS and commercial MBS are generally driven by changes in projected collateral losses, credit spreads and interest rates. We assess for credit impairment by estimating the present value of expected cash flows. The key assumptions for determining expected cash flows include default rates, loss severities and/or prepayment rates. We estimate security losses by forecasting the underlying mortgage loans in each transaction. We use forecasted loan performance to project cash flows to the various tranches in the structure. We also consider cash flow forecasts and, as applicable, independent industry analyst reports and forecasts, sector credit ratings, and other independent market data. Based upon our assessment of the expected credit losses and the credit enhancement level of the securities, we expect to recover the entire amortized cost basis of these securities.

CORPORATE DEBT SECURITIES The unrealized losses associated with corporate debt securities are predominantly related to unsecured debt obligations issued by various corporations. We evaluate the financial performance of each issuer on a quarterly basis to determine if the issuer can make all contractual principal and interest payments. Based upon this assessment, we expect to recover the entire amortized cost basis of these securities.

COLLATERALIZED LOAN AND OTHER DEBT OBLIGATIONS The unrealized losses associated with collateralized loan and other debt obligations relate to securities predominantly backed by commercial collateral. The unrealized losses are typically driven by changes in projected collateral losses, credit spreads and interest rates. We assess for credit impairment by estimating the present value of expected cash flows. The key assumptions for determining expected cash flows include default rates, loss severities and prepayment rates. We also consider cash flow forecasts and, as applicable, independent industry analyst reports and forecasts, sector credit ratings, and other independent market data. Based upon our assessment of the expected credit losses and the credit enhancement level of the securities, we expect to recover the entire amortized cost basis of these securities.

OTHER DEBT SECURITIES The unrealized losses associated with other debt securities predominantly relate to other asset-backed securities. The losses are usually driven by changes in projected collateral losses, credit spreads and interest rates. We assess for credit impairment by estimating the present value of expected cash flows. The key assumptions for determining expected cash flows include default rates, loss severities and prepayment rates. Based upon our assessment of the expected credit losses and the credit enhancement level of the securities, we expect to recover the entire amortized cost basis of these securities.

OTHER DEBT SECURITIES MATTERS The fair values of our debt securities could decline in the future if the underlying performance of the collateral for the residential and commercial MBS or other securities deteriorate, and our credit enhancement levels do not provide sufficient protection to our contractual principal and interest. As a result, there is a risk that significant OTTI may occur in the future.

Table 5.3 shows the gross unrealized losses and fair value of the available-for-sale and held-to-maturity debt securities by those rated investment grade and those rated less than investment grade, according to their lowest credit rating by Standard & Poor's Rating Services (S&P) or Moody's Investors Service (Moody's). Credit ratings express opinions about the credit quality of a debt security. Debt securities rated investment grade, that is those rated BBB- or higher by S&P or Baa3 or higher by Moody's, are generally considered by the rating agencies and market participants to be low credit risk. Conversely, debt securities rated below investment grade, labeled as "speculative grade" by the rating agencies, are considered to be distinctively higher credit risk than investment grade debt securities. We have also included debt securities not rated by S&P or Moody's in the table below based on our internal credit grade of the debt securities (used for credit risk management purposes) equivalent to the credit rating assigned by major credit agencies. The unrealized losses and fair value of unrated debt securities categorized as investment grade based on internal credit grades were $20 million and $5.2 billion, respectively, at December 31, 2018, and $32 million and $6.9 billion, respectively, at December 31, 2017. If an internal credit grade was not assigned, we categorized the debt security as non-investment grade.

Table 5.3: Gross Unrealized Losses and Fair Value by Investment Grade

	Investment grade		Non-investment grade	
(in millions)	Gross unrealized losses	Fair value	Gross unrealized losses	Fair value
December 31, 2018				
Available-for-sale debt securities:				
Securities of U.S. Treasury and federal agencies	**$ (106)**	**6,702**	**—**	**—**
Securities of U.S. states and political subdivisions	**(425)**	**18,447**	**(21)**	**316**
Mortgage-backed securities:				
Federal agencies	**(3,140)**	**123,231**	**—**	**—**
Residential	**(2)**	**295**	**(3)**	**172**
Commercial	**(20)**	**1,999**	**(2)**	**52**
Total mortgage-backed securities	**(3,162)**	**125,525**	**(5)**	**224**
Corporate debt securities	**(17)**	**791**	**(73)**	**1,472**
Collateralized loan and other debt obligations	**(396)**	**28,859**	**—**	**—**
Other	**(7)**	**726**	**(6)**	**252**
Total available-for-sale debt securities	**(4,113)**	**181,050**	**(105)**	**2,264**
Held-to-maturity debt securities:				
Securities of U.S. Treasury and federal agencies	**(415)**	**41,978**	**—**	**—**
Securities of U.S. states and political subdivisions	**(116)**	**4,590**	**—**	**—**
Federal agency and other mortgage-backed securities	**(2,278)**	**81,977**	**(10)**	**399**
Collateralized loan obligations	**—**	**—**	**—**	**—**
Total held-to-maturity debt securities	**(2,809)**	**128,545**	**(10)**	**399**
Total	**$ (6,922)**	**309,595**	**(115)**	**2,663**
December 31, 2017				
Available-for-sale debt securities:				
Securities of U.S. Treasury and federal agencies	$ (108)	6,274	—	—
Securities of U.S. states and political subdivisions	(412)	17,763	(27)	182
Mortgage-backed securities:				
Federal agencies	(1,272)	97,250	—	—
Residential	(1)	42	(1)	63
Commercial	(1)	183	(1)	51
Total mortgage-backed securities	(1,274)	97,475	(2)	114
Corporate debt securities	(13)	304	(27)	438
Collateralized loan and other debt obligations	(3)	519	—	—
Other	(2)	469	(3)	51
Total available-for-sale debt securities	(1,812)	122,804	(59)	785
Held-to-maturity debt securities:				
Securities of U.S. Treasury and federal agencies	(103)	12,745	—	—
Securities of U.S. states and political subdivisions	(43)	2,183	—	—
Federal agency and other mortgage-backed securities	(680)	57,789	(2)	168
Collateralized loan obligations	—	—	—	—
Total held-to-maturity debt securities	(826)	72,717	(2)	168
Total	$ (2,638)	195,521	(61)	953

Contractual Maturities

Table 5.4 shows the remaining contractual maturities and contractual weighted-average yields (taxable-equivalent basis) of available-for-sale debt securities. The remaining contractual principal maturities for MBS do not consider prepayments. Remaining expected maturities will differ from contractual maturities because borrowers may have the right to prepay obligations before the underlying mortgages mature.

Table 5.4: Contractual Maturities

			Remaining contractual maturity							
	Total		Within one year		After one year through five years		After five years through ten years		After ten years	
(in millions)	amount	Yield	Amount	Yield	Amount	Yield	Amount	Yield	Amount	Yield
December 31, 2018										
Available-for-sale debt securities (1):										
Fair value:										
Securities of U.S. Treasury and federal agencies	**$ 13,348**	**1.87%**	**$ 1,087**	**1.52%**	**$ 12,213**	**1.90%**	**$ 48**	**1.89%**	**$ —**	**—%**
Securities of U.S. states and political subdivisions	**49,264**	**4.78**	**3,568**	**2.92**	**6,644**	**3.42**	**4,635**	**3.44**	**34,417**	**5.42**
Mortgage-backed securities:										
Federal agencies	**153,203**	**3.42**	**—**	**—**	**169**	**3.52**	**1,909**	**2.56**	**151,125**	**3.43**
Residential	**2,775**	**4.01**	**—**	**—**	**14**	**5.85**	**6**	**3.04**	**2,755**	**4.00**
Commercial	**4,225**	**3.64**	**—**	**—**	**—**	**—**	**342**	**3.60**	**3,883**	**3.65**
Total mortgage-backed securities	**160,203**	**3.44**	**—**	**—**	**183**	**3.70**	**2,257**	**2.72**	**157,763**	**3.45**
Corporate debt securities	**6,271**	**5.11**	**390**	**6.27**	**2,525**	**5.25**	**2,743**	**4.68**	**613**	**5.67**
Collateralized loan and other debt obligations	**35,343**	**3.89**	**—**	**—**	**28**	**4.18**	**8,866**	**3.91**	**26,449**	**3.89**
Other	**5,483**	**3.17**	**15**	**6.02**	**818**	**3.84**	**1,446**	**2.17**	**3,204**	**3.44**
Total available-for-sale debt securities at fair value	**$ 269,912**	**3.70%**	**$ 5,060**	**2.89%**	**$ 22,411**	**2.82%**	**$ 19,995**	**3.64%**	**$222,446**	**3.81%**
December 31, 2017										
Available-for-sale debt securities (1):										
Fair value:										
Securities of U.S. Treasury and federal agencies	$ 6,319	1.59 %	$ 81	1.37 %	$ 6,189	1.59 %	$ 49	1.89 %	$ —	— %
Securities of U.S. states and political subdivisions	51,326	5.88	2,380	3.47	9,484	3.42	2,276	4.63	37,186	6.75
Mortgage-backed securities:										
Federal agencies	160,219	3.27	15	2.03	210	3.08	5,534	2.82	154,460	3.28
Residential	4,608	3.52	—	—	24	5.67	11	2.46	4,573	3.51
Commercial	4,565	3.45	—	—	—	—	166	2.69	4,399	3.48
Total mortgage-backed securities	169,392	3.28	15	2.03	234	3.35	5,711	2.82	163,432	3.30
Corporate debt securities	7,666	5.12	443	5.54	2,738	5.56	3,549	4.70	936	5.26
Collateralized loan and other debt obligations	36,056	2.98	—	—	50	1.68	15,008	2.96	20,998	3.00
Other	5,648	2.46	71	3.56	463	2.72	1,466	2.13	3,648	2.53
Total available-for-sale debt securities at fair value	$ 276,407	3.72 %	$ 2,990	3.70 %	$ 19,158	3.11 %	$ 28,059	3.24 %	$ 226,200	3.83 %

(1) Weighted-average yields displayed by maturity bucket are weighted based on fair value and predominantly represent contractual coupon rates without effect for any related hedging derivatives.

Table 5.5 shows the amortized cost and weighted-average yields of held-to-maturity debt securities by contractual maturity.

Table 5.5: Amortized Cost by Contractual Maturity

			Remaining contractual maturity							
	Total		Within one year		After one year through five years		After five years through ten years		After ten years	
(in millions)	amount	Yield	Amount	Yield	Amount	Yield	Amount	Yield	Amount	Yield
December 31, 2018										
Held-to-maturity debt securities (1):										
Amortized cost:										
Securities of U.S. Treasury and federal agencies	**$ 44,751**	**2.12%**	**$ —**	**—%**	**$ 32,356**	**2.04%**	**$ 12,395**	**2.32%**	**$ —**	**—%**
Securities of U.S. states and political subdivisions	**6,286**	**4.93**	**—**	**—**	**72**	**6.04**	**1,188**	**4.91**	**5,026**	**4.92**
Federal agency and other mortgage-backed securities	**93,685**	**3.10**	**—**	**—**	**26**	**3.52**	**—**	**—**	**93,659**	**3.10**
Collateralized loan obligations	**66**	**3.62**	**—**	**—**	**—**	**—**	**66**	**3.62**	**—**	**—**
Other	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
Total held-to-maturity debt securities at amortized cost	**$ 144,788**	**2.87%**	**$ —**	**—%**	**$ 32,454**	**2.05%**	**$ 13,649**	**2.55%**	**$ 98,685**	**3.19%**
December 31, 2017										
Held-to-maturity debt securities (1):										
Amortized cost:										
Securities of U.S. Treasury and federal agencies	$ 44,720	2.12 %	$ —	— %	$ 32,330	2.04 %	$ 12,390	2.32 %	$ —	— %
Securities of U.S. states and political subdivisions	6,313	6.02	—	—	50	7.18	695	6.31	5,568	5.98
Federal agency and other mortgage-backed securities	87,527	3.11	—	—	15	2.81	11	2.49	87,501	3.11
Collateralized loan obligations	661	2.86	—	—	—	—	661	2.86	—	—
Other	114	1.83	—	—	114	1.83	—	—	—	—
Total held-to-maturity debt securities at amortized cost	$ 139,335	2.92 %	$ —	— %	$ 32,509	2.05 %	$ 13,757	2.55 %	$ 93,069	3.28 %

(1) Weighted-average yields displayed by maturity bucket are weighted based on amortized cost and predominantly represent contractual coupon rates.

Table 5.6 shows the fair value of held-to-maturity debt securities by contractual maturity.

Table 5.6: Fair Value by Contractual Maturity

		Remaining contractual maturity			
	Total	Within one year	After one year through five years	After five years through ten years	After ten years
(in millions)	amount	Amount	Amount	Amount	Amount
December 31, 2018					
Held-to-maturity debt securities:					
Fair value:					
Securities of U.S. Treasury and federal agencies	**$ 44,340**	**—**	**32,073**	**12,267**	**—**
Securities of U.S. states and political subdivisions	**6,200**	**—**	**70**	**1,191**	**4,939**
Federal agency and other mortgage-backed securities	**91,509**	**—**	**26**	**—**	**91,483**
Collateralized loan obligations	**66**	**—**	**—**	**66**	**—**
Other	**—**	**—**	**—**	**—**	**—**
Total held-to-maturity debt securities at fair value	**$ 142,115**	**—**	**32,169**	**13,524**	**96,422**
December 31, 2017					
Held-to-maturity debt securities:					
Fair value:					
Securities of U.S. Treasury and federal agencies	$ 44,806	—	32,388	12,418	—
Securities of U.S. states and political subdivisions	6,354	—	49	701	5,604
Federal agency and other mortgage-backed securities	87,046	—	15	11	87,020
Collateralized loan obligations	665	—	—	665	—
Other	114	—	114	—	—
Total held-to-maturity debt securities at fair value	$ 138,985	—	32,566	13,795	92,624

Realized Gains and Losses

Table 5.7 shows the gross realized gains and losses on sales and OTTI write-downs related to available-for-sale debt securities.

Table 5.7: Realized Gains and Losses

	Year ended December 31,		
(in millions)	**2018**	2017	2016
Gross realized gains	**$ 155**	948	1,234
Gross realized losses	**(19)**	(207)	(103)
OTTI write-downs	**(28)**	(262)	(189)
Net realized gains from available-for-sale debt securities	**$ 108**	479	942

Other-Than-Temporary Impaired Debt Securities

Table 5.8 shows the detail of total OTTI write-downs included in earnings for available-for-sale debt securities. There were no OTTI write-downs on held-to-maturity debt securities during the years ended December 31, 2018, 2017 or 2016.

Table 5.8: Detail of OTTI Write-downs

	Year ended December 31,		
(in millions)	**2018**	2017	2016
Debt securities OTTI write-downs included in earnings:			
Securities of U.S. states and political subdivisions	**$ 2**	150	63
Mortgage-backed securities:			
Residential	**4**	11	34
Commercial	**18**	80	14
Corporate debt securities	**—**	21	72
Other debt securities	**4**	—	6
Total debt securities OTTI write-downs included in earnings	**$ 28**	262	189

Table 5.9 shows the detail of OTTI write-downs on available-for-sale debt securities included in earnings and the related changes in OCI for the same securities.

Table 5.9: OTTI Write-downs Included in Earnings and the Related Changes in OCI

	Year ended December 31,		
(in millions)	**2018**	2017	2016
OTTI on debt securities			
Recorded as part of gross realized losses:			
Credit-related OTTI	**$ 27**	119	143
Intent-to-sell OTTI	**1**	143	46
Total recorded as part of gross realized losses	**28**	262	189
Changes to OCI for losses (reversal of losses) in non-credit-related OTTI (1):			
Securities of U.S. states and political subdivisions	**(2)**	(5)	8
Residential mortgage-backed securities	**2**	(1)	(3)
Commercial mortgage-backed securities	**(11)**	(51)	24
Corporate debt securities	**—**	1	(13)
Other debt securities	**—**	(1)	2
Total changes to OCI for non-credit-related OTTI	**(11)**	(57)	18
Total OTTI losses (reversal of losses) recorded on debt securities	**$ 17**	205	207

(1) Represents amounts recorded to OCI for impairment of debt securities, due to factors other than credit, that have also had credit-related OTTI write-downs during the period. Increases represent initial or subsequent non-credit-related OTTI on debt securities. Decreases represent partial to full reversal of impairment due to recoveries in the fair value of debt securities due to non-credit factors.

Table 5.10 presents a rollforward of the OTTI credit loss that has been recognized in earnings as a write-down of available-for-sale debt securities we still own (referred to as "credit-impaired" debt securities) and do not intend to sell. Recognized credit loss represents the difference between the present value of expected future cash flows discounted using the security's current effective interest rate and the amortized cost basis of the security prior to considering credit loss.

Table 5.10: Rollforward of OTTI Credit Loss

	Year ended December 31,		
(in millions)	**2018**	2017	2016
Credit loss recognized, beginning of year	**$ 742**	1,043	1,092
Additions:			
For securities with initial credit impairments	**1**	9	85
For securities with previous credit impairments	**26**	110	58
Total additions	**27**	119	143
Reductions:			
For securities sold, matured, or intended/required to be sold	**(204)**	(414)	(184)
For recoveries of previous credit impairments (1)	**(3)**	(6)	(8)
Total reductions	**(207)**	(420)	(192)
Credit loss recognized, end of year	**$ 562**	742	1,043

(1) Recoveries of previous credit impairments result from increases in expected cash flows subsequent to credit loss recognition. Such recoveries are reflected prospectively as interest yield adjustments using the effective interest method.

Note 6: Loans and Allowance for Credit Losses

Table 6.1 presents total loans outstanding by portfolio segment and class of financing receivable. Outstanding balances include a total net reduction of $1.3 billion and $3.9 billion at December 31, 2018 and 2017, respectively, for unearned income, net deferred loan fees, and unamortized discounts and premiums, which among other things, reflect the impact of various loan sales.

Table 6.1: Loans Outstanding

					December 31,
(in millions)	**2018**	2017	2016	2015	2014
Commercial:					
Commercial and industrial	**$ 350,199**	333,125	330,840	299,892	271,795
Real estate mortgage	**121,014**	126,599	132,491	122,160	111,996
Real estate construction	**22,496**	24,279	23,916	22,164	18,728
Lease financing	**19,696**	19,385	19,289	12,367	12,307
Total commercial	**513,405**	503,388	506,536	456,583	414,826
Consumer:					
Real estate 1-4 family first mortgage	**285,065**	284,054	275,579	273,869	265,386
Real estate 1-4 family junior lien mortgage	**34,398**	39,713	46,237	53,004	59,717
Credit card	**39,025**	37,976	36,700	34,039	31,119
Automobile	**45,069**	53,371	62,286	59,966	55,740
Other revolving credit and installment	**36,148**	38,268	40,266	39,098	35,763
Total consumer	**439,705**	453,382	461,068	459,976	447,725
Total loans	**$ 953,110**	956,770	967,604	916,559	862,551

Our foreign loans are reported by respective class of financing receivable in the table above. Substantially all of our foreign loan portfolio is commercial loans. Loans are classified as foreign primarily based on whether the borrower's primary address is outside of the United States. Table 6.2 presents total commercial foreign loans outstanding by class of financing receivable.

Table 6.2: Commercial Foreign Loans Outstanding

					December 31,
(in millions)	**2018**	2017	2016	2015	2014
Commercial foreign loans:					
Commercial and industrial	**$ 62,564**	60,106	55,396	49,049	44,707
Real estate mortgage	**6,731**	8,033	8,541	8,350	4,776
Real estate construction	**1,011**	655	375	444	218
Lease financing	**1,159**	1,126	972	274	336
Total commercial foreign loans	**$ 71,465**	69,920	65,284	58,117	50,037

Loan Concentrations

Loan concentrations may exist when there are amounts loaned to borrowers engaged in similar activities or similar types of loans extended to a diverse group of borrowers that would cause them to be similarly impacted by economic or other conditions. At December 31, 2018 and 2017, we did not have concentrations representing 10% or more of our total loan portfolio in domestic commercial and industrial loans and lease financing by industry or CRE loans (real estate mortgage and real estate construction) by state or property type. Real estate 1-4 family non-PCI mortgage loans to borrowers in the state of California represented 12% of total loans at both December 31, 2018 and 2017, and PCI loans were under 1% in both years. These California loans are generally diversified among the larger metropolitan areas in California, with no single area consisting of more than 5% of total loans. We continuously monitor changes in real estate values and underlying economic or market conditions for all geographic areas of our real estate 1-4 family mortgage portfolio as part of our credit risk management process.

Some of our real estate 1-4 family first and junior lien mortgage loans include an interest-only feature as part of the loan terms. These interest-only loans were approximately 4% of total loans at both December 31, 2018 and 2017. Substantially all of these interest-only loans at origination were considered to be prime or near prime. We do not offer option adjustable-rate mortgage (ARM) products, nor do we offer variable-rate mortgage products with fixed payment amounts, commonly referred to within the financial services industry as negative amortizing mortgage loans. We acquired an option payment loan portfolio (Pick-a-Pay) from Wachovia at December 31, 2008. A majority of the portfolio was identified as PCI loans. Since the acquisition, we have reduced our exposure to the option payment portion of the portfolio through our modification efforts and loss mitigation actions. At December 31, 2018, approximately 1% of total loans remained with the payment option feature compared with 10% at December 31, 2008.

Our first and junior lien lines of credit products generally have draw periods of 10, 15 or 20 years, with variable interest rate and payment options during the draw period of (1) interest only or (2) 1.5% of total outstanding balance plus accrued interest. During the draw period, the borrower has the option of converting all or a portion of the line from a variable interest rate to a fixed rate with terms including interest-only payments for a fixed period between three to seven years or a fully amortizing payment with a fixed period between five to 30 years. At the end of the draw period, a line of credit generally converts to an amortizing payment schedule with repayment terms of up to 30 years based on the balance at time of conversion. At December 31, 2018, our lines of credit portfolio had an outstanding balance of $43.6 billion, of which $11.1 billion, or 25%, is in its amortization period, another $1.3 billion, or 3%, of our total outstanding balance, will reach their end of draw period during 2019 through 2020, $11.3 billion, or 26%, during 2021 through 2023, and $19.9 billion, or 46%, will convert in subsequent years. This portfolio had unfunded credit commitments of $60.1 billion at December 31, 2018. The lines that enter their amortization period may experience higher delinquencies and higher loss rates than the lines in their draw period. At December 31, 2018, $488 million, or 4%, of outstanding lines of credit that are in their amortization period were 30 or more days past due, compared with $553 million, or 2%, for lines in their draw period. We have considered this increased inherent risk in our allowance for credit loss estimate. In anticipation of our borrowers reaching the end of their contractual commitment, we have created a program to inform, educate and help these borrowers transition from interest-only to fully-amortizing payments or full repayment. We monitor the performance of the borrowers moving through the program in an effort to refine our ongoing program strategy.

Loan Purchases, Sales, and Transfers

Table 6.3 summarizes the proceeds paid or received for purchases and sales of loans and transfers from loans held for investment to mortgages/loans held for sale at lower of cost or fair value. This loan activity primarily includes loans purchased and sales of whole loan or participating interests, whereby we receive or transfer a portion of a loan after origination. The table excludes PCI loans and loans recorded at fair value, including loans originated for sale because their loan activity normally does not impact the allowance for credit losses.

Table 6.3: Loan Purchases, Sales, and Transfers

						Year ended December 31,
			2018			2017
(in millions)	**Commercial**	**Consumer (1)**	**Total**	Commercial	Consumer (1)	Total
Purchases	**$ 2,065**	**16**	**2,081**	3,675	2	3,677
Sales	**(1,905)**	**(261)**	**(2,166)**	(2,066)	(425)	(2,491)
Transfers to MLHFS/LHFS	**(617)**	**(1,995)**	**(2,612)**	(736)	(2)	(738)

(1) Excludes activity in government insured/guaranteed real estate 1-4 family first mortgage loans. As servicer, we are able to buy delinquent insured/guaranteed loans out of the Government National Mortgage Association (GNMA) pools, and manage and/or resell them in accordance with applicable requirements. These loans are predominantly insured by the Federal Housing Administration (FHA) or guaranteed by the Department of Veterans Affairs (VA). Accordingly, these loans have limited impact on the allowance for loan losses.

Commitments to Lend

A commitment to lend is a legally binding agreement to lend funds to a customer, usually at a stated interest rate, if funded, and for specific purposes and time periods. We generally require a fee to extend such commitments. Certain commitments are subject to loan agreements with covenants regarding the financial performance of the customer or borrowing base formulas on an ongoing basis that must be met before we are required to fund the commitment. We may reduce or cancel consumer commitments, including home equity lines and credit card lines, in accordance with the contracts and applicable law.

We may, as a representative for other lenders, advance funds or provide for the issuance of letters of credit under syndicated loan or letter of credit agreements. Any advances are generally repaid in less than a week and would normally require default of both the customer and another lender to expose us to loss. These temporary advance arrangements totaled approximately $91 billion at December 31, 2018, and $85 billion at December 31, 2017.

We issue commercial letters of credit to assist customers in purchasing goods or services, typically for international trade. At December 31, 2018 and 2017, we had $919 million and $982 million, respectively, of outstanding issued commercial letters of credit. We also originate multipurpose lending commitments under which borrowers have the option to draw on the facility for different purposes in one of several forms, including a standby letter of credit. See Note 15 (Guarantees, Pledged Assets and Collateral, and Other Commitments) for additional information on standby letters of credit.

When we make commitments, we are exposed to credit risk. The maximum credit risk for these commitments will generally be lower than the contractual amount because a significant portion of these commitments are expected to expire without being used by the customer. In addition, we manage the potential risk in commitments to lend by limiting the total amount of commitments, both by individual customer and in total, by monitoring the size and maturity structure of these commitments and by applying the same credit standards for these commitments as for all of our credit activities.

For loans and commitments to lend, we generally require collateral or a guarantee. We may require various types of collateral, including commercial and consumer real estate, automobiles, other short-term liquid assets such as accounts receivable or inventory and long-lived assets, such as equipment and other business assets. Collateral requirements for each loan or commitment may vary based on the loan product and our assessment of a customer's credit risk according to the specific credit underwriting, including credit terms and structure.

The contractual amount of our unfunded credit commitments, including unissued standby and commercial letters of credit, is summarized by portfolio segment and class of financing receivable in Table 6.4. The table excludes the issued standby and commercial letters of credit and temporary advance arrangements described above.

Table 6.4: Unfunded Credit Commitments

(in millions)	Dec 31, 2018	Dec 31, 2017
Commercial:		
Commercial and industrial	**$330,492**	326,626
Real estate mortgage	**6,984**	7,485
Real estate construction	**16,400**	16,621
Total commercial	**353,876**	350,732
Consumer:		
Real estate 1-4 family first mortgage	**29,736**	29,876
Real estate 1-4 family junior lien mortgage	**37,719**	38,897
Credit card	**109,840**	108,465
Other revolving credit and installment	**27,530**	27,541
Total consumer	**204,825**	204,779
Total unfunded credit commitments	**$558,701**	555,511

Allowance for Credit Losses

Table 6.5 presents the allowance for credit losses, which consists of the allowance for loan losses and the allowance for unfunded credit commitments.

Table 6.5: Allowance for Credit Losses

					Year ended December 31,
(in millions)	**2018**	2017	2016	2015	2014
Balance, beginning of year	**$ 11,960**	12,540	12,512	13,169	14,971
Provision for credit losses	**1,744**	2,528	3,770	2,442	1,395
Interest income on certain impaired loans (1)	**(166)**	(186)	(205)	(198)	(211)
Loan charge-offs:					
Commercial:					
Commercial and industrial	**(727)**	(789)	(1,419)	(734)	(627)
Real estate mortgage	**(42)**	(38)	(27)	(59)	(66)
Real estate construction	**—**	—	(1)	(4)	(9)
Lease financing	**(70)**	(45)	(41)	(14)	(15)
Total commercial	**(839)**	(872)	(1,488)	(811)	(717)
Consumer:					
Real estate 1-4 family first mortgage	**(179)**	(240)	(452)	(507)	(721)
Real estate 1-4 family junior lien mortgage	**(179)**	(279)	(495)	(635)	(864)
Credit card	**(1,599)**	(1,481)	(1,259)	(1,116)	(1,025)
Automobile	**(947)**	(1,002)	(845)	(742)	(729)
Other revolving credit and installment	**(685)**	(713)	(708)	(643)	(668)
Total consumer	**(3,589)**	(3,715)	(3,759)	(3,643)	(4,007)
Total loan charge-offs	**(4,428)**	(4,587)	(5,247)	(4,454)	(4,724)
Loan recoveries:					
Commercial:					
Commercial and industrial	**304**	297	263	252	369
Real estate mortgage	**70**	82	116	127	160
Real estate construction	**13**	30	38	37	136
Lease financing	**23**	17	11	8	8
Total commercial	**410**	426	428	424	673
Consumer:					
Real estate 1-4 family first mortgage	**267**	288	373	245	212
Real estate 1-4 family junior lien mortgage	**219**	266	266	259	238
Credit card	**307**	239	207	175	161
Automobile	**363**	319	325	325	349
Other revolving credit and installment	**118**	121	128	134	146
Total consumer	**1,274**	1,233	1,299	1,138	1,106
Total loan recoveries	**1,684**	1,659	1,727	1,562	1,779
Net loan charge-offs	**(2,744)**	(2,928)	(3,520)	(2,892)	(2,945)
Other	**(87)**	6	(17)	(9)	(41)
Balance, end of year	**$ 10,707**	11,960	12,540	12,512	13,169
Components:					
Allowance for loan losses	**$ 9,775**	11,004	11,419	11,545	12,319
Allowance for unfunded credit commitments	**932**	956	1,121	967	850
Allowance for credit losses	**$ 10,707**	11,960	12,540	12,512	13,169
Net loan charge-offs as a percentage of average total loans	**0.29%**	0.31	0.37	0.33	0.35
Allowance for loan losses as a percentage of total loans	**1.03**	1.15	1.18	1.26	1.43
Allowance for credit losses as a percentage of total loans	**1.12**	1.25	1.30	1.37	1.53

(1) Certain impaired loans with an allowance calculated by discounting expected cash flows using the loan's effective interest rate over the remaining life of the loan recognize changes in allowance attributable to the passage of time as interest income.

Table 6.6 summarizes the activity in the allowance for credit losses by our commercial and consumer portfolio segments.

Table 6.6: Allowance Activity by Portfolio Segment

	Year ended December 31,					
			2018			2017
(in millions)	**Commercial**	**Consumer**	**Total**	Commercial	Consumer	Total
Balance, beginning of year	**$ 6,632**	**5,328**	**11,960**	7,394	5,146	12,540
Provision (reversal of provision) for credit losses	**281**	**1,463**	**1,744**	(261)	2,789	2,528
Interest income on certain impaired loans	**(47)**	**(119)**	**(166)**	(59)	(127)	(186)
Loan charge-offs	**(839)**	**(3,589)**	**(4,428)**	(872)	(3,715)	(4,587)
Loan recoveries	**410**	**1,274**	**1,684**	426	1,233	1,659
Net loan charge-offs	**(429)**	**(2,315)**	**(2,744)**	(446)	(2,482)	(2,928)
Other	**(20)**	**(67)**	**(87)**	4	2	6
Balance, end of year	**$ 6,417**	**4,290**	**10,707**	6,632	5,328	11,960

Table 6.7 disaggregates our allowance for credit losses and recorded investment in loans by impairment methodology.

Table 6.7: Allowance by Impairment Methodology

	Allowance for credit losses			Recorded investment in loans		
(in millions)	Commercial	Consumer	Total	Commercial	Consumer	Total
December 31, 2018						
Collectively evaluated (1)	**$ 5,903**	**3,361**	**9,264**	**510,180**	**421,574**	**931,754**
Individually evaluated (2)	**514**	**929**	**1,443**	**3,221**	**13,126**	**16,347**
PCI (3)	**—**	**—**	**—**	**4**	**5,005**	**5,009**
Total	**$ 6,417**	**4,290**	**10,707**	**513,405**	**439,705**	**953,110**
December 31, 2017						
Collectively evaluated (1)	$ 5,927	4,143	10,070	499,342	425,919	925,261
Individually evaluated (2)	705	1,185	1,890	3,960	14,714	18,674
PCI (3)	—	—	—	86	12,749	12,835
Total	$ 6,632	5,328	11,960	503,388	453,382	956,770

(1) Represents loans collectively evaluated for impairment in accordance with Accounting Standards Codification (ASC) 450-20, *Loss Contingencies* (formerly FAS 5), and pursuant to amendments by ASU 2010-20 regarding allowance for non-impaired loans.
(2) Represents loans individually evaluated for impairment in accordance with ASC 310-10, *Receivables* (formerly FAS 114), and pursuant to amendments by ASU 2010-20 regarding allowance for impaired loans.
(3) Represents the allowance and related loan carrying value determined in accordance with ASC 310-30*, Receivables – Loans and Debt Securities Acquired with Deteriorated Credit Quality* (formerly SOP 3-3) and pursuant to amendments by ASU 2010-20 regarding allowance for PCI loans.

Credit Quality

We monitor credit quality by evaluating various attributes and utilize such information in our evaluation of the appropriateness of the allowance for credit losses. The following sections provide the credit quality indicators we most closely monitor. The credit quality indicators are generally based on information as of our financial statement date, with the exception of updated Fair Isaac Corporation (FICO) scores and updated loan-to-value (LTV)/combined LTV (CLTV). We obtain FICO scores at loan origination and the scores are generally updated at least quarterly, except in limited circumstances, including compliance with the Fair Credit Reporting Act (FCRA). Generally, the LTV and CLTV indicators are updated in the second month of each quarter, with updates no older than September 30, 2018. See the “Purchased Credit-Impaired Loans” section in this Note for credit quality information on our PCI portfolio.

COMMERCIAL CREDIT QUALITY INDICATORS In addition to monitoring commercial loan concentration risk, we manage a consistent process for assessing commercial loan credit quality. Generally, commercial loans are subject to individual risk assessment using our internal borrower and collateral quality ratings. Our ratings are aligned to Pass and Criticized categories. The Criticized category includes Special Mention, Substandard, and Doubtful categories which are defined by bank regulatory agencies.

Table 6.8 provides a breakdown of outstanding commercial loans by risk category. Of the $14.8 billion in criticized commercial and industrial loans and $4.8 billion in criticized commercial real estate (CRE) loans at December 31, 2018, $1.5 billion and $612 million, respectively, have been placed on nonaccrual status and written down to net realizable collateral value.

Table 6.8: Commercial Loans by Risk Category

(in millions)	Commercial and industrial	Real estate mortgage	Real estate construction	Lease financing	Total
December 31, 2018					
By risk category:					
Pass	**$ 335,412**	**116,514**	**22,207**	**18,671**	**492,804**
Criticized	**14,783**	**4,500**	**289**	**1,025**	**20,597**
Total commercial loans (excluding PCI)	**350,195**	**121,014**	**22,496**	**19,696**	**513,401**
Total commercial PCI loans (carrying value)	**4**	**—**	**—**	**—**	**4**
Total commercial loans	**$ 350,199**	**121,014**	**22,496**	**19,696**	**513,405**
December 31, 2017					
By risk category:					
Pass	$ 316,431	122,312	23,981	18,162	480,886
Criticized	16,608	4,287	298	1,223	22,416
Total commercial loans (excluding PCI)	333,039	126,599	24,279	19,385	503,302
Total commercial PCI loans (carrying value)	86	—	—	—	86
Total commercial loans	$ 333,125	126,599	24,279	19,385	503,388

Table 6.9 provides past due information for commercial loans, which we monitor as part of our credit risk management practices.

Table 6.9: Commercial Loans by Delinquency Status

(in millions)	Commercial and industrial	Real estate mortgage	Real estate construction	Lease financing	Total
December 31, 2018					
By delinquency status:					
Current-29 days past due (DPD) and still accruing	**$ 348,158**	**120,176**	**22,411**	**19,443**	**510,188**
30-89 DPD and still accruing	**508**	**207**	**53**	**163**	**931**
90+ DPD and still accruing	**43**	**51**	**—**	**—**	**94**
Nonaccrual loans	**1,486**	**580**	**32**	**90**	**2,188**
Total commercial loans (excluding PCI)	**350,195**	**121,014**	**22,496**	**19,696**	**513,401**
Total commercial PCI loans (carrying value)	**4**	**—**	**—**	**—**	**4**
Total commercial loans	**$ 350,199**	**121,014**	**22,496**	**19,696**	**513,405**
December 31, 2017					
By delinquency status:					
Current-29 DPD and still accruing	$ 330,319	125,642	24,107	19,148	499,216
30-89 DPD and still accruing	795	306	135	161	1,397
90+ DPD and still accruing	26	23	—	—	49
Nonaccrual loans	1,899	628	37	76	2,640
Total commercial loans (excluding PCI)	333,039	126,599	24,279	19,385	503,302
Total commercial PCI loans (carrying value)	86	—	—	—	86
Total commercial loans	$ 333,125	126,599	24,279	19,385	503,388

CONSUMER CREDIT QUALITY INDICATORS We have various classes of consumer loans that present unique risks. Loan delinquency, FICO credit scores and LTV for loan types are common credit quality indicators that we monitor and utilize in our evaluation of the appropriateness of the allowance for credit losses for the consumer portfolio segment.

Many of our loss estimation techniques used for the allowance for credit losses rely on delinquency-based models; therefore, delinquency is an important indicator of credit quality and the establishment of our allowance for credit losses. Table 6.10 provides the outstanding balances of our consumer portfolio by delinquency status.

Table 6.10: Consumer Loans by Delinquency Status

(in millions)	Real estate 1-4 family first mortgage	Real estate 1-4 family junior lien mortgage	Credit card	Automobile	Other revolving credit and installment	Total
December 31, 2018						
By delinquency status:						
Current-29 DPD	**$ 263,881**	**33,644**	**38,008**	**43,604**	**35,794**	**414,931**
30-59 DPD	**1,411**	**247**	**292**	**1,040**	**140**	**3,130**
60-89 DPD	**549**	**126**	**212**	**314**	**87**	**1,288**
90-119 DPD	**257**	**74**	**192**	**109**	**80**	**712**
120-179 DPD	**225**	**77**	**320**	**2**	**27**	**651**
180+ DPD	**822**	**213**	**1**	**—**	**20**	**1,056**
Government insured/guaranteed loans (1)	**12,688**	**—**	**—**	**—**	**—**	**12,688**
Loans held at fair value	**244**	**—**	**—**	**—**	**—**	**244**
Total consumer loans (excluding PCI)	**280,077**	**34,381**	**39,025**	**45,069**	**36,148**	**434,700**
Total consumer PCI loans (carrying value)	**4,988**	**17**	**—**	**—**	**—**	**5,005**
Total consumer loans	**$ 285,065**	**34,398**	**39,025**	**45,069**	**36,148**	**439,705**
December 31, 2017						
By delinquency status:						
Current-29 DPD	$ 251,786	38,746	36,996	51,445	37,885	416,858
30-59 DPD	1,893	336	287	1,385	155	4,056
60-89 DPD	742	163	201	392	93	1,591
90-119 DPD	369	103	192	146	80	890
120-179 DPD	308	95	298	3	30	734
180+ DPD	1,091	243	2	—	25	1,361
Government insured/guaranteed loans (1)	14,767	—	—	—	—	14,767
Loans held at fair value	376	—	—	—	—	376
Total consumer loans (excluding PCI)	271,332	39,686	37,976	53,371	38,268	440,633
Total consumer PCI loans (carrying value)	12,722	27	—	—	—	12,749
Total consumer loans	$ 284,054	39,713	37,976	53,371	38,268	453,382

(1) Represents loans whose repayments are predominantly insured by the FHA or guaranteed by the VA. Loans insured/guaranteed by the FHA/VA and 90+ DPD totaled $7.7 billion at December 31, 2018, compared with $10.5 billion at December 31, 2017.

Of the $2.4 billion of consumer loans not government insured/guaranteed that are 90 days or more past due at December 31, 2018, $885 million was accruing, compared with $3.0 billion past due and $1.0 billion accruing at December 31, 2017.

Real estate 1-4 family first mortgage loans 180 days or more past due totaled $822 million, or 0.3% of total first mortgages (excluding PCI), at December 31, 2018, compared with $1.1 billion, or 0.4%, at December 31, 2017.

Table 6.11 provides a breakdown of our consumer portfolio by FICO. Most of the scored consumer portfolio has an updated FICO of 680 and above, reflecting a strong current borrower credit profile. FICO is not available for certain loan types, or may not be required if we deem it unnecessary due to strong collateral and other borrower attributes. Substantially all loans not requiring a FICO score are securities-based loans originated through retail brokerage, and totaled $8.9 billion at December 31, 2018, and $8.5 billion at December 31, 2017.

Table 6.11: Consumer Loans by FICO

(in millions)		Real estate 1-4 family first mortgage	Real estate 1-4 family junior lien mortgage	Credit card	Automobile	Other revolving credit and installment	Total
December 31, 2018							
By FICO:							
< 600	**$**	**4,273**	**1,454**	**3,292**	**7,071**	**697**	**16,787**
600-639		**2,974**	**994**	**2,777**	**4,431**	**725**	**11,901**
640-679		**5,810**	**1,898**	**6,464**	**6,225**	**1,822**	**22,219**
680-719		**13,568**	**3,908**	**9,445**	**7,354**	**3,384**	**37,659**
720-759		**27,258**	**5,323**	**7,949**	**6,853**	**4,395**	**51,778**
760-799		**57,193**	**6,315**	**5,227**	**5,947**	**5,322**	**80,004**
800+		**151,465**	**13,190**	**3,794**	**7,099**	**8,411**	**183,959**
No FICO available		**4,604**	**1,299**	**77**	**89**	**2,507**	**8,576**
FICO not required		**—**	**—**	**—**	**—**	**8,885**	**8,885**
Government insured/guaranteed loans (1)		**12,932**	**—**	**—**	**—**	**—**	**12,932**
Total consumer loans (excluding PCI)		**280,077**	**34,381**	**39,025**	**45,069**	**36,148**	**434,700**
Total consumer PCI loans (carrying value)		**4,988**	**17**	**—**	**—**	**—**	**5,005**
Total consumer loans	**$**	**285,065**	**34,398**	**39,025**	**45,069**	**36,148**	**439,705**
December 31, 2017							
By FICO:							
< 600	$	5,145	1,768	3,525	8,858	863	20,159
600-639		3,487	1,253	3,101	5,615	904	14,360
640-679		6,789	2,387	5,690	7,696	1,959	24,521
680-719		14,977	4,797	7,628	8,825	3,582	39,809
720-759		27,926	6,246	8,097	7,806	5,089	55,164
760-799		55,590	7,323	6,372	6,468	6,257	82,010
800+		136,729	15,144	2,994	7,845	8,455	171,167
No FICO available		5,546	768	569	258	2,648	9,789
FICO not required		—	—	—	—	8,511	8,511
Government insured/guaranteed loans (1)		15,143	—	—	—	—	15,143
Total consumer loans (excluding PCI)		271,332	39,686	37,976	53,371	38,268	440,633
Total consumer PCI loans (carrying value)		12,722	27	—	—	—	12,749
Total consumer loans	$	284,054	39,713	37,976	53,371	38,268	453,382

(1) Represents loans whose repayments are predominantly insured by the FHA or guaranteed by the VA.

LTV refers to the ratio comparing the loan's unpaid principal balance to the property's collateral value. CLTV refers to the combination of first mortgage and junior lien mortgage (including unused line amounts for credit line products) ratios. LTVs and CLTVs are updated quarterly using a cascade approach which first uses values provided by automated valuation models (AVMs) for the property. If an AVM is not available, then the value is estimated using the original appraised value adjusted by the change in Home Price Index (HPI) for the property location. If an HPI is not available, the original appraised value is used. The HPI value is normally the only method considered for high value properties, generally with an original value of $1 million or more, as the AVM values have proven less accurate for these properties.

Table 6.12 shows the most updated LTV and CLTV distribution of the real estate 1-4 family first and junior lien mortgage loan portfolios. We consider the trends in residential real estate markets as we monitor credit risk and establish our allowance for credit losses. In the event of a default, any loss should be limited to the portion of the loan amount in excess of the net realizable value of the underlying real estate collateral value. Certain loans do not have an LTV or CLTV due to industry data availability and portfolios acquired from or serviced by other institutions.

Table 6.12: Consumer Loans by LTV/CLTV

	December 31, 2018			December 31, 2017		
(in millions)	Real estate 1-4 family first mortgage by LTV	Real estate 1-4 family junior lien mortgage by CLTV	Total	Real estate 1-4 family first mortgage by LTV	Real estate 1-4 family junior lien mortgage by CLTV	Total
By LTV/CLTV:						
0-60%	$ 147,666	15,753	163,419	133,902	16,301	150,203
60.01-80%	104,477	11,183	115,660	104,639	12,918	117,557
80.01-100%	12,372	4,874	17,246	13,924	6,580	20,504
100.01-120% (1)	1,211	1,596	2,807	1,868	2,427	4,295
> 120% (1)	484	578	1,062	783	1,008	1,791
No LTV/CLTV available	935	397	1,332	1,073	452	1,525
Government insured/guaranteed loans (2)	12,932	—	12,932	15,143	—	15,143
Total consumer loans (excluding PCI)	280,077	34,381	314,458	271,332	39,686	311,018
Total consumer PCI loans (carrying value)	4,988	17	5,005	12,722	27	12,749
Total consumer loans	$ 285,065	34,398	319,463	284,054	39,713	323,767

(1) Reflects total loan balances with LTV/CLTV amounts in excess of 100%. In the event of default, the loss content would generally be limited to only the amount in excess of 100% LTV/CLTV.
(2) Represents loans whose repayments are predominantly insured by the FHA or guaranteed by the VA.

NONACCRUAL LOANS Table 6.13 provides loans on nonaccrual status. PCI loans are excluded from this table because they continue to earn interest from accretable yield, independent of performance in accordance with their contractual terms.

Table 6.13: Nonaccrual Loans

(in millions)	Dec 31, 2018	Dec 31, 2017
Commercial:		
Commercial and industrial	$ 1,486	1,899
Real estate mortgage	580	628
Real estate construction	32	37
Lease financing	90	76
Total commercial	2,188	2,640
Consumer:		
Real estate 1-4 family first mortgage (1)	3,183	3,732
Real estate 1-4 family junior lien mortgage	945	1,086
Automobile	130	130
Other revolving credit and installment	50	58
Total consumer	4,308	5,006
Total nonaccrual loans (excluding PCI)	$ 6,496	7,646

(1) Prior period has been revised to exclude $390 million of MLHFS, LHFS and loans held at fair value.

LOANS IN PROCESS OF FORECLOSURE Our recorded investment in consumer mortgage loans collateralized by residential real estate property that are in process of foreclosure was $4.6 billion and $6.3 billion at December 31, 2018 and 2017, respectively, which included $3.2 billion and $4.0 billion, respectively, of loans that are government insured/guaranteed. Under the Consumer Financial Protection Bureau guidelines, we do not commence the foreclosure process on consumer real estate loans until after the loan is 120 days delinquent. Foreclosure procedures and timelines vary depending on whether the property address resides in a judicial or non-judicial state. Judicial states require the foreclosure to be processed through the state's courts while non-judicial states are processed without court intervention. Foreclosure timelines vary according to state law.

LOANS 90 DAYS OR MORE PAST DUE AND STILL ACCRUING Certain loans 90 days or more past due as to interest or principal are still accruing, because they are (1) well-secured and in the process of collection or (2) real estate 1-4 family mortgage loans or consumer loans exempt under regulatory rules from being classified as nonaccrual until later delinquency, usually 120 days past due. PCI loans of $370 million at December 31, 2018, and $1.4 billion at December 31, 2017, are not included in these past due and still accruing loans even when they are 90 days or more contractually past due. These PCI loans are considered to be accruing because they continue to earn interest from accretable yield, independent of performance in accordance with their contractual terms.

Table 6.14 shows non-PCI loans 90 days or more past due and still accruing by class for loans not government insured/ guaranteed.

Table 6.14: Loans 90 Days or More Past Due and Still Accruing (1)

(in millions)	Dec 31, 2018	Dec 31, 2017
Total (excluding PCI):	$ 8,704	11,532
Less: FHA insured/VA guaranteed (2)	7,725	10,475
Total, not government insured/guaranteed	$ 979	1,057
By segment and class, not government insured/guaranteed:		
Commercial:		
Commercial and industrial	$ 43	26
Real estate mortgage	51	23
Total commercial	94	49
Consumer:		
Real estate 1-4 family first mortgage	124	213
Real estate 1-4 family junior lien mortgage	32	60
Credit card	513	492
Automobile	114	143
Other revolving credit and installment	102	100
Total consumer	885	1,008
Total, not government insured/guaranteed	$ 979	1,057

(1) Financial information for the prior period December 31, 2017 has been revised to exclude MLHFS, LHFS and loans held at fair value, which reduced "Total, not government insured/guaranteed" by $6 million.
(2) Represents loans whose repayments are predominantly insured by the FHA or guaranteed by the VA.

IMPAIRED LOANS Table 6.15 summarizes key information for impaired loans. Our impaired loans predominantly include loans on nonaccrual status in the commercial portfolio segment and loans modified in a TDR, whether on accrual or nonaccrual status. These impaired loans generally have estimated losses which are included in the allowance for credit losses. We have impaired loans with no allowance for credit losses when loss content has been previously recognized through charge-offs and we do not anticipate additional charge-offs or losses, or certain loans are currently performing in accordance with their terms and for which no loss has been estimated. Impaired loans exclude PCI loans. Table 6.15 includes trial modifications that totaled $149 million at December 31, 2018, and $194 million at December 31, 2017.

For additional information on our impaired loans and allowance for credit losses, see Note 1 (Summary of Significant Accounting Policies).

Table 6.15: Impaired Loans Summary

		Recorded investment		
(in millions)	Unpaid principal balance (1)	Impaired loans	Impaired loans with related allowance for credit losses	Related allowance for credit losses
December 31, 2018				
Commercial:				
Commercial and industrial	**$ 3,057**	**2,030**	**1,730**	**319**
Real estate mortgage	**1,228**	**1,032**	**1,009**	**154**
Real estate construction	**74**	**47**	**46**	**9**
Lease financing	**146**	**112**	**112**	**32**
Total commercial	**4,505**	**3,221**	**2,897**	**514**
Consumer:				
Real estate 1-4 family first mortgage	**12,309**	**10,738**	**4,420**	**525**
Real estate 1-4 family junior lien mortgage	**1,886**	**1,694**	**1,133**	**183**
Credit card	**449**	**449**	**449**	**172**
Automobile	**153**	**89**	**43**	**8**
Other revolving credit and installment	**162**	**156**	**136**	**41**
Total consumer (2)	**14,959**	**13,126**	**6,181**	**929**
Total impaired loans (excluding PCI)	**$ 19,464**	**16,347**	**9,078**	**1,443**
December 31, 2017				
Commercial:				
Commercial and industrial	$ 3,577	2,568	2,310	462
Real estate mortgage	1,502	1,239	1,207	211
Real estate construction	95	54	45	9
Lease financing	132	99	89	23
Total commercial	5,306	3,960	3,651	705
Consumer:				
Real estate 1-4 family first mortgage	14,020	12,225	6,060	770
Real estate 1-4 family junior lien mortgage	2,135	1,918	1,421	245
Credit card	356	356	356	136
Automobile	157	87	34	5
Other revolving credit and installment	136	128	117	29
Total consumer (2)	16,804	14,714	7,988	1,185
Total impaired loans (excluding PCI)	$ 22,110	18,674	11,639	1,890

(1) Excludes the unpaid principal balance for loans that have been fully charged off or otherwise have zero recorded investment.
(2) Includes the recorded investment of $1.3 billion and $1.4 billion at December 31, 2018 and 2017, respectively, of government insured/guaranteed loans that are predominantly insured by the FHA or guaranteed by the VA and generally do not have an allowance. Impaired loans may also have limited, if any, allowance when the recorded investment of the loan approximates estimated net realizable value as a result of charge-offs prior to a TDR modification.

Commitments to lend additional funds on loans whose terms have been modified in a TDR amounted to $513 million and $579 million at December 31, 2018 and 2017, respectively.

Table 6.16 provides the average recorded investment in impaired loans and the amount of interest income recognized on impaired loans by portfolio segment and class.

Table 6.16: Average Recorded Investment in Impaired Loans

						Year ended December 31,
	2018		2017		2016	
(in millions)	**Average recorded investment**	**Recognized interest income**	Average recorded investment	Recognized interest income	Average recorded investment	Recognized interest income
Commercial:						
Commercial and industrial	**$ 2,287**	**173**	3,241	118	3,408	101
Real estate mortgage	**1,193**	**89**	1,328	91	1,636	128
Real estate construction	**60**	**7**	66	14	115	11
Lease financing	**125**	**1**	105	1	88	—
Total commercial	**3,665**	**270**	4,740	224	5,247	240
Consumer:						
Real estate 1-4 family first mortgage	**11,522**	**664**	13,326	730	15,857	828
Real estate 1-4 family junior lien mortgage	**1,804**	**116**	2,041	121	2,294	132
Credit card	**407**	**50**	323	36	295	34
Automobile	**86**	**11**	86	11	93	11
Other revolving credit and installment	**142**	**10**	117	8	89	6
Total consumer	**13,961**	**851**	15,893	906	18,628	1,011
Total impaired loans (excluding PCI)	**$ 17,626**	**1,121**	20,633	1,130	23,875	1,251
Interest income:						
Cash basis of accounting		**$ 338**		299		353
Other (1)		**783**		831		898
Total interest income		**$ 1,121**		1,130		1,251

(1) Includes interest recognized on accruing TDRs, interest recognized related to certain impaired loans which have an allowance calculated using discounting, and amortization of purchase accounting adjustments related to certain impaired loans.

TROUBLED DEBT RESTRUCTURINGS (TDRs) When, for economic or legal reasons related to a borrower's financial difficulties, we grant a concession for other than an insignificant period of time to a borrower that we would not otherwise consider, the related loan is classified as a TDR, the balance of which totaled $15.5 billion and $17.8 billion at December 31, 2018 and 2017, respectively. We do not consider loan resolutions such as foreclosure or short sale to be a TDR.

We may require some consumer borrowers experiencing financial difficulty to make trial payments generally for a period of three to four months, according to the terms of a planned permanent modification, to determine if they can perform according to those terms. These arrangements represent trial modifications, which we classify and account for as TDRs. While loans are in trial payment programs, their original terms are not considered modified and they continue to advance through delinquency status and accrue interest according to their original terms.

Table 6.17 summarizes our TDR modifications for the periods presented by primary modification type and includes the financial effects of these modifications. For those loans that modify more than once, the table reflects each modification that occurred during the period. Loans that both modify and pay off within the period, as well as changes in recorded investment during the period for loans modified in prior periods, are not included in the table.

Table 6.17: TDR Modifications

	Primary modification type (1)				Financial effects of modifications		
(in millions)	Principal (2)	Interest rate reduction	Other concessions (3)	Total	Charge- offs (4)	Weighted average interest rate reduction	Recorded investment related to interest rate reduction (5)
Year ended December 31, 2018							
Commercial:							
Commercial and industrial	**$ 13**	**29**	**2,310**	**2,352**	**58**	**1.18%**	**$ 29**
Real estate mortgage	**—**	**44**	**375**	**419**	**—**	**0.88**	**44**
Real estate construction	**—**	**—**	**25**	**25**	**—**	**—**	**—**
Lease financing	**—**	**—**	**63**	**63**	**—**	**—**	**—**
Total commercial	**13**	**73**	**2,773**	**2,859**	**58**	**1.00**	**73**
Consumer:							
Real estate 1-4 family first mortgage	**209**	**26**	**1,042**	**1,277**	**4**	**2.25**	**119**
Real estate 1-4 family junior lien mortgage	**7**	**41**	**113**	**161**	**5**	**2.14**	**45**
Credit card	**—**	**336**	**—**	**336**	**—**	**12.54**	**336**
Automobile	**13**	**16**	**55**	**84**	**30**	**6.21**	**16**
Other revolving credit and installment	**—**	**49**	**12**	**61**	**—**	**7.95**	**49**
Trial modifications (6)	**—**	**—**	**8**	**8**	**—**	**—**	**—**
Total consumer	**229**	**468**	**1,230**	**1,927**	**39**	**8.96**	**565**
Total	**$ 242**	**541**	**4,003**	**4,786**	**97**	**8.06%**	**$ 638**
Year ended December 31, 2017							
Commercial:							
Commercial and industrial	$ 24	45	2,912	2,981	173	0.64 %	$ 45
Real estate mortgage	5	59	507	571	20	1.28	59
Real estate construction	—	1	26	27	—	0.69	1
Lease financing	—	—	37	37	—	—	—
Total commercial	29	105	3,482	3,616	193	1.00	105
Consumer:							
Real estate 1-4 family first mortgage	231	140	1,035	1,406	15	2.57	257
Real estate 1-4 family junior lien mortgage	25	82	81	188	14	3.26	93
Credit card	—	257	—	257	—	11.98	257
Automobile	2	15	67	84	39	5.89	15
Other revolving credit and installment	—	47	8	55	1	7.47	47
Trial modifications (6)	—	—	(28)	(28)	—	—	—
Total consumer	258	541	1,163	1,962	69	6.70	669
Total	$ 287	646	4,645	5,578	262	5.92 %	$ 774
Year ended December 31, 2016							
Commercial:							
Commercial and industrial	$ 42	130	3,154	3,326	360	1.91 %	$ 130
Real estate mortgage	2	105	560	667	1	1.15	105
Real estate construction	—	27	72	99	—	1.02	27
Lease financing	—	—	8	8	—	—	—
Total commercial	44	262	3,794	4,100	361	1.51	262
Consumer:							
Real estate 1-4 family first mortgage	338	288	1,411	2,037	49	2.69	507
Real estate 1-4 family junior lien mortgage	23	109	106	238	37	3.07	130
Credit card	—	180	—	180	—	12.09	180
Automobile	2	16	57	75	36	6.07	16
Other revolving credit and installment	1	33	10	44	2	6.83	33
Trial modifications (6)	—	—	44	44	—	—	—
Total consumer	364	626	1,628	2,618	124	4.92	866
Total	$ 408	888	5,422	6,718	485	4.13 %	$ 1,128

(1) Amounts represent the recorded investment in loans after recognizing the effects of the TDR, if any. TDRs may have multiple types of concessions, but are presented only once in the first modification type based on the order presented in the table above. The reported amounts include loans remodified of $1.9 billion, $2.1 billion and $1.6 billion, for the years ended December 31, 2018, 2017, and 2016, respectively.

(2) Principal modifications include principal forgiveness at the time of the modification, contingent principal forgiveness granted over the life of the loan based on borrower performance, and principal that has been legally separated and deferred to the end of the loan, with a zero percent contractual interest rate.

(3) Other concessions include loans discharged in bankruptcy, loan renewals, term extensions and other interest and noninterest adjustments, but exclude modifications that also forgive principal and/or reduce the contractual interest rate.

(4) Charge-offs include write-downs of the investment in the loan in the period it is contractually modified. The amount of charge-off will differ from the modification terms if the loan has been charged down prior to the modification based on our policies. In addition, there may be cases where we have a charge-off/down with no legal principal modification. Modifications resulted in legally forgiving principal (actual, contingent or deferred) of $28 million, $32 million and $67 million for the years ended December 31, 2018, 2017, and 2016, respectively.

(5) Reflects the effect of reduced interest rates on loans with an interest rate concession as one of their concession types, which includes loans reported as a principal primary modification type that also have an interest rate concession.

(6) Trial modifications are granted a delay in payments due under the original terms during the trial payment period. However, these loans continue to advance through delinquency status and accrue interest according to their original terms. Any subsequent permanent modification generally includes interest rate related concessions; however, the exact concession type and resulting financial effect are usually not known until the loan is permanently modified. Trial modifications for the period are presented net of previously reported trial modifications that became permanent in the current period.

Table 6.18 summarizes permanent modification TDRs that have defaulted in the current period within 12 months of their permanent modification date. We are reporting these defaulted TDRs based on a payment default definition of 90 days past due for the commercial portfolio segment and 60 days past due for the consumer portfolio segment.

Table 6.18: Defaulted TDRs

	Recorded investment of defaults		
	Year ended December 31,		
(in millions)	**2018**	2017	2016
Commercial:			
Commercial and industrial	$ **198**	173	124
Real estate mortgage	**76**	61	66
Real estate construction	**36**	4	3
Lease financing	**—**	1	—
Total commercial	**310**	239	193
Consumer:			
Real estate 1-4 family first mortgage	**60**	114	138
Real estate 1-4 family junior lien mortgage	**14**	19	20
Credit card	**79**	74	56
Automobile	**14**	15	13
Other revolving credit and installment	**6**	5	4
Total consumer	**173**	227	231
Total	$ **483**	466	424

Purchased Credit-Impaired Loans

Substantially all of our PCI loans were acquired from Wachovia on December 31, 2008, at which time we acquired commercial and consumer loans with a carrying value of $18.7 billion and $40.1 billion, respectively. The unpaid principal balance on December 31, 2008, was $98.2 billion for the total of commercial and consumer PCI loans. Table 6.19 presents PCI loans net of any remaining purchase accounting adjustments. Real estate 1-4 family first mortgage PCI loans are predominantly Pick-a-Pay loans.

Table 6.19: PCI Loans

(in millions)	**Dec 31, 2018**	Dec 31, 2017
Total commercial	$ **4**	86
Consumer:		
Real estate 1-4 family first mortgage	**4,988**	12,722
Real estate 1-4 family junior lien mortgage	**17**	27
Total consumer	**5,005**	12,749
Total PCI loans (carrying value)	$ **5,009**	12,835
Total PCI loans (unpaid principal balance)	$ **7,348**	18,975

ACCRETABLE YIELD The excess of cash flows expected to be collected over the carrying value of PCI loans is referred to as the accretable yield and is recognized in interest income using an effective yield method over the remaining life of the loan, or pools of loans. The accretable yield is affected by:

- changes in interest rate indices for variable rate PCI loans – expected future cash flows are based on the variable rates in effect at the time of the regular evaluations of cash flows expected to be collected;
- changes in prepayment assumptions – prepayments affect the estimated life of PCI loans which may change the amount of interest income, and possibly principal, expected to be collected; and
- changes in the expected principal and interest payments over the estimated weighted-average life – updates to expected cash flows are driven by the credit outlook and actions taken with borrowers. Changes in expected future cash flows from loan modifications are included in the regular evaluations of cash flows expected to be collected.

The change in the accretable yield related to PCI loans since the merger with Wachovia is presented in Table 6.20. Changes during 2018 also reflect $2.4 billion in gains on the sale of $6.2 billion Pick-a-Pay PCI loans.

Table 6.20: Change in Accretable Yield

(in millions)		2018	2017	2016	2009-2015
Total, beginning of period	$	**8,887**	11,216	16,301	10,447
Addition of accretable yield due to acquisitions		**—**	2	27	132
Accretion into interest income (1)		**(1,094)**	(1,406)	(1,365)	(14,212)
Accretion into noninterest income due to sales (2)		**(2,374)**	(334)	(9)	(458)
Reclassification from nonaccretable difference for loans with improving credit-related cash flows		**403**	642	1,221	9,734
Changes in expected cash flows that do not affect nonaccretable difference (3)		**(2,789)**	(1,233)	(4,959)	10,658
Total, end of period	$	**3,033**	8,887	11,216	16,301

(1) Includes accretable yield released as a result of settlements with borrowers, which is included in interest income.
(2) Includes accretable yield released as a result of sales to third parties, which is included in noninterest income.
(3) Represents changes in cash flows expected to be collected due to the impact of modifications, changes in prepayment assumptions, changes in interest rates on variable rate PCI loans and sales to third parties.

COMMERCIAL PCI CREDIT QUALITY INDICATORS
Table 6.21 provides a breakdown of commercial PCI loans by risk category.

Table 6.21: Commercial PCI Loans by Risk Category

(in millions)		Dec. 31, 2018	Dec. 31, 2017
By risk category:			
Pass	$	**1**	8
Criticized		**3**	78
Total commercial PCI loans	$	**4**	86

Table 6.22 provides past due information for commercial PCI loans.

Table 6.22: Commercial PCI Loans by Delinquency Status

(in millions)		Dec. 31, 2018	Dec. 31, 2017
By delinquency status:			
Current-29 DPD and still accruing	$	3	86
30-89 DPD and still accruing		1	—
Total commercial PCI loans	$	4	86

CONSUMER PCI CREDIT QUALITY INDICATORS Our consumer PCI loans were aggregated into several pools of loans at acquisition. Below, we have provided credit quality indicators based on the unpaid principal balance (adjusted for write-downs) of the individual loans included in the pool, but we have not allocated the remaining purchase accounting adjustments, which were established at a pool level. Table 6.23 provides the delinquency status of consumer PCI loans.

Table 6.23: Consumer PCI Loans by Delinquency Status

		December 31, 2018			December 31, 2017		
(in millions)		Real estate 1-4 family first mortgage	Real estate 1-4 family junior lien mortgage	Total	Real estate 1-4 family first mortgage	Real estate 1-4 family junior lien mortgage	Total
By delinquency status:							
Current-29 DPD and still accruing	$	5,545	117	5,662	13,127	138	13,265
30-59 DPD and still accruing		495	8	503	1,317	8	1,325
60-89 DPD and still accruing		229	3	232	622	3	625
90-119 DPD and still accruing		99	2	101	293	2	295
120-179 DPD and still accruing		54	1	55	219	2	221
180+ DPD and still accruing		353	3	356	1,310	4	1,314
Total consumer PCI loans (adjusted unpaid principal balance)	$	6,775	134	6,909	16,888	157	17,045
Total consumer PCI loans (carrying value)	$	4,988	17	5,005	12,722	27	12,749

Table 6.24 provides FICO scores for consumer PCI loans.

Table 6.24: Consumer PCI Loans by FICO

	December 31, 2018			December 31, 2017		
(in millions)	Real estate 1-4 family first mortgage	Real estate 1-4 family junior lien mortgage	Total	Real estate 1-4 family first mortgage	Real estate 1-4 family junior lien mortgage	Total
By FICO:						
< 600	$ 1,418	27	1,445	4,014	37	4,051
600-639	713	18	731	2,086	20	2,106
640-679	898	20	918	2,393	24	2,417
680-719	970	24	994	2,242	29	2,271
720-759	843	20	863	1,779	23	1,802
760-799	523	11	534	933	12	945
800+	381	6	387	468	6	474
No FICO available	1,029	8	1,037	2,973	6	2,979
Total consumer PCI loans (adjusted unpaid principal balance)	$ 6,775	134	6,909	16,888	157	17,045
Total consumer PCI loans (carrying value)	$ 4,988	17	5,005	12,722	27	12,749

Table 6.25 shows the distribution of consumer PCI loans by LTV for real estate 1-4 family first mortgages and by CLTV for real estate 1-4 family junior lien mortgages.

Table 6.25: Consumer PCI Loans by LTV/CLTV

	December 31, 2018			December 31, 2017		
(in millions)	Real estate 1-4 family first mortgage by LTV	Real estate 1-4 family junior lien mortgage by CLTV	Total	Real estate 1-4 family first mortgage by LTV	Real estate 1-4 family junior lien mortgage by CLTV	Total
By LTV/CLTV:						
0-60%	$ 3,970	44	4,014	8,010	45	8,055
60.01-80%	2,161	53	2,214	6,510	63	6,573
80.01-100%	542	28	570	1,975	35	2,010
100.01-120% (1)	82	8	90	319	10	329
> 120% (1)	19	1	20	73	3	76
No LTV/CLTV available	1	—	1	1	1	2
Total consumer PCI loans (adjusted unpaid principal balance)	$ 6,775	134	6,909	16,888	157	17,045
Total consumer PCI loans (carrying value)	$ 4,988	17	5,005	12,722	27	12,749

(1) Reflects total loan balances with LTV/CLTV amounts in excess of 100%. In the event of default, the loss content would generally be limited to only the amount in excess of 100% LTV/CLTV.

Note 7: Premises, Equipment, Lease Commitments and Other Assets

Table 7.1: Premises and Equipment

(in millions)		Dec 31, 2018	Dec 31, 2017
Land	$	1,757	1,799
Buildings		8,974	8,865
Furniture and equipment		6,896	7,089
Leasehold improvements		2,387	2,291
Premises and equipment leased under capital leases		75	103
Total premises and equipment		20,089	20,147
Less: Accumulated depreciation and amortization		11,169	11,300
Net book value, premises and equipment	$	8,920	8,847

Depreciation and amortization expense for premises and equipment was $1.3 billion, $1.2 billion and $1.2 billion in 2018, 2017 and 2016, respectively.

Dispositions of premises and equipment resulted in net gains of $32 million, $128 million and $44 million in 2018, 2017 and 2016, respectively, included in other noninterest expense.

We have obligations under a number of noncancelable operating leases for premises and equipment. The leases predominantly expire over the next fifteen years, with the longest expiring in 2105, and many provide for periodic adjustment of rentals based on changes in various economic indicators. Some leases also include a renewal option. Table 7.2 provides the future minimum payments of noncancelable operating leases, net of sublease income, with terms greater than one year as of December 31, 2018.

Table 7.2: Minimum Lease Payments of Operating Leases

(in millions)		
Year ended December 31,		
2019	$	1,174
2020		1,056
2021		880
2022		713
2023		577
Thereafter		1,654
Total	$	6,054

Total minimum lease payments for operating leases above are net of $427 million of noncancelable sublease income. Operating lease rental expense (predominantly for premises) was $1.3 billion for the years 2018, 2017 and 2016, net of sublease income of $73 million, $76 million and $86 million for the same years, respectively.

Table 7.3 presents the components of other assets.

Table 7.3: Other Assets

(in millions)		Dec 31, 2018	Dec 31, 2017
Corporate/bank-owned life insurance	$	19,751	19,549
Accounts receivable (1)		34,281	39,127
Interest receivable		6,084	5,688
Core deposit intangibles		—	769
Customer relationship and other amortized intangibles		545	841
Foreclosed assets:			
Residential real estate:			
Government insured/guaranteed (1)		88	120
Non-government insured/guaranteed		229	252
Non-residential real estate		134	270
Operating lease assets		9,036	9,666
Due from customers on acceptances		258	177
Other		9,444	13,785
Total other assets	$	79,850	90,244

(1) Certain government-guaranteed residential real estate mortgage loans upon foreclosure are included in Accounts receivable. Both principal and interest related to these foreclosed real estate assets are collectible because the loans were predominantly insured by the FHA or guaranteed by the VA. For more information on the classification of certain government-guaranteed mortgage loans upon foreclosure, see Note 1 (Summary of Significant Accounting Policies).

Note 8: Equity Securities

Table 8.1 provides a summary of our equity securities by business purpose and accounting method, including equity securities with readily determinable fair values (marketable) and those without readily determinable fair values (nonmarketable).

Table 8.1: Equity Securities

(in millions)	Dec 31, 2018	Dec 31, 2017
Held for trading at fair value:		
Marketable equity securities	$ 19,449	30,004
Not held for trading:		
Fair value:		
Marketable equity securities (1)	4,513	4,356
Nonmarketable equity securities (2)	5,594	4,867
Total equity securities at fair value	10,107	9,223
Equity method:		
LIHTC (3)	10,999	10,269
Private equity	3,832	3,839
Tax-advantaged renewable energy	3,073	1,950
New market tax credit and other	311	294
Total equity method	18,215	16,352
Other:		
Federal Reserve Bank stock and other at cost (4)	5,643	5,828
Private equity (5)	1,734	1,090
Total equity securities not held for trading	35,699	32,493
Total equity securities (6)	$ 55,148	62,497

(1) Includes $3.2 billion and $3.7 billion at December 31, 2018 and 2017, respectively, related to securities held as economic hedges of our deferred compensation plan obligations.
(2) Includes $5.5 billion and $4.9 billion at December 31, 2018 and 2017, respectively, related to investments for which we elected the fair value option. See Note 18 (Fair Value of Assets and Liabilities) for additional information.
(3) Represents low-income housing tax credit investments.
(4) Includes $5.6 billion and $5.4 billion at December 31, 2018 and 2017, respectively, related to investments in Federal Reserve Bank and Federal Home Loan Bank stock.
(5) Represents nonmarketable equity securities for which we have elected to account for the security under the measurement alternative.
(6) At December 31, 2018 and 2017, we held no securities of any single issuer with a book value that exceeded 10% of stockholder's equity.

Equity Securities Held for Trading

Equity securities held for trading purposes are marketable equity securities traded on organized exchanges. These securities are held as part of our customer accommodation trading activities. For more information on these activities, see Note 4 (Trading Activities).

Equity Securities Not Held for Trading

We also hold equity securities unrelated to trading activities. These securities include private equity and tax credit investments, securities held as economic hedges or to meet regulatory requirements (for example, Federal Reserve Bank and Federal Home Loan Bank stock). Equity securities not held for trading purposes are accounted for at either fair value, equity method, cost or the measurement alternative.

FAIR VALUE Marketable equity securities held for purposes other than trading primarily consist of exchange-traded equity funds held to economically hedge obligations related to our deferred compensation plans and to a lesser extent other holdings of publicly traded equity securities held for investment purposes. We have elected to account for nonmarketable equity securities under the fair value method, and substantially all of these securities are economically hedged with equity derivatives.

EQUITY METHOD Our equity method investments consist of tax credit and private equity investments, the majority of which are our low-income housing tax credit (LIHTC) investments.

We invest in affordable housing projects that qualify for the LIHTC, which are designed to promote private development of low-income housing. These investments generate a return mostly through realization of federal tax credit and other tax benefits. We recognized pre-tax losses of $1.2 billion for both 2018 and 2017, related to our LIHTC investments. These losses were recognized in other noninterest income. We also recognized total tax benefits of $1.5 billion for both 2018 and 2017, which included tax credits recorded to income taxes of $1.2 billion and $1.1 billion for the same periods, respectively. We are periodically required to provide additional financial support during the investment period. Our liability for unfunded commitments was $3.9 billion and $3.6 billion at December 31, 2018 and 2017, respectively. Substantially all of this liability is expected to be paid over the next three years. This liability is included in long-term debt.

OTHER The remaining portion of our nonmarketable equity securities portfolio consists of securities accounted for using the cost or measurement alternative method.

Realized Gains and Losses

Table 8.2 provides a summary of the net gains and losses for equity securities. Gains and losses for securities held for trading are reported in net gains from trading activities.

Table 8.2: Net Gains (Losses) from Equity Securities

	Year ended December 31,		
(in millions)	**2018**	2017	2016
Net gains (losses) from equity securities carried at fair value:			
Marketable equity securities	**$ (389)**	967	525
Nonmarketable equity securities	**709**	1,557	(21)
Total equity securities carried at fair value	**320**	2,524	504
Net gains (losses) from nonmarketable equity securities not carried at fair value:			
Impairment write-downs	**(352)**	(339)	(448)
Net unrealized gains related to measurement alternative observable transactions	**418**	—	—
Net realized gains on sale	**1,504**	980	849
All other	**33**	97	73
Total nonmarketable equity securities not carried at fair value	**1,603**	738	474
Net gains (losses) from economic hedge derivatives (1)	**(408)**	(1,483)	125
Total net gains from equity securities	**$ 1,515**	1,779	1,103

(1) Includes net gains (losses) on derivatives not designated as hedging instruments.

Measurement Alternative

Table 8.3 provides additional information about the impairment write-downs and observable price adjustments related to nonmarketable equity securities accounted for under the measurement alternative. Gains and losses related to these adjustments are also included in Table 8.2.

Table 8.3: Measurement Alternative

	Year ended December 31,
(in millions)	**2018**
Net gains (losses) recognized in earnings during the period:	
Gross unrealized gains due to observable price changes	**$ 443**
Gross unrealized losses due to observable price changes	**(25)**
Impairment write-downs	**(33)**
Realized net gains from sale	**274**
Total net gains recognized during the period	**$ 659**

The cumulative gross unrealized gains and (losses) due to observable price changes as of December 31, 2018, were $415 million and $(25) million, respectively. Cumulative impairment losses as of December 31, 2018, were $33 million. These cumulative amounts represent carrying value adjustments to equity securities accounted for under the measurement alternative that were recognized on the balance sheet as of December 31, 2018.

Note 9: Securitizations and Variable Interest Entities

Involvement with Special Purpose Entities (SPEs)

In the normal course of business, we enter into various types of on- and off-balance sheet transactions with SPEs, which are corporations, trusts, limited liability companies or partnerships that are established for a limited purpose. Generally, SPEs are formed in connection with securitization transactions. In a securitization transaction, assets are transferred to an SPE, which then issues to investors various forms of interests in those assets and may also enter into derivative transactions. In a securitization transaction where we transferred assets from our balance sheet, we typically receive cash and/or other interests in an SPE as proceeds for the assets we transfer. Also, in certain transactions, we may retain the right to service the transferred receivables and to repurchase those receivables from the SPE if the outstanding balance of the receivables falls to a level where the cost exceeds the benefits of servicing such receivables. In addition, we may purchase the right to service loans in an SPE that were transferred to the SPE by a third party.

In connection with our securitization activities, we have various forms of ongoing involvement with SPEs, which may include:

- underwriting securities issued by SPEs and subsequently making markets in those securities;
- providing liquidity facilities to support short-term obligations of SPEs issued to third-party investors;
- providing credit enhancement on securities issued by SPEs or market value guarantees of assets held by SPEs through the use of letters of credit, financial guarantees, credit default swaps and total return swaps;
- entering into other derivative contracts with SPEs;
- holding senior or subordinated interests in SPEs;
- acting as servicer or investment manager for SPEs; and
- providing administrative or trustee services to SPEs.

SPEs formed in connection with securitization transactions are generally considered variable interest entities (VIEs). SPEs formed for other corporate purposes may be VIEs as well. A VIE is an entity that has either a total equity investment that is insufficient to finance its activities without additional subordinated financial support or whose equity investors lack the ability to control the entity's activities or lack the ability to receive expected benefits or absorb obligations in a manner that's consistent with their investment in the entity. A VIE is consolidated by its primary beneficiary, the party that has both the power to direct the activities that most significantly impact the VIE and a variable interest that could potentially be significant to the VIE. A variable interest is a contractual, ownership or other interest whose value changes with changes in the fair value of the VIE's net assets. To determine whether or not a variable interest we hold could potentially be significant to the VIE, we consider both qualitative and quantitative factors regarding the nature, size and form of our involvement with the VIE. We assess whether or not we are the primary beneficiary of a VIE on an on-going basis.

We have segregated our involvement with VIEs between those VIEs which we consolidate, those which we do not consolidate and those for which we account for the transfers of financial assets as secured borrowings. Secured borrowings are transactions involving transfers of our financial assets to third parties that are accounted for as financings with the assets pledged as collateral. Accordingly, the transferred assets remain recognized on our balance sheet. Subsequent tables within this Note further segregate these transactions by structure type.

Table 9.1 provides the classifications of assets and liabilities in our balance sheet for our transactions with VIEs.

Table 9.1: Balance Sheet Transactions with VIEs

(in millions)		VIEs that we do not consolidate	VIEs that we consolidate		Transfers that we account for as secured borrowings	Total
December 31, 2018						
Cash and due from banks	**$**	**—**	**139**		**—**	**139**
Interest-earning deposits with banks		**—**	**8**		**—**	**8**
Debt securities:						
Trading debt securities		**2,110**	**45**		**200**	**2,355**
Available-for-sale debt securities (1)		**2,686**	**—**		**317**	**3,003**
Held-to-maturity debt securities		**510**	**—**		**—**	**510**
Loans		**1,433**	**13,564**		**94**	**15,091**
Mortgage servicing rights		**14,761**	**—**		**—**	**14,761**
Derivative assets		**53**	**—**		**—**	**53**
Equity securities		**11,041**	**85**		**—**	**11,126**
Other assets		**—**	**221**		**6**	**227**
Total assets		**32,594**	**14,062**		**617**	**47,273**
Short-term borrowings		**—**	**—**		**493**	**493**
Derivative liabilities		**26**	**—**	(2)	**—**	**26**
Accrued expenses and other liabilities		**231**	**191**	(2)	**8**	**430**
Long-term debt		**3,870**	**816**	(2)	**93**	**4,779**
Total liabilities		**4,127**	**1,007**		**594**	**5,728**
Noncontrolling interests		**—**	**34**		**—**	**34**
Net assets	**$**	**28,467**	**13,021**		**23**	**41,511**
December 31, 2017						
Cash and due from banks	$	—	116		—	116
Interest-earning deposits with banks		—	371		—	371
Debt securities:						
Trading debt securities		1,305	—		201	1,506
Available-for-sale debt securities (1)		3,288	—		358	3,646
Held-to-maturity debt securities		485	—		—	485
Loans		4,274	12,482		110	16,866
Mortgage servicing rights		13,628	—		—	13,628
Derivative assets		44	—		—	44
Equity securities		10,740	306		—	11,046
Other assets		—	342		6	348
Total assets		33,764	13,617		675	48,056
Short-term borrowings		—	—		522	522
Derivative liabilities		106	5	(2)	—	111
Accrued expenses and other liabilities		244	132	(2)	10	386
Long-term debt		3,590	1,479	(2)	111	5,180
Total liabilities		3,940	1,616		643	6,199
Noncontrolling interests		—	283		—	283
Net assets	$	29,824	11,718		32	41,574

(1) Excludes certain debt securities related to loans serviced for the Federal National Mortgage Association (FNMA), Federal Home Loan Mortgage Corporation (FHLMC) and GNMA.
(2) There were no VIE liabilities with recourse to the general credit of Wells Fargo for the periods presented.

Transactions with Unconsolidated VIEs

Our transactions with unconsolidated VIEs include securitizations of residential mortgage loans, CRE loans, student loans, automobile loans and leases, certain dealer floorplan loans; investment and financing activities involving collateralized debt obligations (CDOs) backed by asset-backed and CRE securities, tax credit structures, collateralized loan obligations (CLOs) backed by corporate loans, and other types of structured financing. We have various forms of involvement with VIEs, including servicing, holding senior or subordinated interests, entering into liquidity arrangements, credit default swaps and other derivative contracts. Involvements with these unconsolidated VIEs are recorded on our balance sheet in debt and equity securities, loans, MSRs, derivative assets and liabilities, other assets, other liabilities, and long-term debt, as appropriate.

Table 9.2 provides a summary of unconsolidated VIEs with which we have significant continuing involvement, but we are not the primary beneficiary. We do not consider our continuing involvement in an unconsolidated VIE to be significant when it relates to third-party sponsored VIEs for which we were not the transferor (unless we are servicer and have other significant forms of involvement) or if we were the sponsor only or sponsor and servicer but do not have any other forms of significant involvement.

Significant continuing involvement includes transactions where we were the sponsor or transferor and have other significant forms of involvement. Sponsorship includes transactions with unconsolidated VIEs where we solely or materially participated in the initial design or structuring of the entity or marketing of the transaction to investors. When we transfer assets to a VIE and account for the transfer as a sale, we are considered the transferor. We consider investments in securities (other than those held temporarily in trading), loans, guarantees, liquidity agreements, written options and servicing of collateral to be other forms of involvement that may be significant. We have excluded certain transactions with unconsolidated VIEs from the balances presented in the following table where we have determined that our continuing involvement is not significant due to the temporary nature and size of our variable interests, because we were not the transferor or because we were not involved in the design of the unconsolidated VIEs. We also exclude from the table secured borrowing transactions with unconsolidated VIEs (for information on these transactions, see the Transactions with Consolidated VIEs and Secured Borrowings section in this Note).

Table 9.2: Unconsolidated VIEs

		Carrying value – asset (liability)				
(in millions)	Total VIE assets	Debt and equity interests (1)	Servicing assets	Derivatives	Other commitments and guarantees	Net assets
December 31, 2018						
Residential mortgage loan securitizations:						
Conforming (2)	$ 1,172,833	2,377	13,811	—	(171)	16,017
Other/nonconforming	10,596	453	57	—	—	510
Commercial mortgage securitizations	153,350	2,409	893	(22)	(40)	3,240
Collateralized debt obligations:						
Debt securities	659	—	—	5	(20)	(15)
Loans (3)	—	—	—	—	—	—
Asset-based finance structures	304	205	—	—	—	205
Tax credit structures	35,185	12,087	—	—	(3,870)	8,217
Collateralized loan obligations	2	—	—	—	—	—
Investment funds	185	42	—	—	—	42
Other (4)	1,688	207	—	44	—	251
Total	$ 1,374,802	17,780	14,761	27	(4,101)	28,467

	Maximum exposure to loss				
	Debt and equity interests (1)	Servicing assets	Derivatives	Other commitments and guarantees	Total exposure
Residential mortgage loan securitizations:					
Conforming	$ 2,377	13,811	—	1,183	17,371
Other/nonconforming	453	57	—	—	510
Commercial mortgage securitizations	2,409	893	28	11,563	14,893
Collateralized debt obligations:					
Debt securities	—	—	5	20	25
Loans (3)	—	—	—	—	—
Asset-based finance structures	205	—	—	71	276
Tax credit structures	12,087	—	—	1,420	13,507
Collateralized loan obligations	—	—	—	—	—
Investment funds	42	—	—	—	42
Other (4)	207	—	45	158	410
Total	$ 17,780	14,761	78	14,415	47,034

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(in millions)	Total VIE assets	Debt and equity interests (1)	Servicing assets	Derivatives	Other commitments and guarantees	Net assets
		Carrying value - asset (liability)				
December 31, 2017						
Residential mortgage loan securitizations:						
Conforming (2)	$ 1,169,410	2,100	12,665	—	(190)	14,575
Other/nonconforming	14,175	598	73	—	—	671
Commercial mortgage securitizations	144,650	2,198	890	28	(34)	3,082
Collateralized debt obligations:						
Debt securities	1,031	—	—	5	(20)	(15)
Loans (3)	1,481	1,443	—	—	—	1,443
Asset-based finance structures	2,333	1,867	—	—	—	1,867
Tax credit structures	31,852	11,258	—	—	(3,590)	7,668
Collateralized loan obligations	23	1	—	—	—	1
Investment funds	225	50	—	—	—	50
Other (4)	2,257	577	—	(95)	—	482
Total	$ 1,367,437	20,092	13,628	(62)	(3,834)	29,824

	Debt and equity interests (1)	Servicing assets	Derivatives	Other commitments and guarantees	Total exposure
	Maximum exposure to loss				
Residential mortgage loan securitizations:					
Conforming	$ 2,100	12,665	—	1,137	15,902
Other/nonconforming	598	73	—	—	671
Commercial mortgage securitizations	2,198	890	42	10,202	13,332
Collateralized debt obligations:					
Debt securities	—	—	5	20	25
Loans (3)	1,443	—	—	—	1,443
Asset-based finance structures	1,867	—	—	71	1,938
Tax credit structures	11,258	—	—	1,175	12,433
Collateralized loan obligations	1	—	—	—	1
Investment funds	50	—	—	—	50
Other (4)	577	—	120	157	854
Total	$ 20,092	13,628	167	12,762	46,649

(1) Includes total equity interests of $11.0 billion and $10.7 billion at December 31, 2018 and 2017, respectively. Also includes debt interests in the form of both loans and securities. Excludes certain debt securities held related to loans serviced for FNMA, FHLMC and GNMA.
(2) Excludes assets and related liabilities with a recorded carrying value on our balance sheet of $1.2 billion and $2.2 billion at December 31, 2018 and 2017, respectively, for certain delinquent loans that are eligible for repurchase from GNMA loan securitizations. The recorded carrying value represents the amount that would be payable if the Company was to exercise the repurchase option. The carrying amounts are excluded from the table because the loans eligible for repurchase do not represent interests in the VIEs.
(3) Represents senior loans to trusts that are collateralized by asset-backed securities. The trusts invested in senior tranches from a diversified pool of U.S. asset securitizations, of which all were current and 100% were rated as investment grade by the primary rating agencies at December 31, 2017. These senior loans were accounted for at amortized cost and were subject to the Company's allowance and credit charge-off policies. The securitization was terminated in first quarter 2018.
(4) Includes structured financing and credit-linked note structures. At December 31, 2017, also contains investments in auction rate securities (ARS) issued by VIEs that we did not sponsor and, accordingly, are unable to obtain the total assets of the entity.

In Table 9.2, "Total VIE assets" represents the remaining principal balance of assets held by unconsolidated VIEs using the most current information available. For VIEs that obtain exposure to assets synthetically through derivative instruments, the remaining notional amount of the derivative is included in the asset balance. "Carrying value" is the amount in our consolidated balance sheet related to our involvement with the unconsolidated VIEs. "Maximum exposure to loss" from our involvement with off-balance sheet entities, which is a required disclosure under GAAP, is determined as the carrying value of our involvement with off-balance sheet (unconsolidated) VIEs plus the remaining undrawn liquidity and lending commitments, the notional amount of net written derivative contracts, and generally the notional amount of, or stressed loss estimate for, other commitments and guarantees. It represents estimated loss that would be incurred under severe, hypothetical circumstances, for which we believe the possibility is extremely remote, such as where the value of our interests and any associated collateral declines to zero, without any consideration of recovery or offset from any economic hedges. Accordingly, this required disclosure is not an indication of expected loss.

RESIDENTIAL MORTGAGE LOANS Residential mortgage loan securitizations are financed through the issuance of fixed-rate or floating-rate asset-backed securities, which are collateralized by the loans transferred to a VIE. We typically transfer loans we originated to these VIEs, account for the transfers as sales, retain the right to service the loans and may hold other beneficial interests issued by the VIEs. We also may be exposed to limited liability related to recourse agreements and repurchase agreements we make to our issuers and purchasers, which are included in other commitments and guarantees. In certain instances, we may service residential mortgage loan securitizations structured by third parties whose loans we did not originate or transfer. Our residential mortgage loan securitizations consist of conforming and nonconforming securitizations.

Conforming residential mortgage loan securitizations are those that are guaranteed by the GSEs, including GNMA. Because of the power of the GSEs over the VIEs that hold the assets from these conforming residential mortgage loan securitizations, we do not consolidate them.

The loans sold to the VIEs in nonconforming residential mortgage loan securitizations are those that do not qualify for a GSE guarantee. We may hold variable interests issued by the VIEs, including senior securities. We do not consolidate the nonconforming residential mortgage loan securitizations included in the table because we either do not hold any variable interests, hold variable interests that we do not consider potentially significant or are not the primary servicer for a majority of the VIE assets.

Other commitments and guarantees include amounts related to loans sold that we may be required to repurchase, or otherwise indemnify or reimburse the investor or insurer for losses incurred, due to material breach of contractual representations and warranties as well as other retained recourse arrangements. The maximum exposure to loss for material breach of contractual representations and warranties represents a stressed case estimate we utilize for determining stressed case regulatory capital needs and is considered to be a remote scenario.

COMMERCIAL MORTGAGE LOAN SECURITIZATIONS Commercial mortgage loan securitizations are financed through the issuance of fixed or floating-rate asset-backed securities, which are collateralized by the loans transferred to the VIE. In a typical securitization, we may transfer loans we originate to these VIEs, account for the transfers as sales, retain the right to service the loans and may hold other beneficial interests issued by the VIEs. In certain instances, we may service commercial mortgage loan securitizations structured by third parties whose loans we did not originate or transfer. We typically serve as primary or master servicer of these VIEs. The primary or master servicer in a commercial mortgage loan securitization typically cannot make the most significant decisions impacting the performance of the VIE and therefore does not have power over the VIE. We do not consolidate the commercial mortgage loan securitizations included in the disclosure because we either do not have power or do not have a variable interest that could potentially be significant to the VIE.

COLLATERALIZED DEBT OBLIGATIONS (CDOs) A CDO is a securitization where a VIE purchases a pool of assets consisting of asset-backed securities and issues multiple tranches of equity or notes to investors. In some CDOs, a portion of the assets are obtained synthetically through the use of derivatives such as credit default swaps or total return swaps.

In addition to our role as arranger, we may have other forms of involvement with these CDOs. Such involvement may include acting as liquidity provider, derivative counterparty, secondary market maker or investor. For certain CDOs, we may also act as the collateral manager or servicer. We receive fees in connection with our role as collateral manager or servicer.

We assess whether we are the primary beneficiary of CDOs based on our role in them in combination with the variable interests we hold. Subsequently, we monitor our ongoing involvement to determine if the nature of our involvement has changed. We are not the primary beneficiary of these CDOs in most cases because we do not act as the collateral manager or servicer, which generally denotes power. In cases where we are the collateral manager or servicer, we are not the primary beneficiary because we do not hold interests that could potentially be significant to the VIE.

COLLATERALIZED LOAN OBLIGATIONS (CLOs) A CLO is a securitization where an SPE purchases a pool of assets consisting of loans and issues multiple tranches of equity or notes to investors. Generally, CLOs are structured on behalf of a third-party asset manager that typically selects and manages the assets for the term of the CLO. Typically, the asset manager has the power over the significant decisions of the VIE through its discretion to manage the assets of the CLO. We assess whether we are the primary beneficiary of CLOs based on our role in them and the variable interests we hold. In most cases, we are not the primary beneficiary because we do not have the power to manage the collateral in the VIE.

In addition to our role as arranger, we may have other forms of involvement with these CLOs. Such involvement may include acting as underwriter, derivative counterparty, secondary market maker or investor. For certain CLOs, we may also act as the servicer, for which we receive fees in connection with that role. We also earn fees for arranging these CLOs and distributing the securities.

ASSET-BASED FINANCE STRUCTURES We engage in various forms of structured finance arrangements with VIEs that are collateralized by various asset classes including energy contracts, automobile and other transportation loans and leases, intellectual property, equipment and general corporate credit. We typically provide senior financing, and may act as an interest rate swap or commodity derivative counterparty when necessary. In most cases, we are not the primary beneficiary of these structures because we do not have power over the significant activities of the VIEs involved in them.

For example, we have investments in asset-backed securities that are collateralized by automobile leases or loans and cash. These fixed-rate and variable-rate securities have been structured as single-tranche, fully amortizing, unrated bonds that are equivalent to investment-grade securities due to their significant overcollateralization. The securities are issued by VIEs that have been formed by third-party automobile financing institutions primarily because they require a source of liquidity to fund ongoing vehicle sales operations. The third-party automobile financing institutions manage the collateral in the VIEs, which is indicative of power in them and we therefore do not consolidate these VIEs.

TAX CREDIT STRUCTURES We co-sponsor and make investments in affordable housing and sustainable energy projects that are designed to generate a return primarily through the realization of federal tax credits. In some instances, our investments in these structures may require that we fund future capital commitments at the discretion of the project sponsors. While the size of our investment in a single entity may at times exceed 50% of the outstanding equity interests, we do not consolidate these structures due to the project sponsor's ability to manage the projects, which is indicative of power in them.

INVESTMENT FUNDS We voluntarily waived a portion of our management fees for certain money market funds that are exempt from the consolidation analysis to ensure the funds maintained a minimum level of daily net investment income. The amount of fees waived in 2018, 2017 and 2016 was $45 million, $53 million, and $109 million, respectively.

OTHER TRANSACTIONS WITH VIEs Other VIEs include certain entities that issue auction rate securities (ARS) which are debt instruments with long-term maturities, that re-price more frequently, and preferred equities with no maturity. At December 31, 2018, we held no ARS issued by VIEs, compared with $400 million at December 31, 2017. We acquired the ARS pursuant to agreements entered into in 2008 and 2009. All ARS were sold during 2018.

We did not consolidate the VIEs that issued the ARS because we did not have power over the activities of the VIEs.

TRUST PREFERRED SECURITIES VIEs that we wholly own issue debt securities or preferred equity to third-party investors. All of the proceeds of the issuance are invested in debt securities or preferred equity that we issue to the VIEs. The VIEs' operations and cash flows relate only to the issuance, administration and repayment of the securities held by third parties. We do not consolidate these VIEs because the sole assets of the VIEs are receivables from us, even though we own all of the voting equity shares of the VIEs, have fully guaranteed the obligations of the VIEs and may have the right to redeem the third-party securities under certain circumstances. In our consolidated balance sheet at December 31, 2018 and 2017, we reported the debt securities issued to the VIEs as long-term junior subordinated debt with a carrying value of $2.0 billion at both dates, and the preferred equity securities issued to the VIEs as preferred stock with a carrying value of $2.5 billion at both dates. These amounts are in addition to the involvements in these VIEs included in the preceding table.

In 2017, we redeemed $150 million of trust preferred securities which were partially included in Tier 2 capital (50% credit in 2017) in the transitional framework and were not included under the fully-phased framework under the Basel III standards.

Loan Sales and Securitization Activity

We periodically transfer consumer and CRE loans and other types of financial assets in securitization and whole loan sale transactions. We typically retain the servicing rights from these sales and may continue to hold other beneficial interests in the transferred financial assets. We may also provide liquidity to investors in the beneficial interests and credit enhancements in the form of standby letters of credit. Through these transfers we may be exposed to liability under limited amounts of recourse as well as standard representations and warranties we make to purchasers and issuers. Table 9.3 presents the cash flows for our transfers accounted for as sales in which we have a continuing involvement with the transferred financial assets.

Table 9.3: Cash Flows From Sales and Securitization Activity

	Year ended December 31,					
	2018		2017		2016	
(in millions)	**Mortgage loans**	**Other financial assets**	Mortgage loans	Other financial assets	Mortgage loans	Other financial assets
Proceeds from securitizations and whole loan sales	**$ 193,721**	**—**	228,282	25	252,723	347
Fees from servicing rights retained	**3,337**	**—**	3,352	—	3,492	—
Cash flows from other interests held (1)	**698**	**1**	2,218	1	2,898	1
Repurchases of assets/loss reimbursements (2):						
Non-agency securitizations and whole loan transactions	**3**	**—**	12	—	26	—
Agency securitizations (3)	**96**	**—**	92	—	133	—
Servicing advances, net of repayments	**(154)**	**—**	(269)	—	(218)	—

(1) Cash flows from other interests held include principal and interest payments received on retained bonds and excess cash flows received on interest-only strips.
(2) Consists of cash paid to repurchase loans from investors and cash paid to investors to reimburse them for losses on individual loans that are already liquidated. In addition, during 2018 and 2017, we paid nothing to third-party investors to settle repurchase liabilities on pools of loans, compared with $11 million in 2016.
(3) Represent loans repurchased from GNMA, FNMA, and FHLMC under representation and warranty provisions included in our loan sales contracts. Excludes $7.8 billion in delinquent insured/guaranteed loans that we service and have exercised our option to purchase out of GNMA pools in 2018, compared with $8.6 billion and $9.9 billion in 2017 and 2016, respectively. These loans are predominantly insured by the FHA or guaranteed by the VA.

In 2018, 2017, and 2016, we recognized net gains of $270 million, $701 million and $524 million, respectively, from transfers accounted for as sales of financial assets, in which we have a continuing involvement with the transferred assets. These net gains largely relate to commercial mortgage securitizations, and residential mortgage securitizations where the loans were not already carried at fair value.

Sales with continuing involvement during 2018, 2017 and 2016 largely related to securitizations of residential mortgages that are sold to the government-sponsored entities (GSEs), including FNMA, FHLMC and GNMA (conforming residential mortgage securitizations). During 2018, 2017 and 2016 we transferred $177.8 billion, $213.6 billion and $236.6 billion, respectively, in fair value of residential mortgages to unconsolidated VIEs and third-party investors and recorded the transfers as sales. Substantially all of these transfers did not result in a gain or loss because the loans were already carried at fair value. In connection with all of these transfers, in 2018 we recorded a $1.9 billion servicing asset, measured at fair value using a Level 3 measurement technique, securities of $5.0 billion, classified as Level 2, and a $17 million liability for repurchase losses which reflects management's estimate of probable losses related to various representations and warranties for the loans transferred, initially measured at fair value. In 2017, we recorded a $2.1 billion servicing asset, securities of $1.4 billion and a $24 million liability. In 2016, we recorded a $2.1 billion servicing asset, securities of $4.4 billion and a $36 million liability.

Table 9.4 presents the key weighted-average assumptions we used to measure residential mortgage servicing rights at the date of securitization.

Table 9.4: Residential Mortgage Servicing Rights

	Residential mortgage servicing rights		
	2018	2017	2016
Year ended December 31,			
Prepayment speed (1)	**10.6%**	11.5	11.7
Discount rate	**7.4**	7.0	6.5
Cost to service ($ per loan) (2)	**$ 128**	132	132

(1) The prepayment speed assumption for residential mortgage servicing rights includes a blend of prepayment speeds and default rates. Prepayment speed assumptions are influenced by mortgage interest rate inputs as well as our estimation of drivers of borrower behavior.
(2) Includes costs to service and unreimbursed foreclosure costs, which can vary period to period depending on the mix of modified government-guaranteed loans sold to GNMA.

During 2018, 2017 and 2016, we transferred $17.9 billion, $16.7 billion and $18.3 billion, respectively, in carrying value of commercial mortgages to unconsolidated VIEs and third-party investors and recorded the transfers as sales. These transfers resulted in gains of $280 million in 2018, $359 million in 2017 and $429 million in 2016, respectively, because the loans were carried at lower of cost or fair value (LOCOM). In connection with these transfers, in 2018 we recorded a servicing asset of $158 million, initially measured at fair value using a Level 3 measurement technique, and securities of $81 million, classified as Level 2. In 2017, we recorded a servicing asset of $166 million and securities of $65 million. In 2016, we recorded a servicing asset of $270 million and securities of $258 million.

Retained Interests from Unconsolidated VIEs

Table 9.5 provides key economic assumptions and the sensitivity of the current fair value of residential mortgage servicing rights and other interests held to immediate adverse changes in those assumptions. "Other interests held" relate to residential and commercial mortgage loan securitizations. Residential mortgage-backed securities retained in securitizations issued through GSEs, such as FNMA, FHLMC and GNMA, are excluded from the table because these securities have a remote risk of credit loss due to the GSE guarantee. These securities also have economic characteristics similar to GSE mortgage-backed securities that we purchase, which are not included in the table. Subordinated interests include only those bonds whose credit rating was below AAA by a major rating agency at issuance. Senior interests include only those bonds whose credit rating was AAA by a major rating agency at issuance. The information presented excludes trading positions held in inventory.

Table 9.5: Retained Interests from Unconsolidated VIEs

($ in millions, except cost to service amounts)	Residential mortgage servicing rights (1)	Other interests held: Interest-only strips	Other interests held: Commercial (2): Subordinated bonds	Other interests held: Commercial (2): Senior bonds
Fair value of interests held at December 31, 2018	**$ 14,649**	**16**	**668**	**309**
Expected weighted-average life (in years)	**6.5**	**3.6**	**7.0**	**5.7**
Key economic assumptions:				
Prepayment speed assumption (3)	**9.9%**	**17.7**		
Decrease in fair value from:				
10% adverse change	**$ 530**	**1**		
25% adverse change	**1,301**	**1**		
Discount rate assumption	**8.1%**	**14.5**	**4.3**	**3.7**
Decrease in fair value from:				
100 basis point increase	**$ 615**	**—**	**37**	**14**
200 basis point increase	**1,176**	**1**	**72**	**28**
Cost to service assumption ($ per loan)	**106**			
Decrease in fair value from:				
10% adverse change	**316**			
25% adverse change	**787**			
Credit loss assumption			**5.1%**	**—**
Decrease in fair value from:				
10% higher losses			**$ 2**	**—**
25% higher losses			**5**	**—**
Fair value of interests held at December 31, 2017	$ 13,625	19	596	468
Expected weighted-average life (in years)	6.2	3.3	6.7	5.2
Key economic assumptions:				
Prepayment speed assumption (3)	10.5 %	20.0		
Decrease in fair value from:				
10% adverse change	$ 565	1		
25% adverse change	1,337	2		
Discount rate assumption	6.9 %	14.8	4.1	3.1
Decrease in fair value from:				
100 basis point increase	$ 652	—	32	20
200 basis point increase	1,246	1	61	39
Cost to service assumption ($ per loan)	143			
Decrease in fair value from:				
10% adverse change	467			
25% adverse change	1,169			
Credit loss assumption			1.8 %	—
Decrease in fair value from:				
10% higher losses			$ —	—
25% higher losses			—	—

(1) See narrative following this table for a discussion of commercial mortgage servicing rights.
(2) Prepayment speed assumptions do not significantly impact the value of commercial mortgage securitization bonds as the underlying commercial mortgage loans experience significantly lower prepayments due to certain contractual restrictions, impacting the borrower's ability to prepay the mortgage.
(3) The prepayment speed assumption for residential mortgage servicing rights includes a blend of prepayment speeds and default rates. Prepayment speed assumptions are influenced by mortgage interest rate inputs as well as our estimation of drivers of borrower behavior.

In addition to residential mortgage servicing rights (MSRs) included in the previous table, we have a small portfolio of commercial MSRs with a fair value of $2.3 billion and $2.0 billion at December 31, 2018 and 2017, respectively. The nature of our commercial MSRs, which are carried at LOCOM, is different from our residential MSRs. Prepayment activity on serviced loans does not significantly impact the value of commercial MSRs because, unlike residential mortgages, commercial mortgages experience significantly lower prepayments due to certain contractual restrictions, impacting the borrower's ability to prepay the mortgage. Additionally, for our commercial MSR portfolio, we are typically master/primary servicer, but not the special servicer, who is separately responsible for the servicing and workout of delinquent and foreclosed loans. It is the special servicer, similar to our role as servicer of residential mortgage loans, who is affected by higher servicing and foreclosure costs due to an increase in delinquent and foreclosed loans. Accordingly, prepayment speeds and costs to service are not key assumptions for commercial MSRs as they do not significantly impact the valuation. The primary economic driver impacting the fair value of our commercial MSRs is forward interest rates, which are derived from market observable yield curves used to price capital markets instruments. Market interest rates significantly affect interest earned on custodial deposit balances. The sensitivity of the current fair value to an immediate adverse 25% change in the assumption about interest earned on deposit balances at December 31, 2018 and 2017, results in a decrease in fair value of $320 million and $278 million, respectively. See Note 10 (Mortgage Banking Activities) for further information on our commercial MSRs.

The sensitivities in the preceding paragraph and table are hypothetical and caution should be exercised when relying on this data. Changes in value based on variations in assumptions generally cannot be extrapolated because the relationship of the change in the assumption to the change in value may not be linear. Also, the effect of a variation in a particular assumption on the value of the other interests held is calculated independently without changing any other assumptions. In reality, changes in one factor may result in changes in others (for example, changes in prepayment speed estimates could result in changes in the credit losses), which might magnify or counteract the sensitivities.

Off-Balance Sheet Loans

Table 9.6 presents information about the principal balances of off-balance sheet loans that were sold or securitized, including residential mortgage loans sold to FNMA, FHLMC, GNMA and other investors, for which we have some form of continuing involvement (including servicer). Delinquent loans include loans 90 days or more past due and loans in bankruptcy, regardless of delinquency status. For loans sold or securitized where servicing is our only form of continuing involvement, we would only experience a loss if we were required to repurchase a delinquent loan or foreclosed asset due to a breach in representations and warranties associated with our loan sale or servicing contracts.

Table 9.6: Off-Balance Sheet Loans Sold or Securitized

					Net charge-offs	
	Total loans		Delinquent loans and foreclosed assets (1)		Year ended	
	December 31,		December 31,		December 31,	
(in millions)	**2018**	2017	**2018**	2017	**2018**	2017
Commercial:						
Real estate mortgage	**$ 105,173**	100,875	**1,008**	2,839	**739**	1,027
Total commercial	**105,173**	100,875	**1,008**	2,839	**739**	1,027
Consumer:						
Real estate 1-4 family first mortgage	**1,097,128**	1,126,208	**8,947**	13,393	**466**	735
Total consumer	**1,097,128**	1,126,208	**8,947**	13,393	**466**	735
Total off-balance sheet sold or securitized loans (2)	**$ 1,202,301**	1,227,083	**9,955**	16,232	**1,205**	1,762

(1) Includes $675 million and $1.2 billion of commercial foreclosed assets and $582 million and $879 million of consumer foreclosed assets at December 31, 2018 and 2017, respectively.
(2) At December 31, 2018 and 2017, the table includes total loans of $1.1 trillion at both dates, delinquent loans of $6.4 billion and $9.1 billion, and foreclosed assets of $442 million and $619 million, respectively, for FNMA, FHLMC and GNMA. Net charge-offs exclude loans sold to FNMA, FHLMC and GNMA as we do not service or manage the underlying real estate upon foreclosure and, as such, do not have access to net charge-off information.

Transactions with Consolidated VIEs and Secured Borrowings

Table 9.7 presents a summary of financial assets and liabilities for asset transfers accounted for as secured borrowings and involvements with consolidated VIEs. Carrying values of "Assets" are presented using GAAP measurement methods, which may include fair value, credit impairment or other adjustments, and therefore in some instances will differ from "Total VIE assets." For VIEs that obtain exposure synthetically through derivative instruments, the remaining notional amount of the derivative is included in "Total VIE assets." On the consolidated balance sheet, we separately disclose the consolidated assets of certain VIEs that can only be used to settle the liabilities of those VIEs.

Table 9.7: Transactions with Consolidated VIEs and Secured Borrowings

	Total VIE				
		Carrying value			
(in millions)	Total VIE assets	Assets	Liabilities	Noncontrolling interests	Net assets
December 31, 2018					
Secured borrowings:					
Municipal tender option bond securitizations	**$ 627**	**523**	**(501)**	**—**	**22**
Residential mortgage securitizations	**95**	**94**	**(93)**	**—**	**1**
Total secured borrowings	**722**	**617**	**(594)**	**—**	**23**
Consolidated VIEs:					
Commercial and industrial loans and leases	**8,215**	**8,204**	**(477)**	**(14)**	**7,713**
Nonconforming residential mortgage loan securitizations	**1,947**	**1,732**	**(521)**	**—**	**1,211**
Commercial real estate loans	**3,957**	**3,957**	**—**	**—**	**3,957**
Structured asset finance	**—**	**—**	**—**	**—**	**—**
Investment funds	**155**	**155**	**(5)**	**(15)**	**135**
Other	**14**	**14**	**(4)**	**(5)**	**5**
Total consolidated VIEs	**14,288**	**14,062**	**(1,007)**	**(34)**	**13,021**
Total secured borrowings and consolidated VIEs	**$ 15,010**	**14,679**	**(1,601)**	**(34)**	**13,044**
December 31, 2017					
Secured borrowings:					
Municipal tender option bond securitizations	$ 658	565	(532)	—	33
Residential mortgage securitizations	113	110	(111)	—	(1)
Total secured borrowings	771	675	(643)	—	32
Consolidated VIEs:					
Commercial and industrial loans and leases	9,116	8,626	(915)	(29)	7,682
Nonconforming residential mortgage loan securitizations	2,515	2,212	(694)	—	1,518
Commercial real estate loans	2,378	2,378	—	—	2,378
Structured asset finance	10	6	(4)	—	2
Investment funds	305	305	(2)	(230)	73
Other	100	90	(1)	(24)	65
Total consolidated VIEs	14,424	13,617	(1,616)	(283)	11,718
Total secured borrowings and consolidated VIEs	$ 15,195	14,292	(2,259)	(283)	11,750

We have raised financing through the securitization of certain financial assets in transactions with VIEs accounted for as secured borrowings. We also consolidate VIEs where we are the primary beneficiary. In certain transactions, we provide contractual support in the form of limited recourse and liquidity to facilitate the remarketing of short-term securities issued to third-party investors. Other than this limited contractual support, the assets of the VIEs are the sole source of repayment of the securities held by third parties.

MUNICIPAL TENDER OPTION BOND SECURITIZATIONS As part of our normal investment portfolio activities, we consolidate municipal bond trusts that hold highly rated, long-term, fixed-rate municipal bonds, the majority of which are rated AA or better. Our residual interests in these trusts generally allow us to capture the economics of owning the securities outright, and constructively make decisions that significantly impact the economic performance of the municipal bond vehicle, primarily by directing the sale of the municipal bonds owned by the vehicle. In addition, the residual interest owners have the right to receive benefits and bear losses that are proportional to owning the underlying municipal bonds in the trusts. The trusts obtain financing by issuing floating-rate trust certificates that reprice on a weekly or other basis to third-party investors. Under certain conditions, if we elect to terminate the trusts and withdraw the underlying assets, the third-party investors are entitled to a small portion of any unrealized gain on the underlying assets. We may serve as remarketing agent and/or liquidity provider for the trusts. The floating-rate investors have the right to tender the certificates at specified dates, often with as little as seven days' notice. Should we be unable to remarket the tendered certificates, we are generally obligated to purchase them at par under standby liquidity facilities unless the bond's credit rating has declined below investment grade or there has been an event of default or bankruptcy of the issuer and insurer.

COMMERCIAL AND INDUSTRIAL LOANS AND LEASES In conjunction with the GE Capital business acquisitions, on March 1, 2016, we acquired certain consolidated SPE entities. The most significant of these SPEs is a revolving master trust entity that purchases dealer floorplan loans and issues senior and subordinated notes. The senior notes are held by third parties and the subordinated notes and residual equity interests are held by us. At December 31, 2018 and 2017, total assets held by the master trust were $6.7 billion and $7.6 billion, respectively, and the outstanding senior notes were $299 million and $773 million, respectively. The other SPEs acquired included securitization term trust entities, which purchased vendor finance lease and loan assets and issued notes to investors, and an SPE that engages in leasing activities to specific vendors. The securitization term trusts were dissolved during 2017. The remaining other SPE held $1.5 billion and $1.4 billion in total assets at December 31, 2018 and 2017, respectively. We are the primary beneficiary of these acquired SPEs due to our ability to direct the significant activities of the SPEs, such as our role as servicer, and because we hold variable interests that are considered significant.

NONCONFORMING RESIDENTIAL MORTGAGE LOAN SECURITIZATIONS We have consolidated certain of our nonconforming residential mortgage loan securitizations in accordance with consolidation accounting guidance. We have determined we are the primary beneficiary of these securitizations because we have the power to direct the most significant activities of the entity through our role as primary servicer and also hold variable interests that we have determined to be significant. The nature of our variable interests in these entities may include beneficial interests issued by the VIE, mortgage servicing rights and recourse or repurchase reserve liabilities. The beneficial interests issued by the VIE that we hold include either subordinate or senior securities held in an amount that we consider potentially significant.

Note 10: Mortgage Banking Activities

Mortgage banking activities, included in the Community Banking and Wholesale Banking operating segments, consist of residential and commercial mortgage originations, sale activity and servicing.

We apply the amortization method to commercial MSRs and apply the fair value method to residential MSRs. Table 10.1 presents the changes in MSRs measured using the fair value method.

Table 10.1: Analysis of Changes in Fair Value MSRs

	Year ended December 31,		
(in millions)	**2018**	2017	2016
Fair value, beginning of year	**$ 13,625**	12,959	12,415
Purchases	**—**	541	—
Servicing from securitizations or asset transfers (1)	**2,010**	2,263	2,204
Sales and other (2)	**(71)**	(23)	(65)
Net additions	**1,939**	2,781	2,139
Changes in fair value:			
Due to changes in valuation model inputs or assumptions:			
Mortgage interest rates (3)	**1,337**	(103)	543
Servicing and foreclosure costs (4)	**818**	96	106
Discount rates (5)	**(830)**	13	—
Prepayment estimates and other (6)	**(365)**	(132)	(84)
Net changes in valuation model inputs or assumptions	**960**	(126)	565
Changes due to collection/realization of expected cash flows over time	**(1,875)**	(1,989)	(2,160)
Total changes in fair value	**(915)**	(2,115)	(1,595)
Fair value, end of year	**$ 14,649**	13,625	12,959

(1) Includes impacts associated with exercising our right to repurchase delinquent loans from GNMA loan securitization pools.
(2) Includes sales and transfers of MSRs, which can result in an increase of total reported MSRs if the sales or transfers are related to nonperforming loan portfolios or portfolios with servicing liabilities.
(3) Includes prepayment speed changes as well as other valuation changes due to changes in mortgage interest rates (such as changes in estimated interest earned on custodial deposit balances).
(4) Includes costs to service and unreimbursed foreclosure costs. The amount for the year ended December 31, 2018, reflects updated information obtained regarding market participants' views of servicing and foreclosure costs.
(5) Reflects discount rate assumption change, excluding portion attributable to changes in mortgage interest rates. The amount for the year ended December 31, 2018, reflects updated information obtained regarding market participants' views of discount rates.
(6) Represents changes driven by other valuation model inputs or assumptions including prepayment speed estimation changes and other assumption updates. Prepayment speed estimation changes are influenced by observed changes in borrower behavior and other external factors that occur independent of interest rate changes.

Table 10.2 presents the changes in amortized MSRs.

Table 10.2: Analysis of Changes in Amortized MSRs

	Year ended December 31,		
(in millions)	**2018**	2017	2016
Balance, beginning of year	**$ 1,424**	1,406	1,308
Purchases	**127**	115	97
Servicing from securitizations or asset transfers	**158**	166	270
Amortization	**(266)**	(263)	(269)
Balance, end of year (1)	**$ 1,443**	1,424	1,406
Fair value of amortized MSRs:			
Beginning of year	**$ 2,025**	1,956	1,680
End of year	**2,288**	2,025	1,956

(1) Commercial amortized MSRs are evaluated for impairment purposes by the following risk strata: agency (GSEs) for multi-family properties and non-agency. There was no valuation allowance recorded for the periods presented on the commercial amortized MSRs.

Note 10: Mortgage Banking Activities *(continued)*

We present the components of our managed servicing portfolio in Table 10.3 at unpaid principal balance for loans serviced and subserviced for others and at book value for owned loans serviced.

Table 10.3: Managed Servicing Portfolio

(in billions)		Dec 31, 2018	Dec 31, 2017
Residential mortgage servicing:			
Serviced for others	$	**1,164**	1,209
Owned loans serviced		**334**	342
Subserviced for others		**4**	3
Total residential servicing		**1,502**	1,554
Commercial mortgage servicing:			
Serviced for others		**543**	495
Owned loans serviced		**121**	127
Subserviced for others		**9**	9
Total commercial servicing		**673**	631
Total managed servicing portfolio	$	**2,175**	2,185
Total serviced for others	$	**1,707**	1,704
Ratio of MSRs to related loans serviced for others		**0.94%**	0.88

Table 10.4 presents the components of mortgage banking noninterest income.

Table 10.4: Mortgage Banking Noninterest Income

			Year ended December 31,		
(in millions)			2018	2017	2016
Servicing income, net:					
Servicing fees:					
Contractually specified servicing fees		$	**3,613**	3,603	3,778
Late charges			**162**	172	180
Ancillary fees			**182**	199	229
Unreimbursed direct servicing costs (1)			**(331)**	(582)	(819)
Net servicing fees			**3,626**	3,392	3,368
Changes in fair value of MSRs carried at fair value:					
Due to changes in valuation model inputs or assumptions (2)	(A)		**960**	(126)	565
Changes due to collection/realization of expected cash flows over time			**(1,875)**	(1,989)	(2,160)
Total changes in fair value of MSRs carried at fair value			**(915)**	(2,115)	(1,595)
Amortization			**(266)**	(263)	(269)
Net derivative gains (losses) from economic hedges (3)	(B)		**(1,072)**	413	261
Total servicing income, net			**1,373**	1,427	1,765
Net gains on mortgage loan origination/sales activities			**1,644**	2,923	4,331
Total mortgage banking noninterest income		$	**3,017**	4,350	6,096
Market-related valuation changes to MSRs, net of hedge results (2)(3)	(A)+(B)	$	**(112)**	287	826

(1) Includes costs associated with foreclosures, unreimbursed interest advances to investors, and other interest costs.
(2) Refer to the analysis of changes in fair value MSRs presented in Table 10.1 in this Note for more detail.
(3) Represents results from economic hedges used to hedge the risk of changes in fair value of MSRs. See Note 17 (Derivatives) for additional discussion and detail.

Note 11: Intangible Assets

Table 11.1 presents the gross carrying value of intangible assets and accumulated amortization.

Table 11.1: Intangible Assets

	December 31, 2018			December 31, 2017		
(in millions)	**Gross carrying value**	**Accumulated amortization**	**Net carrying value**	Gross carrying value	Accumulated amortization	Net carrying value
Amortized intangible assets (1):						
MSRs (2)	**$ 4,161**	**(2,718)**	**1,443**	3,876	(2,452)	1,424
Core deposit intangibles	**12,834**	**(12,834)**	**—**	12,834	(12,065)	769
Customer relationship and other intangibles	**3,994**	**(3,449)**	**545**	3,994	(3,153)	841
Total amortized intangible assets	**$ 20,989**	**(19,001)**	**1,988**	20,704	(17,670)	3,034
Unamortized intangible assets:						
MSRs (carried at fair value) (2)	**$ 14,649**			13,625		
Goodwill	**26,418**			26,587		
Trademark	**14**			14		

(1) Excludes fully amortized intangible assets.
(2) See Note 10 (Mortgage Banking Activities) for additional information on MSRs.

Table 11.2 provides the current year and estimated future amortization expense for amortized intangible assets. We based our projections of amortization expense shown below on existing asset balances at December 31, 2018. Future amortization expense may vary from these projections.

Table 11.2: Amortization Expense for Intangible Assets

(in millions)	Amortized MSRs	Core deposit intangibles	Customer relationship and other intangibles (1)	Total
Year ended December 31, 2018 (actual)	**$ 266**	**769**	**299**	**1,334**
Estimate for year ended December 31,				
2019	$ 260	—	116	376
2020	233	—	97	330
2021	200	—	83	283
2022	178	—	69	247
2023	150	—	59	209

(1) The year ended December 31, 2018, balance includes $10 million for lease intangible amortization.

Table 11.3 shows the allocation of goodwill to our reportable operating segments.

Table 11.3: Goodwill

(in millions)		Community Banking	Wholesale Banking	Wealth and Investment Management	Consolidated Company
December 31, 2016	$	16,849	8,585	1,259	26,693
Reclassification of goodwill held for sale to other assets (2)		—	(116)	—	(116)
Reduction in goodwill related to divested businesses and other (2)		—	(14)	—	(14)
Goodwill from business combinations		—	—	24	24
December 31, 2017 (1)	**$**	**16,849**	**8,455**	**1,283**	**26,587**
Reclassification of goodwill held for sale to other assets		**(155)**	**—**	**—**	**(155)**
Reduction in goodwill related to divested businesses and other		**(9)**	**(5)**	**—**	**(14)**
December 31, 2018 (1)	**$**	**16,685**	**8,450**	**1,283**	**26,418**

(1) At December 31, 2017, other assets included Goodwill classified as held-for-sale of $13 million related to the sales agreement for Wells Fargo Shareowner Services. At December 31, 2018, there was no Goodwill classified as held-for-sale in other assets.
(2) The prior period has been revised to conform with the current period presentation.

We assess goodwill for impairment at a reporting unit level, which is one level below the operating segments. Our goodwill was not impaired at December 31, 2018 and 2017. The fair values exceeded the carrying amount of our respective reporting units by approximately 42% to 544% at December 31, 2018. See Note 26 (Operating Segments) for further information on management reporting.

Note 12: Deposits

Table 12.1 presents a summary of the time certificates of deposit (CDs) and other time deposits issued by domestic and foreign offices.

Table 12.1: Time Certificates of Deposits and Other Time Deposits

(in billions)		**Dec 31, 2018**	Dec 31, 2017
Total domestic and foreign	**$**	**130.6**	128.6
Domestic:			
$100,000 or more		**42.5**	52.7
$250,000 or more		**37.1**	46.9
Foreign:			
$100,000 or more		**4.6**	13.4
$250,000 or more		**4.6**	13.4

Substantially all CDs and other time deposits issued by domestic and foreign offices were interest bearing and a significant portion of our foreign time deposits with a denomination of $100,000 or more have maturities of less than 7 days.

The contractual maturities of these deposits are presented in Table 12.2.

Table 12.2: Contractual Maturities of CDs and Other Time Deposits

(in millions)		December 31, 2018
2019	$	88,435
2020		25,986
2021		6,324
2022		3,320
2023		2,868
Thereafter		3,712
Total	$	130,645

The contractual maturities of the domestic time deposits with a denomination of $100,000 or more are presented in Table 12.3.

Table 12.3: Contractual Maturities of Domestic Time Deposits

(in millions)		2018
Three months or less	$	13,724
After three months through six months		12,292
After six months through twelve months		12,945
After twelve months		3,504
Total	$	42,465

Demand deposit overdrafts of $624 million and $371 million were included as loan balances at December 31, 2018 and 2017, respectively.

Note 13: Short-Term Borrowings

Table 13.1 shows selected information for short-term borrowings, which generally mature in less than 30 days. We pledge certain financial instruments that we own to collateralize repurchase agreements and other securities financings. For additional information, see the "Pledged Assets" section of Note 15 (Guarantees, Pledged Assets and Collateral, and Other Commitments).

Table 13.1: Short-Term Borrowings

	2018		2017		2016	
(in millions)	**Amount**	**Rate**	Amount	Rate	Amount	Rate
As of December 31,						
Federal funds purchased and securities sold under agreements to repurchase	**$ 92,430**	**2.65%**	$ 88,684	1.30%	$ 78,124	0.17%
Commercial paper	**—**	**—**	—	—	120	0.93
Other short-term borrowings	**13,357**	**1.63**	14,572	0.72	18,537	0.28
Total	**$ 105,787**	**2.52**	$ 103,256	1.22	$ 96,781	0.19
Year ended December 31,						
Average daily balance						
Federal funds purchased and securities sold under agreements to repurchase	**$ 90,348**	**1.78**	$ 82,507	0.90	$ 99,955	0.33
Commercial paper	**—**	**—**	16	0.95	256	0.86
Other short-term borrowings	**13,919**	**0.79**	16,399	0.13	14,976	0.02
Total	**$ 104,267**	**1.65**	$ 98,922	0.77	$ 115,187	0.29
Maximum month-end balance						
Federal funds purchased and securities sold under agreements to repurchase (1)	**$ 93,918**	**N/A**	$ 91,604	N/A	$ 109,645	N/A
Commercial paper (2)	**—**	**N/A**	78	N/A	519	N/A
Other short-term borrowings (3)	**16,924**	**N/A**	19,439	N/A	18,537	N/A

N/A- Not applicable
(1) Highest month-end balance in each of the last three years was November 2018, November 2017 and October 2016.
(2) There were no month-end balances in 2018; highest month-end balance in the remaining years was January 2017 and March 2016.
(3) Highest month-end balance in each of the last three years was January 2018, February 2017 and December 2016.

Note 14: Long-Term Debt

We issue long-term debt denominated in multiple currencies, largely in U.S. dollars. Our issuances have both fixed and floating interest rates. As a part of our overall interest rate risk management strategy, we often use derivatives to manage our exposure to interest rate risk. We also use derivatives to manage our exposure to foreign currency risk. As a result, approximately half of the long-term debt presented below is hedged in a fair value or cash flow hedge relationship. See Note 17 (Derivatives) for further information on qualifying hedge contracts.

Table 14.1 presents a summary of our long-term debt carrying values, reflecting unamortized debt discounts and premiums, and purchase accounting adjustments, where applicable. The interest rates displayed represent the range of contractual rates in effect at December 31, 2018. These interest rates do not include the effects of any associated derivatives designated in a hedge accounting relationship.

Table 14.1: Long-Term Debt

			December 31,	
			2018	2017
(in millions)	Maturity date(s)	Stated interest rate(s)		
Wells Fargo & Company (Parent only)				
Senior				
Fixed-rate notes (1)	2019-2045	0.38-6.75%	$ **77,742**	84,652
Floating-rate notes	2019-2048	0.10-4.08%	**19,553**	22,463
FixFloat notes	2028	3.58%	**2,901**	2,961
Structured notes (2)	2019-2056		**7,984**	7,442
Total senior debt - Parent			**108,180**	117,518
Subordinated				
Fixed-rate notes (3)	2023-2046	3.45-7.57%	**25,428**	27,132
Total subordinated debt - Parent			**25,428**	27,132
Junior subordinated				
Fixed-rate notes - hybrid trust securities	2029-2036	5.95-7.95%	**1,308**	1,369
Floating-rate notes	2027	2.94-3.44%	**308**	299
Total junior subordinated debt - Parent (4)			**1,616**	1,668
Total long-term debt - Parent (3)			**135,224**	146,318
Wells Fargo Bank, N.A. and other bank entities (Bank)				
Senior				
Fixed-rate notes	2019-2023	1.75-3.63%	**14,222**	7,732
Floating-rate notes	2019-2053	2.33-3.57%	**6,617**	4,317
FixFloat notes	2021	3.33%	**1,998**	—
Fixed-rate advances - Federal Home Loan Bank (FHLB) (5)	2019-2031	3.83-7.50%	**51**	62
Floating-rate advances - FHLB (5)	2019-2021	2.44-3.28%	**53,825**	47,825
Structured notes (2)	2019-2037		**1,646**	743
Capital leases	2019-2029	2.87-17.78%	**36**	39
Total senior debt - Bank			**78,395**	60,718
Subordinated				
Fixed-rate notes	2023-2038	5.25-7.74%	**5,199**	5,408
Total subordinated debt - Bank			**5,199**	5,408
Junior subordinated				
Floating-rate notes	2027	3.09-3.19%	**352**	342
Total junior subordinated debt - Bank (4)			**352**	342
Long-term debt issued by VIE - Fixed rate (6)	2020-2047	6.00%	**160**	268
Long-term debt issued by VIE - Floating rate (6)	2020-2047	2.46-13.02%	**656**	1,211
Mortgage notes and other debt (7)	2019-2057	0.20-9.20%	**6,637**	7,291
Total long-term debt - Bank			**91,399**	75,238

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			December 31,	
(in millions)	Maturity date(s)	Stated interest rate(s)	**2018**	2017
Other consolidated subsidiaries				
Senior				
Fixed-rate notes	2019-2023	2.94-3.46%	**2,383**	3,390
Structured notes (2)	2021-2028		**6**	1
Total senior debt - Other consolidated subsidiaries			**2,389**	3,391
Mortgage notes and other (7)	2026	4.08%	**32**	73
Total long-term debt - Other consolidated subsidiaries			**2,421**	3,464
Total long-term debt			**$ 229,044**	225,020

(1) Includes $59 million of outstanding zero coupon callable notes at December 31, 2018.
(2) Included in the table are certain structured notes that have coupon or repayment terms linked to the performance of debt or equity securities, an embedded equity, commodity, or currency index, or basket of indices accounted for separately from the note as a free-standing derivative, and the maturity may be accelerated based on the value of a referenced index or security. For information on embedded derivatives, see the "Derivatives Not Designated as Hedging Instruments" section in Note 17 (Derivatives). In addition, a major portion consists of zero coupon callable notes where interest is paid as part of the final redemption amount.
(3) Includes fixed-rate subordinated notes issued by the Parent at a discount of $131 million and $133 million in 2018 and 2017, respectively, and debt issuance costs of $2 million in both 2018 and 2017, to effect a modification of Wells Fargo Bank, NA notes. These subordinated notes are carried at their par amount on the balance sheet of the Parent presented in Note 27 (Parent-Only Financial Statements). In addition, Parent long-term debt presented in Note 27 also includes affiliate related issuance costs of $278 million and $323 million in 2018 and 2017, respectively.
(4) Represents junior subordinated debentures held by unconsolidated wholly-owned trusts formed for the sole purpose of issuing trust preferred securities. See Note 9 (Securitizations and Variable Interest Entities) for additional information on our trust preferred security structures.
(5) At December 31, 2018 and 2017, FHLB advances were secured by residential loan collateral.
(6) For additional information on VIEs, see Note 9 (Securitizations and Variable Interest Entities).
(7) A major portion related to securitizations and secured borrowings, see Note 9 (Securitizations and Variable Interest Entities).

We issue long-term debt in a variety of maturities and currencies to achieve cost-efficient funding and to maintain an appropriate maturity profile. Long-term debt of $229.0 billion at December 31, 2018, increased $4.0 billion from December 31, 2017. We issued $47.6 billion of long-term debt in 2018.

The aggregate carrying value of long-term debt that matures (based on contractual payment dates) as of December 31, 2018, in each of the following five years and thereafter is presented in Table 14.2.

Table 14.2: Maturity of Long-Term Debt

							December 31, 2018
(in millions)	2019	2020	2021	2022	2023	Thereafter	Total
Wells Fargo & Company (Parent Only)							
Senior notes	$ 6,713	13,459	17,923	17,772	10,932	41,381	108,180
Subordinated notes	—	—	—	—	3,544	21,884	25,428
Junior subordinated notes	—	—	—	—	—	1,616	1,616
Total long-term debt - Parent	6,713	13,459	17,923	17,772	14,476	64,881	135,224
Wells Fargo Bank, N.A. and other bank entities (Bank)							
Senior notes	36,653	18,498	20,218	40	2,807	179	78,395
Subordinated notes	—	—	—	—	1,043	4,156	5,199
Junior subordinated notes	—	—	—	—	—	352	352
Securitizations and other bank debt	2,084	1,647	574	268	119	2,761	7,453
Total long-term debt - Bank	38,737	20,145	20,792	308	3,969	7,448	91,399
Other consolidated subsidiaries							
Senior notes	1,097	—	920	—	367	5	2,389
Securitizations and other bank debt	—	—	—	—	—	32	32
Total long-term debt - Other consolidated subsidiaries	1,097	—	920	—	367	37	2,421
Total long-term debt	$ 46,547	33,604	39,635	18,080	18,812	72,366	229,044

As part of our long-term and short-term borrowing arrangements, we are subject to various financial and operational covenants. Some of the agreements under which debt has been issued have provisions that may limit the merger or sale of certain subsidiary banks and the issuance of capital stock or convertible securities by certain subsidiary banks. At December 31, 2018, we were in compliance with all the covenants.

Note 15: Guarantees, Pledged Assets and Collateral, and Other Commitments

Guarantees are contracts that contingently require us to make payments to a guaranteed party based on an event or a change in an underlying asset, liability, rate or index. Guarantees are generally in the form of standby letters of credit, securities lending and other indemnifications, written put options, recourse obligations, and other types of arrangements. Table 15.1 shows carrying value, maximum exposure to loss on our guarantees and the related non-investment grade amounts.

Table 15.1: Guarantees – Carrying Value and Maximum Exposure to Loss

			Maximum exposure to loss					
(in millions)		Carrying value of obligation (asset)	Expires in one year or less	Expires after one year through three years	Expires after three years through five years	Expires after five years	Total	Non-investment grade
December 31, 2018								
Standby letters of credit (1)	**$**	**40**	**14,636**	**7,897**	**3,398**	**497**	**26,428**	**8,027**
Securities lending and other indemnifications (2)		**—**	**—**	**1**	**—**	**1,044**	**1,045**	**1**
Written put options (3)		**(185)**	**17,243**	**10,502**	**3,066**	**400**	**31,211**	**21,732**
Loans and MLHFS sold with recourse (4)		**54**	**104**	**653**	**1,207**	**10,163**	**12,127**	**9,079**
Factoring guarantees		**—**	**889**	**—**	**—**	**—**	**889**	**751**
Other guarantees		**1**	**—**	**—**	**3**	**2,959**	**2,962**	**1**
Total guarantees	**$**	**(90)**	**32,872**	**19,053**	**7,674**	**15,063**	**74,662**	**39,591**
December 31, 2017								
Standby letters of credit (1)	$	39	15,357	7,908	3,068	645	26,978	8,773
Securities lending and other indemnifications (2)		—	—	—	2	809	811	2
Written put options (3)		(455)	14,758	12,706	3,890	1,038	32,392	19,087
Loans and MLHFS sold with recourse (4)		51	165	533	934	9,385	11,017	8,155
Factoring guarantees		—	747	—	—	—	747	668
Other guarantees		1	7	—	2	4,175	4,184	7
Total guarantees	$	(364)	31,034	21,147	7,896	16,052	76,129	36,692

(1) Total maximum exposure to loss includes direct pay letters of credit (DPLCs) of $7.5 billion and $8.1 billion at December 31, 2018 and 2017, respectively. We issue DPLCs to provide credit enhancements for certain bond issuances. Beneficiaries (bond trustees) may draw upon these instruments to make scheduled principal and interest payments, redeem all outstanding bonds because a default event has occurred, or for other reasons as permitted by the agreement. We also originate multipurpose lending commitments under which borrowers have the option to draw on the facility in one of several forms, including as a standby letter of credit. Total maximum exposure to loss includes the portion of these facilities for which we have issued standby letters of credit under the commitments.
(2) Includes indemnifications provided to certain third-party clearing agents. Outstanding customer obligations under these arrangements were $70 million and $92 million with related collateral of $974 million and $717 million at December 31, 2018 and 2017, respectively. Estimated maximum exposure to loss was $1.0 billion at December 31, 2018, and $809 million at December 31, 2017.
(3) Written put options, which are in the form of derivatives, are also included in the derivative disclosures in Note 17 (Derivatives). Carrying value net asset position is a result of certain deferred premium option trades.
(4) Represent recourse provided, predominantly to the GSEs, on loans sold under various programs and arrangements. Under these arrangements, we repurchased $3 million and $5 million of loans associated with these agreements during 2018 and 2017, respectively.

"Maximum exposure to loss" and "Non-investment grade" are required disclosures under GAAP. Non-investment grade represents those guarantees on which we have a higher risk of being required to perform under the terms of the guarantee. If the underlying assets under the guarantee are non-investment grade (that is, an external rating that is below investment grade or an internal credit default grade that is equivalent to a below investment grade external rating), we consider the risk of performance to be high. Internal credit default grades are determined based upon the same credit policies that we use to evaluate the risk of payment or performance when making loans and other extensions of credit. Credit quality indicators we usually consider in evaluating risk of payments or performance are described in Note 6 (Loans and Allowance for Credit Losses).

Maximum exposure to loss represents the estimated loss that would be incurred under an assumed hypothetical circumstance, despite what we believe is a remote possibility, where the value of our interests and any associated collateral declines to zero. Maximum exposure to loss estimates in Table 15.1 do not reflect economic hedges or collateral we could use to offset or recover losses we may incur under our guarantee agreements. Accordingly, this required disclosure is not an indication of expected loss. We believe the carrying value, which is either fair value for derivative-related products or the allowance for lending-related commitments, is more representative of our exposure to loss than maximum exposure to loss.

STANDBY LETTERS OF CREDIT We issue standby letters of credit, which include performance and financial guarantees, for customers in connection with contracts between our customers and third parties. Standby letters of credit are agreements where we are obligated to make payment to a third party on behalf of a customer if the customer fails to meet their contractual obligations. We consider the credit risk in standby letters of credit and commercial and similar letters of credit in determining the allowance for credit losses.

SECURITIES LENDING AND OTHER INDEMNIFICATIONS As a securities lending agent, we lend debt and equity securities from participating institutional clients' portfolios to third-party borrowers. These arrangements are for an indefinite period of time, and we indemnify our clients against default by the borrower in returning these lent securities. This indemnity is supported by collateral received from the borrowers and is generally in the form of cash or highly liquid securities that are marked to market daily.

We use certain third-party clearing agents to clear and settle transactions on behalf of some of our institutional brokerage customers. We indemnify the clearing agents against loss that could occur for non-performance by our customers on transactions that are not sufficiently collateralized. Transactions subject to the indemnifications may include customer obligations related to the settlement of margin accounts and short positions, such as written call options and securities borrowing transactions.

We enter into other types of indemnification agreements in the ordinary course of business under which we agree to indemnify third parties against any damages, losses and expenses incurred in connection with legal and other proceedings arising from relationships or transactions with us. These relationships or transactions include those arising from service as a director or officer of the Company, underwriting agreements relating to our securities, acquisition agreements and various other business transactions or arrangements. Because the extent of our obligations under these agreements depends entirely upon the occurrence of future events, we are unable to determine our potential future liability under these agreements. We do, however, record a liability for residential mortgage loans that we expect to repurchase pursuant to various representations and warranties.

WRITTEN PUT OPTIONS Written put options are contracts that give the counterparty the right to sell to us an underlying instrument held by the counterparty at a specified price and may include options, floors, caps and credit default swaps. These written put option contracts generally permit net settlement. While these derivative transactions expose us to risk if the option is exercised, we manage this risk by entering into offsetting trades or by taking short positions in the underlying instrument. We offset market risk related to put options written to customers with cash securities or other offsetting derivative transactions. Additionally, for certain of these contracts, we require the counterparty to pledge the underlying instrument as collateral for the transaction. Our ultimate obligation under written put options is based on future market conditions and is only quantifiable at settlement. See Note 17 (Derivatives) for additional information regarding written derivative contracts.

LOANS AND MLHFS SOLD WITH RECOURSE In certain sales and securitizations of loans, including mortgage loans, we provide recourse to the buyer whereby we are required to indemnify the buyer for any loss on the loan up to par value plus accrued interest. We provide recourse, predominantly to GSEs, on loans sold under various programs and arrangements. Substantially all of these programs and arrangements require that we share in the loans' credit exposure for their remaining life by providing recourse to the GSE, up to 33.33% of actual losses incurred on a pro-rata basis in the event of borrower default. Under the remaining recourse programs and arrangements, if certain events occur within a specified period of time from transfer date, we have to provide limited recourse to the buyer to indemnify them for losses incurred for the remaining life of the loans. The maximum exposure to loss reported in Table 15.1 represents the outstanding principal balance of the loans sold or securitized that are subject to recourse provisions or the maximum losses per the contractual agreements. However, we believe the likelihood of loss of the entire balance due to these recourse agreements is remote, and amounts paid can be recovered in whole or in part from the sale of collateral. We also provide representation and warranty guarantees on loans sold under the various recourse programs and arrangements. Our loss exposure relative to these guarantees is separately considered and provided for, as necessary, in determination of our liability for loan repurchases due to breaches of representation and warranties.

FACTORING GUARANTEES Under certain factoring arrangements, we may be required to purchase trade receivables from third parties, if receivable debtors default on their payment obligations.

OTHER GUARANTEES We are members of exchanges and clearing houses that we use to clear our trades and those of our customers. It is common that all members in these organizations are required to collectively guarantee the performance of other members. Our obligations under the guarantees are based on either a fixed amount or a multiple of the collateral we are required to maintain with these organizations. We have not recorded a liability for these arrangements as of the dates presented in Table 15.1 because we believe the likelihood of loss is remote.

We also have contingent performance arrangements related to various customer relationships and lease transactions. We are required to pay the counterparties to these agreements if third parties default on certain obligations.

Pledged Assets

As part of our liquidity management strategy, we pledge various assets to secure trust and public deposits, borrowings and letters of credit from the FHLB and FRB, securities sold under agreements to repurchase (repurchase agreements), securities lending arrangements, and for other purposes as required or permitted by law or insurance statutory requirements. The types of collateral we pledge include securities issued by federal agencies, GSEs, domestic and foreign companies and various commercial and consumer loans. Table 15.2 provides the total carrying amount of pledged assets by asset type and pledged off-balance sheet securities for securities financings. The table excludes pledged consolidated VIE assets of $14.1 billion and $13.6 billion at December 31, 2018 and 2017, respectively, which can only be used to settle the liabilities of those entities. The table also excludes $617 million and $675 million in assets pledged in transactions with VIE's accounted for as secured borrowings at December 31, 2018 and 2017, respectively. See Note 9 (Securitizations and Variable Interest Entities) for additional information on consolidated VIE assets and secured borrowings.

Table 15.2: Pledged Assets

(in millions)		**Dec 31, 2018**	Dec 31, 2017
Held for trading:			
Debt securities	**$**	**96,616**	96,993
Equity securities		**9,695**	12,161
Total pledged assets held for trading (1)		**106,311**	109,154
Not held for trading:			
Debt securities and other (2)		**62,438**	73,592
Mortgage loans held for sale and loans (3)		**453,894**	469,554
Total pledged assets not held for trading		**516,332**	543,146
Total pledged assets	**$**	**622,643**	652,300

(1) Consists of pledged assets held for trading of $45.5 billion and $41.9 billion at December 31, 2018 and 2017, respectively, and off-balance sheet securities of $60.8 billion and $67.3 billion as of the same dates, respectively, that are pledged as collateral for repurchase agreements and other securities financings. Total pledged assets held for trading includes $106.2 billion and $109.0 billion at December 31, 2018 and 2017, respectively, that permit the secured parties to sell or repledge the collateral.

(2) Includes carrying value of $4.2 billion and $5.0 billion (fair value of $4.1 billion and $5.0 billion) in collateral for repurchase agreements at December 31, 2018 and 2017, respectively, which are pledged under agreements that do not permit the secured parties to sell or repledge the collateral. Also includes $68 million and $64 million in collateral pledged under repurchase agreements at December 31, 2018 and 2017, respectively, that permit the secured parties to sell or repledge the collateral. Substantially all other pledged securities are pursuant to agreements that do not permit the secured party to sell or repledge the collateral.

(3) Includes mortgage loans held for sale of $7.4 billion and $2.6 billion at December 31, 2018 and 2017, respectively. Substantially all of the total mortgage loans held for sale and loans are pledged under agreements that do not permit the secured parties to sell or repledge the collateral. Amounts exclude $1.2 billion and $2.2 billion at December 31, 2018 and 2017, respectively, of pledged loans recorded on our balance sheet representing certain delinquent loans that are eligible for repurchase from GNMA loan securitizations.

Securities Financing Activities

We enter into resale and repurchase agreements and securities borrowing and lending agreements (collectively, "securities financing activities") typically to finance trading positions (including securities and derivatives), acquire securities to cover short trading positions, accommodate customers' financing needs, and settle other securities obligations. These activities are conducted through our broker-dealer subsidiaries and to a lesser extent through other bank entities. Most of our securities financing activities involve high quality, liquid securities such as U.S. Treasury securities and government agency securities, and to a lesser extent, less liquid securities, including equity securities, corporate bonds and asset-backed securities. We account for these transactions as collateralized financings in which we typically receive or pledge securities as collateral. We believe these financing transactions generally do not have material credit risk given the collateral provided and the related monitoring processes.

OFFSETTING OF SECURITIES FINANCING ACTIVITIES Table 15.3 presents resale and repurchase agreements subject to master repurchase agreements (MRA) and securities borrowing and lending agreements subject to master securities lending agreements (MSLA). We account for transactions subject to these agreements as collateralized financings, and those with a single counterparty are presented net on our balance sheet, provided certain criteria are met that permit balance sheet netting. Most transactions subject to these agreements do not meet those criteria and thus are not eligible for balance sheet netting.

Collateral we pledged consists of non-cash instruments, such as securities or loans, and is not netted on the balance sheet against the related liability. Collateral we received includes securities or loans and is not recognized on our balance sheet. Collateral pledged or received may be increased or decreased over time to maintain certain contractual thresholds, as the assets underlying each arrangement fluctuate in value. Generally, these agreements require collateral to exceed the asset or liability recognized on the balance sheet. The following table includes the amount of collateral pledged or received related to exposures subject to enforceable MRAs or MSLAs. While these agreements are typically over-collateralized, U.S. GAAP requires disclosure in this table to limit the reported amount of such collateral to the amount of the related recognized asset or liability for each counterparty.

In addition to the amounts included in Table 15.3, we also have balance sheet netting related to derivatives that is disclosed in Note 17 (Derivatives).

Table 15.3: Offsetting – Securities Financing Activities

(in millions)		Dec 31, 2018	Dec 31, 2017
Assets:			
Resale and securities borrowing agreements			
Gross amounts recognized	$	**112,662**	121,135
Gross amounts offset in consolidated balance sheet (1)		**(15,258)**	(23,188)
Net amounts in consolidated balance sheet (2)		**97,404**	97,947
Collateral not recognized in consolidated balance sheet (3)		**(96,734)**	(96,829)
Net amount (4)	$	**670**	1,118
Liabilities:			
Repurchase and securities lending agreements			
Gross amounts recognized (5)	$	**106,248**	111,488
Gross amounts offset in consolidated balance sheet (1)		**(15,258)**	(23,188)
Net amounts in consolidated balance sheet (6)		**90,990**	88,300
Collateral pledged but not netted in consolidated balance sheet (7)		**(90,798)**	(87,918)
Net amount (8)	$	**192**	382

(1) Represents recognized amount of resale and repurchase agreements with counterparties subject to enforceable MRAs that have been offset in the consolidated balance sheet.
(2) At December 31, 2018 and 2017, includes $80.1 billion and $78.9 billion, respectively, classified on our consolidated balance sheet in federal funds sold and securities purchased under resale agreements. Balance also includes securities purchased under long-term resale agreements (generally one year or more) classified in loans, which totaled $17.3 billion and $19.0 billion, at December 31, 2018 and 2017, respectively.
(3) Represents the fair value of collateral we have received under enforceable MRAs or MSLAs, limited for table presentation purposes to the amount of the recognized asset due from each counterparty. At December 31, 2018 and 2017, we have received total collateral with a fair value of $123.1 billion and $130.8 billion, respectively, all of which we have the right to sell or repledge. These amounts include securities we have sold or repledged to others with a fair value of $60.8 billion at December 31, 2018, and $66.3 billion at December 31, 2017.
(4) Represents the amount of our exposure that is not collateralized and/or is not subject to an enforceable MRA or MSLA.
(5) For additional information on underlying collateral and contractual maturities, see the "Repurchase and Securities Lending Agreements" section in this Note.
(6) Amount is classified in short-term borrowings on our consolidated balance sheet.
(7) Represents the fair value of collateral we have pledged, related to enforceable MRAs or MSLAs, limited for table presentation purposes to the amount of the recognized liability owed to each counterparty. At December 31, 2018 and 2017, we have pledged total collateral with a fair value of $108.8 billion and $113.6 billion, respectively, of which, the counterparty does not have the right to sell or repledge $4.4 billion as of December 31, 2018, and $5.2 billion as of December 31, 2017.
(8) Represents the amount of our obligation that is not covered by pledged collateral and/or is not subject to an enforceable MRA or MSLA.

REPURCHASE AND SECURITIES LENDING AGREEMENTS
Securities sold under repurchase agreements and securities lending arrangements are effectively short-term collateralized borrowings. In these transactions, we receive cash in exchange for transferring securities as collateral and recognize an obligation to reacquire the securities for cash at the transaction's maturity. These types of transactions create risks, including (1) the counterparty may fail to return the securities at maturity, (2) the fair value of the securities transferred may decline below the amount of our obligation to reacquire the securities, and therefore create an obligation for us to pledge additional amounts, and (3) the counterparty may accelerate the maturity on demand, requiring us to reacquire the security prior to contractual maturity. We attempt to mitigate these risks by the fact that most of our securities financing activities involve highly liquid securities, we underwrite and monitor the financial strength of our counterparties, we monitor the fair value of collateral pledged relative to contractually required repurchase amounts, and we monitor that our collateral is properly returned through the clearing and settlement process in advance of our cash repayment. Table 15.4 provides the underlying collateral types of our gross obligations under repurchase and securities lending agreements.

Table 15.4: Underlying Collateral Types of Gross Obligations

(in millions)		Dec 31, 2018	Dec 31, 2017
Repurchase agreements:			
Securities of U.S. Treasury and federal agencies (1)	$	**38,408**	40,507
Securities of U.S. States and political subdivisions		**159**	92
Federal agency mortgage-backed securities (1)		**47,241**	45,336
Non-agency mortgage-backed securities		**1,875**	1,324
Corporate debt securities (1)		**6,191**	8,020
Asset-backed securities		**2,074**	2,034
Equity securities		**992**	838
Other (1)		**340**	1,602
Total repurchases		**97,280**	99,753
Securities lending:			
Securities of U.S. Treasury and federal agencies		**222**	186
Federal agency mortgage-backed securities		**2**	—
Corporate debt securities		**389**	619
Equity securities (2)		**8,349**	10,930
Other		**6**	—
Total securities lending		**8,968**	11,735
Total repurchases and securities lending	$	**106,248**	111,488

(1) Amounts for December 31, 2017, have been revised to conform with the current period classification of certain collateral.
(2) Equity securities are generally exchange traded and either re-hypothecated under margin lending agreements or obtained through contemporaneous securities borrowing transactions with other counterparties.

Table 15.5 provides the contractual maturities of our gross obligations under repurchase and securities lending agreements.

Table 15.5: Contractual Maturities of Gross Obligations

(in millions)		Overnight/ continuous	Up to 30 days	30-90 days	>90 days	Total gross obligation
December 31, 2018						
Repurchase agreements	**$**	**86,574**	**3,244**	**2,153**	**5,309**	**97,280**
Securities lending		**8,669**	**—**	**299**	**—**	**8,968**
Total repurchases and securities lending (1)	**$**	**95,243**	**3,244**	**2,452**	**5,309**	**106,248**
December 31, 2017						
Repurchase agreements	$	83,780	7,922	3,286	4,765	99,753
Securities lending		9,634	584	1,363	154	11,735
Total repurchases and securities lending (1)	$	93,414	8,506	4,649	4,919	111,488

(1) Securities lending is executed under agreements that allow either party to terminate the transaction without notice, while repurchase agreements have a term structure to them that technically matures at a point in time. The overnight/continuous repurchase agreements require election of both parties to roll the trade rather than the election to terminate the arrangement as in securities lending.

OTHER COMMITMENTS To meet the financing needs of our customers, we may enter into commitments to purchase debt and equity securities to provide capital for their funding, liquidity or other future needs. As of December 31, 2018 and 2017, we had commitments to purchase debt securities of $335 million and $194 million, respectively, and commitments to purchase equity securities of $2.5 billion and $2.2 billion, respectively.

As part of maintaining our memberships in certain clearing organizations, we are required to stand ready to provide liquidity meant to sustain market clearing activity in the event unforeseen events occur or are deemed likely to occur. This includes commitments we have entered into to purchase securities under resale agreements from a central clearing organization that, at its option, require us to provide funding under such agreements. We do not have any outstanding amounts funded, and the amount of our unfunded contractual commitment was $9.8 billion and $2.8 billion as of December 31, 2018 and 2017, respectively.

The Parent fully and unconditionally guarantees the payment of principal, interest, and any other amounts that may be due on securities that its 100% owned finance subsidiary, Wells Fargo Finance LLC, may issue. These guaranteed liabilities were $5 million and $0 million at December 31, 2018 and 2017, respectively. These guarantees rank on parity with all of the Parent's other unsecured and unsubordinated indebtedness.

Note 16: Legal Actions

Wells Fargo and certain of our subsidiaries are involved in a number of judicial, regulatory, arbitration, and other proceedings concerning matters arising from the conduct of our business activities, and many of those proceedings expose Wells Fargo to potential financial loss. These proceedings include actions brought against Wells Fargo and/or our subsidiaries with respect to corporate-related matters and transactions in which Wells Fargo and/or our subsidiaries were involved. In addition, Wells Fargo and our subsidiaries may be requested to provide information or otherwise cooperate with government authorities in the conduct of investigations of other persons or industry groups.

Although there can be no assurance as to the ultimate outcome, Wells Fargo and/or our subsidiaries have generally denied, or believe we have a meritorious defense and will deny, liability in all significant legal actions pending against us, including the matters described below, and we intend to defend vigorously each case, other than matters we describe as having settled. We establish accruals for legal actions when potential losses associated with the actions become probable and the costs can be reasonably estimated. For such accruals, we record the amount we consider to be the best estimate within a range of potential losses that are both probable and estimable; however, if we cannot determine a best estimate, then we record the low end of the range of those potential losses. The actual costs of resolving legal actions may be substantially higher or lower than the amounts accrued for those actions.

ATM ACCESS FEE LITIGATION In October 2011, plaintiffs filed a putative class action, *Mackmin, et al. v. Visa, Inc. et al.*, against Wells Fargo & Company, Wells Fargo Bank, N.A., Visa, MasterCard, and several other banks in the United States District Court for the District of Columbia. Plaintiffs allege that the Visa and MasterCard requirement that if an ATM operator charges an access fee on Visa and MasterCard transactions, then that fee cannot be greater than the access fee charged for transactions on other networks, violates antitrust rules. Plaintiffs seek treble damages, restitution, injunctive relief, and attorneys' fees where available under federal and state law. Two other antitrust cases that make similar allegations were filed in the same court, but these cases did not name Wells Fargo as a defendant. On February 13, 2013, the district court granted defendants' motions to dismiss the three actions. Plaintiffs appealed the dismissals and, on August 4, 2015, the United States Court of Appeals for the District of Columbia Circuit vacated the district court's decisions and remanded the three cases to the district court for further proceedings. On June 28, 2016, the United States Supreme Court granted defendants' petitions for writ of certiorari to review the decisions of the United States Court of Appeals for the District of Columbia. On November 17, 2016, the United States Supreme Court dismissed the petitions as improvidently granted, and the three cases returned to the district court for further proceedings.

AUTOMOBILE LENDING MATTERS On April 20, 2018, the Company entered into consent orders with the Office of the Comptroller of the Currency (OCC) and the Consumer Financial Protection Bureau (CFPB) to resolve, among other things, investigations by the agencies into the Company's compliance risk management program and its past practices involving certain automobile collateral protection insurance (CPI) policies and, as discussed below, certain mortgage interest rate lock extensions. The consent orders require remediation to customers and the payment of a total of $1.0 billion in civil money penalties to the agencies. In July 2017, the Company announced a plan to remediate customers who may have been financially harmed due to issues related to automobile CPI policies purchased through a third-party vendor on their behalf. Multiple putative class action cases alleging, among other things, unfair and deceptive practices relating to these CPI policies, have been filed against the Company and consolidated into one multi-district litigation in the United States District Court for the Central District of California. A putative class of shareholders also filed a securities fraud class action against the Company and its executive officers alleging material misstatements and omissions of CPI-related information in the Company's public disclosures. Former team members have also alleged retaliation for raising concerns regarding automobile lending practices. In addition, the Company has identified certain issues related to the unused portion of guaranteed automobile protection (GAP) waiver or insurance agreements between the customer and dealer and, by assignment, the lender, which will result in remediation to customers in certain states. Allegations related to the CPI and GAP programs are among the subjects of shareholder derivative lawsuits pending in federal and state court in California. The court dismissed the state court action in September 2018, but plaintiffs filed an amended complaint in November 2018. Subject to full documentation and court approval, the parties have reached agreements in principle to resolve the shareholder derivative lawsuits pursuant to which the Company will pay plaintiffs' attorneys' fees and undertake certain business and governance practices. These and other issues related to the origination, servicing, and/or collection of consumer automobile loans, including related insurance products, have also subjected the Company to formal or informal inquiries, investigations, or examinations from federal and state government agencies. In December 2018, the Company entered into an agreement with all 50 state Attorneys General and the District of Columbia to resolve an investigation into the Company's retail sales practices, CPI and GAP, and mortgage interest rate lock matters, pursuant to which the Company paid $575 million.

CONSUMER DEPOSIT ACCOUNT RELATED REGULATORY INVESTIGATION The CFPB is conducting an investigation into whether customers were unduly harmed by the Company's procedures regarding the freezing (and, in many cases, closing) of consumer deposit accounts after the Company detected suspected fraudulent activity (by third-parties or account holders) that affected those accounts. A former team member has brought a state court action alleging retaliation for raising concerns about these procedures.

FIDUCIARY AND CUSTODY ACCOUNT FEE CALCULATIONS Federal government agencies are conducting formal or informal inquiries, investigations, or examinations regarding fee calculations within certain fiduciary and custody accounts in the Company's investment and fiduciary services business, which is part of the wealth management business within WIM. The Company has determined that there have been instances of incorrect fees being applied to certain assets and accounts, resulting in both overcharges and undercharges to customers.

FOREIGN EXCHANGE BUSINESS Federal government agencies, including the United States Department of Justice (Department of Justice), are investigating or examining certain activities in the Company's foreign exchange business. The Company has accrued amounts to remediate customers that may have received pricing inconsistent with commitments made to those customers, and to rebate customers where historic pricing, while consistent with contracts entered into with those customers, does not conform to the Company's recently implemented standards and pricing.

INTERCHANGE LITIGATION Plaintiffs representing a putative class of merchants have filed putative class actions, and individual merchants have filed individual actions, against Wells Fargo Bank, N.A., Wells Fargo & Company, Wachovia Bank, N.A., and Wachovia Corporation regarding the interchange fees associated with Visa and MasterCard payment card transactions. Visa, MasterCard, and several other banks and bank holding companies are also named as defendants in these actions. These actions have been consolidated in the United States District Court for the Eastern District of New York. The amended and consolidated complaint asserts claims against defendants based on alleged violations of federal and state antitrust laws and seeks damages, as well as injunctive relief. Plaintiff merchants allege that Visa, MasterCard, and payment card issuing banks unlawfully colluded to set interchange rates. Plaintiffs also allege that enforcement of certain Visa and MasterCard rules and alleged tying and bundling of services offered to merchants are anticompetitive. Wells Fargo and Wachovia, along with other defendants and entities, are parties to Loss and Judgment Sharing Agreements, which provide that they, along with other entities, will share, based on a formula, in any losses from the Interchange Litigation. On July 13, 2012, Visa, MasterCard, and the financial institution defendants, including Wells Fargo, signed a memorandum of understanding with plaintiff merchants to resolve the consolidated class action and reached a separate settlement in principle of the consolidated individual actions. The settlement payments to be made by all defendants in the consolidated class and individual actions totaled approximately $6.6 billion before reductions applicable to certain merchants opting out of the settlement. The class settlement also provided for the distribution to class merchants of 10 basis points of default interchange across all credit rate categories for a period of 8 consecutive months. The district court granted final approval of the settlement, which was appealed to the United States Court of Appeals for the Second Circuit by settlement objector merchants. Other merchants opted out of the settlement and are pursuing several individual actions. On June 30, 2016, the Second Circuit vacated the settlement agreement and reversed and remanded the consolidated action to the United States District Court for the Eastern District of New York for further proceedings. On November 23, 2016, prior class counsel filed a petition to the United States Supreme Court, seeking review of the reversal of the settlement by the Second Circuit, and the Supreme Court denied the petition on March 27, 2017. On November 30, 2016, the district court appointed lead class counsel for a damages class and an equitable relief class. The parties have entered into a settlement agreement to resolve the money damages class claims pursuant to which defendants will pay a total of approximately $6.2 billion, which includes approximately $5.3 billion of funds remaining from the 2012 settlement and $900 million in additional funding. The Company's allocated responsibility for the additional funding is approximately $94.5 million. The court granted preliminary approval of the settlement in January 2019, and scheduled a final approval hearing for November 7, 2019. Several of the opt-out litigations were settled during the pendency of the Second Circuit appeal while others remain pending. Discovery is proceeding in the opt-out litigations and the equitable relief class case.

LOW INCOME HOUSING TAX CREDITS Federal government agencies have undertaken formal or informal inquiries or investigations regarding the manner in which the Company purchased, and negotiated the purchase of, certain federal low income housing tax credits in connection with the financing of low income housing developments.

MORTGAGE BANKRUPTCY LOAN MODIFICATION LITIGATION Plaintiffs, representing a putative class of mortgage borrowers who were debtors in Chapter 13 bankruptcy cases, filed a putative class action, *Cotton, et al. v. Wells Fargo, et al.*, against Wells Fargo & Company and Wells Fargo Bank, N.A. in the United States Bankruptcy Court for the Western District of North Carolina on June 7, 2017. Plaintiffs allege that Wells Fargo improperly and unilaterally modified the mortgages of borrowers who were debtors in Chapter 13 bankruptcy cases. Plaintiffs allege that Wells Fargo implemented these modifications by improperly filing mortgage payment change notices in Chapter 13 bankruptcy cases, in violation of bankruptcy rules and process. The amended complaint asserts claims based on, among other things, alleged fraud, violations of bankruptcy rules and laws, and unfair and deceptive trade practices. The amended complaint seeks monetary damages, attorneys' fees, and declaratory and injunctive relief. The parties have entered into a settlement agreement pursuant to which the Company will pay $13.5 million to resolve the claims. On October 24, 2018, the court granted preliminary approval of the settlement and scheduled a final fairness hearing for March 4, 2019.

MORTGAGE INTEREST RATE LOCK RELATED REGULATORY INVESTIGATION On April 20, 2018, the Company entered into consent orders with the OCC and CFPB to resolve, among other things, investigations by the agencies into the Company's compliance risk management program and its past practices involving certain automobile CPI policies and certain mortgage interest rate lock extensions. The consent orders require remediation to customers and the payment of a total of $1.0 billion in civil money penalties to the agencies. On October 4, 2017, the Company announced plans to reach out to all home lending customers who paid fees for mortgage rate lock extensions requested from September 16, 2013, through February 28, 2017, and to provide refunds, with interest, to customers who believe they should not have paid those fees. The Company was named in a putative class action, filed in the United States District Court for the Northern District of California, alleging violations of federal and state consumer fraud statutes relating to mortgage rate lock extension fees. The Company filed a motion to dismiss and the court granted the motion. Subsequently, a putative class action was filed in the United States District Court for the District of Oregon, raising similar allegations. The Company filed a motion to dismiss this action. In addition, former team members have asserted claims, including in pending litigation, that they were terminated for raising concerns regarding mortgage interest rate lock extension practices. Allegations related to mortgage interest rate lock extension fees are also among the subjects of two shareholder derivative lawsuits filed in California state court. This matter has also subjected the Company to formal or informal inquiries, investigations or examinations from other federal and state government agencies. In December 2018, the Company entered into an agreement with all 50 state Attorneys General and the

District of Columbia to resolve an investigation into the Company's retail sales practices, CPI and GAP, and mortgage interest rate lock matters, pursuant to which the Company paid $575 million.

MORTGAGE LOAN MODIFICATION LITIGATION Plaintiffs representing a putative class of mortgage borrowers have filed separate putative class actions, *Hernandez v. Wells Fargo, et al.*, and *Coordes v. Wells Fargo, et al.*, against Wells Fargo Bank, N.A. in the United States District Court for the Northern District of California and the United States District Court for the District of Washington, respectively. Plaintiffs allege that Wells Fargo improperly denied mortgage loan modifications or repayment plans to customers in the foreclosure process due to the overstatement of foreclosure attorneys' fees that were included for purposes of determining whether a customer in the foreclosure process qualified for a mortgage loan modification or repayment plan.

MORTGAGE RELATED REGULATORY INVESTIGATIONS Federal and state government agencies, including the Department of Justice, have been investigating or examining certain mortgage related activities of Wells Fargo and predecessor institutions. Wells Fargo, for itself and for predecessor institutions, has responded, or continues to respond, to requests from these agencies seeking information regarding the origination, underwriting, and securitization of residential mortgages, including sub-prime mortgages. These agencies have advanced theories of purported liability with respect to certain of these activities. An agreement, pursuant to which the Company paid $2.09 billion, was reached in August 2018 to resolve the Department of Justice investigation, which related to certain 2005-2007 residential mortgage-backed securities activities. In addition, the Company reached an agreement with the Attorney General of the State of Illinois in November 2018 pursuant to which the Company paid $17 million in restitution to certain Illinois state pension funds to resolve a claim relating to certain residential mortgage-backed securities activities. Other financial institutions have entered into similar settlements with these agencies, the nature of which related to the specific activities of those financial institutions, including the imposition of significant financial penalties and remedial actions.

OFAC RELATED INVESTIGATION The Company has self-identified an issue whereby certain foreign banks utilized a Wells Fargo software-based solution to conduct import/export trade-related financing transactions with countries and entities prohibited by the Office of Foreign Assets Control (OFAC) of the United States Department of the Treasury. We do not believe any funds related to these transactions flowed through accounts at Wells Fargo as a result of the aforementioned conduct. The Company has made voluntary self-disclosures to OFAC and is cooperating with an inquiry from the Department of Justice.

ORDER OF POSTING LITIGATION Plaintiffs filed a series of putative class actions against Wachovia Bank, N.A. and Wells Fargo Bank, N.A., as well as many other banks, challenging the "high to low" order in which the banks post debit card transactions to consumer deposit accounts. Most of these actions were consolidated in multi-district litigation proceedings (MDL proceedings) in the United States District Court for the Southern District of Florida. The court in the MDL proceedings has certified a class of putative plaintiffs, and Wells Fargo moved to compel arbitration of the claims of unnamed class members. The court denied the motions to compel arbitration in October 2016, and Wells Fargo appealed this decision to the United States Court of Appeals for the Eleventh Circuit. In May 2018, the Eleventh Circuit ruled in Wells Fargo's favor and found that Wells Fargo had not waived its arbitration rights and remanded the case to the district court for further proceedings. Plaintiffs filed a petition for rehearing to the Eleventh Circuit, which was denied in August 2018. Plaintiffs petitioned for certiorari from the United States Supreme Court, and that petition was denied in January 2019.

RETAIL SALES PRACTICES MATTERS Federal, state, and local government agencies, including the Department of Justice, the United States Securities and Exchange Commission (SEC), and the United States Department of Labor; state attorneys general, including the New York Attorney General; and prosecutors' offices, as well as Congressional committees, have undertaken formal or informal inquiries, investigations or examinations arising out of certain retail sales practices of the Company that were the subject of settlements with the CFPB, the OCC, and the Office of the Los Angeles City Attorney announced by the Company on September 8, 2016. These matters are at varying stages. The Company has responded, and continues to respond, to requests from a number of the foregoing. In October 2018, the Company entered into an agreement to resolve the New York Attorney General's investigation pursuant to which the Company paid $65 million to the State of New York. In December 2018, the Company entered into an agreement with all 50 state Attorneys General and the District of Columbia to resolve an investigation into the Company's retail sales practices, CPI and GAP, and mortgage interest rate lock matters, pursuant to which the Company paid $575 million. The Company has also engaged in preliminary and/or exploratory resolution discussions with the Department of Justice and the SEC, although there can be no assurance as to the outcome of these discussions.

In addition, a number of lawsuits have also been filed by non-governmental parties seeking damages or other remedies related to these retail sales practices. First, various class plaintiffs purporting to represent consumers who allege that they received products or services without their authorization or consent have brought separate putative class actions against the Company in the United States District Court for the Northern District of California and various other jurisdictions. In April 2017, the Company entered into a settlement agreement in the first-filed action, *Jabbari v. Wells Fargo Bank, N.A.*, to resolve claims regarding certain products or services provided without authorization or consent for the time period May 1, 2002 to April 20, 2017. Pursuant to the settlement, the Company will pay $142 million for remediation, attorneys' fees, and settlement fund claims administration. In the unlikely event that the $142 million settlement total is not enough to provide remediation, pay attorneys' fees, pay settlement fund claims administration costs, and have at least $25 million left over to distribute to all class members, the Company will contribute additional funds to the settlement. In addition, in the unlikely event that the number of unauthorized accounts identified by settlement class members in the claims process and not disputed by the claims administrator exceeds plaintiffs' 3.5 million account estimate, the Company will proportionately increase the $25 million reserve so that the ratio of reserve to unauthorized accounts is no less than what was implied by plaintiffs' estimate at the time of the district court's preliminary approval of the settlement in July 2017. The district court issued an order granting final approval of the settlement on June 14, 2018. Several appeals of the district court's order granting final approval of the settlement have been filed with the United States Court of Appeals for the Ninth Circuit. Second, Wells Fargo shareholders brought a consolidated securities fraud class action in the United States District Court for the Northern District of California alleging certain misstatements and omissions in the Company's disclosures related to sales practices matters. The Company entered into a settlement agreement to resolve this matter pursuant to which the Company paid $480 million. The district court issued an order granting final approval of the settlement on December 20, 2018. Third, Wells Fargo shareholders have brought numerous shareholder derivative lawsuits asserting breach of fiduciary duty claims, among others, against current and former directors and officers for their alleged failure to detect and prevent sales practices issues. These actions have been filed or transferred to the United States District Court for the Northern District of California and California state court for coordinated proceedings. An additional lawsuit asserting similar claims in Delaware state court has been stayed. Subject to full documentation and court approval, the parties have reached an agreement in principle to resolve the shareholder derivative lawsuits pursuant to which insurance carriers will pay the Company approximately $240 million for alleged damage to the Company, and the Company will pay plaintiffs' attorneys' fees. Fourth, multiple employment litigation matters have been brought against Wells Fargo, including an Employee Retirement Income Security Act (ERISA) class action in the United States District Court for the District of Minnesota on behalf of 401(k) plan participants that has been dismissed and is now on appeal; a class action in the United States District Court for the Northern District of California on behalf of team members who allege that they protested sales practice misconduct and/or were terminated for not meeting sales goals that has now been dismissed, and we have entered into a framework with plaintiffs' counsel to address individual claims that have been asserted; various wage and hour class actions brought in federal and state court in California (which have been settled), New Jersey, and Pennsylvania on behalf of non-exempt branch based team members alleging that sales pressure resulted in uncompensated overtime; and multiple single plaintiff Sarbanes-Oxley Act complaints and state law whistleblower actions filed with the United States Department of Labor or in various state courts alleging adverse employment actions for raising sales practice misconduct issues.

RMBS TRUSTEE LITIGATION In November 2014, a group of institutional investors (Institutional Investor Plaintiffs), including funds affiliated with BlackRock, Inc., filed a putative class action in the United States District Court for the Southern District of New York against Wells Fargo Bank, N.A., alleging claims against the Company in its capacity as trustee for a number of residential mortgage-backed securities (RMBS) trusts (Federal Court Complaint). Similar complaints have been filed against other trustees in various courts, including in the Southern District of New York, in New York state court, and in other states, by RMBS investors. The Federal Court Complaint alleges that Wells Fargo Bank, N.A., as trustee, caused losses to investors and asserts causes of action based upon, among other things, the trustee's alleged failure to notify and enforce repurchase obligations of mortgage loan sellers for purported breaches of representations and warranties, notify investors of alleged events of default, and abide by appropriate standards of care following alleged events of default. Plaintiffs seek money damages in an unspecified amount, reimbursement of expenses, and equitable relief. In December 2014 and December 2015, certain other investors filed four complaints alleging similar claims against Wells Fargo Bank, N.A. in the Southern District of New York (Related Federal Cases), and the various cases pending against Wells Fargo are proceeding before the same judge. On January 19, 2016, the Southern District of New York entered an order in connection with the Federal Court Complaint dismissing claims related to certain of the trusts at issue (Dismissed Trusts). The Company's motion to dismiss the Federal Court Complaint and the complaints for the Related Federal Cases was granted in part and denied in part in March 2017. In May 2017, the Company filed third-party complaints against certain investment advisors affiliated with the Institutional Investor Plaintiffs seeking contribution with respect to claims alleged in the Federal Court Complaint (Third-Party Claims). The investment advisors have moved to dismiss those complaints. On April 17, 2018, the Southern District of New York denied class certification in the Related Federal Case brought by Royal Park Investments SA/NV (Royal Park Action).

A complaint raising similar allegations to those in the Federal Court Complaint was filed in May 2016 in New York state court by a different plaintiff investor. In December 2016, the Institutional Investor Plaintiffs filed a new putative class action complaint in New York state court in respect of 261 RMBS trusts, including the Dismissed Trusts, for which Wells Fargo Bank, N.A. serves or served as trustee (State Court Action).

In July 2017, certain of the plaintiffs from the State Court Action filed a civil complaint relating to Wells Fargo Bank, N.A.'s setting aside reserves for legal fees and expenses in connection with the liquidation of eleven RMBS trusts at issue in the State Court Action (Declaratory Judgment Action). The complaint seeks, among other relief, declarations that Wells Fargo Bank, N.A. is not entitled to indemnification, the advancement of funds, or the taking of reserves from trust funds for legal fees and expenses it incurs in defending the claims in the State Court Action. In November 2017, the Company's motion to dismiss the complaint was granted. Plaintiffs filed a notice of appeal in January 2018.

In November 2018, the Institutional Investor Plaintiffs and the Company entered into a settlement agreement pursuant to which, among other terms, the Company will pay $43 million to resolve the Federal Court Complaint and the State Court Action. The settlement will also resolve the Third Party Claims and the Declaratory Judgment Action. The New York state court has scheduled a fairness hearing on the settlement for May 6, 2019. In addition, Royal Park Investments SA/NV and Wells Fargo Bank, N.A. have reached an agreement resolving the Royal Park Action. Other than the Royal Park Action, the Related Federal Cases are not covered by these settlement agreements.

SEMINOLE TRIBE TRUSTEE LITIGATION The Seminole Tribe of Florida filed a complaint in Florida state court alleging that Wells Fargo, as trustee, charged excess fees in connection with the administration of a minor's trust and failed to invest the assets of the trust prudently. The complaint was later amended to include three individual current and former beneficiaries as plaintiffs and to remove the Tribe as a party to the case. In December 2016, the Company filed a motion to dismiss the amended complaint on the grounds that the Tribe is a necessary party and that the individual beneficiaries lack standing to bring claims. The motion was denied in June 2018. Trial is scheduled for October 2019.

WHOLESALE BANKING CONSENT ORDER INVESTIGATION
On November 19, 2015, the Company entered into a consent order with the OCC, pursuant to which the Wholesale Banking group was required to implement customer due diligence standards that include collection of current beneficial ownership information for certain business customers. The Company is responding to inquiries from various federal government agencies regarding potentially inappropriate conduct in connection with the collection of beneficial ownership information.

OUTLOOK As described above, the Company establishes accruals for legal actions when potential losses associated with the actions become probable and the costs can be reasonably estimated. The high end of the range of reasonably possible potential losses in excess of the Company's accrual for probable and estimable losses was approximately $2.7 billion as of December 31, 2018. The increase in the high end of the range from September 30, 2018, was due to a variety of matters, including the Company's existing retail sales practices matters. The outcomes of legal actions are unpredictable and subject to significant uncertainties, and it is inherently difficult to determine whether any loss is probable or even possible. It is also inherently difficult to estimate the amount of any loss and there may be matters for which a loss is probable or reasonably possible but not currently estimable. Accordingly, actual losses may be in excess of the established accrual or the range of reasonably possible loss. Wells Fargo is unable to determine whether the ultimate resolution of the retail sales practices matters will have a material adverse effect on its consolidated financial condition. Based on information currently available, advice of counsel, available insurance coverage, and established reserves, Wells Fargo believes that the eventual outcome of other actions against Wells Fargo and/or its subsidiaries will not, individually or in the aggregate, have a material adverse effect on Wells Fargo's consolidated financial condition. However, it is possible that the ultimate resolution of a matter, if unfavorable, may be material to Wells Fargo's results of operations for any particular period.

Note 17: Derivatives

We use derivatives to manage exposure to market risk, including interest rate risk, credit risk and foreign currency risk, and to assist customers with their risk management objectives. We designate certain derivatives as hedging instruments in a qualifying hedge accounting relationship (fair value or cash flow hedge). Our remaining derivatives consist of economic hedges that do not qualify for hedge accounting and derivatives held for customer accommodation trading or other purposes.

Our asset/liability management approach to interest rate, foreign currency and certain other risks includes the use of derivatives. Such derivatives are typically designated as fair value or cash flow hedges, or economic hedges. We use derivatives to help minimize significant, unplanned fluctuations in earnings, fair values of assets and liabilities, and cash flows caused by interest rate, foreign currency and other market risk volatility. This approach involves modifying the repricing characteristics of certain assets and liabilities so that changes in interest rates, foreign currency and other exposures, which may cause the hedged assets and liabilities to gain or lose fair value, do not have a significantly adverse effect on the net interest margin, cash flows and earnings. In a fair value or economic hedge, the effect of change in fair value will generally be offset by the unrealized gain or loss on the derivatives linked to the hedged assets and liabilities. In a cash flow hedge, where we manage the variability of cash payments due to interest rate fluctuations by the effective use of derivatives linked to hedged assets and liabilities, the hedged asset or liability is not adjusted and the unrealized gain or loss on the derivative is recorded in other comprehensive income.

We also offer various derivatives, including interest rate, commodity, equity, credit and foreign exchange contracts, as an accommodation to our customers as part of our trading businesses. These derivative transactions, which involve our engaging in market-making activities or acting as an intermediary, are conducted in an effort to help customers manage their market risks. We usually offset our exposure from such derivatives by entering into other financial contracts, such as separate derivative or security transactions. These customer accommodations and any offsetting derivatives are treated as customer accommodation trading and other derivatives in our disclosures. Additionally, embedded derivatives that are required to be accounted for separately from their host contracts are included in the customer accommodation trading and other derivatives disclosures as applicable.

Table 17.1 presents the total notional or contractual amounts and fair values for our derivatives. Derivative transactions can be measured in terms of the notional amount, but this amount is not recorded on the balance sheet and is not, when viewed in isolation, a meaningful measure of the risk profile of the instruments. The notional amount is generally not exchanged, but is used only as the basis on which interest and other payments are determined.

Table 17.1: Notional or Contractual Amounts and Fair Values of Derivatives

	December 31, 2018			December 31, 2017		
	Notional or		Fair value	Notional or		Fair value
(in millions)	contractual amount	Asset derivatives	Liability derivatives	contractual amount	Asset derivatives	Liability derivatives
Derivatives designated as hedging instruments						
Interest rate contracts (1)	$ 177,511	2,237	636	209,677	2,492	1,092
Foreign exchange contracts (1)	34,176	573	1,376	34,135	1,482	1,137
Total derivatives designated as qualifying hedging instruments		2,810	2,012		3,974	2,229
Derivatives not designated as hedging instruments						
Economic hedges:						
Interest rate contracts (2)	173,215	849	369	220,558	159	201
Equity contracts	13,920	1,362	79	12,315	716	138
Foreign exchange contracts	19,521	225	80	15,976	78	309
Credit contracts - protection purchased	100	27	—	111	37	—
Subtotal		2,463	528		990	648
Customer accommodation trading and other derivatives:						
Interest rate contracts	9,162,821	15,349	15,303	6,434,673	14,979	14,179
Commodity contracts	66,173	1,588	2,336	62,530	2,354	1,335
Equity contracts	217,890	6,183	5,931	213,750	6,291	8,363
Foreign exchange contracts	364,982	5,916	5,657	362,896	7,413	7,122
Credit contracts - protection sold	11,741	76	182	9,021	147	214
Credit contracts - protection purchased	20,880	175	98	17,406	207	208
Subtotal		29,287	29,507		31,391	31,421
Total derivatives not designated as hedging instruments		31,750	30,035		32,381	32,069
Total derivatives before netting		34,560	32,047		36,355	34,298
Netting (3)		(23,790)	(23,548)		(24,127)	(25,502)
Total		$ 10,770	8,499		12,228	8,796

(1) Notional amounts presented at December 31, 2017, exclude $500 million of interest rate contracts for certain derivatives that are combined for designation as a hedge in a single relationship. No such hedging relationships existed at December 31, 2018. The notional amount for foreign exchange contracts at December 31, 2018 and 2017, excludes $11.2 billion and $13.5 billion, respectively for certain derivatives that are combined for designation as a hedge on a single relationship.
(2) Includes economic hedge derivatives used to hedge the risk of changes in the fair value of residential MSRs, MLHFS, loans, derivative loan commitments and other interests held.
(3) Represents balance sheet netting of derivative asset and liability balances, related cash collateral and portfolio level counterparty valuation adjustments. See the next table in this Note for further information.

Table 17.2 provides information on the gross fair values of derivative assets and liabilities, the balance sheet netting adjustments and the resulting net fair value amount recorded on our balance sheet, as well as the non-cash collateral associated with such arrangements. We execute substantially all of our derivative transactions under master netting arrangements and reflect all derivative balances and related cash collateral subject to enforceable master netting arrangements on a net basis within the balance sheet. The "Gross amounts recognized" column in the following table includes $30.9 billion and $28.4 billion of gross derivative assets and liabilities, respectively, at December 31, 2018, and $30.0 billion and $29.9 billion, respectively, at December 31, 2017, with counterparties subject to enforceable master netting arrangements that are carried on the balance sheet net of offsetting amounts. The remaining gross derivative assets and liabilities of $3.7 billion and $3.6 billion, respectively, at December 31, 2018, and $6.4 billion and $4.4 billion, respectively, at December 31, 2017, include those with counterparties subject to master netting arrangements for which we have not assessed the enforceability because they are with counterparties where we do not currently have positions to offset, those subject to master netting arrangements where we have not been able to confirm the enforceability and those not subject to master netting arrangements. As such, we do not net derivative balances or collateral within the balance sheet for these counterparties.

We determine the balance sheet netting adjustments based on the terms specified within each master netting arrangement. We disclose the balance sheet netting amounts within the column titled "Gross amounts offset in consolidated balance sheet." Balance sheet netting adjustments are determined at the counterparty level for which there may be multiple contract types. For disclosure purposes, we allocate these netting adjustments to the contract type for each counterparty proportionally based upon the "Gross amounts recognized" by counterparty. As a result, the net amounts disclosed by contract type may not represent the actual exposure upon settlement of the contracts.

We do not net non-cash collateral that we receive and pledge on the balance sheet. For disclosure purposes, we present the fair value of this non-cash collateral in the column titled "Gross amounts not offset in consolidated balance sheet (Disclosure-only netting)" within the table. We determine and allocate the Disclosure-only netting amounts in the same manner as balance sheet netting amounts.

The "Net amounts" column within Table 17.2 represents the aggregate of our net exposure to each counterparty after considering the balance sheet and Disclosure-only netting adjustments. We manage derivative exposure by monitoring the credit risk associated with each counterparty using counterparty specific credit risk limits, using master netting arrangements and obtaining collateral. Derivative contracts executed in over-the-counter markets include bilateral contractual arrangements that are not cleared through a central clearing organization but are typically subject to master netting arrangements. The percentage of our bilateral derivative transactions outstanding at period end in such markets, based on gross fair value, is provided within the following table. Other derivative contracts executed in over-the-counter or exchange-traded markets are settled through a central clearing organization and are excluded from this percentage. In addition to the netting amounts included in the table, we also have balance sheet netting related to resale and repurchase agreements that are disclosed within Note 15 (Guarantees, Pledged Assets and Collateral, and Other Commitments).

Table 17.2: Gross Fair Values of Derivative Assets and Liabilities

(in millions)		Gross amounts recognized	Gross amounts offset in consolidated balance sheet (1)	Net amounts in consolidated balance sheet	Gross amounts not offset in consolidated balance sheet (Disclosure-only netting) (2)	Net amounts	Percent exchanged in over-the-counter market (3)
December 31, 2018							
Derivative assets							
Interest rate contracts	**$**	**18,435**	**(12,029)**	**6,406**	**(80)**	**6,326**	**90%**
Commodity contracts		**1,588**	**(849)**	**739**	**(4)**	**735**	**57**
Equity contracts		**7,545**	**(5,318)**	**2,227**	**(755)**	**1,472**	**78**
Foreign exchange contracts		**6,714**	**(5,355)**	**1,359**	**(35)**	**1,324**	**100**
Credit contracts-protection sold		**76**	**(73)**	**3**	**—**	**3**	**12**
Credit contracts-protection purchased		**202**	**(166)**	**36**	**(1)**	**35**	**78**
Total derivative assets	**$**	**34,560**	**(23,790)**	**10,770**	**(875)**	**9,895**	
Derivative liabilities							
Interest rate contracts	**$**	**16,308**	**(13,152)**	**3,156**	**(567)**	**2,589**	**92%**
Commodity contracts		**2,336**	**(727)**	**1,609**	**(8)**	**1,601**	**85**
Equity contracts		**6,010**	**(3,877)**	**2,133**	**(110)**	**2,023**	**75**
Foreign exchange contracts		**7,113**	**(5,522)**	**1,591**	**(188)**	**1,403**	**100**
Credit contracts-protection sold		**182**	**(180)**	**2**	**(2)**	**—**	**67**
Credit contracts-protection purchased		**98**	**(90)**	**8**	**—**	**8**	**11**
Total derivative liabilities	**$**	**32,047**	**(23,548)**	**8,499**	**(875)**	**7,624**	
December 31, 2017							
Derivative assets							
Interest rate contracts	$	17,630	(11,929)	5,701	(145)	5,556	99 %
Commodity contracts		2,354	(966)	1,388	(4)	1,384	88
Equity contracts		7,007	(4,233)	2,774	(596)	2,178	76
Foreign exchange contracts		8,973	(6,656)	2,317	(25)	2,292	100
Credit contracts-protection sold		147	(145)	2	—	2	10
Credit contracts-protection purchased		244	(198)	46	(3)	43	89
Total derivative assets	$	36,355	(24,127)	12,228	(773)	11,455	
Derivative liabilities							
Interest rate contracts	$	15,472	(13,226)	2,246	(1,078)	1,168	99 %
Commodity contracts		1,335	(648)	687	(1)	686	76
Equity contracts		8,501	(4,041)	4,460	(400)	4,060	85
Foreign exchange contracts		8,568	(7,189)	1,379	(204)	1,175	100
Credit contracts-protection sold		214	(204)	10	(9)	1	85
Credit contracts-protection purchased		208	(194)	14	—	14	9
Total derivative liabilities	$	34,298	(25,502)	8,796	(1,692)	7,104	

(1) Represents amounts with counterparties subject to enforceable master netting arrangements that have been offset in the consolidated balance sheet, including related cash collateral and portfolio level counterparty valuation adjustments. Counterparty valuation adjustments were $353 million and $245 million related to derivative assets and $152 million and $95 million related to derivative liabilities as of December 31, 2018 and 2017, respectively. Cash collateral totaled $3.7 billion and $3.6 billion, netted against derivative assets and liabilities, respectively, at December 31, 2018, and $2.7 billion and $4.2 billion, respectively, at December 31, 2017.

(2) Represents the fair value of non-cash collateral pledged and received against derivative assets and liabilities with the same counterparty that are subject to enforceable master netting arrangements. U.S. GAAP does not permit netting of such non-cash collateral balances in the consolidated balance sheet but requires disclosure of these amounts.

(3) Represents derivatives executed in over-the-counter markets not settled through a central clearing organization. Over-the-counter percentages are calculated based on Gross amounts recognized as of the respective balance sheet date. The remaining percentage represents derivatives settled through a central clearing organization, which are executed in either over-the-counter or exchange-traded markets.

Fair Value and Cash Flow Hedges

For fair value hedges, we use interest rate swaps to convert certain of our fixed-rate long-term debt and time certificates of deposit to floating rates to hedge our exposure to interest rate risk. We also enter into cross-currency swaps, cross-currency interest rate swaps and forward contracts to hedge our exposure to foreign currency risk and interest rate risk associated with the issuance of non-U.S. dollar denominated long-term debt. In addition, we use interest rate swaps, cross-currency swaps, cross-currency interest rate swaps and forward contracts to hedge against changes in fair value of certain investments in available-for-sale debt securities due to changes in interest rates, foreign currency rates, or both. We also use interest rate swaps to hedge against changes in fair value for certain mortgage loans held for sale.

For cash flow hedges, we use interest rate swaps to hedge the variability in interest payments received on certain floating-rate commercial loans and paid on certain floating-rate debt due to changes in the contractually specified interest rate.

We estimate $293 million pre-tax of deferred net losses primarily related to cash flow hedges in OCI at December 31, 2018, will be reclassified into net interest income during the next twelve months. The deferred losses expected to be reclassified into net interest income are primarily related to discontinued hedges of floating rate loans. We are hedging our foreign exposure to the variability of future cash flows for all forecasted transactions for a maximum of 8 years.

Table 17.3 shows the net gains (losses) related to derivatives in fair value and cash flow hedging relationships.

Table 17.3: Gains (Losses) Recognized in Consolidated Statement of Income on Fair Value and Cash Flow Hedging Relationships (1)

	Net interest income					Noninterest Income	
(in millions)	Debt securities	Loans	Mortgage loans held for sale	Deposits	Long-term debt	Other	Total
Year ended December 31, 2018							
Total amounts presented in the consolidated statement of income	$ 14,406	43,974	777	(5,622)	(6,703)	2,473	49,305
Gains (losses) on fair value hedging relationships							
Interest rate contracts							
Amounts related to interest settlements on derivatives (2)	(187)	—	(3)	(41)	292	—	61
Recognized on derivatives	845	1	15	27	(1,923)	—	(1,035)
Recognized on hedged items	(877)	(1)	(22)	(33)	1,843	—	910
Foreign exchange contracts							
Amounts related to interest settlements on derivatives (2)(3)	33	—	—	—	(434)	—	(401)
Recognized on derivatives (4)	7	—	—	—	135	(1,204)	(1,062)
Recognized on hedged items	(1)	—	—	—	(82)	1,114	1,031
Net income (expense) recognized on fair value hedges	(180)	—	(10)	(47)	(169)	(90)	(496)
Gains (losses) on cash flow hedging relationships							
Interest contracts							
Realized gains (losses) (pre tax) reclassified from cumulative OCI into net income (5)	—	(292)	—	—	1	—	(291)
Foreign exchange contracts							
Realized gains (losses) (pre-tax) reclassified from cumulative OCI into net income (5)	—	—	—	—	(3)	—	(3)
Net income (expense) recognized on cash flow hedges	$ —	(292)	—	—	(2)	—	(294)

(continued on following page)

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				Net interest income		Noninterest Income	
(in millions)	Debt securities	Loans	Mortgage loans held for sale	Deposits	Long-term debt	Other	Total
Year ended December 31, 2017							
Total amounts presented in the consolidated statement of income	$ 12,946	41,388	786	(3,013)	(5,157)	1,603	48,553
Gains (losses) on fair value hedging relationships							
Interest rate contracts							
Amounts related to interest settlements on derivatives (2)	(469)	(1)	(5)	36	1,286	—	847
Recognized on derivatives	(43)	1	(5)	(20)	(912)	—	(979)
Recognized on hedged items	(52)	(1)	(4)	36	938	—	917
Foreign exchange contracts							
Amounts related to interest settlements on derivatives (2)(3)	14	—	—	—	(210)	—	(196)
Recognized on derivatives (4)	13	—	—	—	(230)	3,118	2,901
Recognized on hedged items	(10)	—	—	—	255	(2,855)	(2,610)
Net income (expense) recognized on fair value hedges	(547)	(1)	(14)	52	1,127	263	880
Gains (losses) on cash flow hedging relationships							
Interest contracts							
Realized gains (losses) (pre tax) reclassified from cumulative OCI into net income (5)	—	551	—	—	(8)	—	543
Foreign exchange contracts							
Realized gains (losses) (pre-tax) reclassified from cumulative OCI into net income (5)	—	—	—	—	—	—	—
Net income (expense) recognized on cash flow hedges	$ —	551	—	—	(8)	—	543
Year ended December 31, 2016							
Total amounts presented in the consolidated statement of income	$ 11,244	39,505	784	(1,395)	(3,830)	1,289	47,597
Gains (losses) on fair value hedging relationships							
Interest rate contracts							
Amounts related to interest settlements on derivatives (2)	(582)	—	(6)	62	1,830	—	1,304
Recognized on derivatives	—	—	—	—	—	(2,175)	(2,175)
Recognized on hedged items	—	—	—	—	—	2,157	2,157
Foreign exchange contracts							
Amounts related to interest settlements on derivatives (2)(3)	9	—	—	—	31	—	40
Recognized on derivatives	—	—	—	—	—	(274)	(274)
Recognized on hedged items	—	—	—	—	—	286	286
Net income (expense) recognized on fair value hedges	(573)	—	(6)	62	1,861	(6)	1,338
Gains (losses) on cash flow hedging relationships							
Interest contracts							
Realized gains (losses) (pre tax) reclassified from cumulative OCI into net income (5)	—	1,043	—	—	(14)	—	1,029
Gains (losses) (before tax) recognized in income for hedge ineffectiveness	—	—	—	—	—	(1)	(1)
Foreign exchange contracts							
Realized gains (losses) (pre-tax) reclassified from cumulative OCI into net income (5)	—	—	—	—	—	—	—
Net income (expense) recognized on cash flow hedges	$ —	1,043	—	—	(14)	(1)	1,028

(1) Year ended December 31, 2016, gain or loss amounts and presentation location were not conformed to new hedge accounting guidance that we adopted in 2017.
(2) Includes changes in fair value due to the passage of time associated with the non-zero fair value amount at hedge inception.
(3) Includes $(2) million, $(3) million and $(13) million for years ended December 31, 2018, 2017, and 2016, respectively, of the time value component recognized as net interest income (expense) on forward derivatives hedging foreign currency available-for-sale securities and long-term debt that were excluded from the assessment of hedge effectiveness.
(4) For certain fair value hedges of foreign currency risk, changes in fair value of cross-currency swaps attributable to changes in cross-currency basis spreads are excluded from the assessment of hedge effectiveness and recorded in other comprehensive income. See Note 25 (Other Comprehensive Income) for the amounts recognized in other comprehensive income.
(5) See Note 25 (Other Comprehensive Income) for details of amounts reclassified to net income.

Table 17.4 shows the carrying amount and associated cumulative basis adjustment related to the application of hedge accounting that is included in the carrying amount of hedged assets and liabilities in fair value hedging relationships.

Table 17.4: Hedged Items in Fair Value Hedging Relationship

	Hedged Items Currently Designated		Hedged Items No Longer Designated (1)	
(in millions)	Carrying Amount of Assets/ (Liabilities) (2)(4)	Hedge Accounting Basis Adjustment Assets/(Liabilities) (3)	Carrying Amount of Assets/(Liabilities) (4)	Hedge Accounting Basis Adjustment Assets/(Liabilities)
December 31, 2018				
Available-for-sale debt securities (5)	**$ 37,857**	**(157)**	**4,938**	**238**
Loans	**—**	**—**	**—**	**—**
Mortgage loans held for sale	**448**	**7**	**—**	**—**
Deposits	**(56,535)**	**115**	**—**	**—**
Long-term debt	**(104,341)**	**(742)**	**(25,539)**	**366**
December 31, 2017				
Available-for-sale debt securities (5)	$ 32,498	870	5,221	343
Loans	140	(1)	—	—
Mortgage loans held for sale	465	(1)	—	—
Deposits	(23,679)	158	—	—
Long-term debt	(128,950)	(2,154)	(1,953)	16

(1) Represents hedged items no longer designated in qualifying fair value hedging relationships for which an associated basis adjustment exists at the balance sheet date.
(2) Does not include the carrying amount of hedged items where only foreign currency risk is the designated hedged risk. The carrying amount excluded for debt securities is \$1.6 billion and for long-term debt is \$(6.3) billion as of December 31, 2018, and \$1.5 billion for debt securities and for long-term debt is \$(7.7) billion as of December 31, 2017.
(3) The balance includes \$1.4 billion and \$66 million of debt securities and long-term debt cumulative basis adjustments as of December 31, 2018, respectively, and \$2.1 billion and \$297 million of debt securities and long-term debt cumulative basis adjustments as of December 31, 2017, respectively, on terminated hedges whereby the hedged items have subsequently been re-designated into existing hedges.
(4) Represents the full carrying amount of the hedged asset or liability item as of the balance sheet date, except for circumstances in which only a portion of the asset or liability was designated as the hedged item in which case only the portion designated is presented.
(5) Carrying amount represents the amortized cost.

Derivatives Not Designated as Hedging Instruments

We use economic hedge derivatives to hedge the risk of changes in the fair value of certain residential MLHFS, residential MSRs measured at fair value, derivative loan commitments and other interests held. We also use economic hedge derivatives to mitigate the periodic earnings volatility caused by mismatches between the changes in fair value of the hedged item and hedging instrument recognized on our fair value accounting hedges. The resulting gain or loss on these economic hedge derivatives is reflected in mortgage banking noninterest income, net gains (losses) from equity securities and other noninterest income.

The derivatives used to hedge MSRs measured at fair value, which include swaps, swaptions, constant maturity mortgages, forwards, Eurodollar and Treasury futures and options contracts, resulted in net derivative gains (losses) of \$(1.1) billion, \$413 million, and \$261 million in 2018, 2017, and 2016, respectively, which are included in mortgage banking noninterest income. The aggregate fair value of these derivatives was a net asset of \$757 million at December 31, 2018, and a net asset of \$89 million at December 31, 2017. The change in fair value of these derivatives for each period end is due to changes in the underlying market indices and interest rates as well as the purchase and sale of derivative financial instruments throughout the period as part of our dynamic MSR risk management process.

Loan commitments for mortgage loans that we intend to sell are considered derivatives. Our interest rate exposure on these derivative loan commitments, as well as residential MLHFS, is hedged with economic hedge derivatives such as swaps, forwards and options, Eurodollar futures and options, and Treasury futures, forwards and options contracts. The derivative loan commitments, economic hedge derivatives and residential MLHFS are carried at fair value with changes in fair value included in mortgage banking noninterest income. For the fair value measurement of derivative loan commitments we include, at inception and during the life of the loan commitment, the expected net future cash flows related to the associated servicing of the loan. Fair value changes subsequent to inception are based on changes in fair value of the underlying loan resulting from the exercise of the commitment and changes in the probability that the loan will not fund within the terms of the commitment (referred to as a fall-out factor). The value of the underlying loan is affected by changes in interest rates and the passage of time. However, changes in investor demand can also cause changes in the value of the underlying loan value that cannot be hedged. The aggregate fair value of derivative loan commitments on the balance sheet was a net positive fair value of \$60 million and \$17 million at December 31, 2018 and 2017, respectively, and is included in the caption "Interest rate contracts" under "Customer accommodation trading and other derivatives" in Table 17.1.

We also enter into various derivatives as an accommodation to our customers as part of our trading businesses. These derivatives are not linked to specific assets and liabilities on the balance sheet or to forecasted transactions in an accounting hedge relationship and, therefore, do not qualify for hedge accounting. We also enter into derivatives for risk management that do not otherwise qualify for hedge accounting. They are carried at fair value with changes in fair value recorded in noninterest income.

Customer accommodation trading and other derivatives also include embedded derivatives that are required to be accounted for separately from their host contract. We periodically issue hybrid long-term notes and CDs where the performance of the hybrid instrument notes is linked to an equity, commodity or currency index, or basket of such indices. These notes contain explicit terms that affect some or all of the cash flows or the value of the note in a manner similar to a derivative instrument and therefore are considered to contain an "embedded" derivative instrument. The indices on which the performance of the hybrid instrument is calculated are not clearly and closely related to the host debt instrument. The "embedded" derivative is separated from the host contract and accounted for as a derivative. Additionally, we may invest in hybrid instruments that contain embedded derivatives, such as credit derivatives, that are not clearly and closely related to the host contract. In such instances, we either elect fair value option for the hybrid instrument or separate the embedded derivative from the host contract and account for the host contract and derivative separately.

Table 17.5 shows the net gains (losses), recognized by income statement lines, related to derivatives not designated as hedging instruments.

Table 17.5: Gains (Losses) on Derivatives Not Designated as Hedging Instruments

					Noninterest income
(in millions)	Mortgage banking	Net gains (losses) from equity securities	Net gains (losses) from trading activities	Other	Total
Year ended December 31, 2018					
Net gains (losses) recognized on economic hedges derivatives:					
Interest rate contracts (1)	$ (215)	—	—	(15)	(230)
Equity contracts	—	(408)	—	4	(404)
Foreign exchange contracts	—	—	—	669	669
Credit contracts	—	—	—	—	—
Subtotal (2)	(215)	(408)	—	658	35
Net gains (losses) recognized on customer accommodation trading and other derivatives:					
Interest rate contracts (3)	(352)	—	446	—	94
Equity contracts	—	—	4,499	(403)	4,096
Foreign exchange contracts	—	—	638	—	638
Credit contracts	—	—	1	—	1
Commodity contracts	—	—	83	—	83
Other	—	—	—	—	—
Subtotal	(352)	—	5,667	(403)	4,912
Net gains (losses) recognized related to derivatives not designated as hedging instruments	$ (567)	(408)	5,667	255	4,947

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				Noninterest income	
(in millions)	Mortgage banking	Net gains (losses) from equity securities	Net gains (losses) from trading activities	Other	Total
Year ended December 31, 2017					
Net gains (losses) recognized on economic hedges derivatives:					
Interest rate contracts (1)	$ 448	—	—	(75)	373
Equity contracts	—	(1,483)	—	17	(1,466)
Foreign exchange contracts	—	—	—	(866)	(866)
Credit contracts	—	—	—	5	5
Subtotal (2)	448	(1,483)	—	(919)	(1,954)
Net gains (losses) recognized on customer accommodation trading and other derivatives:					
Interest rate contracts (3)	614	—	160	—	774
Equity contracts	—	—	(3,932)	1	(3,931)
Foreign exchange contracts	—	—	638	—	638
Credit contracts	—	—	(81)	—	(81)
Commodity contracts	—	—	178	—	178
Other	—	—	—	—	—
Subtotal	614	—	(3,037)	1	(2,422)
Net gains (losses) recognized related to derivatives not designated as hedging instruments	$ 1,062	(1,483)	(3,037)	(918)	(4,376)
Year ended December 31, 2016					
Net gains (losses) recognized on economic hedges derivatives:					
Interest rate contracts (1)	$ 1,029	—	—	(51)	978
Equity contracts	—	125	—	(11)	114
Foreign exchange contracts	—	—	—	954	954
Credit contracts	—	—	—	21	21
Subtotal (2)	1,029	125	—	913	2,067
Net gains (losses) recognized on customer accommodation trading and other derivatives:					
Interest contracts (3)	818	—	255	—	1,073
Equity contracts	—	—	(1,643)	—	(1,643)
Foreign exchange contracts	—	—	1,077	—	1,077
Credit contracts	—	—	(105)	—	(105)
Commodity contracts	—	—	216	—	216
Other	—	—	11	—	11
Subtotal	818	—	(189)	—	629
Net gains (losses) recognized related to derivatives not designated as hedging instruments	$ 1,847	125	(189)	913	2,696

(1) Includes gains (losses) on the derivatives used as economic hedges of MSRs measured at fair value, derivative loan commitments and mortgages held for sale.
(2) Includes hedging gains (losses) of $9 million, $(71) million, and $(8) million for the years ended December 31, 2018, 2017, and 2016, respectively, which partially offset hedge accounting ineffectiveness.
(3) Amounts presented in mortgage banking noninterest income are gains (losses) on derivative loan commitments.

Credit Derivatives

Credit derivative contracts are arrangements whose value is derived from the transfer of credit risk of a reference asset or entity from one party (the purchaser of credit protection) to another party (the seller of credit protection). We use credit derivatives to assist customers with their risk management objectives. We may also use credit derivatives in structured product transactions or liquidity agreements written to special purpose vehicles. The maximum exposure of sold credit derivatives is managed through posted collateral, purchased credit derivatives and similar products in order to achieve our desired credit risk profile. This credit risk management provides an ability to recover a significant portion of any amounts that would be paid under the sold credit derivatives. We would be required to perform under the sold credit derivatives in the event of default by the referenced obligors. Events of default include events such as bankruptcy, capital restructuring or lack of principal and/or interest payment. In certain cases, other triggers may exist, such as the credit downgrade of the referenced obligors or the inability of the special purpose vehicle for which we have provided liquidity to obtain funding.

Table 17.6 provides details of sold and purchased credit derivatives.

Table 17.6: Sold and Purchased Credit Derivatives

				Notional amount				
(in millions)		Fair value liability	Protection sold (A)	Protection sold - non-investment grade	Protection purchased with identical underlyings (B)	Net protection sold (A)-(B)	Other protection purchased	Range of maturities
December 31, 2018								
Credit default swaps on:								
Corporate bonds	**$**	**59**	**2,037**	**441**	**1,374**	**663**	**1,460**	**2019 - 2027**
Structured products		**62**	**133**	**128**	**121**	**12**	**113**	**2022 - 2047**
Credit protection on:								
Default swap index		**1**	**3,618**	**582**	**1,998**	**1,620**	**2,896**	**2019 - 2028**
Commercial mortgage-backed securities index		**49**	**389**	**109**	**363**	**26**	**51**	**2047 - 2058**
Asset-backed securities index		**9**	**42**	**42**	**42**	**—**	**1**	**2045 - 2046**
Other		**2**	**5,522**	**5,327**	**—**	**5,522**	**12,561**	**2018 - 2048**
Total credit derivatives	**$**	**182**	**11,741**	**6,629**	**3,898**	**7,843**	**17,082**	
December 31, 2017								
Credit default swaps on:								
Corporate bonds	$	35	2,007	510	1,575	432	946	2018 - 2027
Structured products		86	267	252	232	35	153	2022 - 2047
Credit protection on:								
Default swap index		—	2,626	540	308	2,318	3,932	2018 - 2027
Commercial mortgage-backed securities index		83	423	—	401	22	87	2047 - 2058
Asset-backed securities index		9	42	—	42	—	1	2045 - 2046
Other		1	3,656	3,306	—	3,656	9,840	2018 - 2031
Total credit derivatives	$	214	9,021	4,608	2,558	6,463	14,959	

Protection sold represents the estimated maximum exposure to loss that would be incurred under an assumed hypothetical circumstance, where the value of our interests and any associated collateral declines to zero, without any consideration of recovery or offset from any economic hedges. We believe this hypothetical circumstance to be an extremely remote possibility and accordingly, this required disclosure is not an indication of expected loss. The amounts under non-investment grade represent the notional amounts of those credit derivatives on which we have a higher risk of being required to perform under the terms of the credit derivative and are a function of the underlying assets.

We consider the risk of performance to be high if the underlying assets under the credit derivative have an external rating that is below investment grade or an internal credit default grade that is equivalent thereto. We believe the net protection sold, which is representative of the net notional amount of protection sold and purchased with identical underlyings, in combination with other protection purchased, is more representative of our exposure to loss than either non-investment grade or protection sold. Other protection purchased represents additional protection, which may offset the exposure to loss for protection sold, that was not purchased with an identical underlying of the protection sold.

Credit-Risk Contingent Features

Certain of our derivative contracts contain provisions whereby if the credit rating of our debt were to be downgraded by certain major credit rating agencies, the counterparty could demand additional collateral or require termination or replacement of derivative instruments in a net liability position. The aggregate fair value of all derivative instruments with such credit-risk-related contingent features that are in a net liability position was $7.4 billion at December 31, 2018, and $8.3 billion at December 31, 2017, respectively, for which we posted $5.6 billion and $7.1 billion, respectively, in collateral in the normal course of business. If the credit rating of our debt had been downgraded below investment grade, which is the credit-risk-related contingent feature that if triggered requires the maximum amount of collateral to be posted, on December 31, 2018, or December 31, 2017, we would have been required to post additional collateral of $1.8 billion or $1.2 billion, respectively, or potentially settle the contract in an amount equal to its fair value. Some contracts require that we provide more collateral than the fair value of derivatives that are in a net liability position if a downgrade occurs.

Counterparty Credit Risk

By using derivatives, we are exposed to counterparty credit risk if counterparties to the derivative contracts do not perform as expected. If a counterparty fails to perform, our counterparty credit risk is equal to the amount reported as a derivative asset on our balance sheet. The amounts reported as a derivative asset are derivative contracts in a gain position, and to the extent subject to legally enforceable master netting arrangements, net of derivatives in a loss position with the same counterparty and cash collateral received. We minimize counterparty credit risk through credit approvals, limits, monitoring procedures, executing master netting arrangements and obtaining collateral, where appropriate. To the extent the master netting arrangements and other criteria meet the applicable requirements, including determining the legal enforceability of the arrangement, it is our policy to present derivative balances and related cash collateral amounts net on the balance sheet. We incorporate credit valuation adjustments (CVA) to reflect counterparty credit risk in determining the fair value of our derivatives. Such adjustments, which consider the effects of enforceable master netting agreements and collateral arrangements, reflect market-based views of the credit quality of each counterparty. Our CVA calculation is determined based on observed credit spreads in the credit default swap market and indices indicative of the credit quality of the counterparties to our derivatives.

Note 18: Fair Values of Assets and Liabilities

We use fair value measurements to record fair value adjustments to certain assets and liabilities and to determine fair value disclosures. Assets and liabilities recorded at fair value on a recurring basis are presented in Table 18.2 in this Note. From time to time, we may be required to record fair value adjustments on a nonrecurring basis. These nonrecurring fair value adjustments typically involve application of LOCOM accounting, write-downs of individual assets or application of the measurement alternative for nonmarketable equity securities. Assets recorded on a nonrecurring basis are presented in Table 18.12 in this Note.

Following is a discussion of the fair value hierarchy and the valuation methodologies we use for assets and liabilities recorded at fair value on a recurring or nonrecurring basis and for estimating fair value for financial instruments that are not recorded at fair value.

FAIR VALUE HIERARCHY We group our assets and liabilities measured at fair value in three levels based on the markets in which the assets and liabilities are traded and the reliability of the assumptions used to determine fair value. These levels are:

- Level 1 – Valuation is based upon quoted prices for identical instruments traded in active markets.
- Level 2 – Valuation is based upon quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-based valuation techniques for which all significant assumptions are observable in the market.
- Level 3 – Valuation is generated from techniques that use significant assumptions that are not observable in the market. These unobservable assumptions reflect estimates of assumptions that market participants would use in pricing the asset or liability. Valuation techniques include use of option pricing models, discounted cash flow models and similar techniques.

We do not classify equity securities in the fair value hierarchy if we use the non-published net asset value (NAV) per share (or its equivalent) that has been communicated to us as an investor as a practical expedient to measure fair value. We generally use NAV per share as the fair value measurement for certain nonmarketable equity fund investments. Marketable equity securities with published NAVs are classified in the fair value hierarchy.

In the determination of the classification of financial instruments in Level 2 or Level 3 of the fair value hierarchy, we consider all available information, including observable market data, indications of market liquidity and orderliness, and our understanding of the valuation techniques and significant inputs used. For securities in inactive markets, we use a predetermined percentage to evaluate the impact of fair value adjustments derived from weighting both external and internal indications of value to determine if the instrument is classified as Level 2 or Level 3. Otherwise, the classification of Level 2 or Level 3 is based upon the specific facts and circumstances of each instrument or instrument category and judgments are made regarding the significance of the Level 3 inputs to the instruments' fair value measurement in its entirety. If Level 3 inputs are considered significant, the instrument is classified as Level 3.

Assets

SHORT-TERM FINANCIAL ASSETS Short-term financial assets include cash and due from banks, interest-earning deposits with banks, federal funds sold and securities purchased under resale agreements and due from customers on acceptances (classified in Other Assets). These assets are carried at historical cost. The carrying amount is a reasonable estimate of fair value because of the relatively short time between the origination of the instrument and its expected realization.

TRADING DEBT SECURITIES Trading debt securities are recorded at fair value on a recurring basis. These securities are valued using internal trader prices that are subject to price verification procedures. The fair values derived using internal valuation techniques are verified against multiple pricing sources, including prices obtained from third- party vendors. Vendors compile prices from various sources and often apply matrix pricing for similar securities when no price is observable. We review pricing methodologies provided by the vendors in order to determine if observable market information is being used versus unobservable inputs. When evaluating the appropriateness of an internal trader price compared with vendor prices, considerations include the range and quality of vendor prices. Vendor prices are used to ensure the reasonableness of a trader price; however, valuing financial instruments involves judgments acquired from knowledge of a particular market. If a trader asserts that a vendor price is not reflective of market value, justification for using the trader price, including recent sales activity where possible, must be provided to and approved by the appropriate levels of management.

AVAILABLE-FOR-SALE AND HELD-TO-MATURITY DEBT SECURITIES Available-for-sale (AFS) debt securities are recorded at fair value on a recurring basis and held-to-maturity (HTM) debt securities are recorded at amortized cost. HTM debt securities are subject to impairment and fair value measurement is recorded if the fair value declines below amortized cost and we do not expect to recover the entire amortized cost basis of the security. Fair value measurement for AFS and HTM debt securities is based upon various sources of market pricing. We use quoted prices in active markets, where available, and classify such instruments within Level 1 of the fair value hierarchy. For example, highly liquid government securities, such as U.S. Treasuries, are classified as Level 1. When instruments are traded in secondary markets and quoted market prices do not exist for such securities, we generally rely on internal valuation techniques or on prices obtained from vendors (predominantly third-party pricing services), and accordingly, we classify these instruments as Level 2 or 3.

AFS debt securities traded in secondary markets are typically valued using unadjusted vendor prices or vendor prices adjusted by weighting them with internal discounted cash flow techniques, these prices are reviewed and, if deemed inappropriate by a trader who has the most knowledge of a particular market, can be adjusted. These securities, which include those measured using unadjusted vendor prices, are generally classified as Level 2 and typically involve using quoted market prices for the same or similar securities, pricing models, discounted cash flow analyses using significant inputs observable in the market where available or a combination of multiple valuation techniques. Examples include certain residential and commercial MBS, other asset-backed securities municipal bonds, U.S. government and agency MBS, and corporate debt securities.

Debt security fair value measurements using significant inputs that are unobservable in the market due to limited activity or a less liquid market are classified as Level 3 in the fair value hierarchy. Such measurements include securities valued using internal models or a combination of multiple valuation techniques where the unobservable inputs are significant to the overall fair value measurement. Securities classified as Level 3 include certain residential and commercial MBS, other asset-backed securities, CDOs and certain CLOs, and certain residual and retained interests in residential mortgage loan securitizations. We value CDOs using the prices of similar instruments, the pricing of completed or pending third-party transactions or the pricing of the underlying collateral within the CDO. Where vendor prices are not readily available, we use management's best estimate.

MORTGAGE LOANS HELD FOR SALE (MLHFS) MLHFS are carried at LOCOM or at fair value. We carry substantially all of our residential MLHFS portfolio at fair value. Fair value is based on quoted market prices, where available, or the prices for other mortgage whole loans with similar characteristics. As necessary, these prices are adjusted for typical securitization activities, including servicing value, portfolio composition, market conditions and liquidity. Predominantly all of our MLHFS are classified as Level 2. For the portion where market pricing data is not available, we use a discounted cash flow model to estimate fair value and, accordingly, classify as Level 3.

LOANS HELD FOR SALE (LHFS) LHFS are carried at LOCOM or at fair value. Loans used in our trading business are recorded at fair value on a recurring basis, and the fair value is based on current offerings in secondary markets for loans with similar characteristics. Loans that are subject to nonrecurring fair value adjustments are classified as Level 2.

LOANS For information on how we report the carrying value of loans, see Note 1 (Summary of Significant Accounting Policies). Although most loans are not recorded at fair value on a recurring basis, reverse mortgages are recorded at fair value on a recurring basis. In addition, we record nonrecurring fair value adjustments to loans to reflect partial write-downs that are based on the observable market price of the loan or current appraised value of the collateral.

We provide fair value estimates that are based on an exit price notion in this disclosure for loans that are not recorded at fair value on a recurring or nonrecurring basis. The fair value estimates of these loans are differentiated by their financial characteristics, such as product classification, loan category, pricing features and remaining maturity. Prepayment and credit loss estimates are evaluated and used in the valuation process.

DERIVATIVES All derivatives are recorded at fair value on a recurring basis. Derivative valuation includes the use of available market prices for our exchange-traded derivatives, such as certain interest rate futures and option contracts, which we classify as Level 1. However, substantially all of our derivatives are traded in over-the-counter (OTC) markets where quoted market prices are not always readily available. Therefore we value most OTC derivatives using internal valuation techniques. Valuation techniques and inputs to internally-developed models depend on the type of derivative and nature of the underlying rate, price or index upon which the derivative's value is based. Key inputs can include yield curves, credit curves, foreign exchange rates, prepayment rates, volatility measurements and correlation of such inputs. Where model inputs can be observed in a liquid market and the model does not require significant judgment, such derivatives are typically classified as Level 2 of the fair value hierarchy. Examples of derivatives classified as Level 2 include generic interest rate swaps, foreign currency swaps, commodity swaps, and certain option and forward contracts. When instruments are traded in less liquid markets and significant inputs are unobservable, such derivatives are classified as Level 3. Examples of derivatives classified as Level 3 include complex and highly structured derivatives, certain credit default swaps, derivative loan commitments written for our mortgage loans that we intend to sell and long-dated equity options where volatility is not observable. Additionally, significant judgments are required when classifying financial instruments within the fair value hierarchy, particularly between Level 2 and 3, as is the case for certain derivatives.

MORTGAGE SERVICING RIGHTS (MSRs) AND CERTAIN OTHER INTERESTS HELD IN SECURITIZATIONS MSRs and certain other interests held in securitizations (e.g., interest-only strips) do not trade in an active market with readily observable prices. Accordingly, we determine the fair value of MSRs using a valuation model that calculates the present value of estimated future net servicing income cash flows. The model incorporates assumptions that market participants use in estimating future net servicing income cash flows, including estimates of prepayment speeds (including housing price volatility), discount rates, default rates, cost to service (including delinquency and foreclosure costs), escrow account earnings, contractual servicing fee income, ancillary income and late fees. Commercial MSRs are carried at LOCOM and, therefore, can be subject to fair value measurements on a nonrecurring basis. Changes in the fair value of MSRs occur primarily due to the collection/realization of expected cash flows as well as changes in valuation inputs and assumptions. For other interests held in securitizations (such as interest-only strips), we use a valuation model that calculates the present value of estimated future cash flows. The model incorporates our own estimates of assumptions market participants use in determining the fair value, including estimates of prepayment speeds, discount rates, defaults and contractual fee income. Interest-only strips are recorded as trading assets. Our valuation approach is validated by our internal valuation model validation group. Fair value measurements of our MSRs and interest-only strips use significant unobservable inputs and, accordingly, we classify them as Level 3.

EQUITY SECURITIES Marketable equity securities and certain nonmarketable equity securities for which we have elected to account for under the fair value method are recorded at fair value on a recurring basis. Our remaining nonmarketable equity securities are accounted for using the equity method, cost method or measurement alternative. These securities can be subject to nonrecurring fair value adjustments to record impairment write-downs or, for equity securities accounted for under the measurement alternative, adjustments to the carrying value due to the occurrence of observable transactions.

We use quoted prices to determine the fair value of marketable equity securities as the securities are publicly traded. Quoted prices are typically not available for nonmarketable equity securities. We therefore use other methods, such as market comparable pricing or discounted cash flow valuation techniques, to determine fair value for such securities. We use all available information in making this determination, which includes observable transaction prices for the same or similar security, vendor prices, broker quotes, trading multiples of comparable public companies and discounted cash flow models. Where appropriate we make adjustments to observed market data to reflect the comparative differences between the market data and the attributes of our equity security, such as differences with public companies and other investment-specific considerations like liquidity, marketability or differences in terms of the instruments. Substantially all of our nonmarketable equity securities accounted for under the cost method include Federal Reserve Bank stock and Federal Home Loan Bank stock, of which their carrying value approximate their fair value.

FORECLOSED ASSETS Foreclosed assets are carried at net realizable value, which represents fair value less costs to sell. Fair value is generally based upon independent market prices or appraised values of the collateral and, accordingly, we classify foreclosed assets as Level 2.

Liabilities

DEPOSIT AND SHORT-TERM FINANCIAL LIABILITIES Deposit and short-term financial liabilities are recorded at historical cost. For this disclosure, we estimate the fair value of deposit liabilities with a contractual or defined maturity and short-term financial liabilities, which include federal funds purchased, securities sold under repurchase agreements, commercial paper and other short-term borrowings. The carrying value of our short-term financial liabilities is a reasonable estimate of their fair value because of the relatively short time between their origination and expected realization.

OTHER LIABILITIES Other liabilities recorded at fair value on a recurring basis predominantly include short sale liabilities. Short sale liabilities are predominantly classified as either Level 1 or Level 2, generally depending upon whether the underlying securities have readily available quoted prices in active markets.

LONG-TERM DEBT Long-term debt is recorded at amortized cost. For this disclosure, we estimate the fair value of our long-term debt, which is largely denominated in U.S. dollars that are issued with a fixed or floating rate at varying levels of seniority and maturity.

Level 3 Asset and Liability Valuation Processes

We generally determine fair value of our Level 3 assets and liabilities by using internally-developed models and, to a lesser extent, prices obtained from vendors, which predominantly consist of third-party pricing services. Our valuation processes vary depending on which approach is utilized.

INTERNAL MODEL VALUATIONS Our internally-developed models largely use discounted cash flow techniques. Use of such techniques requires determining relevant inputs, some of which are unobservable. Unobservable inputs are generally derived from historic performance of similar assets or determined from previous market trades in similar instruments. These unobservable inputs usually consist of discount rates, default rates, loss severity upon default, volatilities, correlations and prepayment rates, which are inherent within our Level 3 instruments. Such inputs can be correlated to similar portfolios with known historic experience or recent trades where particular unobservable inputs may be implied, but due to the nature of various inputs being reflected within a particular trade, the value of each input is considered unobservable. We attempt to correlate each unobservable input to historic experience and other third-party data where available.

Internal valuation models are subject to review prescribed within our model risk management policies and procedures, which include model validation. The purpose of model validation includes ensuring the model is appropriate for its intended use and the appropriate controls exist to help mitigate risk of invalid valuations. Model validation assesses the adequacy and appropriateness of the model, including reviewing its key components, such as inputs, processing components, logic or theory, output results and supporting model documentation. Validation also includes ensuring significant unobservable model inputs are appropriate given observable market transactions or other market data within the same or similar asset classes. This process ensures modeled approaches are appropriate given similar product valuation techniques and are in line with their intended purpose.

We have ongoing monitoring procedures in place for our Level 3 assets and liabilities that use such internal valuation models. These procedures, which are designed to provide reasonable assurance that models continue to perform as expected after approved, include:

- ongoing analysis and benchmarking to market transactions and other independent market data (including pricing vendors, if available);
- back-testing of modeled fair values to actual realized transactions; and
- review of modeled valuation results against expectations, including review of significant or unusual value fluctuations.

We update model inputs and methodologies periodically to reflect these monitoring procedures. Additionally, procedures and controls are in place to ensure existing models are subject to periodic reviews, and we perform full model revalidations as necessary.

All internal valuation models are subject to ongoing review by business-unit-level management, and all models are subject to additional oversight by a corporate-level risk management department. Corporate oversight responsibilities include evaluating the adequacy of business unit risk management programs, maintaining company-wide model validation policies and standards and reporting the results of these activities to management and our Corporate Model Risk Committee. This committee consists of senior executive management and reports on top model risk issues to the Company's Risk Committee of the Board.

VENDOR-DEVELOPED VALUATIONS In certain limited circumstances, we obtain pricing from third-party vendors for the value of our Level 3 assets or liabilities. We have processes in place to approve such vendors to ensure information obtained and valuation techniques used are appropriate. Once these vendors are approved to provide pricing information, we monitor and review the results to ensure the fair values are reasonable and in line with market experience in similar asset classes. While the input amounts used by the pricing vendor in determining fair value are not provided, and therefore unavailable for our review, we do perform one or more of the following procedures to validate the prices received:

- comparison to other pricing vendors (if available);
- variance analysis of prices;
- corroboration of pricing by reference to other independent market data, such as market transactions and relevant benchmark indices;

- review of pricing by Company personnel familiar with market liquidity and other market-related conditions; and
- investigation of prices on a specific instrument-by-instrument basis.

Fair Value Measurements from Vendors

For certain assets and liabilities, we obtain fair value measurements from vendors, which predominantly consist of third-party pricing services, and record the unadjusted fair value in our financial statements. For instruments where we utilize vendor prices to record the price of an instrument, we perform additional procedures (see the "Vendor-Developed Valuations" section). Methodologies employed, controls relied upon and inputs used by third-party pricing vendors are subject to additional review when such services are provided. This review may consist of, in part, obtaining and evaluating control reports issued and pricing methodology materials distributed.

Table 18.1 presents unadjusted fair value measurements provided by brokers or third-party pricing services by fair value hierarchy level. Fair value measurements obtained from brokers or third-party pricing services that we have adjusted to determine the fair value recorded in our financial statements are excluded from Table 18.1.

Table 18.1: Fair Value Measurements by Brokers or Third-Party Pricing Services

			Brokers		Third-party pricing services	
(in millions)	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3
December 31, 2018						
Trading debt securities	**$ —**	**—**	**—**	**899**	**256**	**—**
Available-for-sale debt securities:						
Securities of U.S. Treasury and federal agencies	**—**	**—**	**—**	**10,399**	**2,949**	**—**
Securities of U.S. states and political subdivisions	**—**	**—**	**—**	**—**	**48,377**	**43**
Mortgage-backed securities	**—**	**—**	**—**	**—**	**160,162**	**41**
Other debt securities (1)	**—**	**45**	**129**	**—**	**44,292**	**758**
Total available-for-sale debt securities	**—**	**45**	**129**	**10,399**	**255,780**	**842**
Equity securities:						
Marketable	**—**	**—**	**—**	**—**	**158**	**—**
Nonmarketable	**—**	**—**	**—**	**—**	**1**	**—**
Total equity securities	**—**	**—**	**—**	**—**	**159**	**—**
Derivative assets	**—**	**—**	**—**	**17**	**—**	**—**
Derivative liabilities	**—**	**—**	**—**	**(12)**	**—**	**—**
Other liabilities (2)	**—**	**—**	**—**	**—**	**—**	**—**
December 31, 2017						
Trading debt securities	$ —	—	—	926	215	—
Available-for-sale debt securities:						
Securities of U.S. Treasury and federal agencies	—	—	—	3,389	2,930	—
Securities of U.S. states and political subdivisions	—	—	—	—	50,401	49
Mortgage-backed securities	—	33	—	—	168,948	75
Other debt securities (1)	—	307	1,158	—	44,465	22
Total available-for-sale debt securities	—	340	1,158	3,389	266,744	146
Equity securities:						
Marketable	—	—	—	—	227	—
Nonmarketable	—	—	—	—	—	—
Total equity securities	—	—	—	—	227	—
Derivative assets	—	—	—	19	—	—
Derivative liabilities	—	—	—	(19)	—	—
Other liabilities (2)	—	—	—	—	—	—

(1) Includes corporate debt securities, collateralized loan and other debt obligations, asset-backed securities, and other debt securities.
(2) Includes short sale liabilities and other liabilities.

Assets and Liabilities Recorded at Fair Value on a Recurring Basis

Table 18.2 presents the balances of assets and liabilities recorded at fair value on a recurring basis.

Table 18.2: Fair Value on a Recurring Basis

(in millions)		Level 1	Level 2	Level 3		Netting		Total
December 31, 2018								
Trading debt securities:								
Securities of U.S. Treasury and federal agencies	$	20,525	2,892	—		—		23,417
Securities of U.S. states and political subdivisions		—	3,272	3		—		3,275
Collateralized loan obligations		—	673	237		—		910
Corporate debt securities		—	10,723	34		—		10,757
Mortgage-backed securities		—	30,715	—		—		30,715
Asset-backed securities		—	893	—		—		893
Other trading debt securities		—	6	16		—		22
Total trading debt securities		20,525	49,174	290		—		69,989
Available-for-sale debt securities:								
Securities of U.S. Treasury and federal agencies		10,399	2,949	—		—		13,348
Securities of U.S. states and political subdivisions		—	48,820	444		—		49,264
Mortgage-backed securities:								
Federal agencies		—	153,203	—		—		153,203
Residential		—	2,775	—		—		2,775
Commercial		—	4,184	41		—		4,225
Total mortgage-backed securities		—	160,162	41		—		160,203
Corporate debt securities		34	5,867	370		—		6,271
Collateralized loan and other debt obligations (1)		—	34,543	800		—		35,343
Asset-backed securities:								
Automobile loans and leases		—	925	—		—		925
Home equity loans		—	112	—		—		112
Other asset-backed securities		—	4,056	389		—		4,445
Total asset-backed securities		—	5,093	389		—		5,482
Other debt securities		—	1	—		—		1
Total available-for-sale debt securities		10,433	257,435	2,044	(2)	—		269,912
Mortgage loans held for sale		—	10,774	997		—		11,771
Loans held for sale		—	1,409	60		—		1,469
Loans		—	—	244		—		244
Mortgage servicing rights (residential)		—	—	14,649		—		14,649
Derivative assets:								
Interest rate contracts		46	18,294	95		—		18,435
Commodity contracts		—	1,535	53		—		1,588
Equity contracts		1,648	4,582	1,315		—		7,545
Foreign exchange contracts		17	6,689	8		—		6,714
Credit contracts		—	179	99		—		278
Netting		—	—	—		(23,790)	(3)	(23,790)
Total derivative assets		1,711	31,279	1,570		(23,790)		10,770
Equity securities - excluding securities at NAV:								
Marketable		23,205	757	—		—		23,962
Nonmarketable		—	24	5,468		—		5,492
Total equity securities		23,205	781	5,468		—		29,454
Total assets included in the fair value hierarchy	$	55,874	350,852	25,322		(23,790)		408,258
Equity securities at NAV (4)								102
Total assets recorded at fair value								408,360
Derivative liabilities:								
Interest rate contracts	$	(21)	(16,217)	(70)		—		(16,308)
Commodity contracts		—	(2,287)	(49)		—		(2,336)
Equity contracts		(1,492)	(3,186)	(1,332)		—		(6,010)
Foreign exchange contracts		(12)	(7,067)	(34)		—		(7,113)
Credit contracts		—	(216)	(64)		—		(280)
Netting		—	—	—		23,548	(3)	23,548
Total derivative liabilities		(1,525)	(28,973)	(1,549)		23,548		(8,499)
Short sale liabilities:								
Securities of U.S. Treasury and federal agencies		(11,850)	(411)	—		—		(12,261)
Mortgage-backed securities		—	(47)	—		—		(47)
Corporate debt securities		—	(4,505)	—		—		(4,505)
Equity securities		(2,902)	(2)	—		—		(2,904)
Other securities		—	(3)	—		—		(3)
Total short sale liabilities		(14,752)	(4,968)	—		—		(19,720)
Other liabilities		—	—	(2)		—		(2)
Total liabilities recorded at fair value	$	(16,277)	(33,941)	(1,551)		23,548		(28,221)

(1) Includes collateralized debt obligations of $800 million.
(2) A significant portion of the balance consists of securities that are investment grade based on ratings received from the ratings agencies or internal credit grades categorized as investment grade if external ratings are not available. The securities are classified as Level 3 due to limited market activity.
(3) Represents balance sheet netting of derivative asset and liability balances and related cash collateral. See Note 17 (Derivatives) for additional information.
(4) Consists of certain nonmarketable equity securities that are measured at fair value using NAV per share (or its equivalent) as a practical expedient and are excluded from the fair value hierarchy.

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(in millions)		Level 1	Level 2	Level 3	Netting	Total
December 31, 2017						
Trading debt securities:						
Securities of U.S. Treasury and federal agencies	$	12,491	2,383	—	—	14,874
Securities of U.S. states and political subdivisions		—	3,732	3	—	3,735
Collateralized loan obligations		—	565	354	—	919
Corporate debt securities		—	11,760	31	—	11,791
Mortgage-backed securities		—	25,273	—	—	25,273
Asset-backed securities		—	993	—	—	993
Other trading debt securities		—	20	19	—	39
Total trading debt securities		12,491	44,726	407	—	57,624
Available-for-sale debt securities:						
Securities of U.S. Treasury and federal agencies		3,389	2,930	—	—	6,319
Securities of U.S. states and political subdivisions		—	50,401	925	—	51,326
Mortgage-backed securities:						
Federal agencies		—	160,219	—	—	160,219
Residential		—	4,607	1	—	4,608
Commercial		—	4,490	75	—	4,565
Total mortgage-backed securities		—	169,316	76	—	169,392
Corporate debt securities		56	7,203	407	—	7,666
Collateralized loan and other debt obligations (1)		—	35,036	1,020	—	36,056
Asset-backed securities:						
Automobile loans and leases		—	553	—	—	553
Home equity loans		—	149	—	—	149
Other asset-backed securities		—	4,380	566	—	4,946
Total asset-backed securities		—	5,082	566	—	5,648
Other debt securities		—	—	—	—	—
Total available-for-sale debt securities		3,445	269,968	2,994 (2)	—	276,407
Mortgage loans held for sale		—	15,118	998	—	16,116
Loans held for sale		—	1,009	14	—	1,023
Loans		—	—	376	—	376
Mortgage servicing rights (residential)		—	—	13,625	—	13,625
Derivative assets:						
Interest rate contracts		17	17,479	134	—	17,630
Commodity contracts		—	2,318	36	—	2,354
Equity contracts		1,698	3,970	1,339	—	7,007
Foreign exchange contracts		19	8,944	10	—	8,973
Credit contracts		—	269	122	—	391
Netting		—	—	—	(24,127) (3)	(24,127)
Total derivative assets		1,734	32,980	1,641	(24,127)	12,228
Equity securities - excluding securities at NAV:						
Marketable		33,931	429	—	—	34,360
Nonmarketable		—	46	4,821	—	4,867
Total equity securities		33,931	475	4,821	—	39,227
Total assets included in the fair value hierarchy	$	51,601	364,276	24,876	(24,127)	416,626
Equity securities at NAV (4)						—
Total assets recorded at fair value						416,626
Derivative liabilities:						
Interest rate contracts	$	(17)	(15,392)	(63)	—	(15,472)
Commodity contracts		—	(1,318)	(17)	—	(1,335)
Equity contracts		(1,313)	(5,338)	(1,850)	—	(8,501)
Foreign exchange contracts		(19)	(8,546)	(3)	—	(8,568)
Credit contracts		—	(336)	(86)	—	(422)
Netting		—	—	—	25,502 (3)	25,502
Total derivative liabilities		(1,349)	(30,930)	(2,019)	25,502	(8,796)
Short sale liabilities:						
Securities of U.S. Treasury and federal agencies		(10,420)	(568)	—	—	(10,988)
Mortgage-backed securities		—	—	—	—	—
Corporate debt securities		—	(4,986)	—	—	(4,986)
Equity securities		(2,168)	(45)	—	—	(2,213)
Other securities		—	(285)	—	—	(285)
Total short sale liabilities		(12,588)	(5,884)	—	—	(18,472)
Other liabilities		—	—	(3)	—	(3)
Total liabilities recorded at fair value	$	(13,937)	(36,814)	(2,022)	25,502	(27,271)

(1) Includes collateralized debt obligations of $1.0 billion.
(2) Balance primarily consists of securities that are investment grade based on ratings received from the ratings agencies or internal credit grades categorized as investment grade if external ratings are not available. The securities are classified as Level 3 due to limited market activity.
(3) Represents balance sheet netting of derivative asset and liability balances and related cash collateral. See Note 17 (Derivatives) for additional information.
(4) Consists of certain nonmarketable equity investments that are measured at fair value using NAV per share (or its equivalent) as a practical expedient and are excluded from the fair value hierarchy.

Changes in Fair Value Levels

We monitor the availability of observable market data to assess the appropriate classification of financial instruments within the fair value hierarchy and transfer between Level 1, Level 2, and Level 3 accordingly. Observable market data includes but is not limited to quoted prices and market transactions. Changes in economic conditions or market liquidity generally will drive changes in availability of observable market data. Changes in availability of observable market data, which also may result in changing the valuation technique used, are generally the cause of transfers between Level 1, Level 2, and Level 3. The amounts reported as transfers represent the fair value as of the beginning of the quarter in which the transfer occurred.

The changes in Level 3 assets and liabilities measured at fair value on a recurring basis for the year ended December 31, 2018, are presented in Table 18.3.

Table 18.3: Changes in Level 3 Fair Value Assets and Liabilities on a Recurring Basis – 2018

(in millions)	Balance, beginning of period	Total net gains (losses) included in Net income	Total net gains (losses) included in Other compre-hensive income	Purchases, sales, issuances and settlements, net (1)	Transfers into Level 3 (2)	Transfers out of Level 3 (3)	Balance, end of period	Net unrealized gains (losses) included in income related to assets and liabilities held at period end	(4)
Year ended December 31, 2018									
Trading debt securities:									
Securities of U.S. states and political subdivisions	$ 3	—	—	—	—	—	3	—	
Collateralized loan obligations	354	(12)	—	(101)	—	(4)	237	(14)	
Corporate debt securities	31	(1)	—	16	—	(12)	34	(1)	
Other trading debt securities	19	(3)	—	—	—	—	16	—	
Total trading debt securities	407	(16)	—	(85)	—	(16)	290	(15)	(5)
Available-for-sale debt securities:									
Securities of U.S. states and political subdivisions	925	8	(8)	(137)	—	(344)	444	—	
Mortgage-backed securities:									
Residential	1	—	—	(1)	—	—	—	—	
Commercial	75	—	(1)	(33)	—	—	41	(1)	
Total mortgage-backed securities	76	—	(1)	(34)	—	—	41	(1)	
Corporate debt securities	407	4	(3)	(38)	—	—	370	—	
Collateralized loan and other debt obligations	1,020	72	5	(297)	—	—	800	—	
Asset-backed securities:									
Other asset-backed securities	566	5	(11)	(171)	—	—	389	(3)	
Total asset-backed securities	566	5	(11)	(171)	—	—	389	(3)	
Total available-for-sale debt securities	2,994	89	(18)	(677)	—	(344)	2,044	(4)	(6)
Mortgage loans held for sale	998	(27)	—	(36)	72	(10)	997	(22)	(7)
Loans held for sale	14	2	—	(36)	80	—	60	1	
Loans	376	(1)	—	(131)	—	—	244	(11)	(7)
Mortgage servicing rights (residential) (8)	13,625	(915)	—	1,939	—	—	14,649	960	(7)
Net derivative assets and liabilities:									
Interest rate contracts	71	(397)	—	351	—	—	25	(42)	
Commodity contracts	19	3	—	(11)	(7)	—	4	(1)	
Equity contracts	(511)	(108)	—	522	(1)	81	(17)	(169)	
Foreign exchange contracts	7	(42)	—	9	—	—	(26)	(26)	
Credit contracts	36	5	—	(6)	—	—	35	(1)	
Other derivative contracts	—	—	—	—	—	—	—	—	
Total derivative contracts	(378)	(539)	—	865	(8)	81	21	(239)	(9)
Equity securities:									
Marketable	—	—	—	—	—	—	—	—	
Nonmarketable (10)	5,203	703	—	(450)	16	(4)	5,468	642	
Total equity securities	5,203	703	—	(450)	16	(4)	5,468	642	(11)
Short sale liabilities	—	—	—	—	—	—	—	—	(5)
Other liabilities	(3)	1	—	—	—	—	(2)	—	(7)

(1) See Table 18.4 for detail.
(2) All assets and liabilities transferred into level 3 were previously classified within level 2.
(3) All assets and liabilities transferred out of level 3 are classified as level 2.
(4) Represents only net gains (losses) that are due to changes in economic conditions and management's estimates of fair value and excludes changes due to the collection/realization of cash flows over time.
(5) Included in net gains (losses) from trading activities in the income statement.
(6) Included in net gains (losses) from debt securities in the income statement.
(7) Included in mortgage banking and other noninterest income in the income statement.
(8) For more information on the changes in mortgage servicing rights, see Note 10 (Mortgage Banking Activities).
(9) Included in mortgage banking, trading activities, equity securities and other noninterest income in the income statement.
(10) Beginning balance includes $382 million of auction rate securities, which changed from the cost to fair value method of accounting in connection with our adoption of ASU 2016-01 in first quarter 2018.
(11) Included in net gains (losses) from equity securities in the income statement.

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Table 18.4 presents gross purchases, sales, issuances and settlements related to the changes in Level 3 assets and liabilities measured at fair value on a recurring basis for the year ended December 31, 2018.

Table 18.4: Gross Purchases, Sales, Issuances and Settlements – Level 3 – 2018

(in millions)	Purchases	Sales	Issuances	Settlements	Net
Year ended December 31, 2018					
Trading debt securities:					
Securities of U.S. states and political subdivisions	$ —	—	—	—	—
Collateralized loan obligations	408	(348)	—	(161)	(101)
Corporate debt securities	20	(4)	—	—	16
Other trading debt securities	—	—	—	—	—
Total trading debt securities	428	(352)	—	(161)	(85)
Available-for-sale debt securities:					
Securities of U.S. states and political subdivisions	—	(6)	79	(210)	(137)
Mortgage-backed securities:					
Residential	—	—	—	(1)	(1)
Commercial	—	—	—	(33)	(33)
Total mortgage-backed securities	—	—	—	(34)	(34)
Corporate debt securities	33	—	—	(71)	(38)
Collateralized loan and other debt obligations	61	(149)	—	(209)	(297)
Asset-backed securities:					
Other asset-backed securities	25	(12)	166	(350)	(171)
Total asset-backed securities	25	(12)	166	(350)	(171)
Total available-for-sale debt securities	119	(167)	245	(874)	(677)
Mortgage loans held for sale	87	(320)	353	(156)	(36)
Loans held for sale	4	(40)	—	—	(36)
Loans	8	—	17	(156)	(131)
Mortgage servicing rights (residential) (1)	—	(71)	2,010	—	1,939
Net derivative assets and liabilities:					
Interest rate contracts	—	—	—	351	351
Commodity contracts	—	—	—	(11)	(11)
Equity contracts	3	(37)	—	556	522
Foreign exchange contracts	—	—	—	9	9
Credit contracts	12	(7)	—	(11)	(6)
Other derivative contracts	—	—	—	—	—
Total derivative contracts	15	(44)	—	894	865
Equity securities:					
Marketable	—	—	—	—	—
Nonmarketable	—	(51)	—	(399)	(450)
Total equity securities	—	(51)	—	(399)	(450)
Short sale liabilities	—	—	—	—	—
Other liabilities	—	—	—	—	—

(1) For more information on the changes in mortgage servicing rights, see Note 10 (Mortgage Banking Activities).

The changes in Level 3 assets and liabilities measured at fair value on a recurring basis for the year ended December 31, 2017, are presented in Table 18.5.

Table 18.5: Changes in Level 3 Fair Value Assets and Liabilities on a Recurring Basis – 2017

		Total net gains (losses) included in							
(in millions)	Balance, beginning of period	Net income	Other compre-hensive income	Purchases, sales, issuances and settlements, net (1)	Transfers into Level 3 (2)	Transfers out of Level 3 (3)	Balance, end of period	Net unrealized gains (losses) included in income related to assets and liabilities held at period end	(4)
Year ended December 31, 2017									
Trading debt securities:									
Securities of U.S. states and political subdivisions	$ 3	—	—	—	—	—	3	—	
Collateralized loan obligations	309	3	—	42	—	—	354	(13)	
Corporate debt securities	34	2	—	(7)	6	(4)	31	2	
Other trading debt securities	28	(9)	—	—	—	—	19	(4)	
Total trading debt securities	374	(4)	—	35	6	(4)	407	(15)	(5)
Available-for-sale debt securities:									
Securities of U.S. states and political subdivisions	1,140	4	5	1,105	5	(1,334)	925	—	
Mortgage-backed securities:									
Residential	1	—	—	—	—	—	1	—	
Commercial	91	(4)	—	(12)	—	—	75	(11)	
Total mortgage-backed securities	92	(4)	—	(12)	—	—	76	(11)	
Corporate debt securities	432	(1)	23	(47)	—	—	407	—	
Collateralized loan and other debt obligations	879	22	103	16	—	—	1,020	—	
Asset-backed securities:									
Other asset-backed securities	962	1	3	(400)	—	—	566	—	
Total asset-backed securities	962	1	3	(400)	—	—	566	—	
Total available-for-sale debt securities	3,505	22	134	662	5	(1,334)	2,994	(11)	(6)
Mortgage loans held for sale	985	(36)	—	(75)	134	(10)	998	(34)	(7)
Loans held for sale	—	1	—	(3)	34	(18)	14	—	
Loans	758	(6)	—	(376)	—	—	376	(12)	(7)
Mortgage servicing rights (residential) (8)	12,959	(2,115)	—	2,781	—	—	13,625	(126)	(7)
Net derivative assets and liabilities:									
Interest rate contracts	121	604	—	(654)	—	—	71	(52)	
Commodity contracts	23	(17)	—	13	2	(2)	19	15	
Equity contracts	(267)	(199)	—	(37)	(53)	45	(511)	(259)	
Foreign exchange contracts	12	(5)	—	—	—	—	7	6	
Credit contracts	77	24	—	(65)	—	—	36	(62)	
Other derivative contracts	(47)	27	—	20	—	—	—	—	
Total derivative contracts	(81)	434	—	(723)	(51)	43	(378)	(352)	(9)
Equity securities:									
Marketable	—	—	—	—	—	—	—	—	
Nonmarketable	3,259	1,563	—	(2)	1	—	4,821	1,569	
Total equity securities	3,259	1,563	—	(2)	1	—	4,821	1,569	(10)
Short sale liabilities	—	—	—	—	—	—	—	—	(5)
Other liabilities	(4)	1	—	—	—	—	(3)	—	(7)

(1) See Table 18.6 for detail.
(2) All assets and liabilities transferred into level 3 were previously classified within level 2.
(3) All assets and liabilities transferred out of level 3 are classified as level 2.
(4) Represents only net gains (losses) that are due to changes in economic conditions and management's estimates of fair value and excludes changes due to the collection/realization of cash flows over time.
(5) Included in net gains (losses) from trading activities in the income statement.
(6) Included in net gains (losses) from debt securities in the income statement.
(7) Included in mortgage banking and other noninterest income in the income statement.
(8) For more information on the changes in mortgage servicing rights, see Note 10 (Mortgage Banking Activities)
(9) Included in mortgage banking, trading activities, equity securities and other noninterest income in the income statement.
(10) Included in net gains (losses) from equity securities in the income statement.

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Table 18.6 presents gross purchases, sales, issuances and settlements related to the changes in Level 3 assets and liabilities measured at fair value on a recurring basis for the year ended December 31, 2017.

Table 18.6: Gross Purchases, Sales, Issuances and Settlements – Level 3 – 2017

(in millions)	Purchases	Sales	Issuances	Settlements	Net
Year ended December 31, 2017					
Trading debt securities:					
Securities of U.S. states and political subdivisions	$ 37	(36)	—	(1)	—
Collateralized loan obligations	439	(250)	—	(147)	42
Corporate debt securities	25	(32)	—	—	(7)
Other trading debt securities	—	—	—	—	—
Total trading debt securities	501	(318)	—	(148)	35
Available-for-sale debt securities:					
Securities of U.S. states and political subdivisions	—	(68)	1,369	(196)	1,105
Mortgage-backed securities:					
Residential	—	—	—	—	—
Commercial	—	—	—	(12)	(12)
Total mortgage-backed securities	—	—	—	(12)	(12)
Corporate debt securities	14	(4)	—	(57)	(47)
Collateralized loan and other debt obligations	135	—	—	(119)	16
Asset-backed securities:					
Other asset-backed securities	—	—	211	(611)	(400)
Total asset-backed securities	—	—	211	(611)	(400)
Total available-for-sale debt securities	149	(72)	1,580	(995)	662
Mortgage loans held for sale	79	(485)	489	(158)	(75)
Loans held for sale	—	(2)	—	(1)	(3)
Loans	6	(129)	19	(272)	(376)
Mortgage servicing rights (residential) (1)	541	(24)	2,263	1	2,781
Net derivative assets and liabilities:					
Interest rate contracts	—	—	—	(654)	(654)
Commodity contracts	—	—	—	13	13
Equity contracts	—	(118)	—	81	(37)
Foreign exchange contracts	—	—	—	—	—
Credit contracts	6	(3)	—	(68)	(65)
Other derivative contracts	—	—	—	20	20
Total derivative contracts	6	(121)	—	(608)	(723)
Equity securities:					
Marketable	—	—	—	—	—
Nonmarketable	—	(2)	—	—	(2)
Total equity securities	—	(2)	—	—	(2)
Short sale liabilities	3	(3)	—	—	—
Other liabilities	—	—	—	—	—

(1) For more information on the changes in mortgage servicing rights, see Note 10 (Mortgage Banking Activities).

The changes in Level 3 assets and liabilities measured at fair value on a recurring basis for the year ended December 31, 2016, are presented in Table 18.7.

Table 18.7: Changes in Level 3 Fair Value Assets and Liabilities on a Recurring Basis – 2016

(in millions)	Balance, beginning of period	Total net gains (losses) included in Net income	Total net gains (losses) included in Other compre-hensive income	Purchases, sales, issuances and settlements, net (1)	Transfers into Level 3 (2)	Transfers out of Level 3 (3)	Balance, end of period	Net unrealized gains (losses) included in income related to assets and liabilities held at period end	(4)
Year ended December 31, 2016									
Trading debt securities:									
Securities of U.S. states and political subdivisions	$ 8	—	—	(5)	—	—	3	—	
Collateralized loan obligations	343	(38)	—	15	—	(11)	309	(42)	
Corporate debt securities	56	(7)	—	(13)	—	(2)	34	—	
Other trading debt securities	34	(6)	—	(1)	1	—	28	1	
Total trading debt securities	441	(51)	—	(4)	1	(13)	374	(41)	(5)
Available-for-sale debt securities:									
Securities of U.S. states and political subdivisions	1,500	6	(25)	60	80	(481)	1,140	—	
Mortgage-backed securities:									
Residential	1	—	—	—	—	—	1	—	
Commercial	73	—	1	17	—	—	91	(1)	
Total mortgage-backed securities	74	—	1	17	—	—	92	(1)	
Corporate debt securities	405	21	35	(29)	—	—	432	(2)	
Collateralized loan and other debt obligations	565	50	(1)	265	—	—	879	—	
Asset-backed securities:									
Other asset-backed securities	1,182	2	(8)	(214)	—	—	962	(4)	
Total asset-backed securities	1,182	2	(8)	(214)	—	—	962	(4)	
Total available-for-sale debt securities	3,726	79	2	99	80	(481)	3,505	(7)	(6)
Mortgage loans held for sale	1,082	(19)	—	(159)	98	(17)	985	(24)	(7)
Loans held for sale	—	—	—	—	—	—	—	—	
Loans	5,316	(59)	—	(4,499)	—	—	758	(24)	(7)
Mortgage servicing rights (residential) (8)	12,415	(1,595)	—	2,139	—	—	12,959	565	(7)
Net derivative assets and liabilities:									
Interest rate contracts	288	843	—	(1,003)	—	(7)	121	170	
Commodity contracts	12	10	—	(2)	4	(1)	23	11	
Equity contracts	(111)	(80)	—	(156)	21	59	(267)	(176)	
Foreign exchange contracts	—	(3)	—	(1)	16	—	12	(4)	
Credit contracts	(3)	31	—	49	—	—	77	26	
Other derivative contracts	(58)	11	—	—	—	—	(47)	11	
Total derivative contracts	128	812	—	(1,113)	41	51	(81)	38	(9)
Equity securities:									
Marketable	—	—	—	(1)	1	—	—	—	
Nonmarketable	3,065	(30)	—	224	—	—	3,259	(30)	
Total equity securities	3,065	(30)	—	223	1	—	3,259	(30)	(10)
Short sale liabilities	—	—	—	—	—	—	—	—	(5)
Other liabilities	(30)	1	—	25	—	—	(4)	—	(7)

(1) See Table 18.8 for detail.
(2) All assets and liabilities transferred into level 3 were previously classified within level 2.
(3) All assets and liabilities transferred out of level 3 are classified as level 2.
(4) Represents only net gains (losses) that are due to changes in economic conditions and management's estimates of fair value and excludes changes due to the collection/realization of cash flows over time.
(5) Included in net gains (losses) from trading activities in the income statement.
(6) Included in net gains (losses) from debt securities in the income statement.
(7) Included in mortgage banking and other noninterest income in the income statement.
(8) For more information on the changes in mortgage servicing rights, see Note 10 (Mortgage Banking Activities).
(9) Included in mortgage banking, trading activities, equity securities and other noninterest income in the income statement.
(10) Included in net gains (losses) from equity securities in the income statement.

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Table 18.8 presents gross purchases, sales, issuances and settlements related to the changes in Level 3 assets and liabilities measured at fair value on a recurring basis for the year ended December 31, 2016.

Table 18.8: Gross Purchases, Sales, Issuances and Settlements – Level 3 – 2016

(in millions)	Purchases	Sales	Issuances	Settlements	Net
Year ended December 31, 2016					
Trading debt securities:					
Securities of U.S. states and political subdivisions	$ 2	(2)	—	(5)	(5)
Collateralized loan obligations	372	(357)	—	—	15
Corporate debt securities	37	(50)	—	—	(13)
Other trading debt securities	—	(1)	—	—	(1)
Total trading debt securities	411	(410)	—	(5)	(4)
Available-for-sale debt securities:					
Securities of U.S. states and political subdivisions	28	(24)	547	(491)	60
Mortgage-backed securities:					
Residential	—	—	—	—	—
Commercial	22	—	—	(5)	17
Total mortgage-backed securities	22	—	—	(5)	17
Corporate debt securities	36	(12)	—	(53)	(29)
Collateralized loan and other debt obligations	618	(54)	—	(299)	265
Asset-backed securities:					
Other asset-backed securities	50	(28)	235	(471)	(214)
Total asset-backed securities	50	(28)	235	(471)	(214)
Total available-for-sale debt securities	754	(118)	782	(1,319)	99
Mortgage loans held for sale	87	(618)	565	(193)	(159)
Loans held for sale	—	—	—	—	—
Loans	21	(3,791)	302	(1,031)	(4,499)
Mortgage servicing rights (residential) (1)	—	(66)	2,204	1	2,139
Net derivative assets and liabilities:					
Interest rate contracts	—	—	—	(1,003)	(1,003)
Commodity contracts	—	—	—	(2)	(2)
Equity contracts	29	(147)	—	(38)	(156)
Foreign exchange contracts	—	—	—	(1)	(1)
Credit contracts	7	(4)	—	46	49
Other derivative contracts	—	—	—	—	—
Total derivative contracts	36	(151)	—	(998)	(1,113)
Equity securities:					
Marketable	—	(1)	—	—	(1)
Nonmarketable	225	—	—	(1)	224
Total equity securities	225	(1)	—	(1)	223
Short sale liabilities	—	—	—	—	—
Other liabilities	—	—	—	25	25

(1) For more information on the changes in mortgage servicing rights, see Note 10 (Mortgage Banking Activities).

Table 18.9 and Table 18.10 provide quantitative information about the valuation techniques and significant unobservable inputs used in the valuation of substantially all of our Level 3 assets and liabilities measured at fair value on a recurring basis for which we use an internal model.

The significant unobservable inputs for Level 3 assets and liabilities that are valued using fair values obtained from third-party vendors are not included in the table, as the specific inputs applied are not provided by the vendor (see discussion regarding vendor-developed valuations within the "Level 3 Asset and Liability Valuation Processes" section previously within this Note).

In addition, the table excludes the valuation techniques and significant unobservable inputs for certain classes of Level 3 assets and liabilities measured using an internal model that we consider, both individually and in the aggregate, insignificant relative to our overall Level 3 assets and liabilities. We made this determination based upon an evaluation of each class, which considered the magnitude of the positions, nature of the unobservable inputs and potential for significant changes in fair value due to changes in those inputs.

Table 18.9: Valuation Techniques – Recurring Basis – 2018

($ in millions, except cost to service amounts)	Fair Value Level 3	Valuation Technique(s)	Significant Unobservable Input	Range of Inputs	Weighted Average (1)
December 31, 2018					
Trading and available-for-sale debt securities:					
Securities of U.S. states and political subdivisions:					
Government, healthcare and other revenue bonds	$ 404	Discounted cash flow	Discount rate	2.1 - 6.4 %	3.4
	43	Vendor priced			
Collateralized loan and other debt obligations (2)	298	Market comparable pricing	Comparability adjustment	(13.5) - 22.1	3.2
	739	Vendor priced			
Asset-backed securities:					
Diversified payment rights (3)	171	Discounted cash flow	Discount rate	3.4 - 6.2	4.4
Other commercial and consumer	198 (4)	Discounted cash flow	Discount rate	4.6 - 5.2	4.7
			Weighted average life	1.1 - 1.5 yrs	1.1
	20	Vendor priced			
Mortgage loans held for sale (residential)	982	Discounted cash flow	Default rate	0.0 - 15.6 %	0.8
			Discount rate	1.1 - 6.6	5.5
			Loss severity	0.0 - 43.3	23.4
			Prepayment rate	3.2 - 13.4	4.6
	15	Market comparable pricing	Comparability adjustment	(56.3) - (6.3)	(36.3)
Loans	244 (5)	Discounted cash flow	Discount rate	3.4 - 6.4	4.2
			Prepayment rate	2.9 - 100.0	87.2
			Loss severity	0.0 - 34.8	10.2
Mortgage servicing rights (residential)	14,649	Discounted cash flow	Cost to service per loan (6)	$ 62 - 507	106
			Discount rate	7.1 - 15.3 %	8.1
			Prepayment rate (7)	9.0 - 23.5	9.9
Net derivative assets and (liabilities):					
Interest rate contracts	(35)	Discounted cash flow	Default rate	0.0 - 5.0	2.0
			Loss severity	50.0 - 50.0	50.0
			Prepayment rate	2.8 - 25.0	13.8
Interest rate contracts: derivative loan commitments	60	Discounted cash flow	Fall-out factor	1.0 - 99.0	19.4
			Initial-value servicing	(36.6) - 91.7 bps	18.5
Equity contracts	104	Discounted cash flow	Conversion factor	(9.3) - 0.0 %	(7.8)
			Weighted average life	1.0 - 3.0 yrs	1.8
	(121)	Option model	Correlation factor	(77.0) - 99.0 %	21.6
			Volatility factor	6.5 - 100.0	21.8
Credit contracts	3	Market comparable pricing	Comparability adjustment	(15.5) - 40.0	3.5
	32	Option model	Credit spread	0.9 - 21.5	1.3
			Loss severity	13.0 - 60.0	45.2
Nonmarketable equity securities	5,468	Market comparable pricing	Comparability adjustment	(20.6) - (4.3)	(15.8)
Insignificant Level 3 assets, net of liabilities	497 (8)				
Total level 3 assets, net of liabilities	$ 23,771 (9)				

(1) Weighted averages are calculated using outstanding unpaid principal balance for cash instruments, such as loans and securities, and notional amounts for derivative instruments.
(2) Includes $800 million of collateralized debt obligations.
(3) Securities backed by specified sources of current and future receivables generated from foreign originators.
(4) Predominantly consists of investments in asset-backed securities that are revolving in nature, for which the timing of advances and repayments of principal are uncertain.
(5) Consists of reverse mortgage loans.
(6) The high end of the range of inputs is for servicing modified loans. For non-modified loans the range is $62 - $204.
(7) Includes a blend of prepayment speeds and expected defaults. Prepayment speeds are influenced by mortgage interest rates as well as our estimation of drivers of borrower behavior.
(8) Represents the aggregate amount of Level 3 assets and liabilities measured at fair value on a recurring basis that are individually and in the aggregate insignificant. The amount includes corporate debt securities, mortgage-backed securities, other trading positions, loans held for sale, other liabilities and certain net derivative assets and liabilities, such as commodity contracts and foreign exchange contracts.
(9) Consists of total Level 3 assets of $25.3 billion and total Level 3 liabilities of $1.6 billion, before netting of derivative balances.

Table 18.10: Valuation Techniques – Recurring Basis – 2017

($ in millions, except cost to service amounts)	Fair Value Level 3		Valuation Technique(s)	Significant Unobservable Input	Range of Inputs				Weighted Average (1)
December 31, 2017									
Trading and available-for-sale debt securities:									
Securities of U.S. states and political subdivisions:									
Government, healthcare and other revenue bonds	$ 868		Discounted cash flow	Discount rate	1.7	-	5.8	%	2.7
Other municipal bonds	11		Discounted cash flow	Discount rate	4.7	-	4.9		4.8
	49		Vendor priced						
Collateralized loan and other debt obligations (2)	354		Market comparable pricing	Comparability adjustment	(22.0)	-	19.5	%	3.0
	1,020		Vendor priced						
Asset-backed securities:									
Diversified payment rights (3)	292		Discounted cash flow	Discount rate	2.4	-	3.9		3.1
Other commercial and consumer	248	(4)	Discounted cash flow	Discount rate	3.7	-	5.2		3.9
				Weighted average life	2.0	-	2.3	yrs	2.1
	26		Vendor priced						
Mortgage loans held for sale (residential)	974		Discounted cash flow	Default rate	0.0	-	7.1	%	1.3
				Discount rate	2.6	-	7.3		5.6
				Loss severity	0.1	-	41.4		19.6
				Prepayment rate	6.5	-	15.9		9.1
	24		Market comparable pricing	Comparability adjustment	(56.3)	-	(6.3)		(42.7)
Loans	376	(5)	Discounted cash flow	Discount rate	3.1	-	7.5		4.2
				Prepayment rate	8.7	-	100.0		91.9
				Loss severity	0.0	-	33.9		6.6
Mortgage servicing rights (residential)	13,625		Discounted cash flow	Cost to service per loan (6)	$ 78	-	587		143
				Discount rate	6.6	-	12.9	%	6.9
				Prepayment rate (7)	9.7	-	20.5		10.5
Net derivative assets and (liabilities):									
Interest rate contracts	54		Discounted cash flow	Default rate	0.0	-	5.0		2.1
				Loss severity	50.0	-	50.0		50.0
				Prepayment rate	2.8	-	12.5		10.5
Interest rate contracts: derivative loan commitments	17		Discounted cash flow	Fall-out factor	1.0	-	99.0		15.2
				Initial-value servicing	(59.9)	-	101.1	bps	2.7
Equity contracts	102		Discounted cash flow	Conversion factor	(9.7)	-	0.0	%	(7.6)
				Weighted average life	0.5	-	3.0	yrs	1.6
	(613)		Option model	Correlation factor	(77.0)	-	98.0	%	24.2
				Volatility factor	5.7	-	95.5		19.2
Credit contracts	(3)		Market comparable pricing	Comparability adjustment	(29.9)	-	17.3		(0.2)
	39		Option model	Credit spread	0.0	-	63.7		1.3
				Loss severity	13.0	-	60.0		50.7
Nonmarketable equity securities	8		Discounted cash flow	Discount rate	10.0	-	10.0		10.0
				Volatility Factor	0.5	-	1.9		1.4
	4,813		Market comparable pricing	Comparability adjustment	(21.1)	-	(5.5)		(15.0)
Insignificant Level 3 assets, net of liabilities	570	(8)							
Total level 3 assets, net of liabilities	$ 22,854	(9)							

(1) Weighted averages are calculated using outstanding unpaid principal balance for cash instruments such as loans and securities, and notional amounts for derivative instruments.
(2) Includes $1.0 billion of collateralized debt obligations.
(3) Securities backed by specified sources of current and future receivables generated from foreign originators.
(4) A significant portion of the balance consists of investments in asset-backed securities that are revolving in nature, for which the timing of advances and repayments of principal are uncertain.
(5) Consists of reverse mortgage loans.
(6) The high end of the range of inputs is for servicing modified loans. For non-modified loans the range is $78 - $252.
(7) Includes a blend of prepayment speeds and expected defaults. Prepayment speeds are influenced by mortgage interest rates as well as our estimation of drivers of borrower behavior.
(8) Represents the aggregate amount of Level 3 assets and liabilities measured at fair value on a recurring basis that are individually and in the aggregate insignificant. The amount includes corporate debt securities, mortgage-backed securities, other trading positions, other liabilities and certain net derivative assets and liabilities, such as commodity contracts and foreign exchange contracts.
(9) Consists of total Level 3 assets of $24.9 billion and total Level 3 liabilities of $2.0 billion, before netting of derivative balances.

The valuation techniques used for our Level 3 assets and liabilities, as presented in the previous tables, are described as follows:

- Discounted cash flow – Discounted cash flow valuation techniques generally consist of developing an estimate of future cash flows that are expected to occur over the life of an instrument and then discounting those cash flows at a rate of return that results in the fair value amount.
- Market comparable pricing – Market comparable pricing valuation techniques are used to determine the fair value of certain instruments by incorporating known inputs, such as recent transaction prices, pending transactions, or prices of other similar investments that require significant adjustment to reflect differences in instrument characteristics.
- Option model – Option model valuation techniques are generally used for instruments in which the holder has a contingent right or obligation based on the occurrence of a future event, such as the price of a referenced asset going above or below a predetermined strike price. Option models estimate the likelihood of the specified event occurring by incorporating assumptions such as volatility estimates, price of the underlying instrument and expected rate of return.
- Vendor-priced – Prices obtained from third-party pricing vendors or brokers that are used to record the fair value of the asset or liability for which the related valuation technique and significant unobservable inputs are not provided.

Significant unobservable inputs presented in the previous tables are those we consider significant to the fair value of the Level 3 asset or liability. We consider unobservable inputs to be significant if by their exclusion the fair value of the Level 3 asset or liability would be impacted by a predetermined percentage change. We also consider qualitative factors, such as nature of the instrument, type of valuation technique used, and the significance of the unobservable inputs relative to other inputs used within the valuation. Following is a description of the significant unobservable inputs provided in the table.

- Comparability adjustment – is an adjustment made to observed market data, such as a transaction price in order to reflect dissimilarities in underlying collateral, issuer, rating, or other factors used within a market valuation approach, expressed as a percentage of an observed price.
- Conversion Factor – is the risk-adjusted rate in which a particular instrument may be exchanged for another instrument upon settlement, expressed as a percentage change from a specified rate.
- Correlation factor – is the likelihood of one instrument changing in price relative to another based on an established relationship expressed as a percentage of relative change in price over a period over time.
- Cost to service – is the expected cost per loan of servicing a portfolio of loans, which includes estimates for unreimbursed expenses (including delinquency and foreclosure costs) that may occur as a result of servicing such loan portfolios.
- Credit spread – is the portion of the interest rate in excess of a benchmark interest rate, such as Overnight Index Swap (OIS), LIBOR or U.S. Treasury rates, that when applied to an investment captures changes in the obligor's creditworthiness.
- Default rate – is an estimate of the likelihood of not collecting contractual amounts owed expressed as a constant default rate (CDR).
- Discount rate – is a rate of return used to calculate the present value of the future expected cash flow to arrive at the fair value of an instrument. The discount rate consists of a benchmark rate component and a risk premium component. The benchmark rate component, for example, OIS, LIBOR or U.S. Treasury rates, is generally observable within the market and is necessary to appropriately reflect the time value of money. The risk premium component reflects the amount of compensation market participants require due to the uncertainty inherent in the instruments' cash flows resulting from risks such as credit and liquidity.
- Fall-out factor – is the expected percentage of loans associated with our interest rate lock commitment portfolio that are likely of not funding.
- Initial-value servicing – is the estimated value of the underlying loan, including the value attributable to the embedded servicing right, expressed in basis points of outstanding unpaid principal balance.
- Loss severity – is the estimated percentage of contractual cash flows lost in the event of a default.
- Prepayment rate – is the estimated rate at which forecasted prepayments of principal of the related loan or debt instrument are expected to occur, expressed as a constant prepayment rate (CPR).
- Volatility factor – is the extent of change in price an item is estimated to fluctuate over a specified period of time expressed as a percentage of relative change in price over a period over time.
- Weighted average life – is the weighted average number of years an investment is expected to remain outstanding based on its expected cash flows reflecting the estimated date the issuer will call or extend the maturity of the instrument or otherwise reflecting an estimate of the timing of an instrument's cash flows whose timing is not contractually fixed.

Significant Recurring Level 3 Fair Value Asset and Liability Input Sensitivity

We generally use discounted cash flow or similar internal modeling techniques to determine the fair value of our Level 3 assets and liabilities. Use of these techniques requires determination of relevant inputs and assumptions, some of which represent significant unobservable inputs as indicated in the preceding tables. Accordingly, changes in these unobservable inputs may have a significant impact on fair value.

Certain of these unobservable inputs will (in isolation) have a directionally consistent impact on the fair value of the instrument for a given change in that input. Alternatively, the fair value of the instrument may move in an opposite direction for a given change in another input. Where multiple inputs are used within the valuation technique of an asset or liability, a change in one input in a certain direction may be offset by an opposite change in another input having a potentially muted impact to the overall fair value of that particular instrument. Additionally, a change in one unobservable input may result in a change to another unobservable input (that is, changes in certain inputs are interrelated to one another), which may counteract or magnify the fair value impact.

SECURITIES, LOANS, MORTGAGE LOANS HELD FOR SALE and NONMARKETABLE EQUITY INVESTMENTS The fair values of predominantly all Level 3 trading securities, mortgage loans held for sale, loans, other nonmarketable equity investments, and available-for-sale securities have consistent inputs, valuation techniques and correlation to changes in underlying inputs. The internal models used to determine fair value for these Level 3 instruments use certain significant unobservable inputs within a discounted cash flow or market comparable pricing valuation technique. Such inputs include discount rate, prepayment rate, default rate, loss severity, comparability adjustment and weighted average life.

These Level 3 assets would decrease (increase) in value based upon an increase (decrease) in discount rate, default rate, loss severity, or weighted average life inputs and would generally decrease (increase) in value based upon an increase (decrease) in prepayment rate. Generally, a change in the assumption used for default rate is accompanied by a directionally similar change in the risk premium component of the discount rate (specifically, the portion related to credit risk) and a directionally opposite change in the assumption used for prepayment rates. The comparability adjustment input may have a positive or negative impact on fair value depending on the change in fair value the comparability adjustment references. Unobservable inputs for comparability adjustment, loss severity, and weighted average life do not increase or decrease based on movements in the other significant unobservable inputs for these Level 3 assets.

DERIVATIVE INSTRUMENTS Level 3 derivative instruments are valued using market comparable pricing, option pricing and discounted cash flow valuation techniques. We utilize certain unobservable inputs within these techniques to determine the fair value of the Level 3 derivative instruments. The significant unobservable inputs consist of credit spread, a comparability adjustment, prepayment rate, default rate, loss severity, initial-value servicing, fall-out factor, volatility factor, weighted average life, conversion factor, and correlation factor.

Level 3 derivative assets (liabilities) where we are long the underlying would decrease (increase) in value upon an increase (decrease) in default rate, fall-out factor, credit spread, conversion factor, or loss severity inputs. Conversely, Level 3 derivative assets (liabilities) would generally increase (decrease) in value upon an increase (decrease) in prepayment rate, initial-value servicing, weighted average life, or volatility factor inputs. The inverse of the above relationships would occur for instruments in which we are short the underlying. The correlation factor and comparability adjustment inputs may have a positive or negative impact on the fair value of these derivative instruments depending on the change in value of the item the correlation factor and comparability adjustment is referencing. The correlation factor and comparability adjustment are considered independent from movements in other significant unobservable inputs for derivative instruments.

Generally, for derivative instruments for which we are subject to changes in the value of the underlying referenced instrument, a change in the assumption used for default rate is accompanied by directionally similar change in the risk premium component of the discount rate (specifically, the portion related to credit risk) and a directionally opposite change in the assumption used for prepayment rates. Unobservable inputs for loss severity, fall-out factor, initial-value servicing, weighted average life, conversion factor, and volatility do not increase or decrease based on movements in other significant unobservable inputs for these Level 3 instruments.

MORTGAGE SERVICING RIGHTS We use a discounted cash flow valuation technique to determine the fair value of Level 3 mortgage servicing rights. These models utilize certain significant unobservable inputs including prepayment rate, discount rate and costs to service. An increase in any of these unobservable inputs will reduce the fair value of the mortgage servicing rights and alternatively, a decrease in any one of these inputs would result in the mortgage servicing rights increasing in value. Generally, a change in the assumption used for the default rate is accompanied by a directionally similar change in the assumption used for cost to service and a directionally opposite change in the assumption used for prepayment. The sensitivity of our residential MSRs is discussed further in Note 9 (Securitizations and Variable Interest Entities).

Assets and Liabilities Recorded at Fair Value on a Nonrecurring Basis

We may be required, from time to time, to measure certain assets at fair value on a nonrecurring basis in accordance with GAAP. These adjustments to fair value usually result from application of LOCOM accounting, write-downs of individual assets or commencing in 2018 with our adoption of ASU 2016-01, use of the measurement alternative for nonmarketable equity securities. Table 18.12 provides the fair value hierarchy and fair value at the date of the nonrecurring fair value adjustment for all assets that were still held as of December 31, 2018 and 2017, and for which a nonrecurring fair value adjustment was recorded during the years then ended.

Table 18.12: Fair Value on a Nonrecurring Basis

		December 31, 2018				December 31, 2017			
(in millions)		**Level 1**	**Level 2**	**Level 3**	**Total**	Level 1	Level 2	Level 3	Total
Mortgage loans held for sale (LOCOM) (1)	**$**	**—**	**1,213**	**1,233**	**2,446**	—	1,646	1,333	2,979
Loans held for sale		**—**	**313**	**—**	**313**	—	108	—	108
Loans:									
Commercial		**—**	**339**	**—**	**339**	—	374	—	374
Consumer		**—**	**346**	**1**	**347**	—	502	10	512
Total loans (2)		**—**	**685**	**1**	**686**	—	876	10	886
Nonmarketable equity securities (3)		**—**	**774**	**157**	**931**	—	—	136	136
Other assets (4)		**—**	**149**	**6**	**155**	—	177	161	338
Total assets at fair value on a nonrecurring basis (5)	**$**	**—**	**3,134**	**1,397**	**4,531**	—	2,807	1,640	4,447

(1) Consists of commercial mortgages and residential real estate 1-4 family first mortgage loans.
(2) Represents the carrying value of loans for which nonrecurring adjustments are based on the appraised value of the collateral.
(3) Consists of certain nonmarketable equity securities that are measured at fair value on a nonrecurring basis, including observable price adjustments for nonmarketable equity securities carried under the measurement alternative.
(4) Includes the fair value of foreclosed real estate, other collateral owned and operating lease assets.
(5) Prior period balances exclude $6 million of nonmarketable equity securities at NAV.

Table 18.13 presents the increase (decrease) in value of certain assets held at the end of the respective reporting periods presented for which a nonrecurring fair value adjustment was recognized during the periods presented.

Table 18.13: Change in Value of Assets with Nonrecurring Fair Value Adjustment

		Year ended December 31,	
(in millions)		**2018**	2017
Mortgage loans held for sale (LOCOM)	**$**	**21**	10
Loans held for sale		**(39)**	(2)
Loans:			
Commercial		**(221)**	(335)
Consumer		**(284)**	(424)
Total loans (1)		**(505)**	(759)
Nonmarketable equity securities (2)		**265**	(178)
Other assets (3)		**(40)**	(121)
Total	**$**	**(298)**	(1,050)

(1) Represents write-downs of loans based on the appraised value of the collateral.
(2) Includes impairment losses and observable price adjustments for certain nonmarketable equity securities.
(3) Includes the losses on foreclosed real estate and other collateral owned that were measured at fair value subsequent to their initial classification as foreclosed assets.

Table 18.14 provides quantitative information about the valuation techniques and significant unobservable inputs used in the valuation of substantially all of our Level 3 assets that are measured at fair value on a nonrecurring basis using an internal model. The table is limited to financial instruments that had nonrecurring fair value adjustments during the periods presented.

We have excluded from the table valuation techniques and significant unobservable inputs for certain classes of Level 3 assets measured using an internal model that we consider, both individually and in the aggregate, insignificant relative to our overall Level 3 nonrecurring measurements. We made this determination based upon an evaluation of each class that considered the magnitude of the positions, nature of the unobservable inputs and potential for significant changes in fair value due to changes in those inputs.

Table 18.14: Valuation Techniques – Nonrecurring Basis

($ in millions)	Fair Value Level 3		Valuation Technique(s) (1)	Significant Unobservable Inputs (1)		Range of inputs	Weighted Average (2)
December 31, 2018							
Residential mortgage loans held for sale (LOCOM)	**$ 1,233**	**(3)**	**Discounted cash flow**	**Default rate**	**(4)**	**0.2 – 2.3%**	**1.4%**
				Discount rate		**1.5 – 8.5**	**4.0**
				Loss severity		**0.5 – 66.0**	**1.7**
				Prepayment rate	**(5)**	**3.5 – 100.0**	**46.5**
Nonmarketable equity securities	**7**		**Discounted cash flow**	**Discount rate**		**10.5 – 10.5**	**10.5**
Insignificant level 3 assets	**157**						
Total	**$ 1,397**						
December 31, 2017							
Residential mortgage loans held for sale (LOCOM)	$ 1,333	(3)	Discounted cash flow	Default rate	(4)	0.1 – 4.1 %	1.7 %
				Discount rate		1.5 – 8.5	3.8
				Loss severity		0.7 – 52.9	2.2
				Prepayment rate	(5)	5.4 – 100.0	50.6
Nonmarketable equity securities	122		Discounted cash flow	Discount rate		5.0 – 10.5	10.2
Insignificant level 3 assets	185						
Total	$ 1,640						

(1) Refer to the narrative following Table 18.10 for a definition of the valuation technique(s) and significant unobservable inputs.
(2) For residential MLHFS, weighted averages are calculated using the outstanding unpaid principal balance of the loans.
(3) Consists of approximately $1.2 billion and $1.3 billion of government insured/guaranteed loans purchased from GNMA-guaranteed mortgage securitizations at December 31, 2018 and 2017, respectively, and $27 million and $26 million of other mortgage loans that are not government insured/guaranteed at December 31, 2018 and 2017, respectively.
(4) Applies only to non-government insured/guaranteed loans.
(5) Includes the impact on prepayment rate of expected defaults for government insured/guaranteed loans, which impact the frequency and timing of early resolution of loans.

Fair Value Option

The fair value option is an irrevocable election, generally only permitted upon initial recognition of financial assets or liabilities, to measure eligible financial instruments at fair value with changes in fair value reflected in earnings. We may elect the fair value option to align the measurement model with how the financial assets or liabilities are managed or to reduce complexity or accounting asymmetry. Following is a discussion of the portfolios for which we elected the fair value option.

MORTGAGE LOANS HELD FOR SALE (MLHFS) We measure MLHFS at fair value for MLHFS originations for which an active secondary market and readily available market prices exist to reliably support fair value pricing models used for these loans. Loan origination fees on these loans are recorded when earned, and related direct loan origination costs are recognized when incurred. We also measure at fair value certain of our other interests held related to residential loan sales and securitizations. We believe fair value measurement for MLHFS and other interests held, which we hedge with economic hedge derivatives along with our MSRs measured at fair value, reduces certain timing differences and better matches changes in the value of these assets with changes in the value of derivatives used as economic hedges for these assets.

LOANS HELD FOR SALE (LHFS) We engage in holding loans for market-making purposes to support the buying and selling demands of our customers. These loans are generally held for a short period of time and managed within parameters of internally approved market risk limits. We have elected to measure and carry them at fair value, which best aligns with our risk management practices. Fair value for these loans is generally determined using readily available market data based on recent transaction prices for similar loans.

LOANS Loans that we measure at fair value consist predominantly of reverse mortgage loans previously transferred under a GNMA reverse mortgage securitization program accounted for as a secured borrowing. Before the transfer, they were classified as MLHFS measured at fair value and, as such, remain carried on our balance sheet under the fair value option.

EQUITY SECURITIES We elected to measure at fair value certain nonmarketable equity securities that are hedged with derivative instruments to better reflect the economics of the transactions.

Table 18.15 reflects differences between the fair value carrying amount of the assets for which we have elected the fair value option and the contractual aggregate unpaid principal amount at maturity.

Table 18.15: Fair Value Option

	December 31, 2018			December 31, 2017		
(in millions)	**Fair value carrying amount**	**Aggregate unpaid principal**	**Fair value carrying amount less aggregate unpaid principal**	Fair value carrying amount	Aggregate unpaid principal	Fair value carrying amount less aggregate unpaid principal
Mortgage loans held for sale:						
Total loans	**$ 11,771**	**11,573**	**198**	16,116	15,827	289
Nonaccrual loans	**127**	**158**	**(31)**	127	165	(38)
Loans 90 days or more past due and still accruing	**7**	**9**	**(2)**	16	21	(5)
Loans held for sale:						
Total loans	**1,469**	**1,536**	**(67)**	1,023	1,075	(52)
Nonaccrual loans	**21**	**32**	**(11)**	34	56	(22)
Loans:						
Total loans	**244**	**274**	**(30)**	376	404	(28)
Nonaccrual loans	**179**	**208**	**(29)**	253	281	(28)
Equity securities (1)	**5,455**	**N/A**	**N/A**	4,867	N/A	N/A

(1) Consists of nonmarketable equity securities carried at fair value.

The assets accounted for under the fair value option are initially measured at fair value. Gains and losses from initial measurement and subsequent changes in fair value are recognized in earnings. The changes in fair value related to initial measurement and subsequent changes in fair value included in earnings for these assets measured at fair value are shown in Table 18.16 by income statement line item. Amounts recorded as interest income are excluded from Table 18.16.

Table 18.16: Fair Value Option – Changes in Fair Value Included in Earnings

	Year ended December 31,											
	2018				2017				2016			
(in millions)	**Mortgage banking noninterest income**	**Net gains (losses) from trading activities**	**Net gains (losses) from equity securities**	**Other noninterest income**	Mortgage banking noninterest income	Net gains (losses) from trading activities	Net gains (losses) from equity securities	Other noninterest income	Mortgage banking noninterest income	Net gains (losses) from trading activities	Net gains (losses) from equity securities	Other noninterest income
Mortgage loans held for sale	**$ 462**	**—**	**—**	**—**	1,229	—	—	—	1,456	—	—	—
Loans held for sale	**—**	**(1)**	**—**	**1**	—	45	—	2	—	55	—	3
Loans	**—**	**—**	**—**	**(1)**	—	—	—	—	—	—	—	(60)
Equity securities	**—**	**—**	**683**	**—**	—	—	1,592	—	—	—	(12)	—
Other interests held (1)	**—**	**(3)**	**—**	**—**	—	(9)	—	—	—	(5)	—	—

(1) Includes retained interests in securitizations.

For performing loans, instrument-specific credit risk gains or losses were derived principally by determining the change in fair value of the loans due to changes in the observable or implied credit spread. Credit spread is the market yield on the loans less the relevant risk-free benchmark interest rate. For nonperforming loans, we attribute all changes in fair value to instrument-specific credit risk. Table 18.17 shows the estimated gains and losses from earnings attributable to instrument-specific credit risk related to assets accounted for under the fair value option.

Table 18.17: Fair Value Option – Gains/Losses Attributable to Instrument-Specific Credit Risk

	Year ended December 31,		
(in millions)	**2018**	2017	2016
Gains (losses) attributable to instrument-specific credit risk:			
Mortgage loans held for sale	**$ (16)**	(12)	3
Loans held for sale	**—**	45	55
Total	**$ (16)**	33	58

Disclosures about Fair Value of Financial Instruments

Table 18.18 is a summary of fair value estimates for financial instruments, excluding financial instruments recorded at fair value on a recurring basis, as they are included within Table 18.2 in this Note. In connection with our adoption of ASU 2016-01 in first quarter 2018, the valuation methodologies for estimating the fair value of financial instruments in Table 18.18 have been changed, where necessary, to conform with an exit price notion. Under an exit price notion, fair value estimates are based upon the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the balance sheet date. For certain loans and deposit liabilities, the estimated fair values prior to our adoption of ASU 2016-01 followed an entrance price notion that based fair values on recent prices offered to customers for loans and deposits with similar characteristics. The carrying amounts in the following table are recorded on the balance sheet under the indicated captions.

We have not included assets and liabilities that are not financial instruments in our disclosure, such as the value of the long-term relationships with our deposit, credit card and trust customers, amortized MSRs, premises and equipment, goodwill and other intangibles, deferred taxes and other liabilities.

The total of the fair value calculations presented does not represent, and should not be construed to represent, the underlying value of the Company.

Table 18.18: Fair Value Estimates for Financial Instruments

		Estimated fair value			
(in millions)	Carrying amount	Level 1	Level 2	Level 3	Total
December 31, 2018					
Financial assets					
Cash and due from banks (1)	**$ 23,551**	**23,551**	**—**	**—**	**23,551**
Interest-earning deposits with banks (1)	**149,736**	**149,542**	**194**	**—**	**149,736**
Federal funds sold and securities purchased under resale agreements (1)	**80,207**	**—**	**80,207**	**—**	**80,207**
Held-to-maturity debt securities	**144,788**	**44,339**	**97,275**	**501**	**142,115**
Mortgage loans held for sale	**3,355**	**—**	**2,129**	**1,233**	**3,362**
Loans held for sale	**572**	**—**	**572**	**—**	**572**
Loans, net (2)(3)	**923,703**	**—**	**45,190**	**872,725**	**917,915**
Nonmarketable equity securities (cost method) (4)	**5,643**	**—**	**—**	**5,675**	**5,675**
Total financial assets	**$ 1,331,555**	**217,432**	**225,567**	**880,134**	**1,323,133**
Financial liabilities					
Deposits (3)(5)	**$ 130,645**	**—**	**107,448**	**22,641**	**130,089**
Short-term borrowings	**105,787**	**—**	**105,789**	**—**	**105,789**
Long-term debt (6)	**229,008**	**—**	**225,904**	**2,230**	**228,134**
Total financial liabilities	**$ 465,440**	**—**	**439,141**	**24,871**	**464,012**
December 31, 2017					
Financial assets					
Cash and due from banks (1)	$ 23,367	23,367	—	—	23,367
Interest-earning deposits with banks (1)	192,580	192,455	125	—	192,580
Federal funds sold and securities purchased under resale agreements (1)	80,025	1,002	78,954	69	80,025
Held-to-maturity debt securities	139,335	44,806	93,694	485	138,985
Mortgage loans held for sale	3,954	—	2,625	1,333	3,958
Loans held for sale	108	—	108	—	108
Loans, net (2)(3)	926,273	—	51,713	886,622	938,335
Nonmarketable equity securities (cost method)	7,136	—	23	7,605	7,628
Total financial assets (7)	$ 1,372,778	261,630	227,242	896,114	1,384,986
Financial liabilities					
Deposits (3)(5)	$ 128,594	—	108,146	19,768	127,914
Short-term borrowings	103,256	—	103,256	—	103,256
Long-term debt (6)	224,981	—	227,109	3,159	230,268
Total financial liabilities	$ 456,831	—	438,511	22,927	461,438

(1) Amounts consist of financial instruments for which carrying value approximates fair value.
(2) Excludes lease financing with a carrying amount of $19.7 billion and $19.4 billion at December 31, 2018 and 2017, respectively.
(3) In connection with our adoption of ASU 2016-01, the valuation methodologies used to estimate the fair value at December 31, 2018, for a portion of loans and deposit liabilities with a defined or contractual maturity has been changed to conform to an exit price notion. The fair value estimates at December 31, 2017 have not been revised to reflect application of the modified methodology.
(4) Excludes $1.7 billion of nonmarketable equity securities accounted for under the measurement alternative at December 31, 2018, that were accounted for under the cost method in prior periods.
(5) Excludes deposit liabilities with no defined or contractual maturity of $1.2 trillion at both December 31, 2018 and 2017.
(6) Excludes capital lease obligations under capital leases of $36 million and $39 million at December 31, 2018 and 2017, respectively.
(7) Excludes $27 million of carrying value and $30 million of fair value relating to nonmarketable equity securities at NAV at December 31, 2017.

Loan commitments, standby letters of credit and commercial and similar letters of credit are not included in Table 18.18. A reasonable estimate of the fair value of these instruments is the carrying value of deferred fees plus the allowance for unfunded credit commitments, which totaled $1.0 billion at both December 31, 2018 and 2017.

Note 19: Preferred Stock

We are authorized to issue 20 million shares of preferred stock and 4 million shares of preference stock, both without par value. Preferred shares outstanding rank senior to common shares both as to dividends and liquidation preference but have no general voting rights. We have not issued any preference shares under this authorization. If issued, preference shares would be limited to one vote per share. Our total authorized, issued and outstanding preferred stock is presented in the following two tables along with the Employee Stock Ownership Plan (ESOP) Cumulative Convertible Preferred Stock.

Table 19.1: Preferred Stock Shares

	December 31, 2018		December 31, 2017	
	Liquidation preference per share	Shares authorized and designated	Liquidation preference per share	Shares authorized and designated
DEP Shares				
Dividend Equalization Preferred Shares (DEP)	$ 10	97,000	$ 10	97,000
Series I				
Floating Class A Preferred Stock (1)	100,000	25,010	100,000	25,010
Series J				
8.00% Non-Cumulative Perpetual Class A Preferred Stock (2)	—	—	1,000	2,300,000
Series K				
Floating Non-Cumulative Perpetual Class A Preferred Stock (3)	1,000	3,500,000	1,000	3,500,000
Series L				
7.50% Non-Cumulative Perpetual Convertible Class A Preferred Stock	1,000	4,025,000	1,000	4,025,000
Series N				
5.20% Non-Cumulative Perpetual Class A Preferred Stock	25,000	30,000	25,000	30,000
Series O				
5.125% Non-Cumulative Perpetual Class A Preferred Stock	25,000	27,600	25,000	27,600
Series P				
5.25% Non-Cumulative Perpetual Class A Preferred Stock	25,000	26,400	25,000	26,400
Series Q				
5.85% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	25,000	69,000	25,000	69,000
Series R				
6.625% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	25,000	34,500	25,000	34,500
Series S				
5.90% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	25,000	80,000	25,000	80,000
Series T				
6.00% Non-Cumulative Perpetual Class A Preferred Stock	25,000	32,200	25,000	32,200
Series U				
5.875% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	25,000	80,000	25,000	80,000
Series V				
6.00% Non-Cumulative Perpetual Class A Preferred Stock	25,000	40,000	25,000	40,000
Series W				
5.70% Non-Cumulative Perpetual Class A Preferred Stock	25,000	40,000	25,000	40,000
Series X				
5.50% Non-Cumulative Perpetual Class A Preferred Stock	25,000	46,000	25,000	46,000
Series Y				
5.625% Non-Cumulative Perpetual Class A Preferred Stock	25,000	27,600	25,000	27,600
ESOP				
Cumulative Convertible Preferred Stock (4)	—	1,406,460	—	1,556,104
Total		9,586,770		12,036,414

(1) Floating rate for Preferred Stock, Series I, is the greater of three-month LIBOR plus 0.93% and 5.56975%.
(2) Preferred Stock, Series J, was redeemed in third quarter 2018.
(3) Effective June 15, 2018, Preferred Stock, Series K, converted from a fixed to a floating coupon rate of three-month LIBOR plus 3.77%.
(4) See the ESOP Cumulative Convertible Preferred Stock section in this Note for additional information about the liquidation preference for the ESOP Cumulative Convertible Preferred Stock.

Table 19.2: Preferred Stock – Shares Issued and Carrying Value

	December 31, 2018				December 31, 2017			
(in millions, except shares)	Shares issued and outstanding	Liquidation preference value	Carrying value	Discount	Shares issued and outstanding	Liquidation preference value	Carrying value	Discount
DEP Shares								
Dividend Equalization Preferred Shares (DEP)	96,546	$ —	—	—	96,546	$ —	—	—
Series I (1)(2)								
Floating Class A Preferred Stock	25,010	2,501	2,501	—	25,010	2,501	2,501	—
Series J (1)(3)								
8.00% Non-Cumulative Perpetual Class A Preferred Stock	—	—	—	—	2,150,375	2,150	1,995	155
Series K (1)(4)								
Floating Non-Cumulative Perpetual Class A Preferred Stock	3,352,000	3,352	2,876	476	3,352,000	3,352	2,876	476
Series L (1)								
7.50% Non-Cumulative Perpetual Convertible Class A Preferred Stock	3,968,000	3,968	3,200	768	3,968,000	3,968	3,200	768
Series N (1)								
5.20% Non-Cumulative Perpetual Class A Preferred Stock	30,000	750	750	—	30,000	750	750	—
Series O (1)								
5.125% Non-Cumulative Perpetual Class A Preferred Stock	26,000	650	650	—	26,000	650	650	—
Series P (1)								
5.25% Non-Cumulative Perpetual Class A Preferred Stock	25,000	625	625	—	25,000	625	625	—
Series Q (1)								
5.85% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	69,000	1,725	1,725	—	69,000	1,725	1,725	—
Series R (1)								
6.625% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	33,600	840	840	—	33,600	840	840	—
Series S (1)								
5.90% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	80,000	2,000	2,000	—	80,000	2,000	2,000	—
Series T (1)								
6.00% Non-Cumulative Perpetual Class A Preferred Stock	32,000	800	800	—	32,000	800	800	—
Series U (1)								
5.875% Fixed-to-Floating Non-Cumulative Perpetual Class A Preferred Stock	80,000	2,000	2,000	—	80,000	2,000	2,000	—
Series V (1)								
6.00% Non-Cumulative Perpetual Class A Preferred Stock	40,000	1,000	1,000	—	40,000	1,000	1,000	—
Series W (1)								
5.70% Non-Cumulative Perpetual Class A Preferred Stock	40,000	1,000	1,000	—	40,000	1,000	1,000	—
Series X (1)								
5.50% Non-Cumulative Perpetual Class A Preferred Stock	46,000	1,150	1,150	—	46,000	1,150	1,150	—
Series Y (1)								
5.625% Non-Cumulative Perpetual Class A Preferred Stock	27,600	690	690	—	27,600	690	690	—
ESOP								
Cumulative Convertible Preferred Stock	1,406,460	1,407	1,407	—	1,556,104	1,556	1,556	—
Total	9,377,216	$ 24,458	23,214	1,244	11,677,235	$ 26,757	25,358	1,399

(1) Preferred shares qualify as Tier 1 capital.
(2) Floating rate for Preferred Stock, Series I, is the greater of three-month LIBOR plus 0.93% and 5.56975%.
(3) Preferred Stock, Series J, was redeemed in third quarter 2018.
(4) Effective June 15, 2018, Preferred Stock, Series K, converted from a fixed to a floating coupon rate of three-month LIBOR plus 3.77%.

See Note 9 (Securitizations and Variable Interest Entities) for additional information on our trust preferred securities.

ESOP CUMULATIVE CONVERTIBLE PREFERRED STOCK All shares of our ESOP Cumulative Convertible Preferred Stock (ESOP Preferred Stock) were issued to a trustee acting on behalf of the Wells Fargo & Company 401(k) Plan (the 401(k) Plan). Dividends on the ESOP Preferred Stock are cumulative from the date of initial issuance and are payable quarterly at annual rates based upon the year of issuance. Each share of ESOP Preferred Stock released from the unallocated reserve of the 401(k) Plan is converted into shares of our common stock based on the stated value of the ESOP Preferred Stock and the then current market price of our common stock. The ESOP Preferred Stock is also convertible at the option of the holder at any time, unless previously redeemed. We have the option to redeem the ESOP Preferred Stock at any time, in whole or in part, at a redemption price per share equal to the higher of (a) $1,000 per share plus accrued and unpaid dividends or (b) the fair market value, as defined in the Certificates of Designation for the ESOP Preferred Stock.

Table 19.3: ESOP Preferred Stock

	Shares issued and outstanding		Carrying value		Adjustable dividend rate	
(in millions, except shares)	**Dec 31, 2018**	Dec 31, 2017	**Dec 31, 2018**	Dec 31, 2017	Minimum	Maximum
ESOP Preferred Stock						
$1,000 liquidation preference per share						
2018	**336,945**	—	**$ 337**	—	7.00%	8.00%
2017	**222,210**	273,210	**222**	273	7.00	8.00
2016	**233,835**	322,826	**234**	323	9.30	10.30
2015	**144,338**	187,436	**144**	187	8.90	9.90
2014	**174,151**	237,151	**174**	237	8.70	9.70
2013	**133,948**	201,948	**134**	202	8.50	9.50
2012	**77,634**	128,634	**78**	129	10.00	11.00
2011	**61,796**	129,296	**62**	129	9.00	10.00
2010	**21,603**	75,603	**22**	76	9.50	10.50
Total ESOP Preferred Stock (1)	**1,406,460**	1,556,104	**$ 1,407**	1,556		
Unearned ESOP shares (2)			**$ (1,502)**	(1,678)		

(1) At December 31, 2018 and 2017, additional paid-in capital included $95 million and $122 million, respectively, related to ESOP preferred stock.
(2) We recorded a corresponding charge to unearned ESOP shares in connection with the issuance of the ESOP Preferred Stock. The unearned ESOP shares are reduced as shares of the ESOP Preferred Stock are committed to be released.

Note 20: Common Stock and Stock Plans

Common Stock

Table 20.1 presents our reserved, issued and authorized shares of common stock at December 31, 2018.

Table 20.1: Common Stock Shares

	Number of shares
Dividend reinvestment and common stock purchase plans	9,114,931
Director plans	447,526
Stock plans (1)	369,893,237
Convertible securities and warrants	65,835,468
Total shares reserved	445,291,162
Shares issued	5,481,811,474
Shares not reserved or issued	3,072,897,364
Total shares authorized	9,000,000,000

(1) Includes employee options, restricted shares and restricted share rights, 401(k) profit sharing and compensation deferral plans.

In connection with our participation in the Capital Purchase Program (CPP), a part of the Troubled Asset Relief Program (TARP), we issued to the U.S. Treasury Department warrants to purchase 110,261,688 shares of our common stock with an original exercise price of $34.01 per share. The warrants expired on October 29, 2018, and the holders of 110,646 unexercised warrants as of the expiration date are no longer entitled to receive any shares of our common stock. Holders exercised 23,217,208 and 9,774,052 warrants to purchase shares of our common stock in 2018 and 2017, respectively.

Dividend Reinvestment and Common Stock Purchase Plans

Participants in our dividend reinvestment and common stock direct purchase plans may purchase shares of our common stock at fair market value by reinvesting dividends and/or making optional cash payments, under the plan's terms.

Employee Stock Plans

We offer stock-based employee compensation plans as described below. For information on our accounting for stock-based compensation plans, see Note 1 (Summary of Significant Accounting Policies).

LONG-TERM INCENTIVE COMPENSATION PLANS Our Long-Term Incentive Compensation Plan (LTICP) provides for awards of incentive and nonqualified stock options, stock appreciation rights, restricted shares, restricted share rights (RSRs), performance share awards (PSAs), performance units and stock awards with or without restrictions.

Beginning in 2010, we granted RSRs and performance shares as our primary long-term incentive awards instead of stock options. Holders of RSRs are entitled to the related shares of common stock at no cost generally vesting over three to five years after the RSRs were granted. Subject to compliance with applicable laws, rules and regulations, RSRs generally continue to vest and are distributed after retirement according to the original vesting schedule. Except for retirement and other limited circumstances, RSRs are canceled when employment ends.

Holders of each vested PSA are entitled to the related shares of common stock at no cost. Subject to compliance with applicable laws, rules, and regulations, PSAs continue to vest and are distributed after retirement according to the original vesting schedule subject to satisfying the performance criteria and other vesting conditions.

Holders of RSRs and PSAs may be entitled to receive additional RSRs and PSAs (dividend equivalents) or cash payments equal to the cash dividends that would have been paid had the RSRs or PSAs been issued and outstanding shares of common stock. RSRs and PSAs granted as dividend equivalents are subject to the same vesting schedule and conditions as the underlying award.

Stock options must have an exercise price at or above fair market value (as defined in the plan) of the stock at the date of grant (except for substitute or replacement options granted in connection with mergers or other acquisitions) and a term of no more than 10 years. Options generally become exercisable over three years beginning on the first anniversary of the date of grant. Except as otherwise permitted under the plan, if employment is ended for reasons other than retirement, permanent disability or death, the option exercise period is reduced or the options are canceled.

Compensation expense for most of our RSRs, and PSAs granted prior to 2013 is based on the quoted market price of the related stock at the grant date; beginning in 2013 certain RSRs and all PSAs granted include discretionary conditions that can result in forfeiture and are subject to variable accounting. For these awards, the associated compensation expense fluctuates with changes in our stock price. Table 20.2 summarizes the major components of stock incentive compensation expense and the related recognized tax benefit.

Table 20.2: Stock Incentive Compensation Expense

	Year ended December 31,		
(in millions)	**2018**	2017	2016
RSRs (1)	**$ 1,013**	743	692
Performance shares	**9**	112	87
Stock options	**—**	(6)	—
Total stock incentive compensation expense (2)	**$ 1,022**	849	779
Related recognized tax benefit	**$ 252**	320	294

(1) In February 2018, a total of 11.9 million RSRs were granted to all eligible team members in the U.S., and eligible team members outside the U.S., referred to as broad-based RSRs.

(2) Amounts for the year-ended December 31, 2018, were net of $19 million related to reversal of previously accrued RSR costs. Year-ended December 31, 2017, were net of $26 million related to clawback credits taken against a prior PSA awarded under our LTICP.

For various acquisitions and mergers, we converted employee and director stock options of acquired or merged companies into stock options to purchase our common stock based on the terms of the original stock option plan and the agreed-upon exchange ratio. In addition, we converted restricted stock awards into awards that entitle holders to our stock after the vesting conditions are met. Holders receive cash dividends on outstanding awards if provided in the original award.

The total number of shares of common stock available for grant under the plans at December 31, 2018, was 92 million.

Director Awards

Beginning in 2011, we granted only common stock awards under the LTICP to non-employee directors elected or re-elected at the annual meeting of stockholders and prorated awards to directors who join the Board at any other time. Stock awards vest immediately. Options also were granted to directors prior to 2011 and can be exercised after 12 months through the tenth anniversary of the grant date.

Restricted Share Rights

A summary of the status of our RSRs and restricted share awards at December 31, 2018, and changes during 2018 is presented in Table 20.3.

Table 20.3: Restricted Share Rights

	Number		Weighted-average grant-date fair value
Nonvested at January 1, 2018	34,894,376	$	50.95
Granted	28,023,158		58.47
Vested	(14,571,562)		52.12
Canceled or forfeited	(2,773,474)		56.76
Nonvested at December 31, 2018	45,572,498		54.85

The weighted-average grant date fair value of RSRs granted during 2017 and 2016 was $57.54 and $48.31, respectively.

At December 31, 2018, there was $1.1 billion of total unrecognized compensation cost related to nonvested RSRs. The cost is expected to be recognized over a weighted-average period of 2.0 years . The total fair value of RSRs that vested during 2018, 2017 and 2016 was $824 million, $865 million and $1.1 billion, respectively.

Performance Share Awards

Holders of PSAs are entitled to the related shares of common stock at no cost subject to the Company's achievement of specified performance criteria over a three-year period. PSAs are granted at a target number; based on the Company's performance, the number of awards that vest can be adjusted downward to zero and upward to a maximum of either 125% or 150% of target. The awards vest in the quarter after the end of the performance period. For PSAs whose performance period ended December 31, 2018, the determination of the number of performance shares that will vest will occur in first quarter of 2019 after review of the Company's performance by the Human Resources Committee of the Board of Directors. Beginning in 2013, PSAs granted include discretionary conditions that can result in forfeiture and are subject to variable accounting. For these awards, the associated compensation expense fluctuates with changes in our stock price and the estimated outcome of meeting the performance conditions. The total expense that will be recognized on these awards cannot be finalized until the determination of the awards that will vest.

A summary of the status of our PSAs at December 31, 2018, and changes during 2018 is in Table 20.4, based on the performance adjustments recognized as of December 2018.

Table 20.4: Performance Share Awards

	Number		Weighted-average grant-date fair value (1)
Nonvested at January 1, 2018	5,492,104	$	47.81
Granted	2,570,300		58.62
Vested	(1,879,523)		55.21
Canceled or forfeited	(198,195)		54.48
Nonvested at December 31, 2018	5,984,686		49.91

(1) Reflects approval date fair value for grants subject to variable accounting.

The weighted-average grant date fair value of performance awards granted during 2017 and 2016 was $57.14 and $44.73, respectively.

At December 31, 2018, there was $26 million of total unrecognized compensation cost related to nonvested performance awards. The cost is expected to be recognized over a weighted-average period of 1.5 years . The total fair value of PSAs that vested during 2018, 2017 and 2016 was $107 million, $117 million, and $220 million, respectively.

Stock Options

Table 20.5 summarizes stock option activity and related information for the stock plans. Options assumed in mergers are included in the activity and related information for Incentive Compensation Plans if originally issued under an employee plan, and in the activity and related information for Director Awards if originally issued under a director plan.

Table 20.5: Stock Option Activity

	Number	Weighted-average exercise price	Weighted-average remaining contractual term (in yrs.)	Aggregate intrinsic value (in millions)
Incentive compensation plans				
Options outstanding as of December 31, 2017	20,179,179	$ 32.80		
Canceled or forfeited	(1,886,251)	172.36		
Exercised	(9,949,771)	22.50		
Options exercisable and outstanding as of December 31, 2018	8,343,157	13.46	0.2	$ 272
Director awards				
Options outstanding as of December 31, 2017	104,900	29.87		
Exercised	(104,900)	29.88		
Options exercisable and outstanding as of December 31, 2018	—	—	0.0	—

The total intrinsic value to option holders, which is the stock market value in excess of the option exercise price, of options exercised during 2018, 2017 and 2016 was $375 million, $623 million and $546 million, respectively.

Cash received from the exercise of stock options for 2018, 2017 and 2016 was $227 million, $602 million and $893 million, respectively.

We do not have a specific policy on repurchasing shares to satisfy share option exercises. Rather, we have a general policy on repurchasing shares to meet common stock issuance requirements for our benefit plans (including share option exercises), conversion of our convertible securities, acquisitions and other corporate purposes. Various factors determine the amount and timing of our share repurchases, including our capital requirements, the number of shares we expect to issue for acquisitions and employee benefit plans, market conditions (including the trading price of our stock), and regulatory and legal considerations. These factors can change at any time, and there can be no assurance as to the number of shares we will repurchase or when we will repurchase them.

Employee Stock Ownership Plan

The Wells Fargo & Company 401(k) Plan (401(k) Plan) is a defined contribution plan with an Employee Stock Ownership Plan (ESOP) feature. The ESOP feature enables the 401(k) Plan to borrow money to purchase our preferred or common stock. From 1994 through 2018, with the exception of 2009, we loaned money to the 401(k) Plan to purchase shares of our ESOP preferred stock. As our employer contributions are made to the 401(k) Plan and are used by the 401(k) Plan to make ESOP loan payments, the ESOP preferred stock in the 401(k) Plan is released and converted into our common stock shares. Dividends on the common stock shares allocated as a result of the release and conversion of the ESOP preferred stock reduce retained earnings, and the shares are considered outstanding for computing earnings per share. Dividends on the unallocated ESOP preferred stock do not reduce retained earnings, and the shares are not considered to be common stock equivalents for computing earnings per share. Loan principal and interest payments are made from our employer contributions to the 401(k) Plan, along with dividends paid on the ESOP preferred stock. With each principal and interest payment, a portion of the ESOP preferred stock is released and converted to common stock shares, which are allocated to the 401(k) Plan participants and invested in the Wells Fargo ESOP Fund within the 401(k) Plan.

Table 20.6 presents the balance of common stock and unreleased preferred stock held in the Wells Fargo ESOP fund, the fair value of unreleased ESOP preferred stock and the dividends on allocated shares of common stock and unreleased ESOP Preferred Stock paid to the 401(k) Plan.

Table 20.6: Common Stock and Unreleased Preferred Stock in the Wells Fargo ESOP Fund

			Shares outstanding
			December 31,
(in millions, except shares)	**2018**	2017	2016
Allocated shares (common)	**138,182,911**	124,670,717	128,189,305
Unreleased shares (preferred)	**1,406,460**	1,556,104	1,439,181
Fair value of unreleased ESOP preferred shares	**$ 1,407**	1,556	1,439

			Dividends paid
			Year ended December 31,
	2018	2017	2016
Allocated shares (common)	**$ 213**	195	208
Unreleased shares (preferred)	**159**	166	169

Deferred Compensation Plan for Independent Sales Agents

WF Deferred Compensation Holdings, Inc. is a wholly-owned subsidiary of the Parent formed solely to sponsor a deferred compensation plan for independent sales agents who provide investment, financial and other qualifying services for or with respect to participating affiliates.

The Nonqualified Deferred Compensation Plan for Independent Contractors, which became effective January 1, 2002, allowed participants to defer all or part of their eligible compensation payable to them by a participating affiliate. The plan was frozen for new compensation deferrals effective January 1, 2012. The Parent has fully and unconditionally guaranteed the deferred compensation obligations of WF Deferred Compensation Holdings, Inc. under the plan.

Note 21: Revenue from Contracts with Customers

Our revenue includes net interest income on financial instruments and noninterest income. Table 21.1 presents our revenue by operating segment. The "Other" segment for each of the tables below includes the elimination of certain items that are included in more than one business segment, most of which represents products and services for WIM customers served through Community Banking distribution channels. For additional description of our operating segments, including additional financial information and the underlying management accounting process, see Note 26 (Operating Segments) to Financial Statements in this Report.

We adopted ASU 2014-09 – *Revenue from Contracts with Customers* ("the new revenue recognition guidance") on a modified retrospective basis as of January 1, 2018. Under this method of adoption, prior period financial information for 2017 and 2016 was not adjusted. Rather, this ASU resulted in a cumulative-effect adjustment that decreased the beginning balance of retained earnings by $32 million on January 1, 2018, and changed the presentation of certain revenues and expenses prospectively. For details on the impact of the adoption of this ASU, see Note 1 (Summary of Significant Accounting Policies).

Table 21.1: Revenue by Operating Segment

(in millions)		Community Banking	Wholesale Banking	Wealth and Investment Management	Other (3)	Consolidated Company
						Year ended December 31, 2018
Net interest income (1)	**$**	**29,219**	**18,690**	**4,441**	**(2,355)**	**49,995**
Noninterest income:						
Service charges on deposit accounts		**2,641**	**2,074**	**16**	**(15)**	**4,716**
Trust and investment fees:						
Brokerage advisory, commissions and other fees		**1,887**	**317**	**9,161**	**(1,929)**	**9,436**
Trust and investment management		**910**	**445**	**2,893**	**(932)**	**3,316**
Investment banking		**(35)**	**1,783**	**9**	**—**	**1,757**
Total trust and investment fees		**2,762**	**2,545**	**12,063**	**(2,861)**	**14,509**
Card fees		**3,543**	**362**	**6**	**(4)**	**3,907**
Other fees:						
Lending related charges and fees (1)(2)		**278**	**1,247**	**7**	**(6)**	**1,526**
Cash network fees		**478**	**3**	**—**	**—**	**481**
Commercial real estate brokerage commissions		**—**	**468**	**—**	**—**	**468**
Wire transfer and other remittance fees		**264**	**209**	**8**	**(4)**	**477**
All other fees (1)		**339**	**92**	**2**	**(1)**	**432**
Total other fees		**1,359**	**2,019**	**17**	**(11)**	**3,384**
Mortgage banking (1)		**2,659**	**362**	**(11)**	**7**	**3,017**
Insurance (1)		**83**	**312**	**82**	**(48)**	**429**
Net gains from trading activities (1)		**28**	**516**	**57**	**1**	**602**
Net gains (losses) on debt securities (1)		**(3)**	**102**	**9**	**—**	**108**
Net gains from equity investments (1)		**1,505**	**293**	**(283)**	**—**	**1,515**
Lease income (1)		**—**	**1,753**	**—**	**—**	**1,753**
Other income of the segment (1)		**3,117**	**(322)**	**(21)**	**(301)**	**2,473**
Total noninterest income		**17,694**	**10,016**	**11,935**	**(3,232)**	**36,413**
Revenue	**$**	**46,913**	**28,706**	**16,376**	**(5,587)**	**86,408**
						Year ended December 31, 2017
Net interest income (1)	$	28,658	18,810	4,641	(2,552)	49,557
Noninterest income:						
Service charges on deposit accounts		2,909	2,201	17	(16)	5,111
Trust and investment fees:						
Brokerage advisory, commissions and other fees		1,830	304	9,072	(1,848)	9,358
Trust and investment management		889	523	2,877	(917)	3,372
Investment banking		(59)	1,827	(2)	(1)	1,765
Total trust and investment fees		2,660	2,654	11,947	(2,766)	14,495
Card fees		3,613	345	6	(4)	3,960
Other fees:						
Lending related charges and fees (1)(2)		311	1,257	8	(8)	1,568
Cash network fees		498	8	—	—	506
Commercial real estate brokerage commissions		1	461	—	—	462
Wire transfer and other remittance fees		239	204	9	(4)	448
All other fees (1)		448	124	1	—	573
Total other fees		1,497	2,054	18	(12)	3,557
Mortgage banking (1)		3,895	458	(10)	7	4,350
Insurance (1)		139	872	88	(50)	1,049
Net gains from trading activities (1)		(251)	701	92	—	542
Net gains (losses) on debt securities (1)		709	(232)	2	—	479
Net gains from equity investments (1)		1,455	116	208	—	1,779
Lease income (1)		—	1,907	—	—	1,907
Other income of the segment (1)		1,734	114	63	(308)	1,603
Total noninterest income		18,360	11,190	12,431	(3,149)	38,832
Revenue	$	47,018	30,000	17,072	(5,701)	88,389

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					Year ended December 31, 2016
	Community Banking	Wholesale Banking	Wealth and Investment Management	Other (3)	Consolidated Company
Net interest income (1)	$ 27,333	18,699	4,249	(2,527)	47,754
Noninterest income:					
Service charges on deposit accounts	3,111	2,260	19	(18)	5,372
Trust and investment fees:					
Brokerage advisory, commissions and other fees	1,854	368	8,870	(1,876)	9,216
Trust and investment management	849	473	2,891	(877)	3,336
Investment banking	(141)	1,833	(1)	—	1,691
Total trust and investment fees	2,562	2,674	11,760	(2,753)	14,243
Card fees	3,598	336	6	(4)	3,936
Other fees:					
Lending related charges and fees (1)(2)	364	1,198	8	(8)	1,562
Cash network fees	528	9	—	—	537
Commercial real estate brokerage commissions	—	494	—	—	494
Wire transfer and other remittance fees	219	178	8	(4)	401
All other fees (1)	525	206	2	—	733
Total other fees	1,636	2,085	18	(12)	3,727
Mortgage banking (1)	5,624	475	(9)	6	6,096
Insurance (1)	112	1,156	—	—	1,268
Net gains from trading activities (1)	(148)	677	81	—	610
Net gains (losses) on debt securities (1)	933	8	1	—	942
Net gains from equity investments (1)	804	199	100	—	1,103
Lease income (1)	—	1,927	—	—	1,927
Other income of the segment (1)	948	551	53	(263)	1,289
Total noninterest income	19,180	12,348	12,029	(3,044)	40,513
Revenue	$ 46,513	31,047	16,278	(5,571)	88,267

(1) Most of our revenue is not within the scope of Accounting Standards Update (ASU) 2014-09 – *Revenue from Contracts with Customers,* and additional details are included in other footnotes to our financial statements. The scope explicitly excludes net interest income as well as many other revenues for financial assets and liabilities, including loans, leases, securities, and derivatives.
(2) Represents combined amount of previously reported "Charges and fees on loans" and "Letters of credit fees".
(3) Includes the elimination of certain items that are included in more than one business segment, most of which represents products and services for WIM customers served through Community Banking distribution channels.

We provide services to customers which have related performance obligations that we complete to recognize revenue. Our revenues are generally recognized either immediately upon the completion of our service or over time as we perform services. Any services performed over time generally require that we render services each period and therefore we measure our progress in completing these services based upon the passage of time.

SERVICE CHARGES ON DEPOSIT ACCOUNTS are earned on depository accounts for commercial and consumer customers and include fees for account and overdraft services. Account charges include fees for periodic account maintenance activities and event-driven services such as stop payment fees. Our obligation for event-driven services is satisfied at the time of the event when the service is delivered, while our obligation for maintenance services is satisfied over the course of each month. Our obligation for overdraft services is satisfied at the time of the overdraft.

Table 21.2 presents our service charges on deposit accounts by operating segment.

Table 21.2: Service Charges on Deposit Accounts by Operating Segment

															Year ended December 31,
	Community Banking			Wholesale Banking			Wealth and Investment Management			Other			Consolidated Company		
(in millions)	**2018**	2017	2016	**2018**	2017	2016	**2018**	2017	2016	**2018**	2017	2016	**2018**	2017	2016
Overdraft fees	**$ 1,776**	1,941	2,024	**5**	6	6	**1**	1	—	**—**	—	—	**1,782**	1,948	2,030
Account charges	**865**	968	1,087	**2,069**	2,195	2,254	**15**	16	19	**(15)**	(16)	(18)	**2,934**	3,163	3,342
Service charges on deposit accounts	**$ 2,641**	2,909	3,111	**2,074**	2,201	2,260	**16**	17	19	**(15)**	(16)	(18)	**4,716**	5,111	5,372

BROKERAGE ADVISORY, COMMISSIONS AND OTHER FEES are earned for providing full-service and discount brokerage services predominantly to retail brokerage clients. These revenues include fees earned on asset-based and transactional accounts and other brokerage advisory services.

Asset-based revenues are charged based on the market value of the client's assets. The services and related obligations associated with certain of these revenues, which include investment advice, active management of client assets, or assistance with selecting and engaging a third-party advisory manager, are generally satisfied over a month or quarter. The remaining revenues include trailing commissions which are earned for selling shares to investors. Our obligation associated with earning trailing commissions is satisfied at the time shares are sold. However, these fees are received and recognized over time during the period the customer owns the shares and we remain the broker of record. The amount of trailing commissions is variable based on the length of time the customer holds the shares and on changes in the value of the underlying assets.

Transactional revenues are earned for executing transactions at the client's direction. Our obligation is generally satisfied upon the execution of the transaction and the fees are based on the size and number of transactions executed.

Other revenues earned from other brokerage advisory services include omnibus and networking fees received from mutual fund companies in return for providing record keeping and other administrative services, and annual account maintenance fees charged to customers.

Table 21.3 presents our brokerage advisory, commissions and other fees by operating segment.

Table 21.3: Brokerage Advisory, Commissions and Other Fees by Operating Segment

	Year ended December 31,														
	Community Banking			Wholesale Banking			Wealth and Investment Management			Other			Consolidated Company		
(in millions)	**2018**	2017	2016	**2018**	2017	2016	**2018**	2017	2016	**2018**	2017	2016	**2018**	2017	2016
Asset-based revenue (1)	**$ 1,482**	1,372	1,243	**1**	1	2	**6,899**	6,630	6,164	**(1,484)**	(1,371)	(1,241)	**6,898**	6,632	6,168
Transactional revenue	**340**	382	454	**70**	40	55	**1,618**	1,802	2,032	**(380)**	(400)	(477)	**1,648**	1,824	2,064
Other revenue	**65**	76	157	**246**	263	311	**644**	640	674	**(65)**	(77)	(158)	**890**	902	984
Brokerage advisory, commissions and other fees	**$ 1,887**	1,830	1,854	**317**	304	368	**9,161**	9,072	8,870	**(1,929)**	(1,848)	(1,876)	**9,436**	9,358	9,216

(1) We earned trailing commissions of $1.3 billion for each of the years ended December 31, 2018, 2017, and 2016.

TRUST AND INVESTMENT MANAGEMENT FEES are earned for providing trust, investment management and other related services.

Investment management services include managing and administering assets, including mutual funds, and institutional separate accounts. Fees for these services are generally determined based on a tiered scale relative to the market value of assets under management (AUM). In addition to AUM we have client assets under administration (AUA) that earn various administrative fees which are generally based on the extent of the services provided to administer the account. Services with AUM and AUA-based fees are generally performed over time.

Trust services include acting as a trustee or agent for corporate trust, personal trust, and agency assets. Obligations for trust services are generally satisfied over time, while obligations for activities that are transactional in nature are satisfied at the time of the transaction.

Other related services include the custody and safekeeping of accounts. Our obligation for these services is generally satisfied over time.

Table 21.4 presents our trust and investment management fees by operating segment.

Table 21.4: Trust and Investment Management Fees by Operating Segment

	Year ended December 31,														
	Community Banking			Wholesale Banking			Wealth and Investment Management			Other			Consolidated Company		
(in millions)	**2018**	2017	2016	**2018**	2017	2016	**2018**	2017	2016	**2018**	2017	2016	**2018**	2017	2016
Investment management fees	**$ —**	1	—	**—**	—	—	**2,087**	2,053	2,079	**—**	—	—	**2,087**	2,054	2,079
Trust fees	**908**	887	847	**329**	421	399	**728**	757	738	**(932)**	(916)	(875)	**1,033**	1,149	1,109
Other revenue	**2**	1	2	**116**	102	74	**78**	67	74	**—**	(1)	(2)	**196**	169	148
Trust and investment management fees	**$ 910**	889	849	**445**	523	473	**2,893**	2,877	2,891	**(932)**	(917)	(877)	**3,316**	3,372	3,336

INVESTMENT BANKING FEES are earned for underwriting debt and equity securities, arranging loan syndications and performing other advisory services. Our obligation for these services is generally satisfied at closing of the transaction. Substantially all of these fees are in the Wholesale Banking operating segment.

CARD FEES include credit and debit card interchange and network revenues and various card-related fees. Credit and debit card interchange and network revenues are earned on credit and debit card transactions conducted through payment networks such as Visa, MasterCard, and American Express. Our obligation is satisfied concurrently with the delivery of services on a daily basis.

Table 21.5 presents our card fees by operating segment.

Table 21.5: Card Fees by Operating Segment

															Year ended December 31,
	Community Banking			Wholesale Banking			Wealth and Investment Management			Other			Consolidated Company		
(in millions)	**2018**	2017	2016	**2018**	2017	2016	**2018**	2017	2016	**2018**	2017	2016	**2018**	2017	2016
Credit card interchange and network revenues (1)	**$ 792**	944	959	**361**	345	329	**6**	6	6	**(4)**	(4)	(4)	**1,155**	1,291	1,290
Debit card interchange and network revenues	**2,053**	1,964	1,889	**—**	—	7	**—**	—	—	**—**	—	—	**2,053**	1,964	1,896
Late fees, cash advance fees, balance transfer fees, and annual fees	**698**	705	750	**1**	—	—	**—**	—	—	**—**	—	—	**699**	705	750
Card fees (1)	**$ 3,543**	3,613	3,598	**362**	345	336	**6**	6	6	**(4)**	(4)	(4)	**3,907**	3,960	3,936

(1) The cost of credit card rewards and rebates of $1.4 billion, $1.2 billion and $1.0 billion for the years ended December 31, 2018, 2017 and 2016, respectively, are presented net against the related revenues.

CASH NETWORK FEES are earned for processing ATM transactions. Our obligation is completed daily upon settlement of ATM transactions. Substantially all of these fees are in the Community Banking operating segment.

COMMERCIAL REAL ESTATE BROKERAGE COMMISSIONS are earned for assisting customers in the sale of real estate property. Our obligation is satisfied upon the successful brokering of a transaction. Fees are based on a fixed percentage of the sales price. All of these fees are in the Wholesale Banking operating segment.

WIRE TRANSFER AND OTHER REMITTANCE FEES consist of fees earned for funds transfer services and issuing cashier's checks and money orders. Our obligation is satisfied at the time of the funds transfer services or upon issuance of the cashier's check or money order. Substantially all of these fees are in the Community Banking and Wholesale Banking operating segments.

ALL OTHER FEES include various types of fees earned on services to customers which have related performance obligations that we complete to recognize revenue. A significant portion of the revenue is earned from providing business payroll services and merchant services, which are generally recognized over time as we perform the services. Most of these fees are in the Community Banking operating segment.

Note 22: Employee Benefits and Other Expenses

Pension and Postretirement Plans

We sponsor a frozen noncontributory qualified defined benefit retirement plan, the Wells Fargo & Company Cash Balance Plan (Cash Balance Plan), which covers eligible employees of Wells Fargo. The Cash Balance Plan was frozen on July 1, 2009, and no new benefits accrue after that date.

Prior to July 1, 2009, eligible employees' Cash Balance Plan accounts were allocated a compensation credit based on a percentage of their certified compensation; the freeze discontinued the allocation of compensation credits after June 30, 2009. Investment credits continue to be allocated to participants' accounts based on their accumulated balances.

We did not make a contribution to our Cash Balance Plan in 2018. We do not expect that we will be required to make a contribution to the Cash Balance Plan in 2019; however, this is dependent on the finalization of the actuarial valuation in 2019. Our decision of whether to make a contribution in 2019 will be based on various factors including the actual investment performance of plan assets during 2019. Given these uncertainties, we cannot estimate at this time the amount, if any, that we will contribute in 2019 to the Cash Balance Plan. For the nonqualified pension plans and postretirement benefit plans, there is no minimum required contribution beyond the amount needed to fund benefit payments; we may contribute more to our postretirement benefit plans dependent on various factors.

We recognize settlement losses for our Cash Balance Plan based on assessing whether lump sum payments will, in aggregate for the year, exceed the sum of its annual service and interest cost (threshold). In 2018, lump sum payments (included in the "Benefits paid" line in Table 22.1) exceeded this threshold. Settlement losses of $134 million were recognized in 2018, representing the pro rata portion of the net loss in cumulative other comprehensive income based on the percentage reduction in the Cash Balance Plan's projected benefit obligation attributable to 2018 lump sum payments.

We sponsored the Pension and Life Assurance Plan of Wachovia Bank to employees in the United Kingdom (UK Pension Plan). In September 2017, an annuity contract was entered into that effected a full settlement of this UK Pension Plan, resulting in a plan settlement of $74 million and a settlement loss of $7 million.

Our nonqualified defined benefit plans are unfunded and provide supplemental defined benefit pension benefits to certain eligible employees. The benefits under these plans were frozen in prior years.

We provide health care and life insurance benefits for certain retired employees, and we reserve the right to amend, modify or terminate any of the benefits at any time.

The benefit obligation for the qualified plans, nonqualified plans and other benefits plans was $10.1 billion, $557 million and $555 million, respectively, at December 31, 2018, a decrease from $11.1 billion, $621 million and $611 million, respectively, at December 31, 2017. The decreases were primarily due to benefits paid (net of participant contributions), and actuarial gains, reflecting an increase in the discount rates, see Table 22.5. The information set forth in the following tables is based on current actuarial reports using the measurement date of December 31 for our pension and postretirement benefit plans.

Table 22.1 presents the changes in the benefit obligation and the fair value of plan assets, the funded status, and the amounts recognized on the balance sheet.

Table 22.1: Changes in Benefit Obligation and Fair Value of Plan Assets

	December 31, 2018			December 31, 2017		
	Pension benefits			Pension benefits		
(in millions)	Qualified	Non-qualified	Other benefits	Qualified	Non-qualified	Other benefits
Change in benefit obligation:						
Benefit obligation at beginning of year	$ 11,110	621	611	10,774	630	731
Service cost	11	—	—	5	—	—
Interest cost	392	21	21	412	24	28
Plan participants' contributions	—	—	48	—	—	40
Actuarial loss (gain)	(674)	(27)	(33)	634	46	(102)
Benefits paid	(719)	(57)	(92)	(651)	(79)	(88)
Medicare Part D subsidy	—	—	2	—	—	1
Amendment	1	—	—	—	—	—
Settlement	—	—	—	(74)	—	—
Other	13	—	—	—	—	—
Foreign exchange impact	(5)	(1)	(2)	10	—	1
Benefit obligation at end of year	10,129	557	555	11,110	621	611
Change in plan assets:						
Fair value of plan assets at beginning of year	10,667	—	565	10,120	—	549
Actual return on plan assets	(478)	—	(17)	1,253	—	56
Employer contribution	10	57	5	11	79	7
Plan participants' contributions	—	—	48	—	—	40
Benefits paid	(719)	(57)	(92)	(651)	(79)	(88)
Medicare Part D subsidy	—	—	2	—	—	1
Settlement	—	—	—	(74)	—	—
Other	1	—	—	—	—	—
Foreign exchange impact	(4)	—	—	8	—	—
Fair value of plan assets at end of year	9,477	—	511	10,667	—	565
Funded status at end of year	$ (652)	(557)	(44)	(443)	(621)	(46)
Amounts recognized on the balance sheet at end of year:						
Assets	$ 1	—	—	—	—	—
Liabilities	(653)	(557)	(44)	(443)	(621)	(46)

Table 22.2 provides information for pension and post retirement plans with benefit obligations in excess of plan assets.

Table 22.2: Plans with Benefit Obligations in Excess of Plan Assets

	December 31, 2018		December 31, 2017	
(in millions)	Pension Benefits	Other Benefits	Pension Benefits	Other Benefits
Projected benefit obligation	$ 10,640	N/A	11,721	N/A
Accumulated benefit obligation	10,627	555	11,717	611
Fair value of plan assets	9,429	511	10,656	565

Table 22.3 presents the components of net periodic benefit cost and other comprehensive income (OCI).

Table 22.3: Net Periodic Benefit Cost and Other Comprehensive Income

	December 31, 2018			December 31, 2017			December 31, 2016		
	Pension benefits			Pension benefits			Pension benefits		
(in millions)	**Qualified**	**Non-qualified**	**Other benefits**	Qualified	Non-qualified	Other benefits	Qualified	Non-qualified	Other benefits
Service cost	**$ 11**	**—**	**—**	5	—	—	3	—	—
Interest cost (1)	**392**	**21**	**21**	412	24	28	422	26	39
Expected return on plan assets (1)	**(641)**	**—**	**(31)**	(652)	—	(30)	(608)	—	(30)
Amortization of net actuarial loss (gain) (1)	**131**	**14**	**(18)**	148	11	(9)	146	12	(5)
Amortization of prior service credit (1)	**—**	**—**	**(10)**	—	—	(10)	—	—	(2)
Settlement loss (1)	**134**	**2**	**—**	7	6	—	5	2	—
Net periodic benefit cost	**27**	**37**	**(38)**	(80)	41	(21)	(32)	40	2
Other changes in plan assets and benefit obligations recognized in other comprehensive income:									
Net actuarial loss (gain)	**445**	**(27)**	**15**	33	46	(128)	302	9	(82)
Amortization of net actuarial gain (loss)	**(131)**	**(14)**	**18**	(148)	(11)	9	(146)	(12)	5
Prior service cost (credit) (2)	**1**	**—**	**—**	1	—	—	—	—	(177)
Amortization of prior service credit	**—**	**—**	**10**	—	—	10	—	—	2
Settlement	**(134)**	**(2)**	**—**	(8)	(6)	—	(5)	(2)	—
Total recognized in other comprehensive income	**181**	**(43)**	**43**	(122)	29	(109)	151	(5)	(252)
Total recognized in net periodic benefit cost and other comprehensive income	**$ 208**	**(6)**	**5**	(202)	70	(130)	119	35	(250)

(1) Effective January 1, 2018, we adopted ASU 2017-07 – Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost. Accordingly, 2018 balances are reported in other noninterest expense on the consolidated statement of income. For 2017 and 2016, these balances were reported in employee benefits.
(2) In 2016, a prior service credit of $177 million was recognized for an amendment that reduced the Wells Fargo & Company Retiree Plan obligation.

Table 22.4 provides the amounts recognized in cumulative OCI (pre tax).

Table 22.4: Benefits Recognized in Cumulative OCI

	December 31, 2018			December 31, 2017		
	Pension benefits			Pension benefits		
(in millions)	**Qualified**	**Non-qualified**	**Other benefits**	Qualified	Non-qualified	Other benefits
Net actuarial loss (gain)	**$ 3,336**	**149**	**(327)**	3,156	192	(360)
Net prior service cost (credit)	**1**	**—**	**(156)**	—	—	(166)
Total	**$ 3,337**	**149**	**(483)**	3,156	192	(526)

Plan Assumptions

For additional information on our pension accounting assumptions, see Note 1 (Summary of Significant Accounting Policies). Table 22.5 presents the weighted-average assumptions used to estimate the projected benefit obligation for pension benefits.

Table 22.5: Weighted-Average Assumptions Used to Estimate Projected Benefit Obligation

	December 31, 2018			December 31, 2017		
	Pension benefits			Pension benefits		
	Qualified	**Non-qualified**	**Other benefits**	Qualified	Non-qualified	Other benefits
Discount rate	**4.30%**	**4.20**	**4.24**	3.65	3.55	3.54
Interest crediting rate	**3.22**	**2.18**	**N/A**	2.74	1.54	N/A

Table 22.6 presents the weighted-average assumptions used to determine the net periodic benefit cost.

Table 22.6: Weighted-Average Assumptions Used to Determine Net Periodic Benefit Cost

	December 31, 2018			December 31, 2017			December 31, 2016		
	Pension benefits			Pension benefits			Pension benefits		
	Qualified	**Non-qualified**	**Other benefits**	Qualified	Non-qualified	Other benefits	Qualified	Non-qualified	Other benefits
Discount rate (1)	**3.65%**	**3.65**	**3.54**	3.98	3.93	4.00	3.99	4.11	4.16
Interest crediting rate (1)	**2.74**	**1.68**	**N/A**	2.92	1.85	N/A	3.03	2.02	N/A
Expected return on plan assets	**6.24**	**N/A**	**5.75**	6.70	N/A	5.75	6.75	N/A	5.75

(1) Includes the impact of interim re-measurements as applicable.

To account for postretirement health care plans, we used health care cost trend rates to recognize the effect of expected changes in future health care costs due to medical inflation, utilization changes, new technology, regulatory requirements and Medicare cost shifting. In determining the end of year benefit obligation, we assumed an average annual increase of approximately 8.40% for health care costs in 2019. This rate is assumed to trend down 0.50%-0.60% per year until the trend rate reaches an ultimate rate of 4.50% in 2026. The 2018 periodic benefit cost was determined using an initial annual trend rate of 9.00%. This rate was assumed to decrease 0.40%-0.70% per year until the trend rate reached an ultimate rate of 4.50% in 2026.

Investment Strategy and Asset Allocation

We seek to achieve the expected long-term rate of return with a prudent level of risk, given the benefit obligations of the pension plans and their funded status. Our overall investment strategy is designed to provide our Cash Balance Plan with long-term growth opportunities while ensuring that risk is mitigated through diversification across numerous asset classes and various investment strategies. We target the asset allocation for our Cash Balance Plan at a target mix range of 25%-45% equities, 45%-65% fixed income, and approximately 10% in real estate, venture capital, private equity and other investments. The Employee Benefit Review Committee (EBRC), which includes several members of senior management, formally reviews the investment risk and performance of our Cash Balance Plan on a quarterly basis. Annual Plan liability analysis and periodic asset/liability evaluations are also conducted.

Other benefit plan assets include (1) assets held in a 401(h) trust, which are invested with a target mix of 40%-60% for both equities and fixed income, and (2) assets held in the Retiree Medical Plan Voluntary Employees' Beneficiary Association (VEBA) trust, which are invested with a general target asset mix of 20%-40% equities and 60%-80% fixed income. Members of the EBRC formally review the investment risk and performance of these assets on a quarterly basis.

Projected Benefit Payments

Future benefits that we expect to pay under the pension and other benefit plans are presented in Table 22.7.

Table 22.7: Projected Benefit Payments

	Pension benefits		
(in millions)	Qualified	Non-qualified	Other Benefits
Year ended December 31,			
2019	$ 784	52	46
2020	771	50	48
2021	767	49	48
2022	759	46	47
2023	711	44	46
2024-2028	3,381	199	198

Fair Value of Plan Assets

Table 22.8 presents the balances of pension plan assets and other benefit plan assets measured at fair value. See Note 18 (Fair Values of Assets and Liabilities) for fair value hierarchy level definitions.

Table 22.8: Pension and Other Benefit Plan Assets

	Carrying value at year end							
	Pension plan assets				Other benefits plan assets			
(in millions)	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
December 31, 2018								
Cash and cash equivalents	**$ 2**	**284**	**—**	**286**	**69**	**22**	**—**	**91**
Long duration fixed income (1)	**902**	**4,414**	**—**	**5,316**	**—**	**—**	**—**	**—**
Intermediate (core) fixed income (2)	**—**	**118**	**—**	**118**	**—**	**183**	**—**	**183**
High-yield fixed income	**—**	**114**	**—**	**114**	**—**	**—**	**—**	**—**
International fixed income	**55**	**186**	**—**	**241**	**—**	**—**	**—**	**—**
Domestic large-cap stocks (3)	**582**	**238**	**—**	**820**	**—**	**115**	**—**	**115**
Domestic mid-cap stocks	**167**	**89**	**—**	**256**	**—**	**28**	**—**	**28**
Domestic small-cap stocks	**141**	**7**	**—**	**148**	**—**	**17**	**—**	**17**
Global stocks (4)	**72**	**357**	**—**	**429**	**—**	**—**	**—**	**—**
International stocks (5)	**449**	**110**	**—**	**559**	**9**	**40**	**—**	**49**
Emerging market stocks	**—**	**205**	**—**	**205**	**—**	**—**	**—**	**—**
Real estate	**148**	**33**	**14**	**195**	**—**	**—**	**—**	**—**
Hedge funds/absolute return	**63**	**32**	**—**	**95**	**—**	**—**	**—**	**—**
Other	**34**	**44**	**8**	**86**	**4**	**—**	**24**	**28**
Plan investments - excluding investments at NAV	**$ 2,615**	**6,231**	**22**	**8,868**	**82**	**405**	**24**	**511**
Investments at NAV (6)				**566**				**—**
Net receivables				**43**				**—**
Total plan assets				**$ 9,477**				**511**
December 31, 2017								
Cash and cash equivalents	$ 1	234	—	235	85	23	—	108
Long duration fixed income (1)	875	4,424	—	5,299	—	—	—	—
Intermediate (core) fixed income (2)	—	255	—	255	—	185	—	185
High-yield fixed income	—	267	—	267	—	—	—	—
International fixed income	60	223	—	283	—	—	—	—
Domestic large-cap stocks (3)	825	300	—	1,125	—	130	—	130
Domestic mid-cap stocks	227	133	—	360	—	34	—	34
Domestic small-cap stocks	224	12	—	236	—	20	—	20
Global stocks (4)	89	391	—	480	—	—	—	—
International stocks (5)	542	257	—	799	23	38	—	61
Emerging market stocks	—	305	—	305	—	—	—	—
Real estate	157	31	20	208	—	—	—	—
Hedge funds/absolute return	62	28	—	90	—	—	—	—
Other	—	72	8	80	3	—	23	26
Plan investments - excluding investments at NAV	$ 3,062	6,932	28	10,022	111	430	23	564
Investments at NAV (6)				594				—
Net receivables				51				1
Total plan assets				$ 10,667				565

(1) This category includes a diversified mix of assets, which are being managed in accordance with a duration target of approximately 10 years and an emphasis on corporate credit bonds combined with investments in U.S. Treasury securities and other U.S. agency and non-agency bonds.
(2) This category includes assets that are intermediate duration, investment grade bonds held in investment strategies benchmarked to the Bloomberg Barclays Capital U.S. Aggregate Bond Index, including U.S. Treasury securities, agency and non-agency asset-backed bonds and corporate bonds.
(3) This category covers a broad range of investment styles, including active, enhanced index and passive approaches, as well as style characteristics of value, core and growth emphasized strategies. Assets in this category are currently diversified across eight unique investment strategies with no single investment manager strategy representing more than 2.0% of total plan assets.
(4) This category consists of five unique investment strategies providing exposure to broadly diversified, global equity investments, which generally have an allocation of 40-60% in U.S. domiciled equities and an equivalent allocation range in non-U.S. equities, with no single strategy representing more than 1.5% of total Plan assets.
(5) This category includes assets diversified across four unique investment strategies providing exposure to companies in developed market, non-U.S. countries with no single strategy representing more than 2.5% of total plan assets.
(6) Consists of certain investments that are measured at fair value using NAV per share (or its equivalent) as a practical expedient and are excluded from the fair value hierarchy.

Table 22.9 presents the changes in Level 3 pension plan and other benefit plan assets measured at fair value.

Table 22.9: Fair Value Level 3 Pension and Other Benefit Plan Assets

(in millions)		Balance beginning of year	Gains (losses) Realized	Gains (losses) Unrealized (1)	Purchases, sales and settlements (net)	Transfers Into/ (Out of) Level 3	Balance end of year
Quarter ended December 31, 2018							
Pension plan assets:							
Real estate	**$**	**20**	**(2)**	**(1)**	**(3)**	**—**	**14**
Other		**8**	**—**	**—**	**—**	**—**	**8**
Total pension plan assets	**$**	**28**	**(2)**	**(1)**	**(3)**	**—**	**22**
Other benefits plan assets:							
Other	**$**	**23**	**1**	**—**	**—**	**—**	**24**
Total other benefit plan assets	**$**	**23**	**1**	**—**	**—**	**—**	**24**
Quarter ended December 31, 2017							
Pension plan assets:							
Long duration fixed income	$	19	—	—	—	(19)	—
Real estate		25	(3)	5	(4)	(3)	20
Other		8	—	—	—	—	8
Total pension plan assets	$	52	(3)	5	(4)	(22)	28
Other benefits plan assets:							
Other	$	23	—	—	—	—	23
Total other benefit plan assets	$	23	—	—	—	—	23

(1) All unrealized gains (losses) relate to instruments held at period end.

VALUATION METHODOLOGIES Following is a description of the valuation methodologies used for assets measured at fair value.

Cash and Cash Equivalents – includes investments in collective investment funds valued at fair value based upon the fund's NAV per share held at year-end. The NAV per share is quoted on a private market that is not active; however, the NAV per share is based on underlying investments traded on an active market. This group of assets also includes investments in registered investment companies valued at the NAV per share held at year-end and in interest-bearing bank accounts.

Long Duration, Intermediate (Core), High-Yield, and International Fixed Income – includes investments traded on the secondary markets; prices are measured by using quoted market prices for similar securities, pricing models, and discounted cash flow analyses using significant inputs observable in the market where available, or a combination of multiple valuation techniques. This group of assets also includes highly liquid government securities such as U.S. Treasuries, limited partnerships valued at the NAV, registered investment companies and collective investment funds described above.

Domestic, Global, International and Emerging Market Stocks – investments in exchange-traded equity securities are valued at quoted market values. This group of assets also includes investments in registered investment companies and collective investment funds described above.

Real Estate – includes investments in real estate, which are valued at fair value based on an income capitalization valuation approach. Market values are estimates, and the actual market price of the real estate can only be determined by negotiation between independent third parties in sales transactions. This group of assets also includes investments in exchange-traded equity securities and collective investment funds described above.

Hedge Funds / Absolute Return – includes investments in registered investment companies, and limited partnerships, as described above.

Other – insurance contracts that are stated at cash surrender value. This group of assets also includes investments in registered investment companies and collective investment funds described above.

The methods described above may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. While we believe our valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

Defined Contribution Retirement Plans

We sponsor a qualified defined contribution retirement plan, the Wells Fargo & Company 401(k) Plan (401(k) Plan). Under the 401(k) Plan, after one month of service, eligible employees may contribute up to 50% of their certified compensation, subject to statutory limits. Eligible employees who complete one year of service are eligible for quarterly company matching contributions, which are generally dollar for dollar up to 6% of an employee's eligible certified compensation. Matching contributions are 100% vested. The 401(k) Plan includes an employer discretionary profit sharing contribution feature to allow us to make a contribution to eligible employees' 401(k) Plan accounts for a plan year. Eligible employees who complete one year of service are eligible for profit sharing contributions. Profit sharing contributions are vested after three years of service. Total defined contribution retirement plan expenses were $1.2 billion in each of the following years, 2018, 2017 and 2016.

Other Expenses

Table 22.10 presents expenses exceeding 1% of total interest income and noninterest income in any of the years presented that are not otherwise shown separately in the financial statements or Notes to Financial Statements.

Table 22.10: Other Expenses

	Year ended December 31,		
(in millions)	**2018**	2017	2016
Outside professional services	**$ 3,306**	3,813	3,138
Operating losses	**3,124**	5,492	1,608
Contract services (1)	**2,192**	1,638	1,497
Credit card rewards and rebates (2)	**1,401**	1,201	1,047
Operating leases	**1,334**	1,351	1,329
Outside data processing	**660**	891	888

(1) The periods prior to 2018 have been revised to conform with the current period presentation whereby temporary help is included in contract services rather than in all other noninterest expense.

(2) Noninterest income from card fees is net of cardholder rewards and rebates expense.

Note 23: Income Taxes

On December 22, 2017, the Tax Cuts & Jobs Act (Tax Act) was enacted resulting in significant changes to both domestic tax law and the U.S taxation of foreign subsidiaries. In 2018, we re-measured our provisional estimates of the tax impacts that were recorded in 2017. As a result, during 2018 the Company recognized a $164 million discrete tax expense for adjustments to the provisional tax impacts of the Tax Act included in its consolidated financial statement for the year ended December 31, 2017. The accounting was completed in fourth quarter 2018.

Table 23.1 presents the components of income tax expense.

Table 23.1: Income Tax Expense

	Year ended December 31,		
(in millions)	**2018**	2017	2016
Current:			
Federal	**$ 2,382**	3,507	6,712
State and local	**1,140**	561	1,395
Foreign	**170**	183	175
Total current	**3,692**	4,251	8,282
Deferred:			
Federal	**1,706**	156	1,498
State and local	**236**	564	296
Foreign	**28**	(54)	(1)
Total deferred	**1,970**	666	1,793
Total	**$ 5,662**	4,917	10,075

The tax effects of our temporary differences that gave rise to significant portions of our deferred tax assets and liabilities are presented in Table 23.2.

Table 23.2: Net Deferred Tax Liability

(in millions)	**Dec 31, 2018**	Dec 31, 2017
Deferred tax assets		
Allowance for loan losses	**$ 2,644**	2,816
Deferred compensation and employee benefits	**2,893**	2,377
Accrued expenses	**815**	722
PCI loans	**467**	1,057
Net unrealized losses on debt securities	**1,022**	—
Net operating loss and tax credit carry forwards	**366**	341
Other	**1,272**	986
Total deferred tax assets	**9,479**	8,299
Deferred tax assets valuation allowance	**(315)**	(397)
Deferred tax liabilities		
Mortgage servicing rights	**(3,475)**	(3,421)
Leasing	**(4,271)**	(4,084)
Basis difference in investments	**(1,203)**	(577)
Mark to market, net	**(7,252)**	(5,816)
Intangible assets	**(427)**	(539)
Net unrealized gains on debt securities	**—**	(55)
Insurance reserves	**(696)**	(750)
Other	**(831)**	(821)
Total deferred tax liabilities	**(18,155)**	(16,063)
Net deferred tax liability (1)	**$ (8,991)**	(8,161)

(1) The net deferred tax liability is included in accrued expenses and other liabilities.

Deferred taxes related to net unrealized gains (losses) on debt securities, net unrealized gains (losses) on derivatives, foreign currency translation, and employee benefit plan adjustments are recorded in cumulative OCI (see Note 25 (Other Comprehensive Income)). These associated adjustments increased OCI by $1.1 billion in 2018. In 2018, we adopted ASU 2018-02 – Income Statement-Reporting Comprehensive Income (Topic 220): *Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income,* and reclassified $400 million from OCI to retained earnings. See Note 1 (Summary of Significant Accounting Policies) and Note 25 (Other Comprehensive Income) for more information.

We have determined that a valuation allowance is required for 2018 in the amount of $315 million, predominantly attributable to deferred tax assets in various state and foreign jurisdictions where we believe it is more likely than not that these deferred tax assets will not be realized. In these jurisdictions, carry back limitations, lack of sources of taxable income, and tax planning strategy limitations contributed to our conclusion that the deferred tax assets would not be realizable. We have concluded that it is more likely than not that the remaining deferred tax assets will be realized based on our history of earnings, sources of taxable income in carry back periods, and our ability to implement tax planning strategies.

At December 31, 2018, we had net operating loss carry forwards with related deferred tax assets of $366 million. If these carry forwards are not utilized, they will mostly expire in varying amounts through December 31, 2038.

In 2018, we finalized the recognition of the U.S. tax expense associated with the deemed repatriation of undistributed earnings of certain non-U.S. subsidiaries as required under the 2017 Tax Act. We do not intend to distribute these earnings in a taxable manner, and therefore intend to limit distributions to foreign earnings previously taxed in the U.S., that would qualify for the 100% dividends received deduction, and that would not result in any significant state or foreign taxes. All other undistributed foreign earnings will continue to be permanently reinvested outside the U.S. and the related tax liability on these earnings is insignificant.

Table 23.3 reconciles the statutory federal income tax expense and rate to the effective income tax expense and rate. Our effective tax rate is calculated by dividing income tax expense by income before income tax expense less the net income from noncontrolling interests.

Table 23.3: Effective Income Tax Expense and Rate

						December 31,
		2018		2017		2016
(in millions)	**Amount**	**Rate**	Amount	Rate	Amount	Rate
Statutory federal income tax expense and rate	**$ 5,892**	**21.0%**	$ 9,485	35.0%	$ 11,204	35.0%
Change in tax rate resulting from:						
State and local taxes on income, net of federal income tax benefit	**1,076**	**3.9**	926	3.4	1,004	3.1
Tax-exempt interest	**(494)**	**(1.8)**	(812)	(3.0)	(725)	(2.2)
Tax credits	**(1,537)**	**(5.5)**	(1,419)	(5.2)	(1,251)	(3.9)
Non-deductible accruals	**236**	**0.8**	1,320	4.9	81	0.3
Tax reform	**164**	**0.6**	(3,713)	(13.7)	—	—
Other	**325**	**1.2**	(870)	(3.3)	(238)	(0.8)
Effective income tax expense and rate	**$ 5,662**	**20.2%**	$ 4,917	18.1%	$ 10,075	31.5%

The 2018 effective income tax rate was 20.2%, compared with 18.1% in 2017 and 31.5% in 2016. The 2018 effective income tax rate reflected the reduction to the U.S. federal income tax rate from 35% to 21% resulting from the 2017 Tax Act. It also included income tax expense related to non-deductible litigation accruals and the reconsideration of reserves for state income taxes following the U.S. Supreme Court opinion in *South Dakota v. Wayfair, Inc.* In addition, we recognized $164 million of income tax expense associated with the final re-measurement of our initial estimates for the impacts of the Tax Act, in accordance with ASC Topic 740, Income Taxes and SEC Accounting Bulletin 118.

The 2017 effective income tax rate included an estimated impact of the Tax Act, including a benefit of $3.9 billion resulting from the re-measurement of the Company's estimated net deferred tax liability as of December 31, 2017, partially offset by $173 million of income tax expense for the estimated deemed repatriation of the Company's previously undistributed foreign earnings. The 2017 effective income tax rate also included income tax expense of $1.3 billion related to the effect of discrete non tax-deductible items, predominantly consisting of litigation accruals. The effective income tax rate for 2016 included net reductions in reserves for uncertain tax positions resulting from settlements with tax authorities, partially offset by a net increase in tax benefits related to tax credit investments.

Table 23.4 presents the change in unrecognized tax benefits.

Table 23.4: Change in Unrecognized Tax Benefits

(in millions)	Year ended December 31, 2018	2017
Balance at beginning of year	**$ 5,167**	5,029
Additions:		
For tax positions related to the current year	**393**	367
For tax positions related to prior years	**503**	158
Reductions:		
For tax positions related to prior years	**(262)**	(319)
Lapse of statute of limitations	**(7)**	(48)
Settlements with tax authorities	**(44)**	(20)
Balance at end of year	**$ 5,750**	5,167

Of the $5.8 billion of unrecognized tax benefits at December 31, 2018, approximately $3.9 billion would, if recognized, affect the effective tax rate. The remaining $1.9 billion of unrecognized tax benefits relates to income tax positions on temporary differences.

We recognize interest and penalties related to unrecognized tax benefits as a component of income tax expense. As of December 31, 2018 and 2017, we have accrued approximately $968 million and $726 million, respectively, for the payment of interest and penalties. In 2018, we recognized in income tax expense a net tax expense related to interest and penalties of $200 million. In 2017, we recognized in income tax expense a net tax expense related to interest and penalties of $96 million.

We are subject to U.S. federal income tax as well as income tax in numerous state and foreign jurisdictions. We are routinely examined by tax authorities in these various jurisdictions. The IRS is currently examining the 2013 through 2016 consolidated U.S. federal income tax returns of Wells Fargo & Company and its subsidiaries. In addition, we are currently subject to examination by various state, local and foreign taxing authorities. With few exceptions, Wells Fargo and its subsidiaries are not subject to federal, state, local and foreign income tax examinations for taxable years prior to 2007.

We are litigating or appealing various issues related to prior IRS examinations for the periods 2003 through 2012. For the 2003 through 2006 periods, we have paid the IRS the contested income tax and interest associated with these issues and refund claims have been filed for the respective years. It is possible that one or more of these examinations, appeals or litigation may be resolved within the next twelve months resulting in a decrease of up to $700 million to our gross unrecognized tax benefits.

Note 24: Earnings and Dividends Per Common Share

Table 24.1 shows earnings per common share and diluted earnings per common share and reconciles the numerator and denominator of both earnings per common share calculations. See Note 1 (Summary of Significant Accounting Policies) for discussion of private share repurchases, and the Consolidated Statement of Changes in Equity and Note 20 (Common Stock and Stock Plans) for information about stock and options activity and terms and conditions of warrants.

Table 24.1: Earnings Per Common Share Calculations

		Year ended December 31,		
(in millions, except per share amounts)		**2018**	2017	2016
Wells Fargo net income	$	**22,393**	22,183	21,938
Less: Preferred stock dividends and other (1)		**1,704**	1,629	1,565
Wells Fargo net income applicable to common stock (numerator)	$	**20,689**	20,554	20,373
Earnings per common share				
Average common shares outstanding (denominator)		**4,799.7**	4,964.6	5,052.8
Per share	$	**4.31**	4.14	4.03
Diluted earnings per common share				
Average common shares outstanding		**4,799.7**	4,964.6	5,052.8
Add: Stock options		**8.0**	17.1	18.9
Restricted share rights		**26.3**	24.7	25.9
Warrants		**4.4**	10.9	10.7
Diluted average common shares outstanding (denominator)		**4,838.4**	5,017.3	5,108.3
Per share	$	**4.28**	4.10	3.99

(1) The year ended December 31, 2018, includes $155 million as a result of eliminating the discount on our Series J Preferred Stock, which was redeemed on September 17, 2018.

Table 24.2 presents the outstanding options to purchase shares of common stock that were anti-dilutive (the exercise price was higher than the weighted-average market price), and therefore not included in the calculation of diluted earnings per common share.

Table 24.2: Outstanding Anti-Dilutive Options

	Weighted-average shares		
	Year ended December 31,		
(in millions)	**2018**	2017	2016
Options	**0.3**	1.9	3.2

Table 24.3 presents dividends declared per common share.

Table 24.3: Dividends Declared Per Common Share

		Year ended December 31,		
		2018	2017	2016
Per common share	$	**1.640**	1.540	1.515

Note 25: Other Comprehensive Income

Table 25.1 provides the components of other comprehensive income (OCI), reclassifications to net income by income statement line item, and the related tax effects.

Table 25.1: Summary of Other Comprehensive Income

									Year ended December 31,
			2018			2017			2016
(in millions)	**Before tax**	**Tax effect**	**Net of tax**	Before tax	Tax effect	Net of tax	Before tax	Tax effect	Net of tax
Debt securities (1):									
Net unrealized gains (losses) arising during the period	**$(4,493)**	**1,100**	**(3,393)**	2,719	(1,056)	1,663	(3,458)	1,302	(2,156)
Reclassification of net (gains) losses to net income:									
Interest income on debt securities (2)	**357**	**(88)**	**269**	198	(75)	123	7	(3)	4
Net gains on debt securities	**(108)**	**27**	**(81)**	(479)	181	(298)	(942)	355	(587)
Net gains from equity securities (3)	**—**	**—**	**—**	(456)	172	(284)	(300)	113	(187)
Other noninterest income	**(1)**	**—**	**(1)**	—	—	—	(5)	2	(3)
Subtotal reclassifications to net income	**248**	**(61)**	**187**	(737)	278	(459)	(1,240)	467	(773)
Net change	**(4,245)**	**1,039**	**(3,206)**	1,982	(778)	1,204	(4,698)	1,769	(2,929)
Derivatives and hedging activities:									
Fair Value Hedges:									
Change in fair value of excluded components on fair value hedges (4)	**(254)**	**63**	**(191)**	(253)	95	(158)	—	—	—
Cash Flow Hedges:									
Net unrealized gains (losses) arising during the period on cash flow hedges	**(278)**	**67**	**(211)**	(287)	108	(179)	177	(67)	110
Reclassification of net (gains) losses to net income:									
Interest income on loans	**292**	**(72)**	**220**	(551)	208	(343)	(1,043)	393	(650)
Interest expense on long-term debt	**2**	**—**	**2**	8	(3)	5	14	(5)	9
Subtotal reclassifications to net income	**294**	**(72)**	**222**	(543)	205	(338)	(1,029)	388	(641)
Net change	**(238)**	**58**	**(180)**	(1,083)	408	(675)	(852)	321	(531)
Defined benefit plans adjustments:									
Net actuarial and prior service gains (losses) arising during the period	**(434)**	**106**	**(328)**	49	(12)	37	(52)	(40)	(92)
Reclassification of amounts to noninterest expense and employee benefits (5):									
Amortization of net actuarial loss	**127**	**(31)**	**96**	150	(57)	93	153	(57)	96
Settlements and other	**126**	**(29)**	**97**	3	2	5	5	(1)	4
Subtotal reclassifications to noninterest expense and employee benefits	**253**	**(60)**	**193**	153	(55)	98	158	(58)	100
Net change	**(181)**	**46**	**(135)**	202	(67)	135	106	(98)	8
Foreign currency translation adjustments:									
Net unrealized gains (losses) arising during the period	**(156)**	**1**	**(155)**	96	3	99	(3)	4	1
Net change	**(156)**	**1**	**(155)**	96	3	99	(3)	4	1
Other comprehensive income (loss)	**$(4,820)**	**1,144**	**(3,676)**	1,197	(434)	763	(5,447)	1,996	(3,451)
Less: Other comprehensive loss from noncontrolling interests, net of tax			**(2)**			(62)			(17)
Wells Fargo other comprehensive income (loss), net of tax			**$(3,674)**			825			(3,434)

(1) The years ended December 31, 2017 and 2016, include net unrealized gains (losses) arising during the period from equity securities of $81 million and $259 million and reclassification of net (gains) losses to net income related to equity securities of $(456) million and $(300) million, respectively. In connection with our adoption in first quarter 2018 of ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities*, the year ended December 31, 2018, reflects net unrealized gains (losses) arising during the period and reclassification of net (gains) losses to net income from only debt securities.

(2) Represents net unrealized gains and losses amortized over the remaining lives of securities that were transferred from the available-for-sale portfolio to the held-to-maturity portfolio.

(3) Net gains from equity securities is presented for table presentation purposes. After our adoption of ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities* on January 1, 2018, this line will not contain balances as realized and unrealized gains and losses on marketable equity investments will be recorded in earnings.

(4) Represents changes in fair value of cross-currency swaps attributable to changes in cross-currency basis spreads, which are excluded from the assessment of hedge effectiveness and recorded in other comprehensive income.

(5) Effective January 1, 2018, we adopted ASU 2017-07 – *Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost*. Accordingly, 2018 balances are reclassified to other noninterest expense on the consolidated statement of income. For 2017 and 2016, these balances were reclassified to employee benefits.

Table 25.2 provides the cumulative OCI balance activity on an after-tax basis.

Table 25.2: Cumulative OCI Balances

(in millions)		Debt securities (1)	Derivatives and hedging activities	Defined benefit plans adjustments	Foreign currency translation adjustments	Cumulative other comprehensive income (loss)
Balance, December 31, 2015	$	1,813	620	(1,951)	(185)	297
Net unrealized gains (losses) arising during the period		(2,156)	110	(92)	1	(2,137)
Amounts reclassified from accumulated other comprehensive income		(773)	(641)	100	—	(1,314)
Net change		(2,929)	(531)	8	1	(3,451)
Less: Other comprehensive loss from noncontrolling interests		(17)	—	—	—	(17)
Balance, December 31, 2016		(1,099)	89	(1,943)	(184)	(3,137)
Transition adjustment (2)		—	168	—	—	168
Balance, January 1, 2017		(1,099)	257	(1,943)	(184)	(2,969)
Net unrealized gains (losses) arising during the period		1,663	(337)	37	99	1,462
Amounts reclassified from accumulated other comprehensive income		(459)	(338)	98	—	(699)
Net change		1,204	(675)	135	99	763
Less: Other comprehensive income (loss) from noncontrolling interests		(66)	—	—	4	(62)
Balance, December 31, 2017		171	(418)	(1,808)	(89)	(2,144)
Transition adjustment (3)		**(118)**	**—**	**—**	**—**	**(118)**
Balance, January 1, 2018		**53**	**(418)**	**(1,808)**	**(89)**	**(2,262)**
Reclassification of certain tax effects to retained earnings (4)		**31**	**(87)**	**(353)**	**9**	**(400)**
Net unrealized losses arising during the period		**(3,393)**	**(402)**	**(328)**	**(155)**	**(4,278)**
Amounts reclassified from accumulated other comprehensive income		**187**	**222**	**193**	**—**	**602**
Net change		**(3,175)**	**(267)**	**(488)**	**(146)**	**(4,076)**
Less: Other comprehensive loss from noncontrolling interests		**—**	**—**	**—**	**(2)**	**(2)**
Balance, December 31, 2018	**$**	**(3,122)**	**(685)**	**(2,296)**	**(233)**	**(6,336)**

(1) The years ended December 31, 2017 and 2016, include net unrealized gains (losses) arising during the period from equity securities of $81 million and $259 million and reclassification of net (gains) losses to net income related to equity securities of $(456) million and $(300) million, respectively. In connection with our adoption in first quarter 2018 of ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities*, the year ended December 31, 2018, reflects net unrealized gains (losses) arising during the period and reclassification of net (gains) losses to net income from only debt securities.

(2) Transition adjustment relates to our adoption of ASU 2017-12 – Derivatives and Hedging (Topic 815): *Targeted Improvements to Accounting for Hedging Activities*. See Note 1 (Summary of Significant Accounting Policies) for more information.

(3) The transition adjustment relates to our adoption of ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities*. See Note 1 (Summary of Significant Accounting Policies) for more information.

(4) Represents the reclassification from other comprehensive income to retained earnings as a result of our adoption of ASU 2018-02 – Income Statement-Reporting Comprehensive Income (Topic 220): *Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income* in third quarter 2018. See Note 1 (Summary of Significant Accounting Policies) for more information.

Note 26: Operating Segments

We have three reportable operating segments: Community Banking; Wholesale Banking; and Wealth and Investment Management (WIM). We define our operating segments by product type and customer segment and their results are based on our management accounting process, for which there is no comprehensive, authoritative guidance equivalent to GAAP for financial accounting. The management accounting process measures the performance of the operating segments based on our management structure and is not necessarily comparable with similar information for other financial services companies. If the management structure and/or the allocation process changes, allocations, transfers and assignments may change. Effective first quarter 2018, we adopted a new funds transfer pricing methodology to allow for better comparability of performance across the Company. Under the new methodology, assets and liabilities receive a funding charge or credit that considers interest rate risk, liquidity risk, and other product characteristics on a more granular level. This methodology change affects results across all three of our reportable operating segments and prior period operating segment results have been revised to reflect this methodology change. Our previously reported consolidated financial results were not impacted by the methodology change; however, in connection with our adoption of ASU 2016-01 in first quarter 2018, certain reclassifications have occurred within noninterest income.

Community Banking offers a complete line of diversified financial products and services for consumers and small businesses with annual sales generally up to $5 million in which the owner generally is the financial decision maker. These financial products and services include checking and savings accounts, credit and debit cards, and automobile, student, mortgage, home equity and small business lending, as well as referrals to Wholesale Banking and WIM business partners.

Community Banking serves customers through a complete range of channels, including traditional and in-supermarket and other small format branches, ATMs, digital (online, mobile, and social), and contact centers (phone, email and correspondence).

The Community Banking segment also includes the results of our Corporate Treasury activities net of allocations (including funds transfer pricing, capital, liquidity and certain corporate expenses) in support of other segments and results of investments in our affiliated venture capital and private equity partnerships.

Wholesale Banking provides financial solutions to businesses across the United States with annual sales generally in excess of $5 million and to financial institutions globally. Wholesale Banking provides a complete line of commercial, corporate, capital markets, cash management and real estate banking products and services. These include traditional commercial loans and lines of credit, letters of credit, asset-based lending, equipment leasing, international trade facilities, trade financing, collection services, foreign exchange services, treasury management, merchant payment processing, institutional fixed-income sales, interest rate, commodity and equity risk management, online/electronic products such as the *Commercial Electronic Office®* (*CEO®*) portal, corporate trust fiduciary and agency services, and investment banking services. Wholesale Banking also supports the CRE market with products and services such as construction loans for commercial and residential development, land acquisition and development loans, secured and unsecured lines of credit, interim financing arrangements for completed structures, rehabilitation loans, affordable housing loans and letters of credit, permanent loans for securitization, CRE loan servicing and real estate and mortgage brokerage services.

Wealth and Investment Management provides a full range of personalized wealth management, investment and retirement products and services to clients across U.S. based businesses including Wells Fargo Advisors, The Private Bank, Abbot Downing, Wells Fargo Institutional Retirement and Trust, and Wells Fargo Asset Management. We deliver financial planning, private banking, credit, investment management and fiduciary services to high-net worth and ultra-high-net worth individuals and families. We also serve clients' brokerage needs, supply retirement and trust services to institutional clients and provide investment management capabilities delivered to global institutional clients through separate accounts and the Wells Fargo Funds.

Other includes the elimination of certain items that are included in more than one business segment, most of which represents products and services for Wealth and Investment Management customers served through Community Banking distribution channels.

Table 26.1 presents our results by operating segment.

Table 26.1: Operating Segments

(income/expense in millions, average balances in billions)		Community Banking	Wholesale Banking	Wealth and Investment Management	Other (1)	Consolidated Company
2018						
Net interest income (2)	**$**	**29,219**	**18,690**	**4,441**	**(2,355)**	**49,995**
Provision (reversal of provision) for credit losses		**1,783**	**(58)**	**(5)**	**24**	**1,744**
Noninterest income		**17,694**	**10,016**	**11,935**	**(3,232)**	**36,413**
Noninterest expense		**30,491**	**16,157**	**12,938**	**(3,460)**	**56,126**
Income (loss) before income tax expense (benefit)		**14,639**	**12,607**	**3,443**	**(2,151)**	**28,538**
Income tax expense (benefit)		**3,784**	**1,555**	**861**	**(538)**	**5,662**
Net income (loss) before noncontrolling interests		**10,855**	**11,052**	**2,582**	**(1,613)**	**22,876**
Less: Net income from noncontrolling interests		**461**	**20**	**2**	**—**	**483**
Net income (loss) (3)	**$**	**10,394**	**11,032**	**2,580**	**(1,613)**	**22,393**
2017 (4)						
Net interest income (2)	$	28,658	18,810	4,641	(2,552)	49,557
Provision (reversal of provision) for credit losses		2,555	(19)	(5)	(3)	2,528
Noninterest income		18,360	11,190	12,431	(3,149)	38,832
Noninterest expense		32,615	16,624	12,623	(3,378)	58,484
Income (loss) before income tax expense (benefit)		11,848	13,395	4,454	(2,320)	27,377
Income tax expense (benefit)		634	3,496	1,668	(881)	4,917
Net income (loss) before noncontrolling interests		11,214	9,899	2,786	(1,439)	22,460
Less: Net income (loss) from noncontrolling interests		276	(15)	16	—	277
Net income (loss) (3)	$	10,938	9,914	2,770	(1,439)	22,183
2016 (4)						
Net interest income (2)	$	27,333	18,699	4,249	(2,527)	47,754
Provision (reversal of provision) for credit losses		2,691	1,073	(5)	11	3,770
Noninterest income		19,180	12,348	12,029	(3,044)	40,513
Noninterest expense		27,655	15,901	12,051	(3,230)	52,377
Income (loss) before income tax expense (benefit)		16,167	14,073	4,232	(2,352)	32,120
Income tax expense (benefit)		5,213	4,159	1,596	(893)	10,075
Net income (loss) before noncontrolling interests		10,954	9,914	2,636	(1,459)	22,045
Less: Net income (loss) from noncontrolling interests		136	(28)	(1)	—	107
Net income (loss) (3)	$	10,818	9,942	2,637	(1,459)	21,938
2018						
Average loans	**$**	**463.7**	**465.7**	**74.6**	**(58.8)**	**945.2**
Average assets		**1,034.1**	**830.5**	**83.9**	**(59.6)**	**1,888.9**
Average deposits		**757.2**	**423.7**	**165.0**	**(70.0)**	**1,275.9**
2017 (4)						
Average loans		475.7	465.6	71.9	(57.1)	956.1
Average assets		1,085.5	822.8	82.8	(58.1)	1,933.0
Average deposits		729.6	464.2	189.0	(78.2)	1,304.6

(1) Includes the elimination of certain items that are included in more than one business segment, most of which represents products and services for Wealth and Investment Management customers served through Community Banking distribution channels.
(2) Net interest income is the difference between interest earned on assets and the cost of liabilities to fund those assets. Interest earned includes actual interest earned on segment assets as well as as interest credits for any funding of a segment available to be provided to other segments. The cost of liabilities includes actual interest expense on segment liabilities as well as funding charges for any funding provided from other segments.
(3) Represents segment net income (loss) for Community Banking; Wholesale Banking; and Wealth and Investment Management segments and Wells Fargo net income for the consolidated company.
(4) Prior period operating segment results have been revised to reflect a methodology change of allocating funding charges and credits.

Note 27: Parent-Only Financial Statements

The following tables present Parent-only condensed financial statements.

Table 27.1: Parent-Only Statement of Income

			Year ended December 31,	
(in millions)		**2018**	2017	2016
Income				
Dividends from subsidiaries (1)	$	**22,427**	20,746	12,776
Interest income from subsidiaries		**3,298**	1,984	1,615
Other interest income		**49**	146	155
Other income		**(424)**	1,238	177
Total income		**25,350**	24,114	14,723
Expense				
Interest expense:				
Indebtedness to nonbank subsidiaries		**644**	189	387
Short-term borrowings		**2**	—	—
Long-term debt		**4,541**	3,595	2,619
Other		**3**	5	19
Noninterest expense		**286**	1,888	1,300
Total expense		**5,476**	5,677	4,325
Income before income tax benefit and equity in undistributed income of subsidiaries		**19,874**	18,437	10,398
Income tax benefit		**(544)**	(319)	(1,152)
Equity in undistributed income of subsidiaries		**1,975**	3,427	10,388
Net income	$	**22,393**	22,183	21,938

(1) Includes dividends paid from indirect bank subsidiaries of $20.8 billion, $17.9 billion and $12.5 billion in 2018, 2017 and 2016, respectively.

Table 27.2: Parent-Only Statement of Comprehensive Income

			Year ended December 31,	
(in millions)		**2018**	2017	2016
Net income	$	**22,393**	22,183	21,938
Other comprehensive income (loss), net of tax:				
Debt securities (1)		**(12)**	94	(76)
Derivatives and hedging activities		**(198)**	(158)	—
Defined benefit plans adjustment		**(132)**	118	(20)
Equity in other comprehensive income (loss) of subsidiaries		**(3,332)**	771	(3,338)
Other comprehensive income (loss), net of tax:		**(3,674)**	825	(3,434)
Total comprehensive income	$	**18,719**	23,008	18,504

(1) The years ended December 31, 2017 and 2016, includes net unrealized gains arising during the period from equity securities of $3 million and $7 million and reclassification of net (gains) to net income related to equity securities of $(21) million and $(30) million, respectively. In connection with our adoption in first quarter 2018 of ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities*, the year ended December 31, 2018, reflects net unrealized gains (losses) arising during the period and reclassification of net (gains) losses to net income from only debt securities.

Table 27.3: Parent-Only Balance Sheet

(in millions)		Dec 31, 2018		Dec 31, 2017
Assets				
Cash, cash equivalents, and restricted cash due from (1):				
Subsidiary banks	$	**16,301**		23,180
Nonaffiliates		**—**		1
Debt securities:				
Trading, at fair value (2)		**—**		24
Available-for-sale, at fair value (2)		**1**		5
Loans to nonbank subsidiaries		**139,163**		138,681
Investments in subsidiaries (3)		**202,695**		206,367
Equity securities (2)		**2,164**		2,414
Other assets (2)		**4,639**		4,731
Total assets	$	**364,963**		375,403
Liabilities and equity				
Accrued expenses and other liabilities	$	**6,986**	$	7,902
Long-term debt		**135,079**		146,130
Indebtedness to nonbank subsidiaries		**26,732**		14,435
Total liabilities		**168,797**		168,467
Stockholders' equity		**196,166**		206,936
Total liabilities and equity	$	**364,963**		375,403

(1) Financial information has been revised to reflect the impact of our adoption in first quarter 2018 of ASU 2016-18 – Statement of Cash Flows (Topic 230): *Restricted Cash* in which we changed the presentation of our cash and cash equivalents to include both cash and due from banks as well as interest-earning deposits with banks, which are inclusive of restricted cash. See Note 1 (Summary of Significant Accounting Policies) for more information.

(2) Financial information for the prior period has been revised to reflect presentation changes made in connection with our adoption in first quarter 2018 of ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities*. See Note 1 (Summary of Significant Accounting Policies) for more information.

(3) The years ended December 31, 2018, and December 31, 2017, include indirect ownership of bank subsidiaries with equity of $167.6 billion and $170.5 billion, respectively.

Table 27.4: Parent-Only Statement of Cash Flows

(in millions)		Year ended December 31, 2018	2017	2016
Cash flows from operating activities:				
Net cash provided by operating activities (1)	$	**19,024**	22,233	10,654
Cash flows from investing activities:				
Available-for-sale debt securities:				
Proceeds from sales:				
Subsidiary banks		**—**	8,658	—
Nonaffiliates (1)		**—**	8,824	5,201
Prepayments and maturities:				
Subsidiary banks		**—**	10,250	15,000
Purchases:				
Subsidiary banks		**—**	(3,900)	(15,000)
Nonaffiliates		**—**	—	(6,544)
Equity securities, not held for trading:				
Proceeds from sales and capital returns (1)		**355**	743	583
Purchases (1)		**(220)**	(215)	(314)
Loans:				
Net repayments from (advances to) subsidiaries		**(7)**	(35,876)	3,174
Capital notes and term loans made to subsidiaries		**(2,441)**	(73,729)	(32,641)
Principal collected on notes/loans made to subsidiaries		**756**	69,286	15,164
Net decrease (increase) in investment in subsidiaries		**2,407**	(2,029)	(606)
Other, net		**109**	113	18
Net cash provided (used) by investing activities		**959**	(17,875)	(15,965)
Cash flows from financing activities:				
Net increase (decrease) in short-term borrowings and indebtedness to subsidiaries		**12,467**	(8,685)	789
Long-term debt:				
Proceeds from issuance		**1,876**	22,217	34,362
Repayment		**(9,162)**	(13,709)	(15,096)
Preferred stock:				
Proceeds from issuance		**—**	677	2,101
Redeemed		**(2,150)**	—	—
Cash dividends paid		**(1,622)**	(1,629)	(1,566)
Common stock:				
Proceeds from issuance		**632**	1,211	1,415
Stock tendered for payment of withholding taxes		**(331)**	(393)	(494)
Repurchased		**(20,633)**	(9,908)	(8,116)
Cash dividends paid		**(7,692)**	(7,480)	(7,472)
Other, net		**(248)**	(138)	(118)
Net cash provided (used) by financing activities		**(26,863)**	(17,837)	5,805
Net change in cash, cash equivalents, and restricted cash (2)		**(6,880)**	(13,479)	494
Cash, cash equivalents, and restricted cash at beginning of year (2)		**23,181**	36,660	36,166
Cash, cash equivalents, and restricted cash at end of year (2)	$	**16,301**	23,181	36,660

(1) Financial information for the prior period has been revised to reflect presentation changes made in connection with our adoption in first quarter 2018 of ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities*. See Note 1 (Summary of Significant Accounting Policies) for more information.

(2) Financial information has been revised to reflect the impact of our adoption in first quarter 2018 of ASU 2016-18 – Statement of Cash Flows (Topic 230): *Restricted Cash* in which we changed the presentation of our cash and cash equivalents to include both cash and due from banks as well as interest-earning deposits with banks, which are inclusive of restricted cash. See Note 1 (Summary of Significant Accounting Policies) for more information.

Note 28: Regulatory and Agency Capital Requirements

The Company and each of its subsidiary banks are subject to regulatory capital adequacy requirements promulgated by federal bank regulatory agencies. The Federal Reserve establishes capital requirements for the consolidated financial holding company, and the OCC has similar requirements for the Company's national banks, including Wells Fargo Bank, N.A. (the Bank).

Table 28.1 presents regulatory capital information for Wells Fargo & Company and the Bank using Basel III, which increased minimum required capital ratios, and introduced a minimum Common Equity Tier 1 (CET1) ratio. We must report the lower of our CET1, tier 1 and total capital ratios calculated under the Standardized Approach and under the Advanced Approach in the assessment of our capital adequacy. The Standardized Approach applies assigned risk weights to broad risk categories, while the calculation of risk-weighted assets (RWAs) under the Advanced Approach differs by requiring applicable banks to utilize a risk-sensitive methodology, which relies upon the use of internal credit models, and includes an operational risk component. The Basel III capital rules are being phased-in effective January 1, 2014, through the end of 2021. Beginning January 1, 2018, the requirements for calculating CET1 and tier 1 capital, along with RWAs, became fully phased-in. Accordingly, the information presented reflects fully phased-in CET1 capital, tier 1 capital, and RWAs, but reflects total capital still in accordance with Transition Requirements.

The Bank is an approved seller/servicer of mortgage loans and is required to maintain minimum levels of shareholders' equity, as specified by various agencies, including the United States Department of Housing and Urban Development, GNMA, FHLMC and FNMA. At December 31, 2018, the Bank met these requirements. Other subsidiaries, including the Company's insurance and broker-dealer subsidiaries, are also subject to various minimum capital levels, as defined by applicable industry regulations. The minimum capital levels for these subsidiaries, and related restrictions, are not significant to our consolidated operations.

Table 28.1: Regulatory Capital Information

	Wells Fargo & Company				Wells Fargo Bank, N.A.			
	December 31, 2018		December 31, 2017		**December 31, 2018**		December 31, 2017	
(in millions, except ratios)	Advanced Approach	Standardized Approach	Advanced Approach	Standardized Approach	Advanced Approach	Standardized Approach	Advanced Approach	Standardized Approach
Regulatory capital:								
Common equity tier 1	**$ 146,363**	**146,363**	154,765	154,765	**142,685**	**142,685**	143,292	143,292
Tier 1	**167,866**	**167,866**	178,209	178,209	**142,685**	**142,685**	143,292	143,292
Total	**198,798**	**207,041**	210,333	220,097	**155,558**	**163,380**	156,661	165,734
Assets:								
Risk-weighted assets	**$ 1,177,350**	**1,247,210**	1,199,545	1,260,663	**1,058,653**	**1,154,182**	1,090,360	1,169,863
Adjusted average assets (1)	**1,850,299**	**1,850,299**	1,905,568	1,905,568	**1,652,009**	**1,652,009**	1,708,828	1,708,828
Regulatory capital ratios:								
Common equity tier 1 capital	**12.43%**	**11.74 ***	12.90	12.28 *	**13.48**	**12.36 ***	13.14	12.25 *
Tier 1 capital	**14.26**	**13.46 ***	14.86	14.14 *	**13.48**	**12.36 ***	13.14	12.25 *
Total capital	**16.89**	**16.60 ***	17.53	17.46 *	**14.69**	**14.16 ***	14.37	14.17 *
Tier 1 leverage (1)	**9.07**	**9.07**	9.35	9.35	**8.64**	**8.64**	8.39	8.39

*Denotes the lowest capital ratio as determined under the Advanced and Standardized Approaches.
(1) The leverage ratio consists of Tier 1 capital divided by quarterly average total assets, excluding goodwill and certain other items.

Table 28.2 presents the minimum required regulatory capital ratios under Transition Requirements to which the Company and the Bank were subject as of December 31, 2018, and December 31, 2017.

Table 28.2: Minimum Required Regulatory Capital Ratios – Transition Requirements (1)

	Wells Fargo & Company		Wells Fargo Bank, N.A.	
	December 31, 2018	December 31, 2017	**December 31, 2018**	December 31, 2017
Regulatory capital ratios:				
Common equity tier 1 capital	**7.875%**	6.750	**6.375**	5.750
Tier 1 capital	**9.375**	8.250	**7.875**	7.250
Total capital	**11.375**	10.250	**9.875**	9.250
Tier 1 leverage	**4.000**	4.000	**4.000**	4.000

(1) At December 31, 2018, under transition requirements, the CET1, tier 1 and total capital minimum ratio requirements for Wells Fargo & Company include a capital conservation buffer of 1.875% and a global systemically important bank (G-SIB) surcharge of 1.500%. Only the 1.875% capital conservation buffer applies to the Bank at December 31, 2018.

Report of Independent Registered Public Accounting Firm

The Stockholders and Board of Directors
Wells Fargo & Company:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Wells Fargo & Company and Subsidiaries (the Company) as of December 31, 2018 and 2017, the related consolidated statements of income, comprehensive income, changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2018, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 27, 2019, expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

KPMG LLP

We have served as the Company's auditor since 1931.

San Francisco, California
February 27, 2019

Quarterly Financial Data

Condensed Consolidated Statement of Income - Quarterly (Unaudited)

				2018				2017
				Quarter ended				Quarter ended
(in millions, except per share amounts)	**Dec 31,**	**Sep 30,**	**Jun 30,**	**Mar 31,**	Dec 31,	Sep 30,	Jun 30,	Mar 31,
Interest income	**$16,921**	**16,364**	**16,015**	**15,347**	14,958	15,044	14,694	14,213
Interest expense	**4,277**	**3,792**	**3,474**	**3,109**	2,645	2,595	2,223	1,889
Net interest income	**12,644**	**12,572**	**12,541**	**12,238**	12,313	12,449	12,471	12,324
Provision for credit losses	**521**	**580**	**452**	**191**	651	717	555	605
Net interest income after provision for credit losses	**12,123**	**11,992**	**12,089**	**12,047**	11,662	11,732	11,916	11,719
Noninterest income								
Service charges on deposit accounts	**1,176**	**1,204**	**1,163**	**1,173**	1,246	1,276	1,276	1,313
Trust and investment fees	**3,520**	**3,631**	**3,675**	**3,683**	3,687	3,609	3,629	3,570
Card fees	**981**	**1,017**	**1,001**	**908**	996	1,000	1,019	945
Other fees	**888**	**850**	**846**	**800**	913	877	902	865
Mortgage banking	**467**	**846**	**770**	**934**	928	1,046	1,148	1,228
Insurance	**109**	**104**	**102**	**114**	223	269	280	277
Net gains (losses) from trading activities (1)	**10**	**158**	**191**	**243**	(1)	120	151	272
Net gains on debt securities	**9**	**57**	**41**	**1**	157	166	120	36
Net gains from equity securities (1)	**21**	**416**	**295**	**783**	572	363	274	570
Lease income	**402**	**453**	**443**	**455**	458	475	493	481
Other	**753**	**633**	**485**	**602**	558	199	472	374
Total noninterest income	**8,336**	**9,369**	**9,012**	**9,696**	9,737	9,400	9,764	9,931
Noninterest expense								
Salaries	**4,545**	**4,461**	**4,465**	**4,363**	4,403	4,356	4,343	4,261
Commission and incentive compensation	**2,427**	**2,427**	**2,642**	**2,768**	2,665	2,553	2,499	2,725
Employee benefits	**706**	**1,377**	**1,245**	**1,598**	1,293	1,279	1,308	1,686
Equipment	**643**	**634**	**550**	**617**	608	523	529	577
Net occupancy	**735**	**718**	**722**	**713**	715	716	706	712
Core deposit and other intangibles	**264**	**264**	**265**	**265**	288	288	287	289
FDIC and other deposit assessments	**153**	**336**	**297**	**324**	312	314	328	333
Other	**3,866**	**3,546**	**3,796**	**4,394**	6,516	4,322	3,541	3,209
Total noninterest expense	**13,339**	**13,763**	**13,982**	**15,042**	16,800	14,351	13,541	13,792
Income before income tax expense	**7,120**	**7,598**	**7,119**	**6,701**	4,599	6,781	8,139	7,858
Income tax expense (benefit)	**966**	**1,512**	**1,810**	**1,374**	(1,642)	2,181	2,245	2,133
Net income before noncontrolling interests	**6,154**	**6,086**	**5,309**	**5,327**	6,241	4,600	5,894	5,725
Less: Net income from noncontrolling interests	**90**	**79**	**123**	**191**	90	58	38	91
Wells Fargo net income	**$ 6,064**	**6,007**	**5,186**	**5,136**	6,151	4,542	5,856	5,634
Less: Preferred stock dividends and other	**353**	**554**	**394**	**403**	411	411	406	401
Wells Fargo net income applicable to common stock	**$ 5,711**	**5,453**	**4,792**	**4,733**	5,740	4,131	5,450	5,233
Per share information								
Earnings per common share	**$ 1.22**	**1.14**	**0.98**	**0.97**	1.17	0.83	1.09	1.05
Diluted earnings per common share	**1.21**	**1.13**	**0.98**	**0.96**	1.16	0.83	1.08	1.03
Average common shares outstanding	**4,665.8**	**4,784.0**	**4,865.8**	**4,885.7**	4,912.5	4,948.6	4,989.9	5,008.6
Diluted average common shares outstanding	**4,700.8**	**4,823.2**	**4,899.8**	**4,930.7**	4,963.1	4,996.8	5,037.7	5,070.4

(1) Financial information for the prior periods of 2017 has been revised to reflect presentation changes made in connection with our adoption in first quarter 2018 of Accounting Standards Update (ASU) 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities*. See Note 1 (Summary of Significant Accounting Policies) for more information.

Average Balances, Yields and Rates Paid (Taxable-Equivalent basis) - Quarterly (1)(2) - (Unaudited)

	Quarter ended December 31,					
	2018			2017		
(in millions)	**Average balance**	**Yields/ rates**	**Interest income/ expense**	Average balance	Yields/ rates	Interest income/ expense
Earning assets						
Interest-earning deposits with banks (3)	**$ 150,091**	**2.18%**	**$ 825**	189,114	1.27%	$ 605
Federal funds sold and securities purchased under resale agreements (3)	**76,108**	**2.22**	**426**	75,826	1.20%	230
Debt securities (4):						
Trading debt securities (5)	**90,110**	**3.52**	**794**	81,580	3.17	647
Available-for-sale debt securities:						
Securities of U.S. Treasury and federal agencies	**7,195**	**1.80**	**32**	6,423	1.66	27
Securities of U.S. states and political subdivisions	**47,618**	**4.05**	**483**	52,390	3.91	513
Mortgage-backed securities:						
Federal agencies	**155,322**	**2.91**	**1,128**	152,910	2.62	1,000
Residential and commercial	**6,666**	**4.87**	**81**	9,371	4.85	114
Total mortgage-backed securities	**161,988**	**2.99**	**1,209**	162,281	2.75	1,114
Other debt securities (5)	**46,072**	**4.46**	**518**	48,679	3.62	443
Total available-for-sale debt securities (5)	**262,873**	**3.41**	**2,242**	269,773	3.10	2,097
Held-to-maturity debt securities:						
Securities of U.S. Treasury and federal agencies	**44,747**	**2.19**	**247**	44,716	2.19	246
Securities of U.S. states and political subdivisions	**6,247**	**4.34**	**67**	6,263	5.26	83
Federal agency and other mortgage-backed securities	**95,748**	**2.46**	**589**	89,622	2.25	503
Other debt securities	**68**	**3.65**	**1**	1,194	2.64	8
Total held-to-maturity debt securities	**146,810**	**2.46**	**904**	141,795	2.36	840
Total debt securities (5)	**499,793**	**3.15**	**3,940**	493,148	2.90	3,584
Mortgages loans held for sale (6)	**17,044**	**4.46**	**190**	20,517	3.82	196
Loans held for sale (5)(6)	**1,992**	**6.69**	**33**	1,490	3.19	12
Commercial loans:						
Commercial and industrial - U.S.	**281,431**	**4.40**	**3,115**	270,294	3.89	2,649
Commercial and industrial - Non-U.S.	**62,035**	**3.73**	**584**	59,233	2.96	442
Real estate mortgage	**120,404**	**4.51**	**1,369**	127,199	3.88	1,244
Real estate construction	**23,090**	**5.32**	**310**	24,408	4.38	270
Lease financing	**19,519**	**4.48**	**219**	19,226	0.62	31
Total commercial loans	**506,479**	**4.39**	**5,597**	500,360	3.68	4,636
Consumer loans:						
Real estate 1-4 family first mortgage	**285,260**	**4.02**	**2,868**	281,966	4.01	2,826
Real estate 1-4 family junior lien mortgage	**34,844**	**5.60**	**491**	40,379	4.96	505
Credit card	**37,858**	**12.69**	**1,211**	36,428	12.37	1,136
Automobile	**45,536**	**5.16**	**592**	54,323	5.13	702
Other revolving credit and installment	**36,359**	**6.95**	**637**	38,366	6.28	607
Total consumer loans	**439,857**	**5.25**	**5,799**	451,462	5.10	5,776
Total loans (6)	**946,336**	**4.79**	**11,396**	951,822	4.35	10,412
Equity securities (5)	**37,412**	**2.79**	**261**	38,001	2.60	246
Other (5)	**4,074**	**1.78**	**18**	7,103	0.88	16
Total earning assets (5)	**$ 1,732,850**	**3.93%**	**$ 17,089**	1,777,021	3.43%	$ 15,301
Funding sources						
Deposits:						
Interest-bearing checking	**$ 53,983**	**1.21%**	**$ 165**	50,483	0.68%	$ 86
Market rate and other savings	**689,639**	**0.43**	**741**	679,893	0.19	319
Savings certificates	**21,955**	**0.87**	**48**	20,920	0.31	17
Other time deposits	**92,676**	**2.46**	**575**	68,187	1.49	255
Deposits in foreign offices	**56,098**	**1.66**	**236**	124,597	0.81	254
Total interest-bearing deposits	**914,351**	**0.77**	**1,765**	944,080	0.39	931
Short-term borrowings	**105,962**	**2.04**	**546**	102,142	0.99	256
Long-term debt	**226,591**	**3.17**	**1,802**	231,598	2.32	1,344
Other liabilities	**27,365**	**2.41**	**164**	24,728	1.86	115
Total interest-bearing liabilities	**1,274,269**	**1.34**	**4,277**	1,302,548	0.81	2,646
Portion of noninterest-bearing funding sources (5)	**458,581**	**—**	**—**	474,473	—	—
Total funding sources (5)	**$ 1,732,850**	**0.99**	**4,277**	1,777,021	0.59	2,646
Net interest margin and net interest income on a taxable-equivalent basis (7)		**2.94%**	**$ 12,812**		2.84%	$ 12,655
Noninterest-earning assets						
Cash and due from banks	**$ 19,288**			19,152		
Goodwill	**26,423**			26,579		
Other (5)	**100,486**			112,566		
Total noninterest-earning assets (5)	**$ 146,197**			158,297		
Noninterest-bearing funding sources						
Deposits	**$ 354,597**			367,512		
Other liabilities	**51,739**			57,845		
Total equity	**198,442**			207,413		
Noninterest-bearing funding sources used to fund earning assets (5)	**(458,581)**			(474,473)		
Net noninterest-bearing funding sources (5)	**$ 146,197**			158,297		
Total assets	**$ 1,879,047**			1,935,318		

(1) Our average prime rate was 5.28% and 4.30% for the quarters ended December 31, 2018 and 2017, respectively. The average three-month London Interbank Offered Rate (LIBOR) was 2.62% and 1.46% for the same quarters, respectively.

(2) Yield/rates and amounts include the effects of hedge and risk management activities associated with the respective asset and liability categories.

(3) Financial information for the prior period has been revised to reflect the impact of our adoption of Accounting Standards Update (ASU) 2016-18 – Statement of Cash Flows (Topic 230): *Restricted Cash* in which we changed the presentation of our cash and cash equivalents to include both cash and due from banks as well as interest-earning deposits with banks, which are inclusive of any restricted cash.

(4) Yields and rates are based on interest income/expense amounts for the period, annualized based on the accrual basis for the respective accounts. The average balance amounts represent amortized cost for the periods presented.

(5) Financial information for the prior period has been revised to reflect presentation changes made in connection with our adoption in first quarter 2018 of ASU 2016-01 – Financial Instruments – Overall (Subtopic 825-10): *Recognition and Measurement of Financial Assets and Financial Liabilities.*

(6) Nonaccrual loans and related income are included in their respective loan categories.

(7) Includes taxable-equivalent adjustments of $168 million and $342 million for the quarters ended December 31, 2018 and 2017, respectively, predominantly related to tax-exempt income on certain loans and securities. The federal statutory tax rate was 21% and 35% for the periods ended December 31, 2018 and 2017, respectively.

Glossary of Acronyms

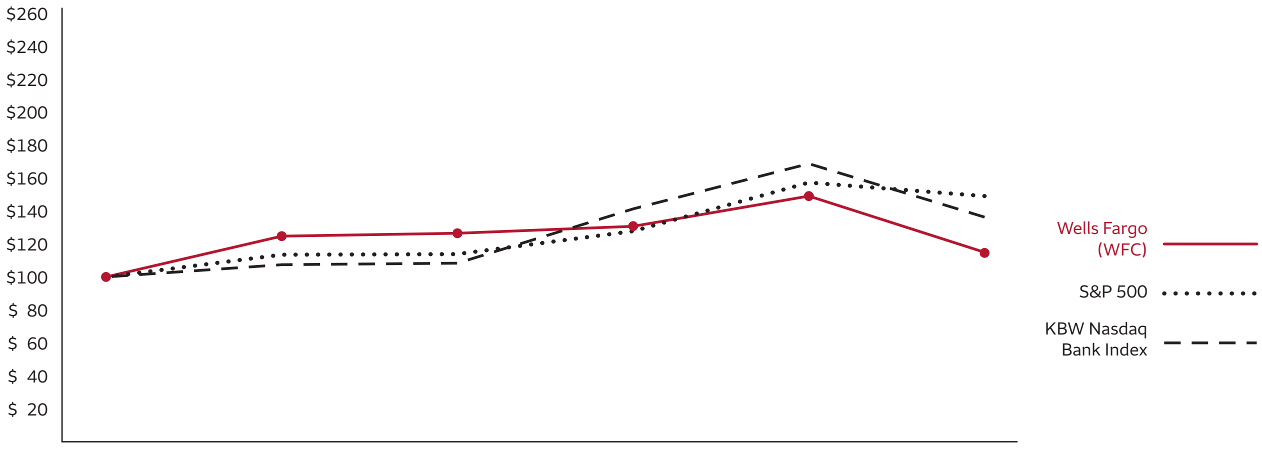
ABS	Asset-backed security
ACL	Allowance for credit losses
ALCO	Asset/Liability Management Committee
ARM	Adjustable-rate mortgage
ASC	Accounting Standards Codification
ASU	Accounting Standards Update
AUA	Assets under administration
AUM	Assets under management
AVM	Automated valuation model
BCBS	Basel Committee on Bank Supervision
BHC	Bank holding company
CCAR	Comprehensive Capital Analysis and Review
CD	Certificate of deposit
CDO	Collateralized debt obligation
CDS	Credit default swaps
CECL	Current expected credit loss
CET1	Common Equity Tier 1
CFPB	Consumer Financial Protection Bureau
CLO	Collateralized loan obligation
CLTV	Combined loan-to-value
CMBS	Commercial mortgage-backed securities
CPI	Collateral protection insurance
CPP	Capital Purchase Program
CRE	Commercial real estate
DPD	Days past due
ESOP	Employee Stock Ownership Plan
FAS	Statement of Financial Accounting Standards
FASB	Financial Accounting Standards Board
FDIC	Federal Deposit Insurance Corporation
FFELP	Federal Family Education Loan Program
FHA	Federal Housing Administration
FHLB	Federal Home Loan Bank
FHLMC	Federal Home Loan Mortgage Corporation
FICO	Fair Isaac Corporation (credit rating)
FNMA	Federal National Mortgage Association
FRB	Board of Governors of the Federal Reserve System
GAAP	Generally accepted accounting principles
GNMA	Government National Mortgage Association
GSE	Government-sponsored entity
G-SIB	Globally systemic important bank
HAMP	Home Affordability Modification Program
HUD	U.S. Department of Housing and Urban Development
LCR	Liquidity coverage ratio
LHFS	Loans held for sale
LIBOR	London Interbank Offered Rate
LIHTC	Low income housing tax credit
LOCOM	Lower of cost or market value
LTV	Loan-to-value
MBS	Mortgage-backed security
MHA	Making Home Affordable programs
MLHFS	Mortgage loans held for sale
MSR	Mortgage servicing right
MTN	Medium-term note
NAV	Net asset value
NPA	Nonperforming asset
OCC	Office of the Comptroller of the Currency
OCI	Other comprehensive income
OTC	Over-the-counter
OTTI	Other-than-temporary impairment
PCI Loans	Purchased credit-impaired loans
PTPP	Pre-tax pre-provision profit
RBC	Risk-based capital
RMBS	Residential mortgage-backed securities
ROA	Wells Fargo net income to average total assets
ROE	Wells Fargo net income applicable to common stock to average Wells Fargo common stockholders' equity
ROTCE	Return on average tangible common equity
RWAs	Risk-weighted assets
SEC	Securities and Exchange Commission
S&P	Standard & Poor's Ratings Services
SLR	Supplementary leverage ratio
SOFR	Secured Overnight Financing Rate
SPE	Special purpose entity
TARP	Troubled Asset Relief Program
TDR	Troubled debt restructuring
TLAC	Total Loss Absorbing Capacity
VA	Department of Veterans Affairs
VaR	Value-at-Risk
VIE	Variable interest entity
WIM	Wealth and Investment Management

STOCK PERFORMANCE

These graphs compare the cumulative total stockholder return and total compound annual growth rate (CAGR) for our common stock (NYSE: WFC) for the five- and ten-year periods ended December 31, 2018, with the cumulative total stockholder returns for the same periods for the Keefe, Bruyette and Woods (KBW) Total Return Bank Index (KBW Nasdaq Bank Index (BKX)) and the S&P 500 Index.

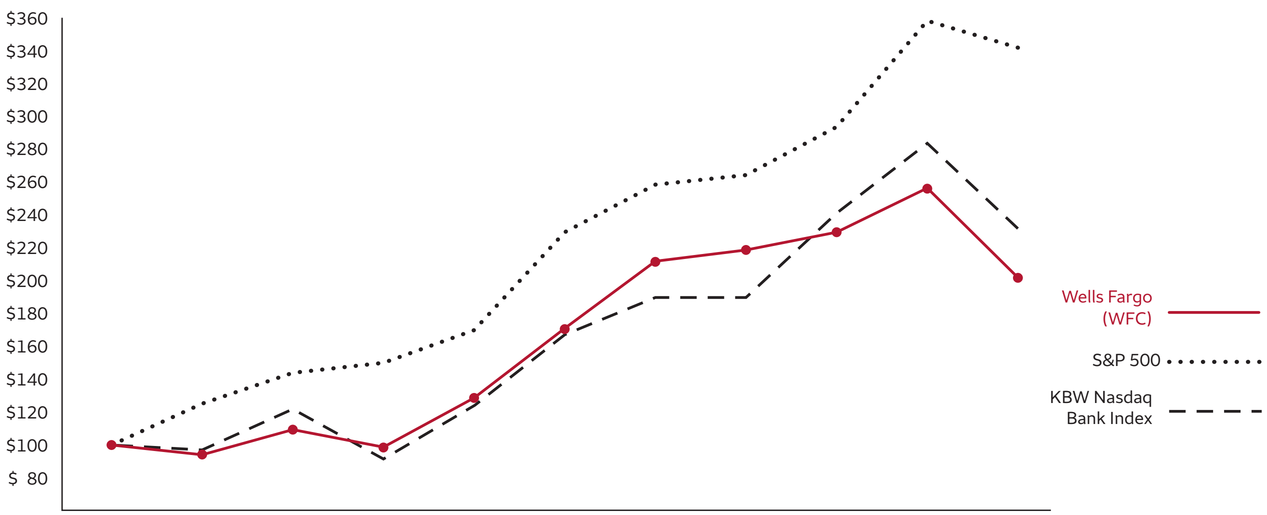
The cumulative total stockholder returns (including reinvested dividends) in the graphs assume the investment of $100 in Wells Fargo's common stock, the KBW Nasdaq Bank Index, and the S&P 500 Index.

FIVE YEAR PERFORMANCE GRAPH



2013	2014	2015	2016	2017	2018	5-year CAGR	
$100	**$124**	**$126**	**$132**	**$149**	**$117**	**3%**	**Wells Fargo**
100	114	115	129	157	150	8%	S&P 500
100	109	110	141	168	138	7%	KBW Nasdaq Bank Index

TEN YEAR PERFORMANCE GRAPH



2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10-year CAGR	
$100	**$95**	**$110**	**$99**	**$127**	**$173**	**$215**	**$219**	**$228**	**$259**	**$202**	**7%**	**Wells Fargo**
100	126	146	149	172	228	259	263	294	359	343	13%	S&P 500
100	98	121	93	124	170	186	187	241	286	235	9%	KBW Nasdaq Bank Index

WELLS FARGO & COMPANY

Wells Fargo & Company (NYSE: WFC) is a diversified, community-based financial services company with $1.9 trillion in assets. Wells Fargo's vision is to satisfy our customers' financial needs and help them succeed financially. Founded in 1852 and headquartered in San Francisco, Wells Fargo provides banking, investment and mortgage products and services, as well as consumer and commercial finance, through 7,800 locations, more than 13,000 ATMs, the internet (wellsfargo.com), and mobile banking, and has offices in 37 countries and territories to support customers who conduct business in the global economy. With approximately 259,000 team members, Wells Fargo serves one in three households in the United States. Wells Fargo & Company was ranked No. 26 on Fortune's 2018 rankings of America's largest corporations.

COMMON STOCK

Wells Fargo & Company is listed and trades on the New York Stock Exchange: WFC

4,581,253,608 common shares outstanding (12/31/18)

STOCK PURCHASE AND DIVIDEND REINVESTMENT

You can buy Wells Fargo stock directly from Wells Fargo, even if you're not a Wells Fargo stockholder, through optional cash payments or automatic monthly deductions from a bank account. You can also have your dividends reinvested automatically. It's a convenient, economical way to increase your Wells Fargo investment.

Call 1-877-840-0492 for an enrollment kit, which includes a plan prospectus.

FORM 10-K

We will send Wells Fargo's 2018 Annual Report on Form 10-K (including the financial statements filed with the Securities and Exchange Commission) free to any shareholder who asks for a copy in writing. Shareholders also can ask for copies of any exhibit to the Form 10-K. We will charge a fee to cover expenses to prepare and send any exhibits. Please send requests to: Corporate Secretary, Wells Fargo & Company, MAC D1130-117, 301 S. Tryon Street, 11th Floor, Charlotte, North Carolina 28202.

SEC FILINGS

Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports are available free of charge on our website (www.wellsfargo.com) as soon as practical after they are electronically filed with or furnished to the SEC. Those reports and amendments are also available free of charge on the SEC's website at www.sec.gov.

FORWARD-LOOKING STATEMENTS

This Annual Report contains forward-looking statements about our future financial performance and business. Because forward-looking statements are based on our current expectations and assumptions regarding the future, they are subject to inherent risks and uncertainties. Do not unduly rely on forward-looking statements, as actual results could differ materially from expectations. Forward-looking statements speak only as of the date made, and we do not undertake to update them to reflect changes or events that occur after that date. For information about factors that could cause actual results to differ materially from our expectations, refer to the discussion under "Forward-Looking Statements" and "Risk Factors" in the Financial Review portion of this Annual Report.

INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

KPMG LLP
San Francisco, California
1-415-963-5100

INVESTOR RELATIONS

1-415-371-2921
investorrelations@
wellsfargo.com

SHAREOWNER SERVICES AND TRANSFER AGENT

EQ Shareowner Services
P.O. Box 64854
St. Paul, Minnesota
55164-0854
1-877-840-0492
www.shareowneronline.com

ANNUAL SHAREHOLDERS' MEETING

10:00 a.m. Central time
Tuesday, April 23, 2019
Grand Hyatt DFW
2337 South International Parkway
Dallas, Texas 75261

COMPANY

3rd
Total Deposits (2018)
FDIC data

4th
Total Assets (2018)
S&P Global Market Intelligence

7th
Biggest Public Company in the World* (2018) *Forbes*

20th
Biggest Employer in the United States (2018)
Fortune

BRAND

Most Valuable Banking Brand in North America and Retail Banking (2018) *Brand Finance*

Third-Most Valuable Financial Services Brand in World (2018)
Brand Finance

Best in Social Media Marketing and Services – North America (2018)
Global Finance

INNOVATION LEADERSHIP

#1
Overall Mobile Performance, Functionality, and Quality & Availability (March 2018)
Dynatrace

Most Comprehensive Mobile App (2018)
S&P Global Market Intelligence

Best Integrated Corporate Bank Site – North America (2018) *Global Finance*

DIVERSITY

Top Company for LGBT (2018) *DiversityInc*

Perfect Score – 100 Corporate Equality Index (2018, 15th year) Human Rights Campaign

Perfect Score – 100 Disability Equality Index® Best Places to Work™ (2018, 3rd year) American Association of People with Disabilities

Top Military Employer and Top Military Spouse Friendly Employer (2018)
Victory Media

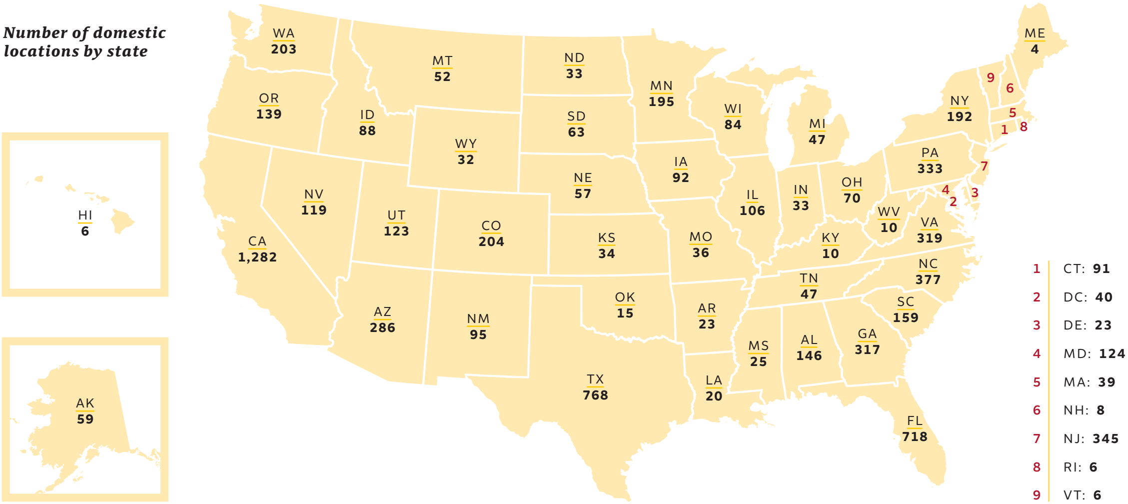
Top 50 Best Companies for Diversity (2018) *Black Enterprise*

*Based on sales, profits, assets, and market value.

WELLS FARGO'S EXTENSIVE NETWORK

Data as of December 31, 2018, unless otherwise noted.

Number of domestic locations by state



Around the world

Argentina	Cayman Islands	Germany	Italy	New Zealand	Taiwan
Australia	Chile	Hong Kong	Japan	Philippines	Thailand
Bahamas	China	India	Korea, Republic of	Singapore	Turkey
Bangladesh	Colombia	Indonesia	Luxembourg	South Africa	United Arab Emirates
Brazil	Dominican Republic	Ireland	Mexico	Spain	United Kingdom
Canada	France	Israel	Netherlands	Sweden	Vietnam

LOCATIONS*

7,800

CUSTOMERS

70+ million

MOBILE BANKING**

22.8 million

mobile active users

ATMs

13,000

WELLSFARGO.COM**

29.2 million

digital (online and mobile) active customers

*Number of domestic and global locations. Includes Wells Fargo Advisors Private Client Group and Financial Network locations.
**Data as of November 2018.

CORPORATE RESPONSIBILITY

Top 50
Most community-minded companies (2018) Points of Light

#2
Most Generous Cash Donor (U.S.) (2018) *The Chronicle of Philanthropy*

IN SUPPORTING HOMEOWNERS AND CONSUMERS

#1
Home loan servicer (3Q18)
Inside Mortgage Finance

#1
Provider of private student loans among banks (2018)
Company and competitor reports

#2
Retail mortgage lender (3Q18)
Inside Mortgage Finance

#3
Used auto lender (August 2018)
AutoCount

IN WEALTH AND INVESTMENT MANAGEMENT

Best Investment Management Services – North America (2018) *Global Finance*

#3
U.S. full-service retail brokerage provider (2Q18) Company and competitor reports

#4
U.S. wealth management provider (2018) *Barron's*

IN COMMERCIAL REAL ESTATE

#1
Commercial real estate lender in the U.S. (2018) MBA Commercial/Multifamily Annual Origination Rankings

#1
Market share by commercial real estate outstandings (2018)
Federal Reserve Form FRY-9C

WELLS FARGO

WELLS FARGO & COMPANY
420 MONTGOMERY STREET | SAN FRANCISCO, CA | 94104
1-866-878-5865 | WELLSFARGO.COM

CCM9537 (Rev 00, 1/each)

City of Doral

Response to Request for Proposal for Banking Services
RFP No. 2020-27

January 29, 2021

Submitted by:
Vincent Mattio
Relationship Manager
813-225-6539
vincent.mattio@wellsfargo.com

Jacqueline Kobialko
Treasury Management Consultant
954-654-1645
jacqueline.kobialko@wellsfargo.com

Table of contents

Appendix

Executive summary

January 29, 2021

Wells Fargo Bank, N.A. (Wells Fargo) is very pleased to be included in the City of Doral's (the City's) Request for Proposal (RFP) process for banking services. With the submission of this response, we are expressing our strong interest in continuing in our role as the City's primary treasury management service and depository bank.

In our proposal, we demonstrate how we have the full array of financial products sought by the City, as well as a strong dedication to delivering excellent customer service. You'll also continue to be supported by a knowledgeable team committed to government clients and the local Doral community.

As the City's incumbent bank for banking services, you have seen firsthand how we consistently provide frequent two-way communication, timely issue resolution, and best-practice recommendations for increasing the use of technology when beneficial to you. For these reasons, the City and many Florida municipalities look to us as their main partner when seeking innovative banking solutions.

Delivering high quality service to the City

The City has clearly indicated various services needed to fulfill your current and future banking needs. We can deliver a complete scope of financial solutions that speak to your needs, including:

Net interest credit

The City will have the option of using either our non-interest bearing account (NIB) or our Government Advantage Interest Checking account (GAIC), and can switch between them as the interest rate environment changes. The NIB account would receive an initial managed earnings credit rate (ECR) of 0.25% (25 basis points). The GAIC account would receive an initial managed ECR of 0.25%, and an initial managed interest rate of 0.17% (17 basis points) on excess balances not used to offset fees.

In addition, we are offering to waive the first four months of analysis fees (approximately $4,476.00), following the execution of a new contract, as well as waiving the implementation fee for Payment Manager® and Wells Fargo Electronic Deposit (WFED) if implemented within the first 12 months of the new contract.

Online banking portal

Our online banking portal offers single sign-on access to more than 50 bank applications, including cash management, credit, trade services, trust, and investment services. Our online banking portal further provides treasury information reporting that allows authorized users to view balances, transactions, statements, and reports. Additionally, the City can originate transactions such as stop payments, wires, and ACHs.

Employee benefits

Wells Fargo is committed to helping the City support your employees through the enhanced benefits of our Wells Fargo At Work℠ program. Offered at no cost to the City, the program brings engaging financial workshops, tools, resources, and options to your workplace.

Branch network and market share

Wells Fargo has 66 full-service branches and an additional 231 ATMs within Miami-Dade County, of which five full-service branches and 10 ATMs are located directly within the City's boundaries.

As of June 30, 2020, Wells Fargo held $18.256 billion in deposits* in Miami-Dade County, or 12.01% of County-wide deposits. Additionally, Wells Fargo Bank has one of the highest credit ratings† of any financial services company.

*FDIC Deposit Market Share Report as of 06/30/2020

†Aa1/A+/AA- from Moody's, S&P, and Fitch, respectively, as of Bloomberg 04/13/2020

Expertise and ability

Our Government and Banking team work with approximately 5,500 customers across our footprint of 39 states and the District of Columbia, including the State of Florida. **Vincent Mattio**, your relationship manager, and **Jackie Kobialko**, your treasury management consultant, have more than 35 years of combined government banking experience. They will be available for onsite problem resolution and consultation throughout your relationship with Wells Fargo. We are committed to having sufficient resources available every day to service the City's needs.

Wells Fargo works with many local governments in the State of Florida and pledges to continue working closely with the appropriate areas of the City to bring ideas and maintain a strong partnership. We understand the scope of services to be performed and commit to performing these services to the City's satisfaction on a timely basis.

We recognize that, in order to be successful, we must not only offer the correct products to meet customer needs, but also provide high-quality service. We are committed to the City to provide superior customer service and progressive technological interaction.

Our partnership and support approach

We're committed to helping the City achieve your goals, not only through products and services, but also through a partnership approach that gives you the in-depth, consultative services you need to remain successful for the long term.

As our valued customer, the City will always be our primary focus. Our support approach is structured around this concept, ensuring that all aspects of your relationship are handled with the upmost priority, quality, and professionalism. No matter how many Wells Fargo products and services you use, you'll have just one team to call when you have an issue to resolve. We'll have sufficient resources available every day to service the City's needs.

In summary

We are confident in our ability to continue exceeding your expectations and are committed to helping you choose the right combination of services for your organization, backed by the service excellence you demand. We also ensure to provide continued commitment to the local community. We understand the scope of services to be performed and commit to performing the work within the specified time period. Our proposal is a firm and irrevocable offer for 120 days after the submission date of this proposal. We look forward to discussing the contents of our response with you further. Please do not hesitate to contact either of us if you have questions.

Sincerely,

Vince Mattio
SVP, Relationship Manager
813-225-6539
vincent.mattio@wellsfargo.com

Jackie Kobialko
SVP, Treasury Management Consultant
954-654-1645
jacqueline.kobialko@wellsfargo.com

Incentives summary

Government Advantage ECR:	0.25%
Non-Interest Bearing ECR:	0.25%
Interest Rate on Excess Balances:	0.17%
Retention Credit:	Waived 4-months of TM Fees: $4,476
WFED*:	$2,500
Payment Manager*:	$2,500
Overall Incentive:	**$9,476**

*Note: Implementation fee “waived” if implemented within 12-months after the contract is signed.

Section I. Project-specific criteria

A. Pricing

1. Please review the attached schedule of current services and volumes for the City (See Exhibit "B"). Include any one-time or setup charges, research fees, and all other fees that will be charged, even if already in place or listed elsewhere in the proposal. If prices are tiered based on volume, provide all price tiers.

Please refer to our pricing proposal in Tab A of the Appendix section of the proposal.

B. Qualifications and experience

2. Indicate the experience and capability your bank has in providing cash management services to organizations of similar size to the City of Doral.

We formed our Government Banking group to help ensure that our government customers get the specialized attention they require.

> Our Government Banking group aligns sales, specialized banking teams, investment banking professionals, and tax-exempt fixed-income trading and distribution capabilities.

Currently, our Government Banking team members work with nearly 5,500 government customers across our footprint of 39 states and the District of Columbia. These customer relationships include federal, state, county, and city governments, as well as government agencies, authorities, and municipal utilities.

Our teams

We have more than 300 government team members including banking, sales, trading, analyst, and derivatives professionals. A dedicated relationship manager oversees your relationship. Our relationship managers are tenured professionals who are local to your market and receive support from our national presence.

We understand the different needs and challenges facing our government customers. Our coast-to-coast Government Banking practice gives your relationship manager access to local and national industry intelligence and best practices. We use this information to help create customized solutions for your needs.

How you benefit

We center our business on the needs of our customers. We take pride in approaching each relationship individually and, as one team, leveraging our resources to create the most value for our customers. We create value through providing:

Industry knowledge and expertise

We are a specialized group of professionals, experienced in working with government organizations across the nation. From raising capital, to managing assets, to increasing operational efficiencies, we share the knowledge gained from our experience with other customers for your benefit.

Strength and stability

For almost 170 years, we have been a trusted financial institution. We are a leading national bank, ranked third in assets by the FDIC in 2019. The strength of our balance sheet helps us serve our government customers across the country.

An enhanced customer experience

We regularly monitor our service levels to validate and help ensure the degree of customer service that we provide you. We also offer training and educational opportunities to you free of charge.

We offer formal and informal training programs for our services. We also offer educational sessions on current treasury management topics, and payment conferences to keep you aware of industry best practices and regulatory changes.

A focus on innovation and quality

We are a recognized leader in the development and application of new technology to enhance our customers' treasury management systems and practices as evidenced by the following recognition:

#1 in Overall Mobile Performance and Functionality (Dynatrace, 2019)

Overall Most Innovative for Wells Fargo Gateway® (Barlow Research Monarch Innovation Awards, 2019)

Best Corporate/Institutional Digital Bank in North America (Global Finance, 2019)

3. Give a brief description, including experience, of the full-time treasury professionals that will be assigned to the City.

You will continue to be supported by an experienced team already familiar with your needs and requirements, resulting in a smooth continuation of service. We include your team's biographies on the following table.

Treasury Management Consultant	
Jackie Kobialko **Senior Vice President** **jacqueline.kobialko@ wellsfargo.com** **954-712-3627 office** **954-654-1645 mobile** **350 E. Las Olas Blvd.** **18th Floor** **Fort Lauderdale, FL 33301**	Jackie will support the City as the primary contact for treasury management services. She shares best practices and product and service information to guide you in developing your treasury management program. She has been with Wells Fargo for 15 years, with 13 of those years dedicated to government and institutional treasury management. Collectively, she brings more than 35 years of business experience, including 27 years of government related financial industry experience. She is an active member of the Florida Government Finance Officers Association (GFOA), South Florida GFOA, Palm Beach County GFOA, and Treasure Coast GFOA. Jackie currently serves as the treasury management consultant to numerous government entities throughout the State of Florida, several of which are similar in size and scope to the City.

Relationship Manager	
Vincent Mattio **Senior Vice President** **vincent.mattio@wellsfargo.com** **813-225-6539 office** **813-285-0745 mobile** **100 S. Ashley Dr.** **Eighth Floor** **Tampa, FL 33602**	Vincent offers the City consultative financial and banking guidance and coordinates the team of specialists that support your banking relationship. Vincent is your primary advocate at the bank. Vincent has spent his career at Wells Fargo working specifically with government entities in Florida. He currently serves as the relationship manager for approximately 60 government entities, many of which are similar in size and scope to the City. Vincent is an active member of the South Florida GFOA and the Gulf Coast GFOA. Vincent has worked in banking since 2007. He began working for Wells Fargo in 2010 as a government banking credit analyst, and transitioned into a relationship manager for government banking in 2013. Vincent received his bachelor's degree in finance and M.B.A. from the University of Florida.

Treasury Management Analyst	
Michael Neave **michael.neave@wellsfargo.com** **904-391-7307 office** **1 Independent Dr.** **Eighth Floor** **Jacksonville, FL 32202**	Michael supports your treasury management consultant. He works with you to begin new service implementations and can assist with treasury management questions when your consultant is unavailable. Michael has been a sales analyst since 2016. He graduated from the University of Florida with a bachelor's degree in English.

Relationship Associate	
Renee Toneske **Assistant Vice President** **renee.toneske@wellsfargo.com** **704-410-0369 office** **550 S. Tryon St.** **27th Floor** **Charlotte, NC 28202**	Renee works with your relationship manager to help enhance your customer service experience. She serves as the liaison between you and the various departments of the bank. She assists you directly with any items pertaining to your account analysis statements and overdrafts. She currently supports various government customers across the State of Florida. Renee brings more than 21 years of banking experience to her current position, including 15 years at Wells Fargo. She has focused on government banking since the beginning of 2017. Renee received her bachelor's degree in psychology, with a minor in sociology, from North Carolina Wesleyan College in Rocky Mount, North Carolina.
Client Service Officer	
Ruth Felix **ruth.felix@wellsfargo.com** **904-634-6327 office** **10401 Deerwood Park Blvd.** **Third Floor** **Jacksonville, FL 32256**	Ruth provides day-to-day support for all of your treasury management services. She acts as a liaison between you and our operations groups to provide you with information and resolve issues in a timely manner. Ruth has been a client service officer since 1986.
Implementation Consultant	
Michelle Wincek **Assistant Vice President** **michelle.wincek@ wellsfargo.com** **904-722-6388 office** **9580 Regency Square Blvd.** **Second Floor** **Jacksonville, FL 32225**	Michelle is responsible for implementing your treasury management products and services. She also coordinates training with your employees using the services and collects the documentation needed to implement services. Michelle has been with Wells Fargo 1989 and an implementation consultant since 2011.

4. For the last three (3) years, identify fully the extent to which your bank or individual partners or employees have been subject to any ongoing municipal securities or banking investigations, party to any municipal securities or banking litigation or arbitration, or the subject of a subpoena in connection with a municipal securities or banking investigation. In addition, include any such investigation which concluded in an enforcement or disciplinary action ordered or imposed in the last three (3) years.

Wells Fargo Bank, N.A. is a subsidiary of Wells Fargo & Company ("WFC"), a corporation organized under the laws of Delaware. As with any large diversified financial institution in the highly regulated banking and securities field, Wells Fargo receives inquiries and subpoenas from regulators and law enforcement from time to time, some of which may be confidential in nature, and is subject to civil litigation. Wells Fargo responds regularly to inquiries and investigations by governmental entities and has in the past entered into settlements of some of those investigations, including those listed below. None have resulted in any material restrictions on Wells Fargo's ability to operate its businesses as related to the services and products addressed in our response to this RFP.

- During the third quarter of 2016, Wells Fargo Bank, N.A. entered into settlements with the City of Los Angeles, the Consumer Financial Protection Bureau and the Office of the Comptroller of the Currency regarding certain sales practices. For additional information, see the press release at https://newsroom.wf.com/press-release/corporate-and-financial/wells-fargo-issues-statement-agreements-related-sales
- On February 2, 2018, WFC entered into a consent order with the Board of Governors of the Federal Reserve System, relating to governance oversight and the company's compliance and operational risk management program. This consent order does not relate to new matters, but rather to prior issues including the 2016 sales practices matter. For additional information, see the press release at https://newsroom.wf.com/press-release/corporate-and-financial/wells-fargo-commits-satisfying-consent-order-federal
- In April 2018, WFC entered into consent orders with the Consumer Financial Protection Bureau and the Office of the Comptroller of the Currency that address matters relating to WFC's compliance risk management program and issues regarding certain interest rate-lock extensions on home mortgages and collateral protection insurance placed on certain auto loans. For additional information, see the press release at https://newsroom.wf.com/press-release/corporate-and-financial/wells-fargo-enters-consent-orders-occ-and-cfpb
- In August 2018, WFC announced that it entered into an agreement with the U.S. Department of Justice (DOJ) to resolve a previously disclosed investigation by the DOJ regarding claims related to certain 2005–07 residential mortgage-backed securities activities. For additional information, see the press release at https://newsroom.wf.com/press-release/consumer-lending/wells-fargo-reaches-agreement-doj-resolve-legacy-rmbs-claims
- On December 28, 2018, WFC entered into a settlement with all 50 state Attorneys General and the District of Columbia regarding previously disclosed retail sales practices, auto collateral protection insurance and guaranteed asset/auto protection, and mortgage interest rate lock matters. For additional information, see the press release at https://newsroom.wf.com/press-release/community-banking-and-small-business/wells-fargo-reaches-agreement-state-attorneys

- On February 21, 2020, WFC entered into settlements with the U.S. Department of Justice and the U.S. Securities and Exchange Commission to resolve these agencies' investigations into Community Bank sales practices and related disclosures. For additional information, see the press release at https://newsroom.wf.com/press-release/corporate-and-financial/wells-fargo-reaches-settlements-resolve-outstanding-doj-and

Many of the actions that Wells Fargo has taken in connection with these settlements are described at https://www.wellsfargo.com/assets/pdf/commitment/progress-report.pdf

To the extent any litigation or regulatory matters are required to be reported, they are disclosed in WFC's SEC filings and are matters of public record:

- Copies of the Legal Proceedings sections from WFC's recent public filings and WFC's most recent periodic reports are available at https://www.wellsfargo.com/invest_relations/filings
- WFC's Annual Reports are available at https://www.wellsfargo.com/invest_relations/annual

At this time, and to the best knowledge of the Wells Fargo representatives preparing this response, neither Wells Fargo Bank, N.A. nor WFC has been involved in any regulatory reviews or legal actions that would have a material adverse impact on Wells Fargo's ability to provide the services requested in this RFP.

5. Will the selection of your bank result in any current or potential conflict of interest? If so, your bank's response must specify the party with which the conflict exists or might arise, the nature of the conflict, and whether your bank would step aside or resign from the engagement or representation creating the conflict. Please disclose any financial or contractual relationship that your bank or any individual member of your bank has or had (over the past three (3) years) with any member of the Doral City Council or with a firm in which they are employed.

To the best knowledge of the Wells Fargo representatives preparing this response, we do not provide any services to other customers that would result in a conflict of interest, such that the bank would be unable to provide the services requested in this RFP.

6. Provide details on any merger or acquisition that the bank is currently committed to and the expected impact on the services requested in this RFP or on the financial condition of your firm.

To the best knowledge of the Wells Fargo representatives preparing this response, we are not currently committed to a merger or acquisition that would have an adverse material impact on our ability to provide the services requested.

7. What are the incentives you would provide to our employees who have accounts with you and participate in direct deposit of payroll?

We are committed to helping the City support your employees with enhanced benefits through our Wells Fargo At Work program. Offered at no cost to you, the program brings engaging financial workshops, tools, resources, and options to your workplace. Your employees will have access to financial resources that can help them and your company.

Enhanced employee benefits for the City

Our program helps you enhance your financial wellness benefits for your employees by providing:

- Financial wellness workshops delivered at your locations
- Customized materials to help promote the City's program benefits
- Support for company initiatives to help increase participation, such as encouraging direct deposit or retirement savings
- Options to help your employees keep their financial priorities on track
- Online, mobile, phone, and in-person access*

*Your mobile carrier's message and data rates may apply. Availability may be affected by your mobile device's coverage area.

Your Wells Fargo At Work program representative helps to implement the program, and serves as your single point of contact.

Financial education for your employees

In person

A distinct advantage of our program is our dedicated team of program representatives. Our team members work with you to provide financial workshops, consultations, and support for your employees, conveniently delivered at the City's locations.

Complimentary on-site financial workshop topics include:

- Budgeting and saving
- Managing your credit
- Paying for college
- Buying a home
- Monitoring your financial information

Online and mobile

We also provide online and mobile access to our financial wellness services, 24 hours a day, 7 days a week. We describe these services in the following paragraphs.

My Financial Guide

This guide offers a variety of articles, videos, and tips to help answer your employees' financial questions and help them plan for their goals. The content is available in English and Spanish. You can visit wellsfargo.com/ financial-education for more information.

Financial health microsite

This website helps your employees start or make further progress on their journey to financial security. It shows how changing "one little thing" in their spending habits can lead to a positive impact on their overall financial situation. You can visit wellsfargo.com/financial-health for more information.

Hands on Banking®

This free, public service offered by Wells Fargo is a non-commercial financial education program. It provides relevant and engaging content for children, young adults, adults, entrepreneurs, seniors, military service members, and veterans. The youth curriculum aligns with the Common Core State Standards Initiative. You can visit handsonbanking.org for financial education modules for each target audience. The website also offers tools and resources that may help your employees and their families make smarter financial decisions.*

*The Hands on Banking program is a free public service provided by Wells Fargo Foundation. An account or business relationship is not required for use or access.

Additional resources for the City's employees banking with us

Financial health conversations

Your employees can help improve their financial well-being and build confidence by speaking with a Wells Fargo Financial Health Banker. This complimentary service is offered Monday through Saturday, from 9:00 a.m. until 7:00 p.m. ET. The conversations are focused on helping with the following:

- Find new ways to reduce spending and build savings
- Take control of debt, and pay bills with confidence
- Make credit work for you, not against you

Steps to Better Banking

We welcome new checking customers with email, online, and ATM communications on how to use key services and maximize account benefits. The step-by-step series includes videos and tips, such as how to set up alerts and bill pay, make a mobile deposit, and pay friends and family.

My Money Map

Our online money management tools can help your employees map their own financial plan and see their finances in a new way. With one click, the tools help track their spending, budget, and savings activities – displayed in easy-to-understand charts. Transactions from Wells Fargo deposit and credit accounts are automatically updated, so you can monitor your progress and adjust as needed.

8. Does your bank charge a fee for cashing City of Doral checks where an individual or employee does not have an account at your bank? If yes, what are the fees, and would they be waived for anyone cashing a City of Doral check?

We typically do charge a fee for cashing checks for non-account holders; however, we will continue to waive that fee for anyone cashing a City of Doral check that is written on a Wells Fargo account.

9. (a) How many branches do you have in the City of Doral and where are they located? (b) How many branches do you have in Miami-Dade County and where are they located? For both (a) and (b), please denote whether each is a full-service branch and list the amenities offered at each location.

We currently have five full-service branches located in the City of Doral and 66 full-service branches in Miami-Dade County. We provide details on our branch locations in Tab B of the Appendix section of the proposal.

10. Proposer shall have a minimum of five (5) years of successful experience in providing Banking Services immediately preceding this Request for Proposal. Proposer shall provide a list of references of prior experience, with whom the City may speak during the evaluation phase that have utilized the work being proposed to the City or transacted similar business with Proposer. (City of Doral Employees shall not be used as a reference.)

Based on our current understanding of your needs, we have chosen references with services that most closely resemble the setup we have proposed for the City. We provide contact information for these references in the following table.

We also include the required reference forms in Tab H of the Appendix section of the proposal.

References*	
Anna Otiniano **Financial Services Director** **City of Plantation** 954-797-2163 954-513-3506 fax aotiniano@plantation.org 400 N.W. 73rd Ave. Plantation, FL, 33317	City of Plantation uses the following Wells Fargo services: ▪ Account Reconciliation ▪ ACH Fraud Filter ▪ ACH Origination ▪ Cash Vault ▪ Commercial Electronic Office® (CEO®) ▪ Desktop Deposit® ▪ Lockbox ▪ Payment Authorization ▪ Positive Pay with Payee Validation ▪ Secure Application File Exchange (SAFE) Transmission ▪ Statements and Notices ▪ Transaction Search ▪ Treasury Information Reporting ▪ WFED ▪ Wire Transfer ▪ Zero Balance Account (ZBA)

References*	
Winsome Freeman **Assistant Finance Director** **City of Miramar** 954-602-3071 954-602-4614 fax wafreeman@miramarfl.gov 2300 Civic Center Pl. Miramar, FL 33025	City of Miramar uses the following Wells Fargo services: ▪ Account Reconciliation ▪ ACH Fraud Filter ▪ ACH Origination ▪ CEO ▪ Desktop Deposit ▪ Lockbox ▪ Payment Authorization ▪ Positive Pay with Payee Validation ▪ SAFE Transmission ▪ Statements and Notices ▪ Transaction Search ▪ Treasury Information Reporting ▪ Sweep ▪ WellsImage® Paid Check CD ▪ WFED ▪ Wire Transfer ▪ ZBA
Mirtha Dziedzic **Finance Director** **City of Miami Gardens** 305-622-8000 ext. 2400 954-572-2469 fax mdziedzic@miamigardens-fl.gov 18605 N.W. 27th Ave. Miami Gardens, FL 33056	City of Miami Gardens uses the following Wells Fargo services: ▪ Account Reconciliation ▪ ACH Fraud Filter ▪ ACH Origination ▪ CEO ▪ Payment Authorization ▪ Positive Pay with Payee Validation ▪ SAFE Transmission ▪ Statements and Notices ▪ Transaction Search ▪ Treasury Information Reporting ▪ Wire Transfer ▪ ZBA

References*	
Sharon Haynes **Assistant Finance Director** **City of Deerfield Beach** 954-798-9497 954-480-4223 fax shaynes@deerfield-beach.com 150 N.E. Second Ave. Deerfield Beach, FL 33441	City of Deerfield Beach uses the following Wells Fargo services: ▪ Account Reconciliation ▪ ACH Fraud Filter ▪ ACH Origination ▪ Cash Vault ▪ CEO ▪ Desktop Deposit ▪ Lockbox ▪ Payment Authorization ▪ Positive Pay with Payee Validation ▪ SAFE Transmission ▪ Statements and Notices ▪ Transaction Search ▪ Treasury Information Reporting ▪ WFED ▪ Wire Transfer ▪ ZBA
Michael Villella **Finance Director** **Town of Jupiter** 561-741-2218 561-741-2585 fax michaelv@jupiter.fl.us 210 Military Trl. Jupiter, FL 33458	Town of Jupiter uses the following Wells Fargo services: ▪ Account Reconciliation ▪ ACH Fraud Filter ▪ ACH Origination ▪ CEO ▪ Payment Authorization ▪ Positive Pay with Payee Validation ▪ SAFE Transmission ▪ Statements and Notices ▪ Transaction Search ▪ Treasury Information Reporting ▪ Wire Transfer ▪ ZBA

*Reference information is confidential.

11. Provide a list of Florida Government customers and that have used your institution's services for more than one year, preferably with comparable volumes and origination types, who have been using the services requested in this RFP. If you do not have Florida Government customers, you may provide information from Government customers in other states.

We are currently the primary bank for more than 200 Government customers in the State of Florida, with 11 of those customers being of similar size and scope of the City. We include a list of these customers below in question 12.

12. Proposer shall include for each: Name of the organization, a contact person, address, telephone number, fax number, and email address. NO PROPOSAL WILL BE CONSIDERED WITHOUT THIS LIST COMPLETED.

We did not provide contact information for our entire list of customers in the State of Florida due to the large volume, however, we are providing a list of our customers in the State of Florida who are most similar in size and scope. Please note the first five customers listed are also serving as our formal references.*

Florida Government customers†		
City of Plantation* Anna Otiniano Finance Director	400 N.W. 73rd Ave. Plantation, FL 33317	954-797-2163 954-513-3506 fax aotiniano@plantation.org
City of Miramar* Winsome Freeman Assistant Finance Director	2300 Civic Center Pl. Miramar, FL 33025	954-602-3071 954-602-4614 fax wafreeman@miramarfl.gov
City of Miami Gardens* Mirtha Dziedzic Finance Director	18605 N.W. 27th Ave. Miami Gardens, FL 33056	305-622-8000 ext. 2400 954-572-2469 fax mdziedzic@miamigardens-fl.gov
City of Deerfield Beach* Sharon Haynes Assistant Finance Director	150 N.E. Second Ave. Deerfield Beach, FL 33441	954-798-9497 954-480-4223 fax shaynes@deerfield-beach.com
Town of Jupiter* Michael Villella Finance Director	210 Military Trl. Jupiter, FL 33458	561-741-2218 561-741-2585 fax michaelv@jupiter.fl.us
City of Deltona Camille Hooper Finance Director	2345 Providence Blvd. Deltona, FL 32725	386-878-8552 chooper@deltonafl.gov
City of Sunrise Wendy Dunbar Finance Director	10770 W. Oakland Pk. Blvd. Sunrise, FL 33351	954-746-3297 wdunbar@sunrisefl.gov

Florida Government customers†		
City of Margate Mary Beazley Finance Director	5790 Margate Blvd. Margate, FL 33063	954-935-5353 mbeazley@margatefl.com
City of Sanford Cynthia Lindsey Finance Director	300 N. Park Ave. Second Floor Sanford, FL 32771	407-688-5026 407-688-5021 fax cynthia.lindsay@sanfordfl.gov
City of Pinellas Park Kelly Schrader Assistant Finance Director	5141 78th Ave. Pinellas Park, FL 33781	727-369-0621 727-541-0940 fax kschrader@pinellas-park.com
City of Pensacola Laura Amentler Accounting Services Manager	222 W. Main St. Pensacola, FL 32502	850-435-1822 850-435-1700 fax lpicklap@ci.pensacola.fl.us

†Contact information is confidential.

C. Technical capability and approach

13. Describe the bank's ability to provide safekeeping for securities and electronic reconciliation of safekeeping on a monthly basis.

Wells Fargo Securities (WFS), LLC, provides its brokerage clients with self-clearing bank safekeeping services. Securities purchased by WFS customers are held with Wells Fargo Bank, N.A., a Federal Reserve Board (FRB) member. Safekeeping activity is subject to annual audits by our internal auditors, Wells Fargo Audit Services, Inc., and by our external auditors, KPMG.

Securities purchased by the account will be settled by delivery versus payment (DVP) through either the Depository Trust Company (DTC) or the Bank of New York (BONY). Securities belonging to customers who have safekeeping with Wells Fargo Bank, N. A. (bank safekeeping) are held in accounts titled "Wells Fargo Bank Safekeeping Services". The securities are recorded in the customer name on our internal system of record. Our books and records are reconciled daily with those of the depositories. Physical securities registered in the customer's name or in WFS' nominee name are held in BONY's securities vault. These securities are counted and reconciled at least quarterly.

You can receive direct access to your brokerage account activity, positions, statements, trade confirmations, as well as online trading of Money Market Mutual Funds from our online banking portal.

14. A copy of the "Banking Telecommunications Certification" is required.

Wells Fargo hereby certifies that we provide secure online banking. Our online banking portal is a proprietary solution that continues to expand with the ever changing needs of our customers. Below we provide additional information regarding our firewalls and intrusion detection systems.

Firewalls

We use firewall technologies to prevent unauthorized packets from entering our secure network without proper credentials.

Intrusion detection systems

We use host-based intrusion detection software on Windows, Unix, and Linux servers. Our Cyber Threat team monitors this requirement.

We use network-based intrusion detection systems on perimeter network segments and network security enclaves (for instance, the wire transfer system), as they support host systems that generate, store, or transmit confidential or restricted information.

We also require wireless-based intrusion detection systems in the physical location of approved wireless local area network enabled devices.

15. Provide system availability/dependability statistics for each of the following systems: balance reporting, wires/ACH, positive pay, stop payments, lockbox images, merchant authorizations, and EDI.

The City accesses services for balance reporting, wires, ACH, positive pay, stop payments, and lockbox images on our online banking portal. We help ensure availability and ease of use by monitoring our online banking portal on a real-time basis.

Online banking portal, to include positive pay and stop payments, and Treasury Information Reporting

Availability	Standard	Q4 2019 average	Q1 2020 average	Q2 2020 average	Q3 2020 average
Online banking portal	99.60%	100%	100%	100%	100%
Treasury Information Reporting	99.60%	100%	100%	100%	100%

Wire transfers

Wire transfer critical quality indicator	February 2020	March 2020	April 2020
Total number of wire transfers processed	3,181,947	3,660,556	3,446,895
Errors per 10,000 payments The number of wire errors per 10,000 incoming and outgoing Fed, Clearing House, and book transfer volumes	0.037	0.027	0.017
Wire payments accuracy The percentage of incoming and outgoing Fed, Clearing House, and book transfers processed accurately	100%	100%	100%

ACH

Performance measures	2020 average	April 2020	May 2020	June 2020
ACH files processed without error	100%	100%	100%	100%
ACH files distributed on time	99.85%	100%	99.69%	100%
ACH files distributed from ACH operators on time	100%	100%	100%	100%
Calls answered within 25 seconds	88.27%	88.02%	88.64%	84.92%
Customer calls captured before customer hangs up	97.56%	97.70%	97.36%	97.37%

Lockbox

We measure our lockbox accuracy rates against Bank Administration Institute (BAI) standard accuracy rates on a quarterly basis. As the following table illustrates, we exceeded the BAI standard in every category during the past three quarters.

BAI standard accuracy rates versus Wells Fargo actual accuracy rates

Wholesale lockbox error type	Q4 2019 Actual[1]	Q1 2020 Actual[2]	Q2 2020 Actual[3]	BAI Benchmark[4]
Wholesale payment processing errors Wells Fargo wholesale payment processing accuracy percentage	99.9953%	99.9951%	99.9947%	99.9865%
Wholesale procedural errors Wells Fargo wholesale procedural accuracy percentage	99.9996%	99.9996%	99.9996%	99.9962%
Wholesale deposit processing errors (accuracy) Wells Fargo wholesale deposit processing accuracy percentage	99.9908%	99.9925%	99.9921%	99.9693%
Wholesale distribution errors Wells Fargo wholesale distribution accuracy percentage	99.9942%	99.9897%	99.9912%	99.8992%
Wholesale deposit reporting errors (accuracy) Wells Fargo wholesale deposit reporting accuracy percentage	100%	100%	99.9520%	94.9612%
Wholesale late or failed deposit reporting errors Wells Fargo wholesale late or failed deposit reporting accuracy percentage	99.9760%	99.9846%	100%	92.3578%

Wholesale lockbox error type	Q4 2019 Actual[1]	Q1 2020 Actual[2]	Q2 2020 Actual[3]	BAI Benchmark[4]
Wholesale detail reporting errors (accuracy) Wells Fargo wholesale detail reporting accuracy percentage	100%	99.9997%	99.9998%	99.8434%
Wholesale late or failed detail reporting errors Wells Fargo wholesale late or failed detail reporting accuracy percentage	99.9996%	99.9996%	99.9997%	94.7185%

1. Q4 2019 aggregate division performance.
2. Q1 2020 aggregate division performance.
3. Q2 2020 aggregate division performance.
4. BAI published industry benchmarks.

In addition to measuring against the BAI quality indicators, we also track daily incoming mail volume. We log mail volume after each pickup. If there are any deviations from historical patterns, we promptly report them to the U.S. Postal Service.

Our performance measurement results are available upon request.

Merchant processing

Year to date as of August, our 2020 average authorization system availability is 100%. In 2019, average system availability was 100%.*

*Source: First Data internal reporting.

Consolidated payables

Performance indicator	October 2018	November 2018	December 2018	Service level target
Timeliness Files delivered to customers within the published service level	99.98%	99.99%	99.99%	98.00%

Consolidated receivables

Performance indicator	October 2018	November 2018	December 2018	Service level target
Timeliness File acknowledgement is transmitted to customer within the published service level	99.74%	99.94%	99.63%	99.50%

16. Describe the procedures established for disaster recovery in the event of a systems failure or other disaster at the bank's primary processing site.

We have formal teams dedicated to managing our ongoing disaster recovery and business continuity planning (BCP) efforts. Our Enterprise BCP office sets the standards for our organization. Each line of business, in conjunction with operational risk management partners, helps ensure preparedness and compliance at the organizational levels.

Standard elements of our programs include:

- Annual plan review, testing, and maintenance
- Identification of alternate strategies and recovery procedures
- Identification of internal and external dependencies
- Identification of potential risks and controls for mitigation
- Prioritization of business functions and technology
- Procedures for communication with customers, suppliers, and essential staff
- Recovery of technology and data

Enterprise general program elements

Testing recoverability

We update and test disaster recovery procedures regularly, with the frequency and timing varying by business function or application. We exercise essential line of business recovery procedures at least annually. We also exercise critical systems at least twice a year.

Teams on call 24 hours a day, 7 days a week, ready to respond.

Critical functions

After a disruption, **we prioritize restoring and maintaining normal service levels for our critical functions**. We have teams on call 24 hours a day, 7 days a week, ready to respond to a disruption.

Components of our recovery plans vary based on the potential business disruption, such as a loss of facility, loss of technology, or significant reduction to our staff. We've identified the main areas most commonly affected, and provide our general approach to each in the following paragraphs.

Data centers

We quickly engage our technology teams when we detect a disruption at a primary data center. Our technology teams assess the situation and determine next steps based on the nature of the disruption. If we need to shift processing to an alternate data center, we can because we maintain redundant platforms for our business critical services. All alternate sites have sufficient capacity to maintain processing for an extended period.

In most situations, we can restore service at a primary data center for critical services within zero to 12 hours.*

We've strategically dispersed our data centers across multiple locations to minimize potential disruption within a specific geographic region.

*This does not guarantee that certain events will not affect Wells Fargo systems or that we will achieve specific recovery times in the event of a disruption.

Operation centers

If a disaster occurs at one of our primary operation centers, we use an identified backup site to take over day-to-day processing and support. We use our backup site until the primary site returns to normal conditions.

We've strategically dispersed our operation centers across multiple locations to minimize potential disruption within a specific geographic region.

Treasury management-specific program elements

In addition to our enterprise general program elements, we've incorporated the following treasury management-specific elements into our disaster recovery and BCPs.

Communication

We offer the following notification methods to inform you of a service disruption, including:

- Phone calls or emails from your dedicated client service officer, Ruth Felix
- Front-end messages advising the City about system issues; available when you contact Treasury Management Client Services though our toll - free number
- System status alerts displayed on the homepage of our online banking portal

The method we use to communicate with you depends on the nature of a disruption.

If a disruption prevents you from accessing your information, Ruth can help. They have access to bank systems and can provide you with the account information, balances, and other data you need to continue operating.

Backup strategies for online channels

Online banking portal

If the online banking portal experiences a disruption, we'll use our backup environment or invoke product recovery plans as needed. We maintain a duplicate environment of our online banking portal in a separate location. We actively monitor the readiness of the alternate site by using it to deploy code enhancements and enact disaster preparedness simulations.

Mobile service*

We have a backup environment for our mobile platform in the event of a system outage. Our mobile service and online banking portal channels use different web addresses and user interfaces. This means that, depending on the nature and root cause of an outage, users may be able to access services through the mobile service if our online banking portal is disrupted.

Additionally, our mobile token feature allows users to use their mobile device in place of a physical token to access secure services. This can be helpful in instances where users are separated from their physical token by a disaster event.

*Requires iOS version 10.1 or higher, or Android version 7.0 or higher.

Backup strategies for core services

ACH

If we invoke a disaster recovery or BCP, processing will divert to the backup site as necessary. Our primary and backup sites are in different geographies to minimize potential disruption in one location. All sites (primary and backup) are staffed and operational, using redundant systems as appropriate. We conduct regular testing of our ACH direct origination capabilities to maintain optimal reliability and effectiveness.

Although we have geographically dispersed backup sites and processes for automatic processing of ACH transactions, manual workarounds may become necessary, depending on the nature and severity of a specific disaster or emergency. For example, we can reprocess your last payroll file if you're unable to transmit it through your usual channel. If manual workarounds do become necessary, we'll work with you on a case-by-case basis to determine the most effective way to process files.

ACH Fraud Filter

Business disruptions can create opportunities for fraud. It's important that during a disruption you can continue to view details and make decisions on your ACH transactions. You can access our ACH Fraud Filter service online, through our mobile service, or you can obtain ACH information by calling Ruth.

Lockbox

If we invoke a disaster recovery or BCP, lockbox processing at the affected site diverts to a backup site, as needed. The specific location of the backup site will depend on the impact of the disruption. Alternative processing may include diverting mail delivery from the affected primary site to the backup site.* In such a case, after we receive mail at the backup site, we'll follow customer-specific instructions to process checks, capture accounts receivable data, and image checks and invoices. We'll notify customers and couriers (as appropriate) about their impacted processing site or procedures.

*Depending on the severity of a disaster, delayed mail delivery may affect processing time, which could impact normal service level agreements.

Cash vault

If a primary cash vault site is unable to accept, deliver, or process cash, we'll divert functions to an identified backup site as needed. Receipt or delivery of cash may be delayed due to the transportation distance between you and the backup site. If such an event occurs, we will take reasonable action to resume our normal cash delivery service levels as soon as possible, given available transportation options.

Wires

When we invoke a disaster recovery or BCP, processing diverts to a backup site. Each backup site has the ability to accept transferred workloads (including telephone calls).

We maintain redundant connections to two different Federal Reserve Banks in order to minimize potential disruption within a geographic region. We conduct comprehensive joint testing with the Federal Reserve Bank on a quarterly basis.

You can also enroll in a backup wire transfer channel. For example, you can choose from telephone-initiated wires or our mobile service to access select functions of our wire transfer service.

Check outsourcing

Our facilities, employees, and business functions are geographically disbursed, and if one site is unable to function, we'll move check printing to our other site. The sites mirror each other and operate in the same way, making it easy to transition print jobs from one site to another. On a regular basis, we move work back and forth for BCP testing and to accommodate special needs.

Account reconciliation plans and positive pay

If you're unable to access our online banking portal or send files using data transmission because of a business interruption, you can still key small-volume issues, cancellations, and voids through our mobile service.

Remote deposit

We automatically store checks that you scan using our remote deposit service on our servers. If a power outage or other disruption prevents you from completing a deposit, it remains in a pending deposit status. It will remain in this status until you can access the system again. You'll have the opportunity to review the deposit before submission to the bank to help ensure the inclusion of all your checks. As a backup, you can make deposits using our mobile deposit service* or take your deposit to a Wells Fargo branch.

*Supported devices include iPhone, iPad, and Android.

Transmission service

We have a backup environment for our browser-based transmissions service. It includes an alternate website in case our online banking portal is unavailable. As a best practice, we recommend that customers leverage URLs if using automation scripts and not IP addresses, which are subject to change.

Commercial card

We routinely back up our card data. Additionally, we partner with Total System Services, Inc. (TSYS) because of the comprehensive plans they have in place for commercial card disaster recovery. In most situations, we can restore commercial card processing within 12 to 24 hours of disaster declaration.

The City will host the commercial card reporting system on your server. This gives you control over developing and maintaining a database backup plan for disaster recovery. We retain a copy of your reporting system website and database structure to assist you in the event of a failure of your disaster recovery plan. If needed, Visa®, Mastercard®, or Wells Fargo can provide data files to restore available transactional and cardholder data.

Keeping current

To keep current with changes in the business continuity and disaster recovery industry, we're active in forums that discuss and share best practices.

The forums include:

Disaster Recovery Journal	**Disaster Recovery Institute International**	**Global Continuity**	**Business Continuity Institute**

17. What type of on-line banking systems do you use for: (a) cash management, (b) payments (i.e. ACH, wires, etc.), (c) reconciliation, (d) positive pay decisions, (e) stop payments, (f) lockbox?

All of the services mentioned above, along with numerous others, are provided through our online banking portal. We provide details on our online banking portal in the paragraphs to follow.

Our online Basic Banking service offers you an easy and efficient way to manage your treasury accounts through your desktop, tablet, or mobile device, without the complex, traditional information reporting services.

Benefits

- Quick access to view and edit your account information or make funds transfers
- Up to 90 days of account history that you can download into various formats
- Simple, flexible control to add new users and administrators
- Streamlined design and experience across devices

Reporting options

You can easily view your account activity through the following reporting options.

Account summary

Gives you a view of your cash and credit account activity, including beginning day, outstanding, and available balances. You can select accounts and options that include:

- Group
- Cash accounts
- Credit accounts
- Print

Account details

You can view 60 days of transaction history, plus up to an additional 30 days of account history for your business checking, savings, money market, credit cards, select loans, and Wells Fargo line of credit accounts. You can also download account history directly into formats that include Microsoft Excel, Quicken, QuickBooks, or comma-delimited.

Account groups

Allows you to categorize your accounts into groups. Your authorized users can transfer funds between accounts in the same group, with no limit to the number of groups you can create.*

*We recommend grouping no more than 50 accounts per list.

Transfer summary

Your authorized users can view and edit pending scheduled transfers and previously completed transfers.

CEO Mobile® service

In addition to our online banking portal, you can access the full CEO Basic Banking application from your mobile device and:

- View account summary, detail, and up to 90 days of history for your cash and credit accounts
- Initiate or schedule funds transfers between eligible accounts
- Add new users and administrators easily through the CEO Administration tool
- Experience the same features and functionalities of the online portal, including printing and downloading

Online administration

Through our online administration service, your administrators can easily:

- Add new users
- Disable or delete users
- Give users access to specific accounts and services
- Modify existing authorizations
- Reset passwords

Our online banking portal is **available 24 hours a day, 7 days a week**, providing you with single sign-on access to account information and a wide range of financial services. By customizing your portal home page, you can view your account balances and transaction information at a glance.

The services you can access through our online banking portal are listed in the following table.

Online services	
Treasury Management	**International Services[1]**
ACH Payments	Canadian Treasury Services
Alerts	Foreign Exchange
Basic Banking	CEO Trade
	▪ Export Services

Online services

Cash Vault
Deposit Maintenance
Desktop Deposit
E-Box® Decisioning
Electronic Document Delivery
Fraud Manager
- Positive Pay
- Check Issues[2]
- ACH Fraud Filter

Healthcare Claims Payments
Healthcare Supplier Payments
Lockbox
Payment Manager
Payment Manager File Validation Tool
Returned Item services
Reverse Positive Pay
SAFE Transmission
CEO Administration
Statements & Notices
Sweep Statements and Confirmations
Transaction Search
- Search Transaction History
- Images
- ACH Deletes and Reversals
- Stop Payments

Treasury Information Reporting
- Cash Flow Analysis
- Pooling and Intercompany Loans

WellsTax® payments
Wire Transfer

Prepaid Card Solution

CEO Recognition Card

Purchasing

Commercial Card Expense Reporting
- Import Services
- MIS and Images

Credit, Loan, and Finance

Asset Based Lending
Business Credit Services
Credit Management
Fed Funds Online
Global Fed Funds
Interest Rate Management
Loan Document Templates
Mortgage Information Reporting
Receivables Financing
Supply Chain Finance
Warehouse Lending Finance
WFBCI Customer Reporting

Trust and Investment[3]

Fed Funds
Institutional Investing: Reporting
Institutional Investing: Trading
Market Linked Investment Offerings
Mutual Fund Reporting
Mutual Fund Trading
Prime Services
Retirement Plan Payments
Retirement Professionals Workstation
Retirement Solutions
Securities Lending Reporting
Security Valuations
Trust Analytics
Trust Information Delivery
Trust Portfolio Reporting
Trust Transaction Management
Wells Capital Management
Wells Fargo Advantage Funds
Wells Fargo Securities – Fixed Income Sales

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1. Deposits held in non-U.S. branches are not FDIC insured.
2. Add new checks, cancel existing checks, or place stop payments.
3. Investment products are not FDIC insured, are not deposits of, or guaranteed by the bank, and may lose value. Deposit and credit products are offered by Wells Fargo Bank, N.A. Member FDIC.

Features and capabilities

With our online banking portal, you can:

- Sign on for services, including alerts by email or text
- Centralize your payment and disbursement capabilities
- Place stop payments, research transactions, and view images
- Customize and download current and previous day reports
- Initiate domestic and international ACH payments, wire transfers, and foreign exchange, trade, credit, and trust transactions
- Mitigate fraud and operational risk with advanced monitoring tools
- Set and manage user authorizations, transaction limits, and assign administrators

Hardware and software requirements

You can access our online banking portal through most web browsers that use 256-bit Secure Hash Algorithm (SHA) encryption without any proprietary software.

Hardware requirements are specific to the operating system and browser you are using and specific services such as Autolink and Desktop Deposit.

We support all operating systems that meet our current browser* and plug-in requirements, as listed in the following table.

*While our services may work with older versions of the operating systems and browsers listed in the table, we don't formally support them.

System requirements*	
Supported operating systems	▪ Windows 10 and Windows 10 Professional ▪ Windows Server 2012 ▪ macOS Mojave 10.14 ▪ macOS High Sierra 10.13
Supported browsers	▪ Microsoft Internet Explorer 11 ▪ Microsoft Edge ▪ Safari (only on Mac) ▪ Mozilla Firefox (only on Windows) ▪ Google Chrome
Browser plug-ins and settings	▪ Adobe Reader 7 (for viewing reports) ▪ Adobe Flash Player 7 (for viewing tutorials) ▪ JavaScript-enabled ▪ Session cookies-enabled ▪ XHR-enabled

System requirements*	
User level	▪ Administrative rights to the computer where Autolink will be installed

*System requirements are subject to change and may vary for other online applications. For the most current requirements, go to wellsfargo.com/ceosystemrequirements.

Security features

User security

All users must enter a company ID, user ID, and password to access our online banking portal.

In order to access transaction-based or user management services, a user must enter a PIN and token code. This second level of authentication helps ensure that the individual performing an activity on your account is authorized to do so.

Dual custody

To reduce your fraud risk, we require dual custody (separate users to initiate and approve) to release online payment transactions, and for any administration services related to transaction-based services.

> Dual custody is an industry standard and best practice. This feature helps protect against fraud that could originate inside or outside your company.

For maximum effectiveness, dual custody should involve two users on different computers or mobile devices.

You can choose to add dual custody to other online features such as user setup and password resets.

By separating user tasks to initiate and approve a payment or make changes to user access, you are better positioned to help prevent fraud.

Dual control

For added security, users initiate and approve separately.

Additional security measures

In addition to user authentication, we offer **extensive security measures to help safeguard your information** when you access any of our online services. From physical security of our data centers to encryption of data transmissions to sophisticated access controls, **we take precautions to help ensure that your information is safe**.

The security of our online banking portal includes:

- Computer network security
- Data center security
- Round-the-clock monitoring
- Data integrity
- Access controls
- Internal controls

18. How many business days is data stored on the reporting system and available for customer access for each system listed above? How far back is data warehoused?

Online and mobile information reporting

As a standard, our information reporting service provides access to seven calendar days of history. You can customize reports to show activity by date, or by date range. For an additional fee, the City can choose extended storage for 30, 60, or 90 calendar days for current day reports, and 30, 60, 90, or 120 calendar days for previous day reports.

You will determine your history retention during implementation and choose from the retention periods listed in the previous paragraph. You can download previous and current day reports in PDF, BAI V2, CSV, and Excel formats.

Online transaction search

Through our online transaction search, we maintain online records of posted transactions for seven years. You can search by date range. History retention is determined by our system and cannot be changed. You can download images of paid and deposited checks in either PDF or RTF formats. We also maintain originated ACH transaction information for up to 180 days or 13 months with our extended storage option.

19. Describe the bank's security procedures for its information reporting systems listed above, both for access and information protection.

We've implemented multiple layers of protection to reasonably keep the City's data secure from access by unauthorized employees and vendor personnel. We provide information about the logical, procedural, and physical controls we use in the following paragraphs.

Logical controls

We only assign privileged access to systems and information, including customer data, to individuals who require it to perform their job. How we assign and administer access varies by system, application, and environment, but we require manager approval before we assign the access. We review user access on a quarterly basis.

We require all our team members, contractors, and vendors to comply with information security policy and procedures. Team members and contractors must complete annual information security and ethics training, and applicable regulatory certifications.

Procedural controls

We maintain network monitoring 24 hours a day, 7 days a week including condition and activity monitoring, and patch management processes.

Any changes to our systems must adhere to the corporate change control management process. Prior to execution and validation, management must review and approve any proposed environment changes.

Managers also review any system level updates, such as security patches and software upgrades, prior to implementation.

Physical controls

We require physical security measures for facilities that house information processing equipment to meet the requirements of our Information Processing Facility Performance Specifications. We determine the specific physical controls used at each site based on the functions performed there.

We do not share specific information regarding our security safeguards and practices. However, they may include the controls listed in the table below.

Physical security controls	
Access control mechanisms at entrances and exits	Individually-assigned ID cards and badges
Biometric authentication	Mantraps
Cameras	Restricted access to specific areas, such as computer rooms
Guards	Visitor sign-in and escort requirements

20. For the systems listed above, describe the security measures for the company's Master User/Security Administrator. What functions does the company's Security Administrator perform?

Your company administrator can perform a variety of functions through our online administration service, including:

- Creating, maintaining, and deleting user access including password resets
- Restricting user access to services and accounts and setting transaction dollar limits
- Creating account or user lists to better organize your users and accounts; lists can be used throughout the administration service to easily select multiple accounts or users to administer
- Setting up multiple users with similar access controls at the same time
- Establishing additional controls for specified transactions and functions that require review and approval by a one or more approvers before the request is executed*
- Setting up forced dual controls for all tasks performed through the online administration service*
- Running management reports that show current user entitlements for a rolling 365 days of administration activity history

*We require dual custody for money movement transactions and changes to user access.

Implement dual custody

To reduce your fraud risk, we require dual custody (separate users to initiate and approve) to release online payment transactions and for administration actions related to transaction-based services. Dual custody is an industry standard best practice that helps protect against fraud attempts that could originate inside or outside your organization. For maximum effectiveness, dual custody should involve two users on different computers or mobile devices.

You can choose to add dual custody to other administration features such as user setup and password resets.

We support two different administration roles through our online administration service and describe them in the following paragraphs. We can segment access to account information to users assigned to the administrator role.

Company administrator

Company administrators can perform all administration functions through our online administration service. Functions include:

- Creating user profiles
- Determining service entitlements
- Customizing dual custody settings
- Determining company-level guidelines for your online services

Administrator

The company administrator assigns the administrator roles to manage specific users, services, accounts, or ACH IDs. Administrators can access many of the same functions as company administrators, but are limited to their assigned users, services, accounts, and ACH IDs. Administrators cannot:

- Create additional company administrators
- Reset company administrator passwords
- Edit and copy company administrator authorizations

Audit features

We offer an online audit report that lists:

- Authorization activities performed by your administrators
- Access assigned to each user

We also internally log and monitor customer events that occur on our online system. The service event logs provide information about your user activities, including login, user profile updates, and transactional activity. The logs identify the user, date and time of event, and other information relevant to the activity performed.

21. Do you offer a payee match positive pay program? Are cashed checks verified against the issue file at the point of encashment (i.e., by bank teller)? If yes, how quickly is Teller System updated with new check issuances? If no, what is the process for dealing with cashed checks?

Yes. We offer an optional Payee Validation service. You include payee names with your check issue information. We validate payee names on all checks presented for cashing* at our teller windows and on deposited checks above the threshold dollar amount. Payee matches are paid, and we report payee mismatches through our online fraud management tool so that you can make pay or return decisions online.

*If the payee is not a Wells Fargo customer, he or she will be charged a check cashing fee when a check is presented for cash at a Wells Fargo location. Alternatively, the City has the option to pay the check cashing fee as part of your account analysis.

Our tellers have access to your positive pay check issue information, including check dollar amounts and serial numbers. If you use our optional Payee Validation service, the payee name information you include on your check issue file will also be available for teller verification at Wells Fargo branches for cashed checks and some deposited checks.

We capture check issue files more than 50 times per day, seven days a week. Your positive pay check issue information reaches Wells Fargo tellers within 30 minutes of receipt. This frequency helps ensure that our tellers have the most current check issue information.

When presented with an unmatched item,* our tellers may return the check to the payee and refer them to the City for further instruction.

To avoid problems or delays at the teller line due to missing check information, you should not distribute checks prior to the issue date. If you send a future-dated issue record that information will not be available for positive pay in our system until the morning of the issue date.

*If the payee is not a Wells Fargo customer, he or she will be charged a check cashing fee when a check is presented for cashing at a Wells Fargo location. Alternatively, the City has the option to pay the check cashing fee through your account analysis.

22. Does your system provide real-time, online check images for positive pay reporting to allow easier pay/return decisions? If not, what data is captured and/or provided at time of presentment?

Yes. You can access images of exception items online in real time. You can view, print, and download images, and submit pay and return decisions.

You can also use our mobile service to access real-time images, view positive pay exceptions, and make pay and return decisions.

23. Does your positive pay system allow for notification of fraudulent return?

Yes. Please refer to the previous response.

24. Describe the methods (e.g. Internet, PC, manually) the bank offers to place stop payments.

a) What is the deadline for same day action?

b) Will the system verify if a check has been paid before accepting the stop?

c) How much history is examined in the verification process?

d) How long will the stops remain in effect?

e) Can the period be extended?

f) Can you request the stop payments for a range of checks? What is the limit of the range?

g) What time is the system available for placing stop payments?

Stop methods

You have two options to submit stop payment orders: through our online banking portal or by electronic transmission, where you include information in your account reconciliation services (ARP) issue file. With both methods, you can send stop payment requests 24 hours a day, 7 days a week — we'll process them in real time.

Online

Stop payments are effective immediately after you successfully initiate the request through our online service.

The system automatically reviews the previous 180 days and intraday teller-cashed activity to determine whether a requested check has paid. While you can place stop payments on a range of checks, there is a maximum number of 50 stops that you can place at one time. To place stop payments on more than 50 checks at one time, please contact your dedicated client service officer, Ruth Felix, for assistance.

By transmission

You can make a request as late as 11:00 p.m. ET and still receive same-day posting.

The system automatically reviews the previous 90 days and intraday teller-cashed activity to determine whether a requested check has paid. If you need to place a stop payment on a range of checks, you must include each individual check number in the file. As an alternative, you can contact Ruth for assistance with a stop payment on a range of checks.

Effective period

Stop payments remain in effect for six months. You can renew an individual stop payment on an as-needed basis through our online service or choose to use our automated renewal option. The renewal option lets you:

- Extend a stop payment for up to an additional six years (in 12-month increments)
- Predetermine a dollar threshold for automatic stop payment renewals
- Limit the number of times a stop payment is automatically renewed

25. Discuss how the bank handles items presented after the company is notified of its total daily clearings and whether bank charges apply.

Late check presentments will post to your account; however, you are not required to fund those items until the following day.

26. Are both full and partial reconciliation offered?

Yes. We offer both Full and Partial ARP. Our ARP services provide flexible reporting options. The City can customize your account reconciliation to match your accounting needs by choosing which optional reports you need from the 14 we list in the following table.

ARP optional reports	
Paid Checks	Deposit Location
Outstanding Checks[1]	Credits
Posted Items	Bank Originated Entries
Stop Payments	Reversed Checks[2]
Issue Notices Not Received[2]	Matched Paid Items[2]
Voids and Cancels[1]	Prior Payments[1]
Issues This Cycle[1]	Unpaid Checks[1]

1. Only available with Full ARP.
2. Only available with Full ARP or Partial ARP with Positive Pay.

Sample reports

The following are samples of our most commonly requested optional reports, shown in PDF format. You may also receive optional reports in Excel, CSV, or flat file text (transmission) formats.

Paid Checks

WELLS FARGO	ACCOUNT RECONCILEMENT	PRINTED: 05-31-08 PAGE 1
P.O. BOX 63020 SAN FRANCISCO, CA 94163	ABC CORPORATION	TREASURY MANAGEMENT CLIENT SERVICES 1-800-AT-WELLS OPTION #2
ACCOUNT: 4999 222222	PAID CHECKS REPORT	PERIOD: 05-31-08 TO 05-31-08

SERIAL	ISSUE	POSTED	AMOUNT	TRANSACTION DESCRIPTION
450201004		5-31-08	20.00	INNR
450201005		5-31-08	200.00	INNR
4050101002	5-30-08	5-30-08	100.00	
4050101004	5-30-08	5-30-08	20.00	
4050101005	5-30-08	5-31-08	200.00	
4050201001		5-31-08	10.00	
4050201002		5-31-08	109.00	INNR
4050201003		5-31-08	1,000.00	
8			1,659.00	TOTAL

Outstanding Checks

WELLS FARGO	ACCOUNT RECONCILEMENT	PRINTED: 05-06-08 PAGE 1
P.O. BOX 63020 SAN FRANCISCO, CA 94163	ABC CORPORATION	TREASURY MANAGEMENT CLIENT SERVICES 1-800-AT-WELLS OPTION #2
ACCOUNT: 4999 222222	OUTSTANDING CHECKS REPORT	PERIOD: 0-00-00 TO 05-06-08

SERIAL	ISSUE	AMOUNT	CODE	OPTIONAL INFO	SERIAL	ISSUE	AMOUNT	CODE	OPTIONAL INFO
3051101003	5-3-08	1,000.00	0		3051101002	5-05-08	1,000.00	0	
3051101004	5-3-08	20.00	0		3051101003	5-05-08	20.00	0	
3051101005	5-3-08	200.00	0		3051101004	5-05-08	200.00	0	
3051201001	5-3-08	10.00	0		3051201005	5-05-08	10.00	0	
3051201002	5-3-08	100.00	0		4051201001	5-06-08	100.00	0	PAYEE NAME 1
3051201003	5-3-08	1,000.00	0		4051201002	5-06-08	1,000.00	0	PAYEE NAME 3
3051201004	5-3-08	20.00	0		4051201003	5-06-08	20.00	0	PAYEE NAME 3
3051201005	5-3-08	200.00	0		4051201004	5-06-08	200.00	0	PAYEE NAME 4
3051301001	5-3-08	10.00	0		4051301005	5-06-08	10.00	0	PAYEE NAME 5
18		5,210.00	TOTAL				5,210.00	TOTAL	

Stop Payments

WELLS FARGO	ACCOUNT RECONCILEMENT	PRINTED: 05-30-08 PAGE 1
P.O. BOX 63020 SAN FRANCISCO, CA 94163	ABC CORPORATION	TREASURY MANAGEMENT CLIENT SERVICES 1-800-AT-WELLS OPTION #2
ACCOUNT: 4999 222222	STOP PAYMENTS REPORT	PERIOD: 04-28-08 TO 05-28-08

SERIAL	STOP	REL/EXP	AMOUNT	CODE	OPTIONAL INFO	SERIAL	STOP	REL/EXP	AMOUNT	CODE	OPTIONAL INFO
3051100621	9-08-08	3-07-09	592.84	STOP/I		3051101005	9-15-08	3-14-09	200.00	STOP/NI	
3051100378	9-11-08	3-10-09	273.37	STOP/I		3051201008	9-18-08	3-17-09	10.00	STOP/NI	
3051100726	9-13-08	3-12-09	668.96	STOP/R		3051301008	9-21-08	3-20-09	10.00	STOP/NI	
3051101003	9-15-08	3-14-09	1,000.00	STOP/NI							
6			2,086.21	TOTAL NEW STOP PAYMENTS							
6			2,086.21	TOTAL STOP PAYMENTS							
1			668.96	STOP PAY RELEASES							

Voids and Cancels

WELLS FARGO	ACCOUNT RECONCILEMENT	PRINTED: 05-06-08 PAGE 1
P.O. BOX 63020 SAN FRANCISCO, CA 94163	ABC CORPORATION	TREASURY MANAGEMENT CLIENT SERVICES 1-800-AT-WELLS OPTION #2
ACCOUNT: 4999 222222	VOIDS AND CANCELS REPORT	PERIOD: 05-06-08 TO 05-06-08

SERIAL	ISSUE	POSTED	AMOUNT	TRANSACTION DESCRIPTION
3051101001	5-03-08	5-06-08	10.00	CANCL/I
3051101002	5-03-08	5-06-08	100.00	CANCL/I
3051101003		5-06-08	0.00	VOID
1			0.00	TOTAL VOIDS
2			110.00	TOTAL CANCELS/I
0			0.00	TOTAL CANCELS/NI

27. Detail how soon after the month end cut-off date the following will be sent for both full and partial reconciliation:

a) Bank statements

b) CD ROM of Canceled checks

c) Reconciliation information

d) Reconciled check file transmission (full recon only)

e) Paid check file transmission (partial recon only)

The following table lists the mailing dates and online availability of statements and optional reports.

Service option	Business days after cutoff: mailed	Business days after cutoff: available online
Demand deposit account (DDA) statements	3 days	1 day
CD-ROM with paid check images	11 days	Not applicable
Positive pay, full or partial ARP, and account statement		
Month-end cutoff	6 days	4 days
Non-month-end cutoff	4 days	4 days
Full ARP statement		
Month-end cutoff	6 days	4 days
Non-month-end cutoff	4 days	4 days
Partial ARP statement		
Month-end cutoff	2 days	1 day
Non-month-end cutoff	1 day	1 day

We do not offer microfilm copies, and we do not return paid or cancelled checks to you with your statement.

28. What has been your average monthly ACH origination volume (items and dollars) during the past 12 months? Distinguish between debit and credit volume.

Approximately 82% of our ACH volume involves B2C transactions. This volume includes direct deposit of payroll and direct payments to consumers. The remaining 18% of our ACH volume consists of B2B transactions.

Our average monthly ACH origination volume for 2019 follows:

Volume type*	Items	Dollars
Total ACH origination	537,311,311	$839 million
Debits originated	338,359,427	$242 million
Credits originated	198,951,884	$597 million

*Does not include on-us transactions.

29. What are the cut-off times for receipt of ACH and Fed Wire transfer instructions?

The following table lists the opening and cutoff times for our wire transfer system, by transfer type, for same-day execution of initiated wires. The same times apply to all of our wire initiation methods.

Transfer type	Opening time (ET)	Cutoff time (ET)
FedWire	8:00 a.m.	5:30 p.m.
CHIPS	8:00 a.m.	5:00 p.m.
U.S. Federal tax payments	8:00 a.m.	4:00 p.m.
Within Wells Fargo*	8:00 a.m.	8:00 p.m.

*Funds moved across Wells Fargo accounts that can be initiated from all origination channels to all our available accounts.

The following table lists the cutoff times for receipt of ACH transaction for each input method.

Input method	Deadline for day cycle[1]	Deadline for night cycle[2]	Transit same-day settlement	Deadline for same-day book transfer[3]
Direct origination	12:00 a.m. ET	9:00 p.m. ET	9:00 a.m. ET and 1:00 p.m. ET	9:00 p.m. ET
Consolidated payables file	8:30 p.m. ET	8:30 p.m. ET	9:00 a.m. ET and 1:00 p.m. ET	8:30 p.m. ET

Input method	Deadline for day cycle[1]	Deadline for night cycle[2]	Transit same-day settlement	Deadline for same-day book transfer[3]
Online	9:00 p.m. ET	9:00 p.m. ET	9:00 a.m. ET and 1:00 p.m. ET	9:00 p.m. ET
ACH Application Programming Interface (API)	8:30 p.m. ET	8:30 p.m. ET	9:00 a.m. ET and 1:00 p.m. ET	9:00 p.m. ET

1. Two-day settlement.
2. Next-day settlement.
3. Both the originating and receiving accounts must be Wells Fargo accounts. The $100,000 transaction limit for the National Automated Clearing House's (Nacha's) Same Day Rule does not apply to on-us transactions.

30. What procedures does the bank use to verify accurate and secure receipt of all types of EDI transmission methods? Does the bank provide automatic file receipt acknowledgments? If so, how? What information is included in the acknowledgement?

When you transmit a file using one of our transmission protocols, you can receive an automatic file receipt notification by email. This notification includes a time stamp and indicates whether your file loaded successfully or failed.

You can also choose to receive file transmission notifications by email when we:

- Receive a file with no data
- Receive an unexpected file
- Do not receive an expected file

ACH direct origination

We offer file acknowledgments as part of our ACH direct origination service.

When we receive an ACH file, our service generates a CNote transmittal register that we send to you by email, transmission, or fax within 15 minutes of receipt of your file. The CNote confirms receipt of your file and includes a time stamp and information about the total number of items and total dollar amounts of your file.

Consolidated payables

For additional assurance that we received your file, we offer file acknowledgments as part of our consolidated payables service. We handle the CNote internally and notify you only if you need to address an issue with your ACH transactions.

We let you know by transmission, email, or both methods that your file has reached our system and undergone initial processing for delivery to our payment systems. You can choose the format: XML, ANSI X12 997 (standard EDI), or human-readable report. You can also view and download acknowledgments online.

The acknowledgment* includes the following information:

- Number of transactions received
- Number of transactions successfully processed
- Number of transactions rejected

*Acknowledgments report on file processing only; acknowledgements do not provide information on clearing and settlement of payment transactions or payment completion.

31. In relation to EDI and for each of the networks listed below, what are the cut-off times in relation to settlement/value date, and the procedure and time frames for deletion and cancellation of payment orders?

a) ACH

b) Fed Wire

c) Other ________________

The following table shows our cutoff times for submission of payment files and deletion of transactions. For files containing multiple payment types, the earliest applicable deadline applies for the entire file.

Network	Cutoff time (ET)	Settlement	Deletion (ET)[3]
ACH[1]	8:30 p.m. Sunday release time	Next-day and two-day	Reversal within five days after settlement[1]; delete notification by 4:00 p.m. on the day you submit your transaction or two business days prior to the transaction posting date (whichever is later)
	9:00 p.m.	Same-day (on-us)	Reversal within five days after settlement[1]; delete notification by 4:00 p.m. on the day you submit your transaction
	9:00 a.m. and 1:00 p.m.	Same-day (transit)	Reversal within five days after settlement[1]; delete notification by 8:00 a.m. on the day you submit your transaction
Fedwire	5:30 p.m.	Same-day	None
CHIPS	5:30 p.m.	Same-day	None

Network	Cutoff time (ET)	Settlement	Deletion (ET)[3]
SWIFT	5:00 p.m.	Depends on destination	None
Wells Fargo virtual card payments	Accepted when received	Processed when received	None
Standard checks	10:00 p.m.	Next-day mail	Call no later than 1:00 p.m. on mail day to request a check pull; we can accommodate check pulls, subject to cutoff times, on a best-effort basis
Same-day checks[2]	12:00 p.m.	Same-day mail	Call no later than 1:00 p.m. on mail day to request a check pull; we can accommodate check pulls, subject to cutoff times, on a best-effort basis

1. Complies with Nacha guidelines.
2. Subject to volume limitations and additional fees.
3. Our consolidated payables service does not perform modification, deletion, or cancellation of payment orders.

32. Are any of the bank's EDI processes (e.g., IT, Operations) outsourced? If yes, are the processes transparent to City of Doral? If no, describe and include diagrams of file and payment flows.

No. We don't outsource any part of our EDI processes. However, after we complete check outsourcing processing, we send the checks to our presort partner, Pitney Bowes, who applies postage and delivers the mail to the post office. Additionally, if you request overnight delivery of your checks, we use your designated overnight courier (UPS or FedEx).

33. Discuss how daylight overdraft limits might impact your bank's processing of EDI payments.

We may establish a daylight overdraft limit as a benefit to you because it allows wires, prepaid ACH payments, and teller check cashing to be processed more timely. It also gives the City much needed flexibility of your cash flow until the end of the day. Your relationship team has discretion to set daylight overdraft limits. The teams sets them based on your overall relationship with the bank, taking into consideration:

- A credit analysis
- An evaluation of your transaction volume history
- A review of the organizations with which you transact business through the ACH system

We'll notify you if pending transactions exceed available balances over the preapproved daylight overdraft and determine appropriate action. However, we would not generally notify you if transactions are processed because of preapproved daylight overdrafts.

Limits for wire

We use internal wire risk processing limits to identify out-of-pattern activity. We notify you of such activity, at the discretion of your relationship team.

Limits ACH

We use file dollar limits for ACH payments. We closely monitor all activity, taking into consideration how many company IDs you have, how often you send files, and when you send files. Should you exceed your limit, your relationship manager, Vincent Mattio, receives notification and will approve or decline the file. We will evaluate your business needs to determine your projected transaction volumes and use the evaluation to set debit and credit limits that reflect the higher end of your normal activity. Vincent will review the limits periodically to help ensure that they remain appropriate for your needs.

We use ACH debit and credit transactions to restrict the total dollars that we can process for scheduled settlement over consecutive days. These are multiple-day exposure limits.

As a matter of policy, we don't inform you of the limits that we set for ACH exposure. We set a limit for each of your accounts with ACH settlement and total those to determine the aggregate ACH exposure at the relationship level for approval purposes.

34. Provide a detailed description of your EDI implementation process including critical path items and a sample implementation schedule.

EDI implementation process

EDI implementation lead time varies depending on several factors, including the date we receive your signed Business Requirements Document, and your requirements, testing, and technical capabilities. A custom implementation can take longer than the times shown in the table below.

Product	File format	Lead time	Notes
Consolidated payables service	Standard	1 to 2 weeks	Includes all payment types
	Custom	4 to 6 weeks	Includes all payment types
Consolidated receivables service	Standard	1 to 2 weeks	Includes all payment types except E-Box
	Custom	4 to 6 weeks	Includes all payment types except E-Box

Product	File format	Lead time	Notes
E-Box service	Standard	6 to 8 weeks	Includes consolidated receivables setup
	Custom	8 to 10 weeks	Includes consolidated receivables setup and any inbound files

We'll conduct applicable end-to-end testing with our source systems. The City will need to produce a system-generated file, receive test files with acknowledgments and confirmations, and upload a file into your system and review it for errors or issues.

The following factors affect the length of implementation.

File formats and transmission

Consolidated payables service

Before we begin implementing the City's services, your technical team will work with one of our project managers to help you determine the file format, delivery method, and system interfaces, and to answer any questions you have. If you're using a proprietary format, you will also need to supply a file specification and data sample. Your project manager will coordinate review of the file and work with you regarding what is required to proceed.

Consolidated receivables service

The length of the implementation will depend on the City's specific formatting needs. Any changes you make to your format requirements once we've started the project (for example, to custom programming or business logic) will affect the implementation lead time.

Testing requirements

We conduct formal testing of all application interfaces with your systems. We'll work with you to determine the appropriate input and output file formats. The City's final approval is required before we move your application from a test environment into production.

Self-testing

The File Validation tool is a free and optional service that allows customers who use a standard format to validate file formatting before submitting a file for processing. This option is particularly useful during implementation and helps ensure we will successfully receive and process a file.

ACH implementation process

The lead time to implement ACH direct origination services is approximately 17 business days for our most commonly used protocols and transmission delivery methods, ACH Payment service is approximately five business days, ACH Fraud Filter service is approximately three business days, and ACH Online Cash Concentration service is approximately 10 business days. Your implementation team will work with the City during your implementation to determine the lead time based on your specific requirements.

Critical factors that can impact your implementation include:

- Size and scope of the implementation
- Customer engagement and responsiveness
- Selected transmission protocol and transfer method

35. Describe any other requirements (hardware, software, encryption, human resources, etc.) to process EDI transactions through your institution.

There are no specific hardware and software requirements for implementing any of our electronic commerce services. Our systems are compatible with most treasury workstations and enterprise resource planning (ERP) systems.

36. Does the bank offer zero balance subaccounts that may be funded automatically from a designated funding account?

Yes. We offer a multi-state zero balance account (ZBA) structure that includes one master funding account and multiple ZBAs. The master account automatically funds the ZBAs, provided sufficient funds are available.

You can link an unlimited number of ZBAs to each master account*. You can establish up to nine tiers† of accounts within your ZBA structure.

37. What are the cutoff times for same day credit of deposits made by Armored Carrier to a branch? To a cash vault?

Our cutoff times for same-day ledger credit vary based on how you make your deposit.

Branch deposit services

- **Deposit-enabled ATM**— ATM deposits made before 9:00 p.m. local time will be posted on the same business day. You receive credit the next business day for deposits you make after the deadline, on weekends, and on federal holidays.
- **Night depository** — Once we process your deposit, you receive same-day credit for cash and check deposits made prior to the cutoff time.
- **Teller line** — You receive same-day ledger credit for both cash and check deposits made by branch closure, local time.

Proximity study of branch depository services

We provide details on our branch locations in Tab B of the Appendix section of the proposal.

Remote cash capture (smart safe)

Most customers choose to receive provisional deposit credit the next business day through our standard or premium remote cash capture service.

We can provide provisional same-day credit to the City's account. However, this level of service requires establishing a cutoff time that is before the end of a typical business day, which can cause reconciliation problems. In anticipation of matching transaction data, we post on the same day your deposits made on or prior to the cutoff time. We then post the deposits that you make after the cutoff time to the next business day.

The following table shows the cutoff times in local time.

Type	Cutoff time (local time)	Provisional credit received*
Standard	3:00 a.m.	Next business day at end of day
Premium intraday†	4:00 a.m.	Next business day by 8:00 a.m.
Same day	Varies	Same business day at end of day

*At implementation, we can discuss questions you may have concerning receipt of provisional credit.
†Premium intraday is available to customers who contract with Loomis. Additional fees apply.

For check deposits that the City makes in the smart safe's manual drop slot, the "check-only" deadlines (shown in the following cash vault table) will apply. These deadlines are the cutoff times for the vendor courier to pick up deposits from your locations.

Deadlines for cash vault service

Different deadlines apply for cash only, check only, and mixed deposits of cash and checks. The following table lists deadlines by deposit type and location, in local time.*

Cash vault site	Deposit deadlines			Order deadlines	
	Cash-only	Check-only	Mixed	Touch tone	Online
Florida Miami	6:00 p.m.	4:00 p.m.	4:00 p.m.	11:00 a.m.	10:30 a.m.

*Cash Vault Locations, Deadlines, and Touch-Tone Quick Reference Guide, as of June 2020. Your relationship manager can provide this guide. You may also download it from our online banking portal, in the cash vault service section.

38. Does the bank have an automated coin/currency ordering service? Describe the deposit and change order procedures, cut-off times, security and other features of this system. Is there a minimum purchase requirement (e.g., standard straps of currency and full boxes of coin)?

Yes. You can place automated coin and currency orders. We debit your account the day that we fill your orders and include your location numbers (if applicable) on your electronic reports and statements.

Online tool for cash management

The City can create, track, and manage cash deposits and change orders online across multiple banks using the DTS Connex® Online Cash Management Tool.* You make deposits and place coin and currency orders that we provision with our cash vault by armored courier and cash vault by mail services.

International Financial Services requires a separate enrollment to use this tool.

*DTS, DTS Connex and corresponding logos are registered trademarks or service marks of International Financial Services, Inc. IFS is not a subsidiary or affiliate of Wells Fargo. The DTS Connex Tool and any other products or services provided by IFS to you are separate from the services you receive from us, and we make no representations or warranties and will have no liability to you in connection with products and services provided to you by IFS.

Security features

The DTS Connex tool features:

- Account lockout — the system will lock out a user account, if there are too many invalid password attempts
- Password expiration — the system requires users to update their password every 90 days
- Timed log off — the system will automatically log off users during periods of inactivity

Standing, automated order

During your cash vault service implementation, you can provide details to receive change orders on a predetermined delivery schedule (recurring orders). As a security measure, such standing orders eliminate the need to place an order manually, which can reduce the likelihood of inaccurate or fraudulent orders.

Deadlines

Different deadlines apply for cash only, check only, and mixed deposits of cash and checks. Coin and currency orders vary according to the cash vault that provisions your order.

Purchase requirements for change orders

There are no minimum or maximum purchase requirements for cash vault or branch change orders. You can order currency in loose, nonstandard quantities or in straps of 100 notes. You can order coin by the roll or in standard, full or half boxes.

We do not offer a discount for purchasing standard amounts or for using standard change orders.

For cash vault only, strapped currency and standard full boxes of rolled coin are less expensive than nonstandard options.

Cash vault services settlement option

We charge your account when the order is fulfilled.

Branch settlement option

You can pay using a check drawn on your Wells Fargo account or cash.

39. Provide an availability schedule.

a) How do you determine and calculate availability of deposited items?

b) Is this an accelerated schedule? How often is it updated?

We include the availability schedules for specific services in Tab C of the Appendix section of the proposal.

We review our availability schedules annually. We determine availability in accordance with applicable law and Wells Fargo's availability policy. Our policy considers factors such as (but not limited to) the routing transit number on the check, deposit location, and deposit method (branch, deposit-enabled ATM, remote deposit capture).

We give immediate availability for on-us items, except for our controlled disbursement items. Those items are available on the following business day.

We calculate availability on an item-by-item basis.

Most of our customers use our accelerated availability schedule. We offer alternate schedules on a case-by-case basis. Your treasury management consultant, Jackie Kobialko, can work with you to help ensure that you have the most appropriate availability schedule for your account.

40. Describe the bank's Lockbox products and services. Using Attachment E as a basis, confirm your ability to meet these requirements and describe how you would structure City of Doral Lockbox services. Would your firm be able to offer this service at a facility within Florida, preferably Miami-Dade County?

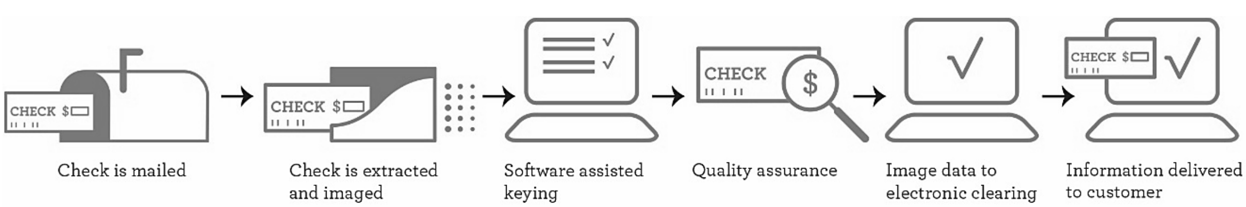
We would be happy to continue providing our wholesale lockbox service through our Orlando lockbox site.

You can streamline your payment processing by directing payments accompanied by non-scannable remittance documents (mostly business-to-business) to a wholesale lockbox at Wells Fargo for processing.

By using our wholesale lockbox to process your payments, you may be able to accelerate collection of funds and reduce in-house processing expenses. You may also be able to meet early deposit deadlines and benefit from improved cash forecasting with intraday availability of funds.

How it works

The following workflow shows the wholesale lockbox process flow.



Our network

You can choose from several image-enabled sites* strategically located across the U.S. This broad coverage means your payments can arrive at our lockbox site — and we can begin processing them — a day or two sooner than if you use a more geographically distant site.

The following table shows the lockbox sites in our network.

Wholesale lockbox sites		
Atlanta	Dallas	Orlando, FL
Baltimore	Denver	Philadelphia
Boston	Des Moines, IA	San Francisco
Charlotte, NC	Los Angeles	Seattle
Chicago	Minneapolis	

Site recommendation

Based on the information you provided, we recommend you use our Orlando, Florida lockbox site.

Post office pickup schedule

The following table lists the post office pickup schedule (in local time) for your recommended site. Holiday schedules vary by location. During the implementation phase of this project, we'll provide you with the holiday schedule for the location or locations you select.

Post office location	Weekdays	Saturday	Sunday
Orlando, FL Orlando Post Office	**AM** 2:30, 6:00 **PM** 12:30, 3:30	**AM** No pickup **PM** 3:30	**PM** No pickup **PM** 3:30

Deposit deadlines

The following table lists our deadlines by site. At sites with more than one deadline, you can choose the time that best meets your internal balance reporting or transmission requirements.

We include payments received after your established deadline (including any payments processed during the weekend or on a holiday), in the following business day's work.

Deposit deadlines	
Lockbox site	**Deposit times***
Orlando, FL	8:00 a.m., 11:00 a.m., 1:00 p.m., 3:00 p.m., 5:00 p.m.

*All times are local.

Reports

Lockbox reports help you track and manage your cash flow more effectively. You can view availability and detail reports online.

When you're not near your computer, you can use your smartphone to access the availability report and view deposit totals for each of your accounts.

Image options

When you use our image service, you'll have less paper to store and access to the information you need to research and apply payments without the hassle of storing paper documents. You can view images of all lockbox documents, including checks, remittance documents, correspondence, and envelopes. Internet, transmission, and DVD delivery options are available.

Online

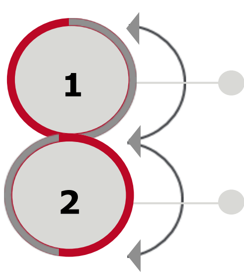
Your images are available within two hours of your deposit deadline. As a standard, we archive images for seven years. However, we do offer shorter retention periods (90 days, one year, or two years) to customers who don't have a business need to access images for seven years.

You can search for transactions using various criteria (including keyed data) by entering either a single value or a range of values. Additionally, you can assign a payer name to a unique account number and routing transit number combination, which lets you search for payments from a particular payer.

> Our online image service is the quickest option to help you **resolve exceptions** and **satisfy customer service needs**.

Transmission file

We post a daily transmission file on our secure website that contains images of your lockbox checks and any corresponding documents. You can download the file from our website and archive the images on your internal system. You have the option of intraday or next-day file transmissions.



Intraday - A separate image file for each batch of work we process is available within two hours of your deposit cutoff in either a zip or a PDF file.

Next day - A consolidated zip file containing all of your images from the previous day is available by 7:00 a.m. ET the following business day.

Disk delivery

You can choose to receive your images on a CD or DVD on a regular (monthly, semi-monthly, or weekly) basis.

Optional lockbox features

Optional features	
Accounts receivable transmission	To help eliminate errors associated with manual keyed entry, you can receive an electronic transmission of your remittance detail. You can use it to update your accounts receivable system, treasury workstation, or ERP platform automatically. Your file can include data from other sources, such as wire and ACH. We generate transmissions to your specifications for frequency and format, including standard BAI V2 and EDI layouts. We offer customization for non-standard formats for an additional fee.
Credit card processing	If your customers provide credit card information, we'll process their payments by keying the information into our credit card processing application. They can use any card with the Visa, Mastercard, American Express, or Discover logo.
Exception processing	Using our online decision tool, you can submit additional processing information for payments that would normally be returned. We present images of each payment to you and give you two options: ▪ Accept the payment and enter any additional processing information (such as invoice data required to balance a transaction or missing required keyed data) ▪ Reject the payment and have us mail it to you
Virtual lockbox	You can scan and send us images of checks, correspondence, and invoices you receive at your location. We can then process and deposit them like your other lockbox payments. We'll include these items in the image and data transmission files we send you for uploading to your accounts receivable system.

41. What controls are in place to ensure all payments received are processed the same day received for Lockbox services?

Listed below are the accuracy and timeliness processing controls we use. In addition, we can establish monthly or quarterly meetings to review the processing of your work.

Accuracy

We program most customer-specific instructions (such as stop files or scanline edits) into our operating software. Our software follows these instructions automatically, without operator intervention.

For all other instructions (such as data entry or cash processing), we document procedures and have you approve and sign them. Throughout processing, our operators have your lockbox processing instructions visible to help ensure they follow your established instructions.

Timeliness

We use a color-coded tagging system to track payments and help ensure we process them within 24 hours. In addition, supervisors inspect mail receiving areas and processing bins to help ensure timely processing of payments. As needed, we'll use system tools to confirm either the processing of a customer's work or the recording of a zero deposit in our system.

42. Can you provide imaging and/or timestamp information on Lockbox remitted envelopes?

Yes. We provide images of all lockbox documents, including checks, remittance documents, and envelopes. You can choose from the following delivery options.

Online image retrieval

With our online lockbox service, images are available within two hours of your deposit cutoff time. As a standard, we archive images for seven years. We do offer shorter retention periods (90 days or one year) if you don't have a business need to access images for seven years.

Batch image retrieval is another option for viewing lockbox images. It groups batches of images into a PDF document for easy downloading. Batches generally contain 25 checks and their associated documents. All batched images can be displayed together.

File transmission

You can receive a transmission file containing images of your lockbox checks, and any corresponding documents, through our secure transmission platform.

Two options

Intraday

Separate image files for each batch of work we process are available within two hours of your deposit cutoff.

Next day

A consolidated zip image file containing all of your images from the previous day is available by 7:00 a.m. ET the following business day.

Two formats

Zip file

A zip file will contain images and an ASCII text data file. To view images, use either our viewing software or your internal archive and a browser.

PDF*

A PDF file will contain both transaction data and images.

*Available intraday only.

Disk

On a regular (monthly, semi-monthly, weekly) basis, we can send you a CD-ROM or DVD of your lockbox check images and any corresponding document images. This medium allows a large amount of data to be stored indefinitely. You can use either our viewing software or your internal archive and a browser to view images.

43. Can you provide daily statistics for Lockbox services e.g. pieces of mail received, payments processed, processable?

Yes. The following table provides our average monthly wholesale lockbox volumes during the last six months.

Lockbox location	Items	Dollars	Keystrokes	Images	Lockboxes	Customers
Orlando, FL	252,669	341,235,860	2,946,812	1,106,432	899	821

44. What are the deposit times for the customer's lockbox and how are they determined?

Lockbox site	Deposit times*
Orlando, FL	8:00 a.m., 11:00 a.m., 1:00 p.m., 3:00 p.m., 5:00 p.m.

*All times are local.

Deposit times are determined by the best time that meets your internal reporting or transmission requirements; the latest cutoff time for mail to be included in a deposit will vary based on the deposit time.

We process payments received after your deadline on the following business day.

45. How many availability schedules are offered to your retail lockbox customers? Is the schedule you are offering us your best retail schedule and is it the same schedule you provide to Phoenix-Hecht (most current release) and other lockbox models? If not, quantify the difference and explain how we can obtain your best availability schedule.

We offer a single availability schedule for all our lockbox sites.

46. Do you use a third-party processor, including couriers, for any part of this service? If so, explain.

Our lockbox site in Orlando is a Wells Fargo-owned site; therefore, we do not use a third-party processor at this site. We do use a contracted courier to pick up mail from the U.S. Postal Service and deliver it to our lockbox site.

47. Can you provide daily images of all checks and remittance advices for the Lockbox? If so, in what formats (online, PC bank software, CD-ROM, other)? How long is this information available in archives?

Yes. We provide images of all lockbox documents, including checks, remittance documents, and envelopes. You can choose from the following delivery options.

Online image retrieval

With our online lockbox service, images are available within two hours of your deposit cutoff time. As a standard, we archive images for seven years. We do offer shorter retention periods (90 days or one year) if you don't have a business need to access images for seven years.

Batch image retrieval is another option for viewing lockbox images. It groups batches of images into a PDF document for easy downloading. Batches generally contain 25 checks and their associated documents. All batched images can be displayed together.

File transmission

You can receive a transmission file containing images of your lockbox checks, and any corresponding documents, through our secure transmission platform.

Two options

Intraday

Separate image files for each batch of work we process are available within two hours of your deposit cutoff.

Next day

A consolidated zip image file containing all of your images from the previous day is available by 7:00 a.m. ET the following business day.

Two formats

Zip file

A zip file will contain images and an ASCII text data file. To view images, use either our viewing software or your internal archive and a browser.

PDF*

A PDF file will contain both transaction data and images.

*Available intraday only.

Disk

On a regular (monthly, semi-monthly, weekly) basis, we can send you a CD-ROM or DVD of your lockbox check images and any corresponding document images. This medium allows a large amount of data to be stored indefinitely. You can use either our viewing software or your internal archive and a browser to view images.

We can transmit directly to you with a zip file or PDF* file. The zip file will contain images and an ASCII text data file; the PDF file will contain both transactions and images.

*Available intraday only.

As a standard, we archive images for online access for seven years.

48. Does the bank support the conversion of consumer checks to ACH debits (ARC) at a lockbox? If yes, describe the bank's services.

No. We don't support ACH check conversion. Wells Fargo does not have plans to offer this service. Your treasury management consultant, Jackie Kobialko, can help you determine a conversion solution based on your needs.

49. What technical support do you offer and what are the hours of operation for (include time zone):

a) EDI/Data Transmission

b) Balance Reporting

c) ACH/Wire

d) Positive Pay

In most cases, client service officers can diagnose your problem and provide a solution on the first call. However, if there's a problem that our client service representatives can't resolve, they act as your liaison to escalate the issue to our Technical Services group.

Hardware and software issues

While we can't provide support for the City's hardware and software, we will assist in any way we can. For instance, we can help to troubleshoot an issue with a scanner, but won't troubleshoot an area that your IT department is more suited to support; we won't put your systems at risk.

Transmissions issues

Our Wholesale Transmissions department focuses primarily on communication issues related to data transmission. Customers who exchange information with Wells Fargo using our data transmission service will also have the help of dedicated support staff.

Hours

Treasury Management Client Services representatives are available Monday through Friday from 7:00 a.m. to 10:00 p.m. ET and Saturday from 9:00 a.m. to 7:00 p.m. ET.

We arrange hours of support for your dedicated customer service officer, Ruth Felix, based on the City's specific needs.

Our Technical Services group is available during the same hours as our Treasury Management Client Services team: from 7:00 a.m. to 10:00 p.m. ET and Saturday from 9:00 a.m. to 7:00 p.m. ET.

Client services representatives contact Technical Services on your behalf and communicate the issue back to you.

50. Does your bank assign an implementation team for each service requested?

Yes. The City's dedicated implementation coordinator, Michelle Wincek, works with the City to manage your implementation needs.

51. How long will implementation require for each major service if you are the selected service provider?

The City will not have to undergo a potentially lengthy or costly implementation as all of your products and services are already in place. For any new services, we would be happy to share the specific implementation timeframe.

52. Describe the method used to calculate the earnings credit rate (ECR).

a) To what rate is the ECR pegged?

b) What has the bank's ECR been for the last six months?

c) When calculating average balances, are positive and negative balances netted?

The City has the option of using an interest bearing account, a non-interest bearing account (NIB), or a hybrid of the two known as the Government Advantage Interest Checking account (GAIC). The City can switch between these accounts as the interest rate environment changes. Your Wells Fargo team will advise the City which accounts are most beneficial based on a number of factors, including U.S. Treasury rates, ECR, and the City's bank balances.

In the current interest rate environment, you may want to maintain bank balances in the "hybrid" interest bearing account. With a GAIC, you can manage your depository needs while enjoying the benefits of an earnings credit allowance. You can also earn interest on unused balances. This full-service account is available only to government entities. You'll have unlimited access to available funds, with no limit on the number of transactions you can make.

With our GAIC account, you would receive an initial bank managed ECR of 0.25% (25 basis points) with a monthly settlement. Interest will be paid on those balances not used to offset service charges. The initial interest rate will be set at a bank managed rate of 0.17% (17 basis points). This account eliminates the need to sweep money to another account or money market fund and assures you that all your bank balances are working for you. Interest is paid on approximately the 10th day of the following month.

If you prefer to keep bank balances in a non-interest bearing account, you'll receive a monthly earnings credit, which can be used to offset monthly analysis charges. The non-interest bearing accounts will receive an initial bank managed ECR of 0.25% (25 basis points) with a monthly or quarterly settlement. If you select the non-interest bearing account structure, we recommend that you set a target balance on deposits to offset the account analysis charges and sweep the excess to one of our money market accounts.

Your relationship manager, Vincent Mattio, will work with you to set the target balance at a level that will most benefit the City. Deposits that are swept into one of our money market funds avoid monthly recoupment charges, which are calculated at $0.085 per $1,000 in average ledger deposits. The recoupment fee helps to cover some of the insurance premiums paid by Wells Fargo to the FDIC that are used to fund the Deposit Insurance Fund, which ensures eligible customers can receive their insurance proceeds in the unlikely situation that a bank fails. We assess the fee on a monthly basis at $0.085 per $1,000 of your positive average ledger balance for the month. Your account analysis statement will detail this fee as an individual charge.

In addition, we are offering to waive the first four months of analysis fees (approximately $4,476.00), following the execution of a new contract, as well as waiving the implementation fee for Payment Manager and WFED if implemented within the first 12 months of the new contract.

Funds in the NIB and GAIC accounts are demand deposits — not investments — that when combined with other accounts in the same legal entity, are covered by the FDIC to the maximum amount allowed. Additionally, we collateralize the funds in the account to the extent required by law.

Note: The "floors" mentioned above are effective throughout the duration of the contract.

The following table lists our ECR for the last six months.

Month, Year	ECR
July, 2020	0.25%
August, 2020	0.25%
September, 2020	0.25%
October, 2020	0.25%
November, 2020	0.25%
December, 2020	0.25%

How it works

The ECR will not be linked to a market index. Instead, we set the ECR internally each month after evaluating a combination of factors, including the 91-Day Treasury Bill rate, the Fed Funds rate, sweep rates, and other market indicators. We set the rate at our discretion and may adjust it during the month to react to market changes.

At the end of each month, Wells Fargo:

- Calculates your average positive collected balance and your investible balance
- Uses an ECR to determine the balance needed to offset analyzed fees
- Pays interest or charges fees to your account using the following criteria:
  - If your average positive collected balance exceeds the balance needed to offset fees, and the City uses a GAIC account, we pay interest on your unused balance* using a competitive managed interest rate
  - If the balance needed to offset fees exceeds your average positive collected balance, you are charged for the remaining fees†

*Unused balance = Your average positive collected balance less balance needed to offset fees.
†Remaining fees = Fees less earnings credit allowance.

We do not deduct a reserve requirement prior to calculating the ECR. We calculate your earnings credit on 100% of your investible balance (also called average daily positive collected balance).

We use the following formula to calculate the earning allowance:

(Investable balance (also called average positive daily collected balance)) × (calendar days in the month) × (ECR) ÷ actual number of days in the year

53. How does the bank charge for overdrafts? Does the bank charge for use of uncollected funds? If so, how is the charge calculated? Are these fees a direct charge or can they be offset by the earnings credit allowance?

We charge for both overdrafts and the use of uncollected funds.

Your relationship manager will set overdraft fees on a per item basis.

The standard interest rate is based on the prime lending rate +3%.

The formula for our uncollected funds fee uses that interest rate basis as the overdraft rate, applying this formula:

(average daily negative collected balance × overdraft rate × days in period) ÷ (360) = uncollected funds fee

We can offset these fees (overdraft and uncollected funds) by the earnings credit allowance.

We do not charge for daylight overdrafts.

54. In the event of a catastrophe (i.e. hurricane, terrorist attack, etc.) where the City's main operations are affected, would your bank be willing to provide dedicated emergency mobile banking services, allowing for City employees and vendors to access cash and deposit checks?

Yes. Wells Fargo's Mobile Response Unit helps customers dealing with the aftermath of a natural disaster. This mobile response unit is 100% self supported, so that we can do business no matter what. We also have mobile ATMs that we can deploy in cases of disaster to assist your employees in accessing cash. The deployment would depend on availability of units, due to disaster type and location needed.

55. Providing for the operational ability of your institution during such a catastrophe, would your bank be able to make available high-speed internet connection and working space at select bank branches to facilitate recording of legal documents in the event City offices are incapacitated? In addition, would your bank be able to provide office space for select City Administrators in the event City offices are incapacitated?

We'll remain available and responsive to the City to help ensure that business continuity strategies and communications remain active before, during, and after a specific emergency. However, legal liability and other concerns prohibit us from providing disaster recovery services to organizations outside of our corporate entity.

56. Can your institution interface with an ERP system? If so, please list systems with which you have successfully interfaced.

Yes. The City can choose from multiple interface options.

Interface options

Autolink

You can automate the download of your Treasury Information Reporting reports for upload directly to your accounting, ERP, or treasury workstation systems.

Reports are available for download in BAI V2, CSV, Excel, and PDF formats.

Direct BAI file transfer

You can receive automatic file transmissions of your previous day and intraday account information directly to your accounting, ERP, or treasury workstation systems.

BAI V2 is the standard format for this service.

Application Programming Interface

Our API solution allows you to connect directly to the bank to retrieve your account balances and transaction details, bypassing the need to log on to banking systems and administer users within your company on our portal.

We build and test API functionality. In a sandbox, your developers use programming code from the Wells Fargo Gateway API channel to design how your staff interacts with your back office systems, website, mobile apps, and customer portals. The Account Balance API and the Transaction Detail API use JSON rest format to allow you to query your accounts, as frequently as you like, to present information to your users from your internal systems or dashboards.

Consolidated receivables

You can use our consolidated receivables service to receive a simple electronic payment file for easy posting to your system. We format the file based on your preferences so that it can automatically update your accounting, ERP, or treasury workstation systems.

Your file can contain receivables data from any combination of the payment sources listed in the following table.

Payment sources	
▪ ACH	▪ Online bill payments
▪ Wires	▪ Remote deposit
▪ Lockbox	

The following table lists the formats we support.

Formats	
▪ ANSI X12 820 (Payment Order or Remittance Advice)	▪ Modified Nacha
▪ ANSI X12 823 (Lockbox)	▪ Proprietary and custom formats (by request)
▪ BAI 80/300 (Lockbox)	▪ Wells Fargo flat file formats ▪ Simplified ▪ Universal
▪ ISO 200022 XML format	

System interfaces

We have existing interfaces with a wide variety of accounting, ERP, and treasury workstation systems, including, but not limited to, Tyler-Munis, PeopleSoft, SAP, Oracle, JD Edwards, Integrity, Selkirk, SunGard, and XRT-Cerg. Integration with our system does not require any type of software installation on your system of record; it is accomplished through data file exchange between the City and us.

Existing interface

Our services use existing interfaces that work with a wide range of accounting, ERP, or treasury workstation systems.

Charge for interface

We charge for our information reporting services.

57. Are you able to provide "smart" safe systems (aka Cash Control Services) in which cash is deposited into the safe and the City is given provisional credit for the funds?

Yes. We provide details on our remote cash capture service in the paragraph below.

Remote cash capture (smart safe)

You can receive provisional expedited credit to your account — **accelerating your cash flow by one to two business days** — with our remote cash capture service.

An approved vendor (with whom you contract and the bank approves) installs a smart safe equipped with bill validating and counterfeit detection technology in your location. The safe accepts deposits, provides deposit counts, and transmits deposit information to us. After the money goes into the safe, your employees never handle it and never take it to the bank. The courier picks up your deposit (and can deliver coin and currency) **on a schedule that you determine**.

Deposits go to vaults in our coast-to-coast network. Provisional expedited credit options and reporting include:*

- Standard Deposit Credit — Receive next business day credit by end of day and view transactions on Previous Day reports.
- Premium Intraday Deposit Credit — Receive next business day credit by 8:00 a.m. local time and view transactions on both Intraday Deposit and Previous Day reports.

*For reconciliation, you can view transaction information through our standard reporting channels.

We offer our remote cash capture service in partnership with armored couriers such as Brinks, Garda and Loomis. The vendor that you select will be responsible for installing the safe(s) at your location(s) and for maintenance and repairs.

58. Does your institution provide Armored Car Services? What would pricing for this service be based on the attached list of City locations (see Attachment D), in keeping with our current policy for same day credit.

The City should contract directly with, and pay fees directly to, an armored courier of your choosing from our approved list of courier companies.

59. Please provide information on Accounts Payable outsourcing and include cost structure.

You can send consolidated payables files to help **streamline** and **automate** your payment and remittance processes, help strengthen trading partnerships and drive working capital, and help improve operational efficiencies.

By reducing the use of paper documents and manual data entry, you can **minimize mistakes** and **increase efficiency**.

Payment types

- U.S. ACH transactions in U.S. dollars (USD)
- USD and Canadian dollar (CAD)* paper checks
- Global ACH transactions in foreign currencies
- USD wires
- Foreign currency wire
- Requests for transfer (SWIFT MT101 messages)
- Wells Fargo virtual card payments
- Disbursements with *Zelle*®

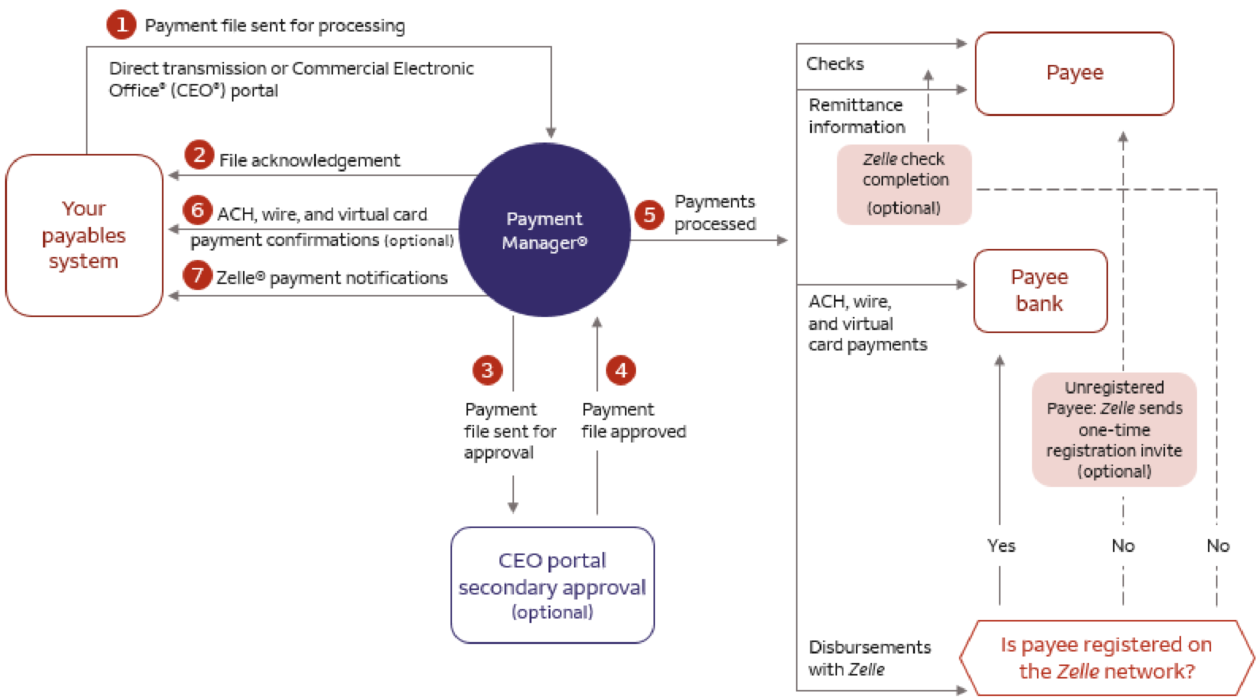
*Available only for off-us accounts. You must be the owner of the account.

Online services

Through our online banking portal, you can:

- Upload a payment file
- Perform additional approvals after sending the file
- Access acknowledgments and optional confirmations
- Generate reports on payment files
- Run an audit report on settings and user entitlements

How it works



Potential benefits

Accept a variety of file formats	We accept most custom and proprietary file formats — almost any type of file format your system can generate. Keep in mind, if you use a standard format, it can minimize your implementation cost and time.
Improve cash forecasting and reconciliation	Electronic control of your global disbursements allows you to better manage and forecast your cash flow. We integrate this service with our account reconciliation and positive pay services.
Potentially reduce costs	Sending one consolidated payables file reduces your internal costs associated with accounts payable (AP) processing. Specifically, electronic payment methods can reduce your expenses for paper check payments.

Compatible with treasury workstations, ERP systems, and other AP systems

These include, but are not limited to:

Treasury workstations and ERP systems	
▪ Tyler-Munis	▪ PeopleSoft
▪ JD Edwards	▪ SAP
▪ Kyriba	▪ SunGard
▪ Lawson	▪ Wall Street Systems
▪ Microsoft Dynamics Great Plains	▪ Yardi
▪ Oracle*	▪ GTreasury

*If you use Oracle, you can use our software solution to manage data translation to the file.

Flexible file options

Delivery

Transmit your payment file using a variety of communication protocols (including multiple internet options) or upload it online.

Formats

Our service accepts:

- Standard Wells Fargo flat file
- Wells Fargo XML
- ASC X12 820
- Lawson AP 161
- Excel
- SAP IDoc
- ISO 20022 (CGI common XML standard)
- Custom and proprietary formats

Our service accepts and acknowledges your file for initial processing, 24 hours a day, 7 days a week.

Processing deadlines

Depending on the payment type you send, we'll process your file, the same business day, if we receive it by our cutoff time. We process a file that arrives after the cutoff the next business day. If you require secondary approval, it must be completed by the applicable deadline for same-day processing.

If a file includes multiple payment types, the earliest applicable deadline applies to the entire file.

Cutoff times (ET)

Payment type	File cutoff time
Checks	
Standard	10:00 p.m.
Same day*	12:00 p.m.
ACH	
On-us same-day settlement	8:30 p.m.
Transit same-day settlement	9:00 a.m. and 1:00 p.m.
One-day settlement	8:30 p.m.
Two-day settlement	8:30 p.m.
Wells Fargo virtual card payments	Accepted when received
***Zelle* payments**	8:30 p.m.

*Subject to volume limitations and additional fees.

Cutoff times for wires

Transfer type	Opening time (ET)	Cutoff time (ET)
FedWire	8:00 a.m.	5:30 p.m.
CHIPS	8:00 a.m.	5:30 p.m.
U.S. Federal tax payments	8:00 a.m.	4:00 p.m.
Within Wells Fargo*	8:00 a.m.	8:00 p.m.

*Funds moved across Wells Fargo accounts that can be initiated from all origination channels to all our available accounts.

Safety and security

Secondary approval

You can make optional secondary approvals for some — or all — of your payments after we receive your file. The system can hold an entire file of payments, or an individual payment, for an authorized user to approve or delete. We then generate the payments and send remittance information based on your instructions.

History

Search for payment information, view standard reports, create custom reports, and schedule report reminders. **Data is available for 90 calendar days after we receive your payment file**.

Users with administrative authority have access to an audit report, which provides snapshots of setups and user entitlements. You can also view all changes made to setups and user entitlements within the last 90 calendar days.

Assurance of receipt

Acknowledgments

We let you know by transmission, secure email, or both that your file has reached our system and undergone initial processing.

You can choose the format:

- Option 01 — XML
- Option 02 — ANSI X12 997 (standard EDI)
- Option 03 — ISO 20022
- Option 04 — Human-readable report

If you'd like delivery by both transmission and email, each can be in a different format. You can also view and download acknowledgments online.

Confirmations

You have the option to receive payment confirmations for wire transfers, commercial card, and ACH payments by **transmission, secure email, or both**. You can also **view and download confirmations online.**

You choose the format:

1. XML
2. Excel CSV
3. ISO 20022
4. ANSI X12 824 (standard EDI)
5. Human-readable report

Additional features and potential benefits

Disbursements with *Zelle*

With Disbursements with *Zelle*, you can replace check payments to consumer payees with electronic payments using your payee's email address or U.S. mobile phone number.

Our service allows you to:

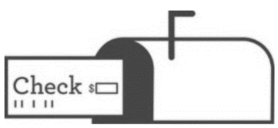
- Send payments without obtaining personal account or routing numbers
- Eliminate the risk of storing payee account data
- Reduce expenses related to paper checks
- Send a courtesy notification to your payee providing payment information

Unregistered payees

If your payee is not registered for *Zelle* payments at the time of payment initiation, we offer an optional feature that will send them a payment alert. This alert contains instructions for your payee to enroll to receive a *Zelle* payment. The funds will settle after your payee registers.*

*Your payees have 14 calendar days to register to receive their funds.

Check completion option



With this option, we can automatically issue a check payment to a registered payee if their electronic payment is unsuccessful. Our check completion option requires you to include complete check issue instructions along with your *Zelle* payment request.

When you choose this option, there are no additional steps to address payment failures because your payments will complete electronically or by check, based on the payee's registration status.

Enhanced remittance delivery options

You can include detailed remittance information in your payment file. You choose the delivery method: secure email, mail, or fax. We separate and process the payments and forward the remittance data in a human-readable format to your payees.

Transition payees to electronic payments

To help transition your payees to electronic payments, we analyze your vendor's data to provide an onboarding forecast. This predicts the conversion to virtual card payments, ACH, or both. We then plan an onboarding campaign on your behalf for your suppliers.

Templated payments

We offer you the option to send templated payments to your suppliers after they enroll. Our database facilitates the payments, which frees up valuable time and resources for the City.

Integration with centralized disbursements service

Our **Centralized Disbursements Manager** service is a web-based platform combining centralized disbursements with entity-level reporting. We partner with you to track and monitor disbursement activity and corresponding funding through a consolidated master account using a **fully integrated online application**. If the City's disbursements are centralized, but reporting must be kept separate by operating location or business line, you will benefit from this service.

Integration provides the ability to transmit a consolidated file for consolidated payables with payment instructions (ACH, virtual card, and check*) and Centralized Disbursement Manager issue records. Our consolidated payables service will process payments, then forward issue notices to our service.

*Not available for CAD checks drawn on off-us accounts.

60. Please provide details on the bank's payroll debit card program.

We do not offer a payroll debit card program.

61. Do you offer a represented check service for returned checks (RCK)? If so, describe the features of the service:

a) Notice requirements

b) Levy of collection fees

c) Number of presentments

d) Return of entries

e) Responsibility for retention of original returned item

f) Pricing

Yes. We offer a re-presented check service that provides a highly automated process for electronically re-presenting checks returned for nonsufficient or uncollected funds. Our Electronic Returned Items service converts your returned check to an electronic ACH debit. This service may increase the collection rate and may allow you to collect the funds more quickly.

Eligible checks

Per Nacha operating rules, to be eligible for check conversion, the check must:

- Contain a pre-printed serial number
- Not contain an auxiliary on-us field in the MICR line
- Be in an amount of $2,500 or less
- Be completed and signed by the check writer

Notice requirements

You must provide standard notification to customers at registers or on mailed invoices. We include sample language in the following paragraph.

> In the event that your check is returned unpaid for insufficient or uncollected funds, we may re-present your check electronically. If, in the ordinary course of business, your check will not be provided to you with your bank statement, you can contact your financial institution to retrieve a copy.

Levy of collection fees

You must provide notice, in accordance with applicable law, informing check writers of the fees that you will charge for returned checks. For example, you can post a sign at your place of business.

We can help you collect service fees for returned checks by automatically generating the returned check fee on your behalf once the original returned check is considered settled.

According to set redeposit parameters, if the service fee debit is not returned within a predetermined timeframe, you receive your credit for the service fee.

During implementation, we will help you to understand the procedures and restrictions of this service.

Number of presentments

By converting your returned checks into ACH debits, you can re-present items twice instead of the standard one time associated with a paper check. A second re-presentment gives you an additional chance to collect on returned checks, and helps increase your collection rates.

You can also choose from the following timed re-presentment options:

- Any day of the work week (Monday through Friday)
- Any day of the month — for example, the 5th, the 15th, the last day
- Two to nine days before re-presenting

Retention of original returned item

We no longer retain original checks or receive original returned items. You will receive an image replacement document, if an RCK item is charged back to your account.

In compliance with Nacha rules, we retain images of checks that have been converted into electronic return entries for seven years from the settlement date.

Pricing

Please refer to the pricing proposal for details on pricing.

62. Discuss your willingness to install your ATM machines at different agreed upon City locations? (e.g. in the Government Center).

ATM machines are provided by ATM USA. We can work with the City to determine if this is a cost-effective solution.

63. Does the bank support point-of-purchase (POP), back office conversion (BOC), or Remote Deposit Capture (RDC) check conversion? If so, provide a detailed description of your services, including equipment used and processing options.

The City is responsible for back office conversions and accounts receivable conversions. Using our TeleCheck Electronic Check Acceptance® (ECA®) Warranty service, you can convert checks into electronic transactions at the point of purchase. Additionally, through image exchange, we can process checks that you deposit through our image cash letter or remote deposit services.

Point of purchase

Our ECA service helps you streamline your deposit process while mitigating the risks typically associated with accepting checks for payment.

How it works

- Your customer presents a check for payment
- Your staff member scans it through the check reader attached to your point-of-sale system
- The warranty service provides an immediate decision to approve or decline
- Your customer signs the receipt authorizing conversion of the check and leaves the branch with the voided check
- The City completes batch settlement at the end of the business day
- The City receives funds within 48 hours of your customer's purchase

Image exchange

With image exchange, we send the check image and check information to your customer's financial institution in an electronic file. We use image exchange with financial institutions that are set up to receive image exchange files.

Remote deposit

We do, however, provide remote deposit service.

Save time and money

You can save both time and money by using our remote deposit service to deposit checks into your Wells Fargo account electronically. **This service eliminates the need for your employees to take check deposits physically to the bank**. An extended deposit deadline of 10:00 p.m. ET for same-day ledger credit may mean faster notice of returned items.

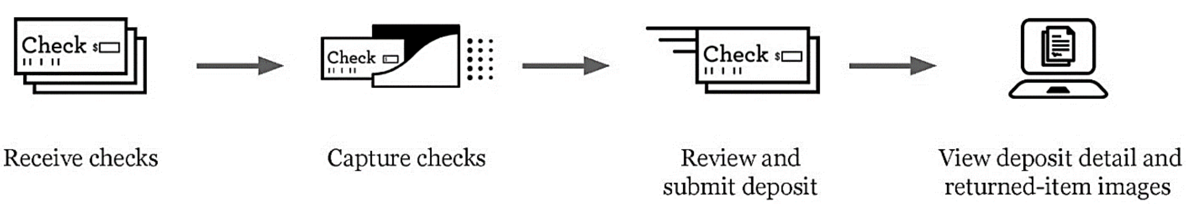
You'll no longer need to maintain accounts at local banks that have physical branches near your locations. You can **consolidate banking relationships**, save money on account maintenance fees, and **reduce the time spent reconciling multiple bank accounts**.

How it works

You scan checks for deposit by using an approved check scanner and computer with internet access. Next, confirm the check dollar amounts and verify the deposit balances. Then, submit the deposit to us; you'll receive a prompt confirmation.

If you enroll in our Alerts service, we'll send authorized users a deposit confirmation notice by email, text message, or fax.

The following diagram shows the remote deposit process flow.



Features

Image access

As you scan checks, we capture their images and store them on our servers. Check images are promptly available online through our remote deposit service for 90 days; these same images are also available online through our online Transaction Search service for seven years.

Custom fields

Using multiple discretionary data fields, you can enter customized information about the checks that you receive; this feature lets you search for checks using your own criteria and makes it easy to upload data into your accounts receivable system. Our quick data feature simplifies the capture process by automatically recalling some of your previously entered receivables data.

Reporting

You can generate the following reports through our remote deposit service.

Available reports	
Report name	**Description**
Deposit Report	This report contains general information (including deposit amount, number of checks included, and submission date) for deposits completed within the past 90 days. It is available in HTML, PDF, CSV, and Excel formats.*
Deposit Report with Item Details	This report contains general deposit information and item details for each deposit completed within the past 90 days. It is available in HTML, PDF, CSV, and Excel formats.* The HTML format includes links to display item images.
Express Report with All Item Images	This report displays a quick version of the Deposit Report with Item Details. It is available in PDF format and contains detail information and images for each item deposited (up to 1,000 items), and maintains a 90-day history. You can select the number of images (up to eight per page) that you would like to see.
Deposit detail transmission	We offer a deposit detail transmission that can include discretionary data that you manually entered, in addition to check detail. This feature allows you to receive an electronic file for posting your receivables.

*CSV, Excel, and HTML formats contain keyed discretionary data.

User access

The City's designated system administrators establish users, grant them access, and set their check limits.

Administrators can customize each user's access. For example, a user can have scan-only access for one account and balance-only access for another account. This flexibility lets you implement dual controls so that one person scans and another person submits a deposit.

Batch deposits

You can create multiple batches within one deposit. This batching simplifies balancing when you have checks for multiple entities in the same deposit.

Mobile deposit

You can capture check images and deposit funds* to your account with the camera of a mobile device.† Mobile users, such as on-the-road personnel, can accept customer checks and deposit them immediately.

*One check per deposit.
†Requires an iPhone, iPad, or iPad Mini running iOS version 11 or later or an Android device running 7.0 or later.

Updates

Because our service is entirely internet-based, it does not require the installation of any software (other than a scanner driver). Any updates we make are promptly available to you when you access the system.

Quality control

- ✓ Before submitting a deposit, you'll have a chance to review the scanned items, and make corrections (such as rescan images, enter missing data, and verify item amounts) to balance the deposit.
- ✓ Then, you'll submit the deposit to us.
- ✓ Our Electronic Deposit Center inspects and analyzes the image quality of all items, looking for illegible items, image issues such as streaking or interference within key areas, and image contrast.
- ✓ While image quality exceptions are rare (accounting for approximately 1% or less of all items we process), we follow process for handling them.
- ✓ If there is an item that we cannot clear, we follow an adjustment process and notify you accordingly.

64. Describe the bank's ability to provide equipment (bank owned or third party) to facilitate mobile check truncation and acceptance.

Our remote deposit service is compatible with Panini, Canon, and Digital Check scanners. The following table lists the specifications by manufacturer. In addition, we include pricing on scanner equipment, maintenance fee, necessary supplies, and set-up fees in the Appendix section of our proposal.

Suggested daily check volume	Scanner type	Check-processing speed and volume	Connection interface and dimension
Fewer than 20	**iPhone, iPad and Android smartphone**		CEO Mobile deposit
	Digital Check CheXpress CX 30-IJ	Single-feed	▪ USB 2.0 (recommended) ▪ Backward-compatible with USB 1.1, with performance limitations ▪ 9.5” Lx4.0”Wx7.0”H ▪ Weight:3.5 lbs.
Fewer than 500	**Digital Check TS240-50**	50 documents per minute	▪ USB 2.0 (recommended)* ▪ Backward-compatible with USB 1.1, with performance limitations* ▪ 11.1”Lx5.1”Wx7.5”H* ▪ Weight: 5.2 lbs.
	Panini X 50	50 documents per minute	▪ Mac compatible ▪ USB 2.0 (recommended) ▪ Backward-compatible with USB 1.1, with performance limitations ▪ 10.39” Lx5.43”Wx6.88”H ▪ Weight:5.5 lbs.
More than 500	**Canon CR190i II†**	190 documents per minute	▪ USB 2.0 (recommended) ▪ 10.7”Lx18.7”Wx8.4”H ▪ Weight: 18.5 lbs.
	Digital Check TS 240-100	100 documents per minute	▪ USB 2.0 (recommended)* ▪ Backward-compatible with USB 1.1, with performance limitations* ▪ 11.1”Lx5.1”Wx7.5”H* ▪ Weight: 5.2 lbs.

*Applicable to all Digital Check TS240 scanner models.
†Allow five to seven extra business days for delivery.

At this time, we do not offer a multi-tray feeder solution for high-volume scanners. If you have low volume, the City can consider using our mobile deposit service or purchasing a single-feed scanner to capture and deposit checks.

With average use, all of the scanner models have an expect life cycle of approximately four years.

Mobile deposit

Mobile deposit service users with scan and balance authorizations can deposit checks* from a camera-enabled iPhone, iPad, or Android smartphone† through the downloadable CEO Mobile app available from the Apple App Store® and Google Play Store™.

*One check per deposit.
†Download the latest version of the CEO Mobile app available for your device from the Apple App Store or Google Play store

65. Would you be able to offer a Line of Credit as backstop for a Commercial Paper program?

Yes. We can offer a line of credit subject to credit approval and due diligence.

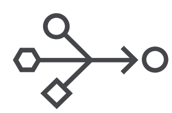
66. Would you be willing to provide consulting services for Letters of Credit in which the City is beneficiary prior to acceptance?

Yes. Your relationship manager, Vincent Mattio, can provide recommendations in this process.

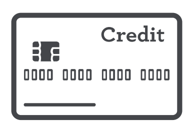
67. Other innovations: Please propose any new financial service plans or practices not otherwise addressed in this proposal but deemed to be in the best interest of the City and include cost information as applicable.

Payables solution

One card, one workflow



Maximize convenience, efficiency, and control with **one card and one platform that easily handles your employee spending, travel, general procurement, AP disbursements, and more**. When you consolidate your expenses under one program, the City gains access to comprehensive information for smart decision-making. You can realize significant savings in time, transaction-processing costs, and internal resources required to support the program. A single-card platform integrates multiple processes and creates a solid foundation for future growth.



Additionally, you'll have a partner with the experience and knowledge to make your program successful.

Accepted almost everywhere

We issue both Visa and Mastercard, with both platforms boasting the highest global acceptance rates — more than 40 million merchants worldwide. This means your employees can make purchases almost everywhere cards are accepted, as applicable. We'll help you determine which issuer best meets your needs.

Corporate liability: A best practice

More organizations are choosing a corporate liability program because it can help you:

- Decrease costs, losses, and risk
- Increase visibility of spending across the entire organization
- Eliminate individual liability and unnecessary burdens on employees

Corporate liability also means that your earned revenue share doesn't depend on cardholder reconcilement, giving you the potential to earn more. The card industry considers corporate liability a best practice, and our program uses this approach.

Online program management

For low IT burden and flexibility, manage your program through our online expense reporting service, which offers self-administration functionality and customizable components. There is no need to install hardware or software on your system. Our service allows you to:

- Manage cards in real time
- Obtain comprehensive standard and custom reports
- Customize transaction fields
- Establish automatic, precise cost allocations

You can upload expense data from the application to most ERP or treasury workstation platforms, which eliminates any manual data entry to your general ledger.

Your employees can use our online expense reporting service to:

- Review and approve transactions
- View and upload receipts
- Input out-of-pocket expenses
- Reclassify line items to multiple cost centers

Because our service is entirely online, cardholders can begin reconciliation, well before the end of the statement cycle.

Automate your invoice payments

The City can achieve significant time and cost savings by moving more of your AP expenditures from paper-based processes to our commercial card. Moving a single transaction to your commercial card can save an average of $90 in processing costs and eliminates approximately 10 days cycle time.*

*RPMG Research Corporation, 2017 Purchasing Card Survey Results.

Virtual Card Payments service

When you authorize a payment using our Virtual Card Payments service, we'll assign a virtual account number to it. Then, we send that number and the transaction details to your supplier by secure email. Use an electronic transaction detail file to close transactions within your accounting system. For added control and ease of reconciliation, you can even limit payments to an exact dollar amount, or make it available for a limited time.

With our Straight Through Processing* solution, you can make it easier for your suppliers to do business with you. They can receive payments just as they normally do, but without manual input of credit card information on their part. Instead, suppliers arrange to have their merchant acquirers process your credit card payments for them.

*We offer our Straight Through Processing solution as part of a relationship with Mastercard, and in conjunction with our WellsOne® Virtual Card Payments service. Additional fees and restrictions apply.

Send one consolidated payment file

To simplify your payables process even further, send us an electronic payment file directly from your treasury workstation, ERP, or AP system. **You can consolidate multiple payment types — check, ACH, wire transfer, and commercial card transactions — in a single file**. Upon receipt of the file, we'll separate payments by type and process them accordingly, sending traditional or human-readable remittance information to the payee.

We'll help get your suppliers on board

Our experienced Supplier Analysis & Onboarding team can help strengthen your supplier trading partner relationships through a single program that covers both commercial card and ACH payments. We use proprietary analysis tools to analyze your supplier base and create a customized strategy and targeted outreach campaign specific to your needs.

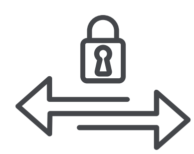
Handle tasks on the go

Quickly, easily, and securely handle critical tasks when you're away from your desk. Your program administrators can change credit limits, adjust merchant category code strategies, and view declined transactions, in real time. This saves them time and provides greater convenience to cardholders. Your cardholders can use smartphones* to view balances and available credit, upload receipts, and enter out-of-pocket expenses as transactions occur, improving the accuracy of your expense reports.

To help keep accounts secure, cardholders can receive text alerts† when a transaction is completed or when nearing their card limit. They can set notifications by dollar threshold.

*Requires iOS version 10.1 or higher, or Android version 7.0 or higher.
†Your mobile device's coverage area can affect availability. Your mobile carrier's message and data rates may apply.

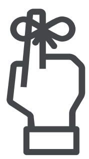
Protect yourself from fraud



You want to make sure that you have the best fraud protection for your cardholders and accounts. We use proprietary fraud mitigation technology, customized transaction monitoring, and offer convenient reconciliation tools to help keep your cardholders and accounts safe. Enhanced fraud alerts are just one of the capabilities we use to fight fraud. We'll send your cardholders alerts by email or text* when we identify a suspicious purchase. They can confirm whether the transaction is fraudulent by simply responding to our email or text. This helps us detect and prevent fraud almost instantly.

*Your mobile device's coverage area can affect availability. Your mobile carrier's message and data rates may apply.

Additionally, our commercial card adheres to the rigorous security protections of the Visa and Mastercard networks. In 2018, **Visa recognized us with the Global Service Quality award for having a high authorization approval rate**. This award demonstrates our commitment to customer service while controlling risk.



Liability protection through Visa and Mastercard

Each commercial card program is eligible for a liability waiver offered through Visa and Mastercard up to $100,000. This waiver can help protect your organization from certain employee misuse or other unauthorized charges.

Full implementation support

We approach implementation as a partnership. We commit our own full-time resources and experienced members of our commercial card team to guide the design, installation, and rollout of your program.

We designed our supplier enrollment process with the understanding that no supplier base is the same. We use a comprehensive and customized approach designed to make onboarding as simple as possible.

Campaign development

During campaign development, we work together to define your objectives and create a customized outreach campaign just for you. The City provides us with a list of your suppliers. We first identify suppliers who currently accept card payments. Then, using our proprietary supplier analysis service, we review each of your supplier relationships to determine the statistical likelihood of their participation in the program. We take all this information and provide you with our recommendation for targeted outreach. Campaigns can include telephone calls, email, and direct mail.

Outreach

Our team performs outreach for card, ACH, or both payment types, based on your campaign strategy. You can also choose how we target suppliers. For example, you can select “card first”, “card only”, and “ACH only” outreach — giving you control of each campaign.

If it’s part of your strategy, then we can immediately offer the option to accept ACH payments to those who decline card acceptance, when we contact suppliers. This practice can increase your chances of successfully migrating suppliers from paper to electronic payments. If a supplier expresses interest in accepting card payments but doesn’t have the capability, we can connect them with our Wells Fargo Merchant Services group for help.

Training

During the enrollment campaign, our team will educate your suppliers on the payment collection process and answer their questions.

Once enrolled, new card-accepting suppliers receive the following:

- Confirmation email describing the payment acceptance process
- Commercial card quick reference guide and merchant tip sheet
- Video that guides the supplier through the card payment acceptance process

New ACH-accepting suppliers can receive either a letter or email with instructions on how to complete a penny deposit validation.

Reporting

Each week, we'll email you a report with details of our enrollment activity for the previous week to show your campaign's progress. You can use the report to identify suppliers that still require check payments and to direct us on supplier follow up.

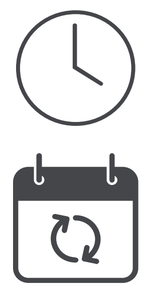
Ongoing efforts

After the initial supplier enrollment campaign is complete, our team will provide you with consulting, tools, and support for continued enrollment efforts. If a targeted supplier does not accept card or ACH payments initially, we can discuss a strategy for future outreach campaigns based on your objectives.

Dedicated account manager

We'll assign a dedicated account manager to your card program who provides ongoing guidance and support. He or she meets with you regularly to track program statistics and measure them against your key goals. In addition to reviews of benchmarking and program information, your account manager updates you on industry developments and best practices that promote card use.

Support available around the clock



We have three commercial card service centers, within the U.S., dedicated exclusively to serving our commercial card customers. Our representatives help with card maintenance services, such as reporting a card as lost or stolen, and answering questions about charges on cardholder statements. Your program administrator and cardholders can have peace of mind knowing they can call our award winning* service team for support, 24 hours a day, 7 days a week.

*2017 Customer Service Team of the Year, American Business Awards by the Stevie Awards

Cash Flow Analysis service

Our Cash Flow Analysis service offers you the core cash management functionality found in most treasury workstations without the challenges of implementing expensive applications.

Our solution is designed to be **affordable** and **easy-to-use** while delivering **cash positioning, cash forecasting, and journal entry reconciliation** information — seamlessly, through our online banking portal.

Cash positioning

This feature helps you determine the daily cash position for the City or for a specific entity of the City. It allows you to:

- View balances on your domestic and international Wells Fargo and non-Wells Fargo accounts, at the account, entity, or company level
- Display balances in a single selected currency
- Calculate anticipated transactions, up to a year in advance, for more accurate positioning and forecasting
- View Wells Fargo term loans and lines of credit
- Print or export your data to spreadsheets

Cash forecasting

This optional feature helps predict your future cash flow, manage your liquidity, and assess short-term financing or investment needs. This feature may also help you:

- Create custom forecast categories and rules
- Generate forecasts using your predefined calculations
- Automatically assign actual (posted transactions) to forecasting categories based on your category rules
- Track cash flow actual for your forecast categories
- Evaluate your forecasting accuracy with our Report Card feature

Journal entry

With this optional tool, you can automate your journal entry reconciliation by creating rules that match bank transactions to your general ledger account. You can also:

- Export journal entries
- Customize your export criteria
- Save your criteria for future use

Cash pooling and intercompany loans

We offer an optional service for cash pooling and intercompany loans so you can offset cash deficits with cash surpluses held among different legal entities (divisions or subsidiaries) in a single corporate group.*

*At this time, cash pooling and intercompany loans only support USD currency.

With this service, you can structure the pooling to meet your accounting needs and use your capital more efficiently. This service may also help you:

- Facilitate capital transfers
- Set your own internal interest rates
- Collect funds for larger overnight sweeps

D. Financial viability

68. What was your bank's Stress Test result from the Supervisory Capital Assessment Program (SCAP) as administered by the Federal Reserve?

You can find the results of our stress test conducted in accordance with the Dodd-Frank Wall Street Reform and Consumer Protection Act (DFA) at:

https://www.wellsfargo.com/about/investor-relations/stress-test-reports/

69. Did your institution accept any money related to the Troubled Assets Relief Program (TARP), and if so, how much was accepted and is there an expected repayment plan in place?

Yes. At the request of the U.S. Treasury Department, Wells Fargo was among the first nine large financial institutions to participate in the Treasury Department's Troubled Asset Relief Program (TARP) Capital Purchase Program (CPP), for a total of $25 billion.

Wells Fargo & Company repaid the $25 billion TARP investment in December 2009. Total dividends paid to the U.S. Treasury and U.S. taxpayers amounted to $1.441 billion.

Between October 2008 and December 2009, Wells Fargo supplied more than $640 billion in credit to consumers and businesses, helped more than 400,000 households preserve their home ownership, and continued as one of America's top lenders to small businesses.

70. Will your firm be able to provide dedicated collateral for City deposits, in addition to the State QPD collateral pool?

Wells Fargo is a qualified QPD in the state of Florida. We are a participant of the "Pool" method of collateralization. All deposits will be secure under this method. Dedicated method is not an option.

Additional information regarding FL Public fund collateralization is found below. In addition, we have provide a copy of the Florida certification of qualified public depository in Tab D of the Appendix section of the proposal.

Wells Fargo Bank, N.A is a qualify QPD and adheres to the "pooling" method of collateralization as stated under the FL Security for Public Act Chapter 280.

- Collateralization method for deposits in FL is a "Pooling" method of securing deposits.
- We meet the criteria in securing the amount above the FDIC coverage set forth in Florida Statutes Chapter 280, the Security for Public Deposits Act.
- The aggregate total of all governmental entity deposits above the FDIC coverage are secure under Florida Statute Chapter 280.
- The Bank of NY Mellon is the safekeeping agent to hold collateral for the State Treasurer of FL account.
- Wells Fargo Tier assigned is at 50%.
- We adhere to the acceptable collateral as stated under the FL Statute Chapter 280.
- Wells Fargo adheres to all reporting requirements as stated under the Florida statute reporting specifications to the State Treasurer.

71. What is the most recent credit rating of your organization (specify S&P, Moody's, and/or Fitch and date of rating)?

Wells Fargo subscribes to DBRS, Fitch, Moody's, and Standard & Poor's ratings agencies and indicated in the following table.*

Wells Fargo & Company	DBRS	Fitch	Moody's	Standard & Poor's
Long-term Issuer Rating	AA (low)	A+	A2	BBB+
Short-term Issuer Rating	R-1 (middle)	F1	P-1	A-2
Senior Unsecured	AA (low)	A+	A2	BBB+
Subordinated	A (high)	A-	A3	BBB
Preferred Stock	A (low)	BBB	Baa2	BB+
Wells Fargo Bank, N.A.	**DBRS**	**Fitch**	**Moody's**	**Standard & Poor's**
Long-term Issuer Rating	AA	AA-	Aa2	A+
Short-term Issuer Rating	R-1 (high)	F1+	P-1	A-1
Bank Deposits	AA	AA	Aa1	A+
Senior Unsecured	AA	AA-	Aa2	A+
Subordinated	AA (low)	A	Aa3	BBB+

*Ratings as of July 2020.

The information provided can be found on our Investor Relations site (wellsfargo.com/invest_relations/debt) and is provided for informational purposes only. We do not guarantee the accuracy or completeness of information on or available through this site, and we are not responsible for inaccuracies or omissions in that information or for actions taken in reliance on that information. Please read Legal Disclaimers (wellsfargo.com/invest_relations/legal) before using or relying on information on or available through this site. Potential investors in our securities should seek professional advice before they invest.

72. Please provide Tier 1 and Tier 2 capital figures as of September 30, 2019 and December 31, 2019 (most recent two quarters available). In addition, provide Total Risk Weighted Assets for each of the same periods. These figures will be used to calculate capital adequacy ratios.

Key performance measures

Our year-end key performance measures are detailed as follows:

Key performance measure	2017	2018	2019
Total assets	$2.0 trillion	$1.9 trillion	$1.9 trillion
Net income	$22.2 billion	$22.4 billion	$19.5 billion
ROA	1.15%	1.19%	1.02%
ROE	11.35%	11.53%	10.23%
Equity and assets	10.66%	10.39%	9.75%

Annual Report

We provide a copy of our 2018 and 2019 annual report in a separate file.

You can also locate Wells Fargo & Company's most recent annual report through the following site: wellsfargo.com/invest_relations/annual.

You can locate Wells Fargo Bank, N.A.'s last four quarterly call reports through the following site: https://cdr.ffiec.gov/public/ManageFacsimiles.aspx by using the Wells Fargo Bank, N.A. FDIC Certificate No. 3511.

Section II. Company profile

E. Legal information and insurance

73. Supply legal firm name, headquarters address, local office addresses, state of incorporation, and key firm contact names with their phone numbers and e-mail addresses.

Wells Fargo & Company

420 Montgomery St.
San Francisco, CA 94104

IRS# 41-0449260

Incorporated in the state of Delaware

Principal banking subsidiary:

Wells Fargo Bank, N.A.

420 Montgomery St.
San Francisco, CA 94104

Incorporated under U.S. federal law as a national banking association

Local address

100 S. Ashley Dr.
Eighth Floor
Tampa, FL 33602

Key contacts

Vincent Mattio
Relationship Manager
813-225-6539 office
vincent.mattio@wellsfargo.com

Jacqueline Kobialko
Treasury Management Consultant
954-654-1645
jacqueline.kobialko@wellsfargo.com

74. Supply the interested firm's federal ID number and Dun and Bradstreet number.

Wells Fargo & Company

IRS# 41-0449260

Dun & Bradstreet number is 00-696-2435.

Wells Fargo Bank, N.A.

IRS# 94-1347393

Dun & Bradstreet number is 00-691-3404.

75. Is the interested firm legally authorized, pursuant to the requirements of the Florida Statutes, to do business in the State of Florida?

Yes.

76. All firms are required to permit the City of Doral to inspect and examine their financial statements in order to demonstrate their financial capabilities. Each firm shall submit their most recent two (2) years of financial statements for review. If a firm is privately held and asserts that its financial statements are confidential trade secret information, the firm shall still make its financial statements which it asserts are confidential, available in Miami-Dade County, Florida, for inspection and examination by the appropriate City staff prior to evaluation rating. The financial statements are not required to be audited financial statements. An element of responsibility for purposes of disclosing the financial statements required by this RFP is that the firm act in good faith in making its disclosure. Therefore, with respect to the number of years of financial statements required by this RFP, the firm must fully disclose the information for all years available; provided, however, that if the firm has been in business for less than the required number of years, then the firm must disclose for all years of the required period that the firm has been in business, including any partial year-to-date financial statements. The City may consider the unavailability of the most recent year's financial statements in its evaluation.

We provide a copy of our 2018 and 2019 annual report in a separate file.

You can also locate Wells Fargo & Company's most recent annual report through the following site: wellsfargo.com/invest_relations/annual.

You can locate Wells Fargo Bank, N.A.'s last four quarterly call reports through the following site: https://cdr.ffiec.gov/public/ManageFacsimiles.aspx by using the Wells Fargo Bank, N.A. FDIC Certificate No. 3511.

77. List and describe all bankruptcy petitions (voluntary or involuntary) which have been filed by or against the interested firm, its parent or subsidiaries, predecessor organization(s), or any wholly owned subsidiary during the past three (3) years. Include in the description the disposition of each such petition.

None.

78. List all business related claims, arbitrations, administrative hearings, and lawsuits that are pending or were filed during the last three (3) years brought by or against the firm, its predecessor organization(s), or any wholly owned subsidiary including but not limited to those claims, arbitrations, administrative hearings and lawsuits that allege negligence, error, or omission, or default, termination, suspension, failure to perform, or improper performance of an obligation of a contract or a legal duty related to a contract. The list should include all case names; case, arbitration, or hearing identification numbers; identification of the project involved in the dispute; a description of the subject matter of the dispute; and the final outcome or current status if the matter has not become final.

Wells Fargo Bank, N.A. is a subsidiary of Wells Fargo & Company ("WFC"), a corporation organized under the laws of Delaware. As with any large diversified financial institution in the highly regulated banking and securities field, Wells Fargo receives inquiries and subpoenas from regulators and law enforcement from time to time, some of which may be confidential in nature, and is subject to civil litigation. Wells Fargo responds regularly to inquiries and investigations by governmental entities and has in the past entered into settlements of some of those investigations, including those listed below. None have resulted in any material restrictions on Wells Fargo's ability to operate its businesses as related to the services and products addressed in our response to this RFP.

- During the third quarter of 2016, Wells Fargo Bank, N.A. entered into settlements with the City of Los Angeles, the Consumer Financial Protection Bureau and the Office of the Comptroller of the Currency regarding certain sales practices. For additional information, see the press release at https://newsroom.wf.com/press-release/corporate-and-financial/wells-fargo-issues-statement-agreements-related-sales
- On February 2, 2018, WFC entered into a consent order with the Board of Governors of the Federal Reserve System, relating to governance oversight and the company's compliance and operational risk management program. This consent order does not relate to new matters, but rather to prior issues including the 2016 sales practices matter. For additional information, see the press release at https://newsroom.wf.com/press-release/corporate-and-financial/wells-fargo-commits-satisfying-consent-order-federal
- In April 2018, WFC entered into consent orders with the Consumer Financial Protection Bureau and the Office of the Comptroller of the Currency that address matters relating to WFC's compliance risk management program and issues regarding certain interest rate-lock extensions on home mortgages and collateral protection insurance placed on certain auto loans. For additional information, see the press release at https://newsroom.wf.com/press-release/corporate-and-financial/wells-fargo-enters-consent-orders-occ-and-cfpb

- In August 2018, WFC announced that it entered into an agreement with the U.S. Department of Justice (DOJ) to resolve a previously disclosed investigation by the DOJ regarding claims related to certain 2005–07 residential mortgage-backed securities activities. For additional information, see the press release at https://newsroom.wf.com/press-release/consumer-lending/wells-fargo-reaches-agreement-doj-resolve-legacy-rmbs-claims
- On December 28, 2018, WFC entered into a settlement with all 50 state Attorneys General and the District of Columbia regarding previously disclosed retail sales practices, auto collateral protection insurance and guaranteed asset/auto protection, and mortgage interest rate lock matters. For additional information, see the press release at https://newsroom.wf.com/press-release/community-banking-and-small-business/wells-fargo-reaches-agreement-state-attorneys
- On February 21, 2020, WFC entered into settlements with the U.S. Department of Justice and the U.S. Securities and Exchange Commission to resolve these agencies' investigations into Community Bank sales practices and related disclosures. For additional information, see the press release at https://newsroom.wf.com/press-release/corporate-and-financial/wells-fargo-reaches-settlements-resolve-outstanding-doj-and

Many of the actions that Wells Fargo has taken in connection with these settlements are described at https://www.wellsfargo.com/assets/pdf/commitment/progress-report.pdf

To the extent any litigation or regulatory matters are required to be reported, they are disclosed in WFC's SEC filings and are matters of public record:

- Copies of the Legal Proceedings sections from WFC's recent public filings and WFC's most recent periodic reports are available at https://www.wellsfargo.com/invest_relations/filings
- WFC's Annual Reports are available at https://www.wellsfargo.com/invest_relations/annual

At this time, and to the best knowledge of the Wells Fargo representatives preparing this response, neither Wells Fargo Bank, N.A. nor WFC has been involved in any regulatory reviews or legal actions that would have a material adverse impact on Wells Fargo's ability to provide the services requested in this RFP.

79. List and describe all criminal proceedings or hearings concerning business related offenses in which the interested firm, its principals, officers, predecessor organization(s), or wholly owned subsidiaries were defendants.

Please refer to the previous response.

80. Has the interested firm, its principals, officers, or predecessor organization(s) been debarred or suspended from bidding by any government during the last five (5) years? If yes, provide details.

Please refer to the previous response to question 78.

81. Has your company ever failed to complete any work awarded to you? If so, where and why?

To the best knowledge of the team preparing this response, there have been no failures of performance that would have a material impact on our ability to continue providing your products and services.

82. Has your company ever been terminated from a contract? If so, where and why?

To the best knowledge of the team preparing this response, there have been no terminations of contract that would have a material impact on our ability to continue providing your products and services.

83. Insurance Requirements: Attached is a sample Certificate of Insurance. It reflects the insurance requirements deemed necessary for this project. It is not necessary to have this level of insurance in effect at the time of submittal, but it is necessary to submit certificates indicating that the firm currently carries the insurance or to submit a letter from the carrier indicating upgrade availability.

The Wells Fargo & Company Corporate Insurance programs include, but are not limited to, Professional Liability insurance (also known as Errors and Omissions policy), Financial Institutions Bond coverage, which includes Fidelity (also known as Employee Dishonesty) coverage, and Commercial, General Liability, and Automobile Liability insurance.

We've included evidence of insurance in Tab E of the Appendix section of the proposal.

F. Corporate responsibility

84. Respondents shall provide a "Corporate Responsibility Plan" which describes in detail how the respondent plans and expects to integrate into the City of Doral community as a "good corporate citizen". In developing their plan, respondent's focus should be to establish a balance between developing opportunities with the City, stimulating and rewarding their employees, developing optimum customer satisfaction, working with and supporting our local community and sustaining the environment where they operate.

Please find our corporate responsibility highlights in the following link:

https://www08.wellsfargomedia.com/assets/pdf/about/corporate-responsibility/2019-corporate-responsibility-highlights.pdf

We also provide additional details on our corporate responsibility in the responses that follow.

Items to be included in the Corporate Responsibility Plan should address, but not necessarily be limited to, the following:

a) Respondent's approach, including policies and procedures, detailing the hiring and promotion of employees.

Wells Fargo recruits, hires, trains, and promotes people in all job titles and provides equal opportunity in all employment decisions, for all qualified applicants and team members. We do not discriminate based on race, color, gender, national origin, religion, age, sexual orientation, gender identity, genetic information, physical or mental disability, pregnancy, marital status, veteran status, or any other status protected by federal, state, or local law.

b) In addition, describe any other programs that Respondent maintains for the welfare and benefit of its employees.

We invest in our employees through meaningful training and education opportunities, and provide competitive pay and comprehensive benefits. We are committed to creating a diverse and inclusive culture that embraces new ideas and dignity and respect for all.

In 2019, we have invested in our employees by providing:

- $3.11 billion in employee benefits programs, including health care, 401k, tuition reimbursement, and other benefits
- 900+ events and hosted first Dedicated Day of Service with 22,450 team members volunteering 93,000 hours at more than 900 events
- 16 weeks of paid parental leave for self-designated primary caregivers and up to four weeks of paid parental leave for self-designated non-primary caregivers
- A new learning platform, Develop You, to support the career growth and development of our employees

In addition:

- 57% of Wells Fargo's U.S. workforce is female
- 45% of Wells Fargo's U.S. workforce is ethnically and racially diverse

c) Is Respondent a responsible corporate citizen and, to that end, what contribution(s) does Respondent make to the community(ies) in which it currently does business? Describe how Respondent is "making a difference" for the betterment of the community(ies) where it operates. Items to address may include, but not be limited to participation in local community organizations. Membership in local civic and charitable organizations including, in particular, any specific programs and/or initiatives that Respondent has either established or (if established) that Respondent actively participates in.

Being a good corporate citizen is part of our culture — it's fundamental to our vision and values, and the way we manage our company. Our business depends on resilient, sustainable communities and a healthy economy. We seek to strengthen the financial knowledge of our customers. We believe this will create opportunities for the City and the communities we serve, to succeed financially.

The following paragraphs provide an overview into just some of the programs we have put in place to make our mission a success.

Leading The Way Home®

We designed this community outreach program to help communities understand and act on efforts to stabilize their current housing situation while advancing homeownership to build a strong community for the future.

NeighborhoodLIFT®

To support sustainable homeownership and advance neighborhood stability, this program, in collaboration with NeighborWorks America and local nonprofit organizations, looks to the future by delivering down-payment assistance and financial education to homebuyers.

Community Support Campaign

The annual Wells Fargo Community Support Campaign takes place during the month of September. Our campaign provides team members with an easy, efficient, and effective way to plan their annual financial giving, and fulfill their pledges to the causes and communities they passionately support.

Hands on Banking

This financial education program, and its Spanish-language counterpart, El futuro en tus manos®, delivers free courses for groups such as the military, seniors, small business owners, and youth. These courses teach the basics of responsible money management, including how to create a budget, borrow responsibly, buy a home, establish a small business, and save and invest for retirement.

Commitment to leadership

As one of the nation's largest financial institutions, we take responsibility for promoting long-term economic prosperity for everyone in our communities. In order to achieve our leadership goals, we focus on these five areas:

- Ethics
- Products and services
- Community involvement
- Team member engagement
- Environmental commitment

d) Is the Respondent's firm environmentally conscious? Include any efforts and/or programs and/or initiatives that Respondent has established, either within its firm or in the community, which demonstrate Respondent's involvement in, and commitment to the betterment of the environment through sustainability (i.e. "green initiatives").

We're committed to doing our part to accelerate the transition to a lower-carbon economy and reduce the impacts of climate change. We engage our customers, team members, suppliers, and community partners in our efforts to reduce waste, conserve resources, and support resilient communities.

Our 2020 commitment

We believe we have a significant role to play in providing thought leadership and delivering practical solutions to social, economic, and environmental challenges. We respond to these challenges through our products and services, culture and operations, and philanthropy. We focus our corporate social responsibility strategy and commitment on these three priorities:

- Environmental sustainability
- Diversity and social inclusion
- Economic empowerment

2020 environmental sustainability goals

We've established a set of goals to be accomplished by 2020. Some of these include:

- Meet 100% of our global electricity needs with renewable energy
- Reduce total waste stream by 50%
- Reduce water use by 65%
- Reduce greenhouse gas emissions by 45%
- Increase energy efficiency by 40%

Notable investments

We will continue to finance and invest in sustainable business opportunities, as well as develop new products and solutions to address critical environmental needs.

We have pledged to provide **$200 billion in financing to sustainable businesses** and projects by 2030, with more than 50 percent focused on clean technology and renewable energy transactions that directly support the transition to a low-carbon economy.

We will also provide **$65 million in philanthropic giving to critical environmental needs** such as clean technology and environmental education.

Environmental grant programs

We take pride in investing our resources into critical environmental needs with a particular focus on projects that accelerate a transition to a "greener" economy, break down barriers, and create a positive impact on our environment.

We seek opportunities to provide resources to universities, colleges, labs, and entrepreneur accelerator programs, all working on commercializing new clean technologies and innovations, through our Innovation Incubator (IN2) program. We also look for programs that promote environmental education.

For more information on how to apply for an environmental grant, visit wellsfargo.com/about/corporate-responsibility/community-giving/environmental-grant-program/

e) With regard to the City, describe in sufficient detail what public benefits, including any specific programs, initiatives, and/or other contributions which Respondent would plan to "give back" to the Doral community should it be awarded this contract.

We actively support the revitalization and growth of the local economy through community investing and contributions. We outline our investing and contributions for 2019 in the following paragraphs. We look to continue to support the City.

Investing in Doral

Home mortgage[1,2]

In Doral, Florida, Wells Fargo provided 99 mortgage loans (total HMDA), extending $115.3 million in credit.

- Of that, four mortgage loans were in low-to-moderate income (LMI) communities, providing $1.2 million in credit and one mortgage loan was to an LMI

Small business[2]

In Doral, Florida, Wells Fargo provided 624 small loans to businesses, extending $26.3 million in credit.

- Of that, seven small loans to businesses were in LMI communities, providing $106,400 in credit

Small farm[2]

In Doral, Florida Wells Fargo provided one small loan to a farm, extending $20,000 in credit.

Community development[3,4]

In Doral, Florida, Wells Fargo provided two community development investments totaling $20,000.

1. Mortgage includes home purchase, home improvement, home refinance, other purpose, NA and originated and purchased loans.
2. Totals include low, moderate, middle, upper, and unclassified income levels. All totals in $(000).
3. Some Community Development activity cannot be tracked at the city level.
4. Community Development activity is subject to change as updates are received.

Appendix

EXHIBIT "B"
RFP No. 2020-27 - Banking Services
PRICING FORM

	APPROX. VOLUME	BID CHARGE PER ITEM	EST. ANNUAL COST	Wells Fargo Description
BANK DEPOSITORY SERVICES				
Account Maintenance	9	8.0000	72.0000	ACCT MAINTENANCE
SERVICES:				
Accounts Payable checks	6,000	0.0800	480.0000	DDA CHECKS PAID
Payroll Transactions	130	0.0500	6.5000	ACH TWO DAY ITEM
Zero Balance Acct.	1	15.0000	15.0000	ZERO BALANCE MASTER ACCOUNT MAINT
Other accounts				
No. of Deposits	300	0.5000	150.0000	BRANCH DEPOSIT
No. of Items Deposited-Local Bank	12	0.0500	0.6000	DEPOSITED CHECKS
No. of Items Deposited-Clearinghouse	500	0.0500	25.0000	DEPOSITED CHECKS
No. of Items Deposited-Desktop	5,000	0.0500	250.0000	DESKTOP DEPOSIT-DEPOSITED ITEM
No. of Items Deposited-Desktop Images Retrieved	5,000	0.0200	100.0000	DESKTOP DEPOSIT IMAGES RETRIEVED
Cash Deposit processing	0	1.0000	0.0000	CV CASH ONLY OR CHECK ONLY DEPOSIT
Coin Deposit processing/bag	1,200	1.0000	1200.0000	CASH VAULT DEP - STD COIN BAG
Deposit corrections		6.5000	0.0000	CASH VAULT DEP - ADJUSTMENT
Cash Deposits per $1,000	0	0.8000	0.0000	CASH VAULT DEP - CURRENCY/COIN DEP ($0.0008 per dollar)
Change Orders	0	0.0006	0.0000	CASH VAULT CASH ORDERS-CEO (per dollar)
Returned Checks	100	5.0000	500.0000	RETURN ITEM-CHARGEBACK
Deposited Items Returned online process	100	1.0000	100.0000	CEO RETURN DECISIONING PER ITEM
Stop Payments all accounts	60	5.0000	300.0000	STOP PAYMENT - ONLINE
History Storage		0.0000	0.0000	INFO REPORTING HISTORY STORAGE 12C
Online Portal Reporting Maintenance(all)		25.0000	0.0000	CEO INTRADAY REPORTING SUBSCRIPTION, CEO PREV DAY REPORTING SUBSCRIPTION
WIRE TRANSFERS				
Incoming	50	9.0000	450.0000	WIRE IN TO USA ACCT-USA DOMESTIC
Outgoing-repetitive	252	5.0000	1260.0000	WIRE OUT DOMESTIC CEO/API
Ougoing non-repetitive	5	5.0000	25.0000	WIRE OUT DOMESTIC CEO/API
Desktop Deposit Monthly Base		30.0000	0.0000	DESKTOP DEPOSIT MONTHLY BASE
Desktop Reporting per Item	5,500	0.0300	165.0000	DESKTOP DEPOSIT REPORT PER ITEM
Checks Fraud Filter base		15.0000	0.0000	POSITIVE PAY ONLY MONTHLY BASE
per item	6,000	0.0300	180.0000	POSITIVE PAY ONLY - ITEM
DDA Checks Paid	5,000	0.0800	400.0000	DDA CHECKS PAID
Electronic Payment Posting	1,716	0.0500	85.8000	ELECTRONIC CREDITS POSTED
Cash Vault		20.0000	0.0000	CASH VAULT MONTHLY BASE
Desktop Deposited Credited	300	0.5000	150.0000	DESKTOP DEPOSIT-DEPOSIT CREDITED
Debits Posted	1,000	0.0500	50.0000	DEBITS POSTED
ACH TRANSACTIONS				
ACH-Fraud Filter per item	432	1.0000	432.0000	ACH FRAUD FILTER REVIEW - ITEM
ACH-Incoming	684	0.0300	20.5200	ACH RECEIVED ITEM
ACH-Outgoing-originated	200	0.0500	10.0000	ACH FUTURE DATED ITEM
ACH-Files processed	0	10.0000	0.0000	ACH TRANSMISSION CHARGE
ACH-Monthly maintenance fee	0	30.0000	0.0000	ACH MONTHLY BASE
ACH-Returns	0	2.0000	0.0000	ACH RETURN ITEM-ELECTRONIC
ACH Notficiation of change	0	0.0000	0.0000	ACH NOC - ELECTRONIC
ACH-Reversal requests	0	15.0000	0.0000	ACH REVERSAL - ITEM
Transmission charges		10.0000	0.0000	ACH TRANSMISSION CHARGE
Bank Transfers Between Accts	1,000	0.0000	0.0000	WIRE BOOK TRANSFER - CEO/API
Bank Internet Connection		0.0000	0.0000	N/A
Monthly Service Charge Report		0.0000	0.0000	ACCOUNT ANALYSIS STATEMENT
Account Reconciliation (Full)		60.0000	0.0000	ARP MONTHLY BASE - FULL
Per Item	6000	0.0500	300.0000	ARP FULL RECON - ITEM
Monthly maintenance fee-per account		10.0000	0.0000	WELLSIMAGE PAID CHECK MONTHLY BASE
CD-ROM of imaged checks		20.0000	0.0000	WELLSIMAGE PAID CHECK PER CD
Bank supplies		Pass-thru		

Average Monthly Amount	**$560.62**	Based on Est Annual Cost Column Above divided by 12 months. Please note this amount does not reflect all the line items or volumes currently being utilized by the City today. We welcome the opportunity to provide a more complete picture of the current monthly banking fees.
Total Average Annual Amount	**$6,727.42**	Based on Est Annual Cost Column Above. Please note this amount does not reflect all the line items or volumes currently being utilized by the City today. We welcome the opportunity to provide a more complete picture of the current annual banking fees.

**If a service requirement cannot be met, the term "No Proposal" should be entered on the Proposal Form for that specific requirement.

Write out complete amount on the following lines: Average Monthly Amount: Five Hundred Sixty Dollars and 62 cents
Total Average Annual Amount: Six Thousand Seven Hundred Twenty Seven Dollars and 42 cents

SUPPLEMENTAL PRICING ITEMS

Service Description	Price
ACH Fraud Filter	
ACH CEO FRAUD FILTER REVIEW MO BASE	15.00000
ACH CEO FRAUD FILTER STOP MTHLYBASE	15.00000
ACH CEO FRAUD FILTER STOP - ITEM	1.00000
ACH Origination	
ACH CEO SUBSCRIPTION - ACCOUNT	0.00000
ACH CEO SUBSCRIPTION - ITEM	0.00000
ACH CEO RETURN SUBSCRIPTION - ITEM	0.10000
ACH CEO RETURN SUBSCRIPTION-ACCOUNT	0.00000
ACH RETURN ADMIN -ELECTRONIC	2.00000
ACH RETURN UNAUTHORIZED -ELECTRONIC	2.00000
ACH DELETE - ITEM	5.00000
Account Reconcilement	
ARP AGED ISSUE RECORDS ON FILE-ITEM	0.00000
CEO CHECK ISSUES-ITEM	0.03000
ARP FULL RECON-ITEM	0.05000
ARP MONTHLY BASE - FULL	60.00000
Basic Banking Funds Transfer	
CEO BASIC BANKING - TRANSFER	0.50000
Cash Vault	
CASH VAULT MONTHLY BASE	20.00000
CASH VAULT CURRENCY FURNISHED	0.00060
CASH VAULT COIN FURNISHED-STD BOX	2.50000
CASH VAULT DEP - NONVERIFIED ENV	0.60000
CASH VAULT DEP - ROLLED COIN	0.12000
CASH VAULT ORDER - AUTOMATED	2.00000
EDI Reporting	
CEO EDI PMT DETAIL SUBSC MO BASE	5.00000
General Account Services	
MISCELLANEOUS CREDITS POSTED	0.75000
OVERDRAFT CHARGE-PAID ITEM	0.00000

General Disbursement Services	
STOP PAYMENT - AUTO RENEWAL	0.00000
CHECK CASHING THRESHOLD MO BASE	0.00000
CHECKS PAY TO INDIV BLOCK MO BASE	0.00000
OTC DEBIT BLOCK MONTHLY BASE	0.00000
PYMT AUTH MAX CHECK MTHLY BASE	15.00000
Image Delivery	
CEO SEARCH	0.00000
CEO IMAGE VIEW < 90 DAYS - ITEM	0.00000
CEO IMAGE VIEW > 90 DAYS - ITEM	0.00000
WELLSIMAGE PAID CHECK PER ITEM	0.05000
Information Reporting	
CEO ALERTS SERVICE - EMAIL	0.00000
CEO PREV DAY REPORTING ITEMS LOADED	0.05000
CEO BASIC BANKING - MONTHLY BASE	0.00000
CEO BASIC BANKING ADDL ACCT-MO BASE	0.00000
CEO INTRADAY REPORTING ITEMS RPTD	0.05000
Other Non TM	
RECOUPMENT MONTHLY IB	0.08500
Paper Checks Deposited	
WHOLESALE LOCKBOX - DEPOSITED CHECK	0.02500
Positive Pay	
PAYEE VALIDATION STANDARD-ITEM	0.02000
POSITIVE PAY ONLY - ITEM	0.03000
POSITIVE PAY EXCEPTION - CEO IMAGE	0.00000
POSITIVE PAY EXCEPTION CHECKS RETND	2.00000
POSITIVE PAY EXCEPTIONS - ITEM	1.00000
Returned Items	
CEO RETURN ITEM SERVICE MTHLY BASE	0.00000
CEO RETN ITEM SUBSCRIPTION PER ACCT	0.00000
CEO RETURN DECISIONING PER ITEM	1.00000
Wholesale Lockbox	
LBX WHOLESALE BASE	125.00000
LBX CORRESPONDENCE OR REJECTS	0.20000
LBX STANDARD CHECK PROCESSED	0.20000
LBX DOCUMENT SCANNED	0.03000
LBX 7 YEAR IMAGE ARCHIVE	0.02000
LBX RESTRICTIVE PROCESSING	0.15000
LBX REMIT PROCESSED EXPRESS MAIL	1.50000
LBX POST OFFICE RETURNED MAIL	0.00000
LBX CEO TIR REPORT PER ITEM	0.05000
Wires Origination and Reporting	
WIRE TRANSFER REPORT BASE-CEO	0.00000
WIRE TRANSFER RPRT PER ITEM-CEO	0.00000
WIRE OUT -VOICE REPETITIVE	0.00000
Zero Balance Account (ZBA)	
ZERO BALANCE MONTHLY BASE	10.00000
Branch Services	
CASHIER'S CHECK	0.00000
WF CHK CASHED FOR NONACCT HOLDER	0.00000
Incoming Wire Transfers	
WIRE IN XBDR USA ACCT-USD OR FX	0.00000

Disclosure

We created this proposal for you based on our understanding of your requirements and the services in which you expressed interest. This proposal confirms the deposit and treasury management services and the pricing we plan to provide you based on certain assumptions including projected volumes and other relevant information you provided.

The services and pricing contained in this proposal are valid for 90 days. The pricing is subject to change if the actual volume or scope of services differs from the assumptions upon which we based the pricing.

Wells Fargo Bank, N.A. will pass through the Recoupment Fee line item, which is charged $0.085 per $1,000 of average ledger balances.

Wells Fargo is ofering to waive the first four months of analysis fees folloiwng the execution of a new contract, as well as waiving the implementation fee for Payment Manager and Wells Fargo Electronic Deposit (WFED).

Please note that we have not included pricing for the proposed new services at this time, in order to provide accurate pricing, it is necessary to have detailed discussions around each of these solutions.

Services utilized but not included in this pricing proposal will be negotiated separately. It is the responsibility of the City of Doral to review their monthly analysis statements ar notify their Wells Fargo Representative of any discrepancies on a timely basis.

This document is a confidential pricing agreement between Wells Fargo Bank and the Client. Neither party has the right to share this information with any entity or entities outside of their organization, without the permission of the other party.

Desktop Deposit® – Compatible Scanners and Price Schedule

Quick Reference Guide

Last updated February 2020

Prices listed are base prices, subject to change without notice, and do not include shipping, handling, or tax.

Suggested daily check volume	Scanner type	Description	Warranty	Charge basis	$ Price
Fewer than 20 per day	*CEO Mobile®* Deposit	*Desktop Deposit* users with scan and balance authorizations can deposit checks from a camera-enabled iPhone, iPad, or Android smartphone through the downloadable *CEO Mobile* app available from the Apple App Store and Google Play Store.	N/A	N/A	N/A
		Digital Check CheXpress CX 30-IJ – single feed	12 month	per unit	$468.00
			24 month	per unit	$505.00
Fewer than 500 per day		Digital Check TS 240-50 ▪ 50 documents per minute	12 month	per unit	$699.00
			24 month	per unit	$749.00
		Panini Vision X 50 ▪ 50 documents per minute ▪ Mac Compatible	12 month	per unit	$740.00
			24 month	per unit	$790.00
More than 500 per day		Digital Check TS 240-100 ▪ 100 documents per minute	12 month	per unit	$928.00
			24 month	per unit	$978.00
		Canon CR190i II ▪ 190 documents per minute **Note**: Allow five to seven extra business days for delivery.	12 month	per unit	$2,734.00
			24 month	per unit	$3,093.00

The following scanners are not sold through Wells Fargo's scanner fulfillment partner, but are compatible with our service.

- Digital Check TS240-75
- Canon CR190i
- Panini I:Deal (until 7/31/2020 for PC users only)
- Panini Vision X 75
- Panini Vision X 60 AGP

Together we'll go far

Desktop Deposit price schedule (continued)

12-month extended warranty – purchased at expiration		
Panini Vision X 50	per unit	$102.91
Digital Check CX30 single feed	per unit	$84.86
Digital Check TS240 batch scanners	per unit	$102.91
Maintenance fees		
Cleaning: Includes removal of loose dirt and debris, complete cleaning of the magnetic head, and cleaning of all rubber roller surfaces.	per unit	$66.89
Checkout: Includes evaluation and testing of unit/parts to specified standards. **Note:** Only applies if no problem is found.	per unit	$65.00
Preventive maintenance: Includes a standard cleaning plus replacement of all O-rings and the drive belt.	per unit	$154.37
Expedite: One day turnaround on warranty or service procedures.	per unit	$51.46
Expedite: Same day turnaround on warranty or service procedures.	per unit	$102.91
Repairs: Not covered under warranty	per hour plus parts	$154.37
Repairs: Not covered under warranty	Flat rate covers all work (except camera or motherboard)	$171.86
Supplies		
Franker for Panini i:Deal	per franker	$23.53
Ink cartridge for Panini Vision X	per cartridge	$22.63
Ink cartridge for Digital Check	per cartridge	$22.63
3-pack ink cartridge for Panini or Digital Check	per 3-pack of cartridges	$59.69
Ink cartridge for Panini AGP	per cartridge	$57.71
Check retention bags	per 100 bags	$24.59
Replacement box w/inserts (CX30)	per kit	$18.52
Replacement box w/inserts (TS240)	per kit	$23.51
Replacement box w/inserts (Panini)	per kit	$35.24
Cleaning kit for Panini	per kit	$46.99
Cleaning kit for Digital Check	per kit	$52.62
Cleaning kit for Digital Check (small)	per kit	$17.63
Cleaning cards for Canon	per pack	$22.38
Cleaning swabs for Digital Check	per pack	$7.20
Other		
Billing adjustments	per occasion	$15.44
Restocking – Cancelled orders (unopened units only)	per unit	$77.18

City of Doral

Bank Name	Bank Address	City	State	Zip	Phone Number	Distance (In miles)	Deposit Channel	Bank Hours	Branch Posting Cutoff Time	ATM Posting Cutoff Time	Night Drop - Traditional
WEST DADE	8201 NW 36TH ST	MIAMI	FL	33166 6613	(305)597-5800	1.14	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
BEACON CENTER	1700 NW 87TH AVE	DORAL	FL	33172 2612	(305)392-5355	2.58	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
MIAMI AIRPORT WEST	2500 NW 72ND AVE	MIAMI	FL	33122 1304	(305)597-3600	3.06	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
DORAL COMMONS	7520 NW 104TH AVE STE A108	DORAL	FL	33178 3375	(786)437-2685	3.36	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
WEST DORAL	10601 NW 41ST ST	DORAL	FL	33178 4288	(305)597-5818	3.55	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes

Miami Dade County

Bank Name	Bank Address	City	State	Zip	Phone Number	Deposit Channel	Bank Hours	Branch Posting Cutoff Time	ATM Posting Cutoff Time	Night Drop - Traditional
163RD STREET	800 N MIAMI BEACH BLVD	NORTH MIAMI BEACH	FL	33162 3701	(305)623-4330	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
SEVENTH AVENUE	9301 NW 7TH AVE	MIAMI	FL	33150 2011	(305)795-2800	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
NORTH MIAMI	12700 BISCAYNE BLVD	NORTH MIAMI	FL	33181 2024	(305)507-0858	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
INTERNATIONAL MALL	2090 NW 107TH AVE	MIAMI	FL	33172 2508	(305)929-2440	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
STADIUM CORNERS	19500 NW 27TH AVE	MIAMI GARDENS	FL	33056 2553	(305)623-4300	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
CORAL WAY	1699 CORAL WAY FL 1	MIAMI	FL	33145 2860	(305)567-4270	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
WEST KENDALL	13700 N KENDALL DR	MIAMI	FL	33186 0000	(305)263-1550	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
PERRINE	17401 SW 97TH AVE	MIAMI	FL	33157 0000	(305)663-6115	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
WEST GABLES	5880 BIRD RD	MIAMI	FL	33155 5304	(305)663-6167	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
WEST DADE	8201 NW 36TH ST	MIAMI	FL	33166 6613	(305)597-5800	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
SURFSIDE	9401 HARDING AVE	SURFSIDE	FL	33154 2803	(305)795-2860	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
EIGHTH STREET	169 SW 8TH ST	MIAMI	FL	33130 3509	(305)789-6888	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
OPA LOCKA	13100 NW 27TH AVE	OPA LOCKA	FL	33054 5022	(305)795-2940	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
COUNTRY CLUB	6707 NW 186TH ST	HIALEAH	FL	33015 3310	(305)623-4360	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
FLORIDA INTL UNIVERSITY	11200 SW 8TH ST GLDPKGAR RM102	MIAMI	FL	33199 2516	(305)423-1033	Teller, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	No
DORAL COMMONS	7520 NW 104TH AVE STE A108	DORAL	FL	33178 3375	(786)437-2685	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
HOMESTEAD	1101 N KROME AVE	HOMESTEAD	FL	33030 4412	(305)229-2010	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the cash vault	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
CORAL GABLES MAIN	2555 PONCE DE LEON BLVD	CORAL GABLES	FL	33134 6010	(305)569-1924	Teller, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	No
SOUTH MIAMI	1541 SUNSET DR	CORAL GABLES	FL	33143 5777	(305)663-6106	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
ARTHUR GODFREY	750 ARTHUR GODFREY RD	MIAMI BEACH	FL	33140 3450	(305)789-3980	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
MIAMI SPRINGS	4299 NW 36TH ST STE W	MIAMI SPRINGS	FL	33166 7345	(305)863-1115	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
WESTCHESTER	8550 SW 24TH ST	MIAMI	FL	33155 0000	(305)221-3657	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
SOUTH DADE	14801 S DIXIE HWY	MIAMI	FL	33176 7928	(305)663-6100	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
LIBERTY CITY	641 NW 62ND ST	MIAMI	FL	33150 4329	(305)423-2962	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
KENDALL TOWN CENTER	16301 SW 88TH ST	MIAMI	FL	33196 0000	(305)386-0430	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
SUNNY ISLES	17780 COLLINS AVE	SUNNY ISLES BEACH	FL	33160 2827	(305)623-4313	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
CORAL WAY WEST	14600 CORAL WAY	MIAMI	FL	33175 8065	(305)207-3833	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
MIAMI SHORES	9899 NE 2ND AVE	MIAMI SHORES	FL	33138 2350	(305)751-0700	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
WESTLAND	1900 W 49TH ST	HIALEAH	FL	33012 2934	(305)364-2450	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
TAMIAMI	12200 SW 8TH ST	MIAMI	FL	33184 1552	(305)229-2050	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
MIAMI AIRPORT WEST	2500 NW 72ND AVE	MIAMI	FL	33122 1304	(305)597-3600	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
MILLER SQUARE	5620 SW 137TH AVE	MIAMI	FL	33183 1102	(305)263-1180	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
AVENTURA SOUTH	18545 BISCAYNE BLVD	AVENTURA	FL	33180 2916	(305)623-4334	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
SKYLAKE	1798 NE MIAMI GARDENS DR	NORTH MIAMI BEACH	FL	33179 5373	(305)430-1300	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
HIALEAH GARDENS	11990 HIALEAH GARDENS BLVD	HIALEAH GARDENS	FL	33018 4300	(305)908-1544	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
CALLE OCHO	1900 SW 8TH ST STE E6	MIAMI	FL	33135 3377	(305)351-4038	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
BRICKELL AVENUE	1395 BRICKELL AVE STE 70	MIAMI	FL	33131 3353	(305)789-3900	Teller, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	No
RED ROAD	900 SW 57TH AVE	MIAMI	FL	33144 5020	(305)263-1030	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
AVENTURA NORTH	2929 AVENTURA BLVD	AVENTURA	FL	33180 3104	(305)623-4370	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
ALTON ROAD	1901 ALTON RD	MIAMI BEACH	FL	33139 1506	(305)534-7364	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
TAMIAMI AIRPORT	13500 SW 120TH ST	MIAMI	FL	33186 7392	(786)242-0906	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
NORTHSIDE	8390 NW 27TH AVE	MIAMI	FL	33147 4157	(305)795-2811	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
WEST DORAL	10601 NW 41ST ST	DORAL	FL	33178 4288	(305)597-5818	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
BEACON CENTER	1700 NW 87TH AVE	DORAL	FL	33172 2612	(305)392-5355	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
LE JEUNE ROAD	433 NW 42ND AVE	MIAMI	FL	33126 5652	(305)643-2111	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
HIALEAH	1137 W 68TH ST	HIALEAH	FL	33014 5152	(786)491-7697	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
COCONUT GROVE	2665 S BAYSHORE DR STE 101-A	COCONUT GROVE	FL	33133 5448	(305)460-6065	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
LITTLE HAVANA	622 SW 27TH AVE	MIAMI	FL	33135 2938	(305)789-6800	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
MIAMI MAIN	300 S BISCAYNE BLVD STE C102A	MIAMI	FL	33131 5312	(305)908-7622	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
SUNSET	10815 SUNSET DR	MIAMI	FL	33173 0000	(305)567-4200	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
MID BEACH	6870 COLLINS AVE	MIAMI BEACH	FL	33141 3244	(305)507-0371	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
EAST HIALEAH	581 W 49TH ST	HIALEAH	FL	33012 3646	(305)507-0857	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
PONCE	2100 PONCE DE LEON BLVD	CORAL GABLES	FL	33134 5215	(305)447-6200	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
MIAMI LAKES	15615 NW 67TH AVE	MIAMI LAKES	FL	33014 2116	(305)364-2440	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
BISCAYNE COMMONS	14731 BISCAYNE BLVD	NORTH MIAMI	FL	33181 1213	(305)957-0952	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
WEST FLAGLER	10781 W FLAGLER ST	MIAMI	FL	33174 1421	(305)229-2030	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
LINCOLN ROAD	1614 ALTON RD STE 107	MIAMI BEACH	FL	33139 2315	(305)423-2133	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes

Miami Dade County (continued)

Bank Name	Bank Address	City	State	Zip	Phone Number	Deposit Channel	Bank Hours	Branch Posting Cutoff Time	ATM Posting Cutoff Time	Night Drop - Traditional
KENDALL TOWN & COUNTRY	11725 SHERRY LN	KENDALL	FL	33183 0000	(305)595-7556	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
SUNILAND	11765 S DIXIE HWY	MIAMI	FL	33156 4438	(305)663-6133	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
MIDTOWN	1752 BISCAYNE BLVD	MIAMI	FL	33132 0000	(305)350-1320	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
BIRD ROAD	9600 SW 40TH ST	MIAMI	FL	33165 4031	(305)229-2080	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
SOUTH BEACH	555 WASHINGTON AVE STE A	MIAMI BEACH	FL	33139 6607	(305)372-5779	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
EAST FLAGLER STREET	100 E FLAGLER ST	MIAMI	FL	33131 1102	(305)789-6844	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
DADELAND	7100 N KENDALL DR	MIAMI	FL	33156 7803	(305)263-1100	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
HOMESTEAD TOWNE SQUARE	907 N HOMESTEAD BLVD	HOMESTEAD	FL	33030 0000	(786)572-3334	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM, Sat : 09:00 AM - 12:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes
KEY BISCAYNE	100 CRANDON BLVD	KEY BISCAYNE	FL	33149 1502	(305)789-3806	Teller, Night Drop - Traditional, Dual pouch deposit bags are post verified in the bank/store	Mon - Fri : 09:00 AM - 05:00 PM	Mon - Fri : 05:00 PM	Mon - Fri : 09:00 PM	Yes

Treasury Management

WELLS FARGO

Check deposit availability schedule

All checks deposited to a commercial or national bank account and received before the cutoff time posted in the store, cash vault, or any other department or office, receive collected funds in accordance with the following schedule:

	Collected funds
Wells Fargo Bank checks[1]	Same day
U.S. government checks	One day
Select financial institution checks[2]	One day
All other checks	Two days

Collected funds are stated in business days. Collected funds on checks drawn on banks in Federal Reserve areas closed in observance of a holiday are delayed one additional day.

This schedule is subject to change without notice.

[1] Excludes Wells Fargo Bank Controlled Disbursement checks. Wells Fargo Controlled Disbursement checks receive collected funds the next business day.

[2] Deposited checks drawn on financial institutions located within the same time zone as the deposit location are available next business day. A business day is defined as every day except Saturday, Sunday, and federal holidays. Time zones include Eastern, Central, Mountain, Pacific, and Alaska.

Wells Fargo will not process single deposits of $100 million or more. Such deposits will be returned to the customer unprocessed.

wellsfargo.com/com

 TM-2177 PDS-1506554 (05/20)

Commercial / Commercial Checking / National Bank customers

Desktop Deposit® service availability schedule

All Wells Fargo electronic deposits to a commercial or national bank account received before the published cutoff time of 9 p.m. Central Time receive collected funds in accordance with the following schedule:

	Collected funds
Wells Fargo Bank checks*	Same day
U.S. government checks	One day
All other checks	One day

Collected funds are stated in business days. Collected funds on checks drawn on banks in Federal Reserve areas closed in observance of a holiday are delayed one additional day.

*Excludes Wells Fargo Bank Controlled Disbursement checks. Wells Fargo Bank Controlled Disbursement checks receive collected funds the next business day.

This schedule is subject to change without notice.

Together we'll go far

TM-1922 - PDS-1523199 – 06/20

WELLS FARGO

Lockbox accelerated availability schedule: Eastern states

Lockbox deposits received before the published ledger deadline receive collected funds in accordance with the following schedule:

	Collected funds
Wells Fargo Bank checks[1]	Same day
All other checks	One day

Ledger deadline (local time)

Monday – Friday: 1800

Collected funds are stated in business days. Collected funds on checks drawn on banks in Federal Reserve areas closed in observance of a holiday are delayed one additional day.

[1] Excludes Wells Fargo Bank Controlled Disbursement checks. Wells Fargo Bank Controlled Disbursement checks receive collected funds the next business day. This schedule is subject to change without notice.

DEPARTMENT OF FINANCIAL SERVICES
Division of Treasury
Bureau of Collateral Management

CERTIFICATE OF QUALIFIED PUBLIC DEPOSITORY
UNDER THE FLORIDA SECURITY FOR
PUBLIC DEPOSITS ACT

This is to certify that

WELLS FARGO BANK, NATIONAL ASSOCIATION
101 NORTH PHILLIPS AVENUE
SIOUX FALLS, SOUTH DAKOTA 57104

has fully qualified as a public depository pursuant to Chapter 280, Florida Statutes, otherwise known as the Florida Security for Public Deposits Act. As such, said bank or savings association is hereby designated to receive public deposits, as defined in Subsection 280.02(23), Florida Statutes.

Given under my hand this 3RD day of APRIL, 2019.

CHIEF FINANCIAL OFFICER, STATE OF FLORIDA

DI4-1002
Rev. 3/92

WELLSFAR112

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 4/30/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
USI Insurance Services, LLC
(Servicing Broker for Wells Fargo & Company)
3475 Piedmont Road NE, Suite 800
Atlanta, GA 30305-2886

CONTACT NAME: USI Insurance Services LLC
PHONE (A/C, No, Ext): 1-800-241-6633 **FAX (A/C, No):** 1-610-537-1929
E-MAIL ADDRESS: USICertRequest@usi.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Old Republic Insurance Company	24147
INSURER B :	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
Wells Fargo & Company and its Affiliates
550 South 4th Street

Minneapolis, MN 55415

COVERAGES **CERTIFICATE NUMBER:** 14974544 **REVISION NUMBER:** See below

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY			MWZY 315337	04/01/2020	04/01/2025	EACH OCCURRENCE	$ 10,000,000
	CLAIMS-MADE; X OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 10,000,000
							MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$ 10,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 10,000,000
	X POLICY; PRO-JECT; LOC						PRODUCTS - COMP/OP AGG	$ 10,000,000
	OTHER:							$
A	AUTOMOBILE LIABILITY			MWTB 315336	04/01/2020	04/01/2025	COMBINED SINGLE LIMIT (Ea accident)	$ 10,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY; SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	X HIRED AUTOS ONLY; X NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
	UMBRELLA LIAB; OCCUR						EACH OCCURRENCE	$
	EXCESS LIAB; CLAIMS-MADE						AGGREGATE	$
	DED; RETENTION $							$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N			MWC 302638 20	04/01/2020	04/01/2025	X PER STATUTE; OTH-ER	
	ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBEREXCLUDED? (Mandatory in NH) N	N / A					E.L. EACH ACCIDENT	$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Proof of Insurance

CERTIFICATE HOLDER

Wells Fargo & Comapy and its Affiliates
550 South 4th Street
Minneapolis, MN 55415

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
Donna Maddox

ACORD 25 (2016/03)

(This certificate replaces certificate# 14973902 issued on 4/29/2020)

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 10/1/2020

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PRODUCER
USI Insurance Services, LLC
(Servicing Broker for Wells Fargo & Company)
1 Concourse Parkway NE, Suite 700
Atlanta, GA 30328

CONTACT NAME: USI Insurance Services LLC
PHONE (A/C, No, Ext): 1-800-241-6633 | FAX (A/C, No): 1-610-537-1929
E-MAIL ADDRESS: USICertRequest@usi.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Old Republic Insurance Company	24147
INSURER B :	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
Wells Fargo & Company and its Affiliates
550 South 4th Street

Minneapolis, MN 55415

COVERAGES **CERTIFICATE NUMBER:** 15198152 **REVISION NUMBER:** See below

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY; CLAIMS-MADE; OCCUR; GEN'L AGGREGATE LIMIT APPLIES PER: POLICY; PRO-JECT; LOC; OTHER:						EACH OCCURRENCE	$
							DAMAGE TO RENTED PREMISES (Ea occurrence)	$
							MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
							GENERAL AGGREGATE	$
							PRODUCTS - COMP/OP AGG	$
								$
	AUTOMOBILE LIABILITY; ANY AUTO; OWNED AUTOS ONLY; SCHEDULED AUTOS; HIRED AUTOS ONLY; NON-OWNED AUTOS ONLY						COMBINED SINGLE LIMIT (Ea accident)	$
							BODILY INJURY (Per person)	$
							BODILY INJURY (Per accident)	$
							PROPERTY DAMAGE (Per accident)	$
								$
	UMBRELLA LIAB; OCCUR; EXCESS LIAB; CLAIMS-MADE; DED; RETENTION $						EACH OCCURRENCE	$
							AGGREGATE	$
								$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N; ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH); If yes, describe under DESCRIPTION OF OPERATIONS below	N / A					PER STATUTE; OTH-ER	
							E.L. EACH ACCIDENT	$
							E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
A	Cyber Liability Network Security, Privacy and Multi-Media Liability			MWZY 315838	10/01/2020	10/01/2022	$100,000,000 Each Occurence $100,000,000 Aggregate	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Proof of Insurance

CERTIFICATE HOLDER

Wells Fargo & Company and its Affiliates
550 South 4th Street
Minneapolis, MN 55415

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Paul B. B[illegible]

WELLSFAR112

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 10/1/2020

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PRODUCER USI Insurance Services, LLC (Servicing Broker for Wells Fargo & Company) 1 Concourse Parkway NE, Suite 700 Atlanta, GA 30328	**CONTACT NAME:** USI Insurance Services LLC **PHONE (A/C, No, Ext):** 1-800-241-6633 **FAX (A/C, No):** 1-610-537-1929 **E-MAIL ADDRESS:** USICertRequest@usi.com
INSURED Wells Fargo & Company and its Affiliates 550 South 4th Street Minneapolis, MN 55415	

INSURER(S) AFFORDING COVERAGE		NAIC #
INSURER A :	Old Republic Insurance Company	24147
INSURER B :		
INSURER C :		
INSURER D :		
INSURER E :		
INSURER F :		

COVERAGES **CERTIFICATE NUMBER:** 15198144 **REVISION NUMBER:** See below

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY CLAIMS-MADE / OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY / PRO-JECT / LOC OTHER:						EACH OCCURRENCE	$
							DAMAGE TO RENTED PREMISES (Ea occurrence)	$
							MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
							GENERAL AGGREGATE	$
							PRODUCTS - COMP/OP AGG	$
								$
	AUTOMOBILE LIABILITY ANY AUTO OWNED AUTOS ONLY / SCHEDULED AUTOS HIRED AUTOS ONLY / NON-OWNED AUTOS ONLY						COMBINED SINGLE LIMIT (Ea accident)	$
							BODILY INJURY (Per person)	$
							BODILY INJURY (Per accident)	$
							PROPERTY DAMAGE (Per accident)	$
								$
	UMBRELLA LIAB / OCCUR **EXCESS LIAB** / CLAIMS-MADE DED / RETENTION $						EACH OCCURRENCE	$
							AGGREGATE	$
								$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A					PER STATUTE / OTH-ER	
							E.L. EACH ACCIDENT	$
							E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
A	Professional Liability Errors & Omissions Claims Made			MWZY 315838	10/01/2020	10/01/2022	$100,000,000 Each Occurence $100,000,000 Aggregate	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Proof of Insurance

CERTIFICATE HOLDER	CANCELLATION
Wells Fargo & Company and its Affiliates 550 South 4th Street Minneapolis, MN 55415	**SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.** AUTHORIZED REPRESENTATIVE Paul B. B[illegible]

Municipal Advisor RFP Disclosure

This proposal is submitted in response to your Request for Proposal for Comprehensive Banking Services dated December, 2020. The contents of this proposal and any subsequent discussions between us, including any and all information and analysis with respect to product is provided to you in reliance upon your compliance with the guidance of the staff of the SEC's office of Municipal Securities in order for a request for proposal to be consistent with the exemption for responses to requests for proposals or qualifications provided under the municipal advisor rules (the "Muni Advisor Rules") of the Securities and Exchange Commission (the "SEC") (240 CFR 15Ba1-1 et seq.).

In submitting this proposal (a) Wells Fargo Bank, N.A. ("Wells Fargo") is not acting as an advisor to the City of Doral ("you") and does not owe a fiduciary duty pursuant to Section 15B of the Securities Exchange Act of 1934 to you with respect to the information and material contained in this proposal; (b) Wells Fargo is acting for its own interests; and (c) you should discuss any information and material contained in this proposal with any and all internal or external advisors and experts that you deem appropriate before acting on this information or material.

Disclosures

RFP Exceptions

Upon award of business, Wells Fargo will negotiate and enter into mutually acceptable agreements with the City of Doral in connection with the deposit and treasury management products and services requested under the RFP. Wells Fargo's right to negotiate all contract terms upon award of business will not be affected or diminished by any language in the RFP, including language that purports to require specific comments (or to prohibit general exceptions) to the City's contractual requirements or to bind Wells Fargo to the City's contractual requirements unless specifically commented upon. Wells Fargo has included with its response copies of its account and service documentation for the deposit and treasury management products and services requested in the RFP, which we require to serve as or be incorporated into any final agreement.

Page_Section	Description
Page 6 of 73, Section 1.10 Compliance with Orders and Laws (Executive Order 11246)	The Company will consider requests to demonstrate compliance; however, some information is considered confidential and proprietary and cannot be released to external parties. If this situation occurs, the Company will make a good faith effort to provide as much information as possible within its corporate Information Security and Data Protection and Privacy policies.
Page 8 of 73, Section 1.19 Public Records, Audit Rights and Record Retention	Wells Fargo retains records in accordance with its enterprise records retention policy, which includes considerations for regulatory requirements. The City may reserve a right to inspect financial books and records in Wells Fargo's possession that are related only to services provided by Wells Fargo to the City, provided that such inspections are conducted in accordance with Wells Fargo's reasonable security requirements. Notwithstanding the foregoing, Wells Fargo does not grant the City any right to examine, inspect, or physically visit any Wells Fargo data center. Access to the depository must be in accordance with Bank's security policies, processes, and protocols; and access to secured areas of the depository or banking systems will not be permitted.
Page 8 of 73, Section 1.16 Termination for Default **Page 8 of 73, Section 1.17 Termination for Convenience** **Page 24 of 73, Section 3.9 Contract Cancellation**	Wells Fargo reserves the right to terminate subject to reasonable termination periods and/or grounds, which may be negotiated upon award of business.

Page 8 of 73, Section 1.21 Governing Law and Venue	Wells Fargo requires that in addition to the designated state law, Wells Fargo also requires that the governing law provision to be included in the final contract also include federal law and regulations. Wells Fargo will negotiate mutually acceptable venue and jurisdiction provisions, including a provision that jurisdiction for any damages arising under the terms of the Contract will be the appropriate County or in the United States District Court for the district that includes such County.
Page 9 of 73, Section 1.24 Terms and Conditions of Agreement (Indemnification)	During the term of this Agreement, Contractor will indemnify, defend and hold harmless the Customer and its officers, directors, employees, agents and assigns (the "Indemnified Parties") from and against all losses or damages (collectively, "Losses") arising out of, resulting from or relating to the performance of the services provided hereunder which are, in each case, directly caused in whole or in part by the negligent or intentional misconduct of Contractor or any of its officers, directors, employees, agents, subcontractors or assigns, except to the extent such Losses are caused by the negligence or intentional misconduct of the Customer. In no event will Contractor be liable for any indirect, special, consequential or punitive damages, whether or not the likelihood of such damages was known to Contractor, and regardless of the form of the claim or action or the legal theory on which it is based. Contractor's liability under this indemnity will be limited to an amount not to exceed 10 times Contractor fees incurred during the calendar month immediately preceding the calendar month in which such loss or damages were incurred (or, if no Contractor fees were incurred in such month, Contractor fees incurred in the month in which the losses or damages were incurred).
Page 9 of 73, Section 1.24 B. Terms and Conditions of Agreement (Intellectual Property)	However, Awarded Proposer shall have no liability under this section if the alleged infringement is caused in whole or in part by: (i) use of the product or service for a purpose or in a manner for which the product or service was not designed, (ii) any modification made to the product without the Awarded Proposer's written approval, (iii) any modifications made to the product by the Awarded Proposer pursuant to the City's specific instructions, (iv) any intellectual property right owned by or licensed to the City, or (v) any use of the product or service by the City that is not in conformity with the terms of any applicable license agreement.
Page 9 of 73, Section 1.25 Hiring Preference for Procured Projects	This section is not applicable as this contract is for banking services and not Public Works and Improvements.

Page 10 of 73, Section 2.2.1 Qualifications/Experience of Proposers	Wells Fargo Bank, N.A. is a subsidiary of Wells Fargo & Company ("WFC"), a corporation organized under the laws of Delaware. As with any large diversified financial institution in the highly regulated banking and securities field, Wells Fargo receives inquiries and subpoenas from regulators and law enforcement from time to time, some of which may be confidential in nature, and is subject to civil litigation. Wells Fargo responds regularly to inquiries and investigations by governmental entities and has in the past entered into settlements of some of those investigations, including those listed below. None have resulted in any material restrictions on Wells Fargo's ability to operate its businesses as related to the services and products addressed in our response to this RFP. • During the third quarter of 2016, Wells Fargo Bank, N.A. entered into settlements with the City of Los Angeles, the Consumer Financial Protection Bureau and the Office of the Comptroller of the Currency regarding certain sales practices. For additional information, see the press release at https://newsroom.wf.com/press-release/corporate-and-financial/wells-fargo-issues-statement-agreements-related-sales • On February 2, 2018, WFC entered into a consent order with the Board of Governors of the Federal Reserve System, relating to governance oversight and the company's compliance and operational risk management program. This consent order does not relate to new matters, but rather to prior issues including the 2016 sales practices matter. For additional information, see the press release at https://newsroom.wf.com/press-release/corporate-and-financial/wells-fargo-commits-satisfying-consent-order-federal • In April 2018, WFC entered into consent orders with the Consumer Financial Protection Bureau and the Office of the Comptroller of the Currency that address matters relating to WFC's compliance risk management program and issues regarding certain interest rate-lock extensions on home mortgages and collateral protection insurance placed on certain auto loans. For additional information, see the press release at https://newsroom.wf.com/press-release/corporate-and-financial/wells-fargo-enters-consent-orders-occ-and-cfpb • In August 2018, WFC announced that it entered into an agreement with the U.S. Department of Justice (DOJ) to resolve a previously disclosed investigation by the DOJ regarding claims related to certain 2005–07 residential mortgage-backed securities activities.

	For additional information, see the press release at https://newsroom.wf.com/press-release/consumer-lending/wells-fargo-reaches-agreement-doj-resolve-legacy-rmbs-claims • On December 28, 2018, WFC entered into a settlement with all 50 state Attorneys General and the District of Columbia regarding previously disclosed retail sales practices, auto collateral protection insurance and guaranteed asset/auto protection, and mortgage interest rate lock matters. For additional information, see the press release at https://newsroom.wf.com/press-release/community-banking-and-small-business/wells-fargo-reaches-agreement-state-attorneys. • On February 21, 2020, WFC entered into settlements with the U.S. Department of Justice and the U.S. Securities and Exchange Commission to resolve these agencies' investigations into Community Bank sales practices and related disclosures. For additional information, see the press release at https://newsroom.wf.com/press-release/corporate-and-financial/wells-fargo-reaches-settlements-resolve-outstanding-doj-and Many of the actions that Wells Fargo has taken in connection with these settlements are described at https://www.wellsfargo.com/assets/pdf/commitment/progress-report.pdf To the extent any litigation or regulatory matters are required to be reported, they are disclosed in WFC's SEC filings and are matters of public record: • Copies of the Legal Proceedings sections from WFC's recent public filings and WFC's most recent periodic reports are available at https://www.wellsfargo.com/invest_relations/filings • WFC's Annual Reports are available at https://www.wellsfargo.com/invest_relations/annual At this time, and to the best knowledge of the Wells Fargo representatives preparing this response, neither Wells Fargo Bank, N.A. nor WFC has been involved in any regulatory reviews or legal actions that would have a material adverse impact on Wells Fargo's ability to provide the services requested in this RFP.

Page 11 of 73, Section 2.2.7 **Page 11 of 73, Section 2.3 Licensing**	As a federally chartered bank, Wells Fargo Bank NA is exempt from obtaining business licenses per our regulator, the Office of the Comptroller of Currency (OCC). It is Wells Fargo Bank NA's practice to obtain all legally required licenses and permits. **Please see the Florida documentation following the exceptions.**
Page 12 of 73, Section 2.5 Term of Contract	Wells Fargo would like the additional renewal periods to be based upon mutual agreement of the parties.
Page 13 of 73, Section 2.8 (Paragraph 2) Method of Award	To help protect our customers and organization, we do not allow on site access to our data centers and other secured areas. Access to the depository must be in accordance with Bank's security policies, processes, and protocols; and access to secured areas of the depository or banking systems will not be permitted.
Page 16 of 73, Section 2.11 Insurance Requirements	Please Note: ~~The Certificate shall contain a provision that coverage afforded under the policy will not be cancelled, or materially changed until at least thirty (30) days prior written notice has been given to the City.~~ Certificates of insurance, reflecting evidence of the required insurance, shall be provided to the City, or in accordance to policy provisions. Note: While historically it was common to provide 30-day notice of cancellation on the industry-standard Acord Certificate of Insurance, that is no longer the case. The certificate of insurance form has been changed, and we can no longer provide 30-day notice of cancellation wording on the certificate. In the event the Certificate of Insurance provided indicates that the insurance shall terminate and lapse during the period of this Agreement, the vendor shall furnish, at ~~least thirty (30) days prior to~~ the expiration of the date of such insurance, a renewed Certificate of Insurance as proof that equal and like coverage for the balance of the period of the Agreement or extension hereunder is in effect. Note: While it is our policy to issue certificates in advance of the renewal date, we cannot guarantee that they will be available (xx) days before the expiration dates of the related policies.
Page 42-43 of 73, ADA Disability Nondiscrimination Statement	Notwithstanding the above, Wells Fargo will comply with all applicable local, state, and federal law and agrees to this Section to the extent it does not impose additional obligations on Wells Fargo beyond those required by law.

Page 44-45 of 73, FL Statutes, On Public Entity Crimes	This form is completed to the best knowledge of the relationship management team preparing this response and subject to the limitation that the information available on the topic is for a 10-year lookback and does not lookback to 1989.
Page 53 of 73, Certificate of Authority	As a national bank, Wells Fargo Bank NA is not required to be qualified to do business in each state, which is something that a corporation would have to do. Because Wells Fargo Bank NA is not qualified in the state of Florida, we do not have a Certificate of Authority from the state of Florida. However, we have attached the most recent Certificate of Corporate Existence and Fiduciary Powers from the OCC, which is the Bank's primary regulator, which evidences the existence of Wells Fargo Bank NA and its authority to transact business.
Page 58-60 of 73, Exhibit A Minimum Insurance Requirements	III. Workers Compensation Statutory- State of Florida Include Employers' Liability Limits: $100,000 for bodily injury caused by an accident, each accident $100,000 for bodily injury caused by disease, each employee $500,000 for bodily injury caused by disease, policy limit Workers Compensation insurance is required for all persons fulfilling this contract, whether employed, contracted, temporary or subcontracted. ~~Waiver of Subrogation in favor of City.~~ Note: Wells Fargo does not add A/I status to any third parties under the Workers Compensation policy.

Page 72 of 73, Section E. 80. Debarment and Suspension	Wells Fargo Bank, N.A. has not been debarred, or otherwise had its legal authorization to conduct its operations suspended, by any state or federal authority, within the past five years. During the third quarter of 2016, Wells Fargo Bank, N.A. entered into settlement agreements with the City of Los Angeles, the Consumer Financial Protection Bureau and the Office of the Comptroller of the Currency regarding certain sales practices. See press release dated September 8, 2016 at https://newsroom.wf.com/press-release/corporate-and-financial/wells-fargo-issues-statement-agreements-related-sales (the "2016 Settlement"). Following the announcement of the 2016 Settlement discussed above, certain state and local governmental bodies and municipal entities have temporarily suspended or removed Wells Fargo Bank, N.A. from providing certain commercial and investment banking services. However, there have been no actions that would materially impair Wells Fargo's ability as of this date to conduct its business or meet its obligations under the transaction to which this RFP relates.

FLORIDA DEPARTMENT OF STATE
DIVISION OF CORPORATIONS

Fictitious Names - Frequently Asked Questions

1. **What is a fictitious name?**

   A fictitious name means any name under which a person transacts business in this state, other than his legal name. Business means any enterprise or venture in which a person sells, buys, exchanges, barters, deals, or represents the dealing in any thing or article of value, or renders services for compensation. Legal name means a person's given name, or an entity that has been properly registered. Examples: trademarks, service marks, corporations, limited partnerships.

2. **What is the intent of the Fictitious Name Registration Act?**

   The intent of the Fictitious Name Act is for public notice as to ownership.

3. **What is the effect of registration?**

   Notwithstanding the provisions of any other law, registration under the Fictitious Name Act, 865.09 F.S., is for public notice only, and gives rise to no presumption of the registrant's rights to own or use the name registered, nor does it affect trademark, service mark, trade name or corporate name rights previously acquired by others in the name or a similar name. Registration under this Act does not reserve a fictitious name against future use by another party.

4. **Who is exempt from filing?**

   A business formed by an attorney licensed to practice law in this state, or a person licensed by the Department of Business and Professional Regulation or the Department of Health, for the purpose of practicing his licensed profession need not be registered under the Fictitious Name Act, notwithstanding that it transacts business ancillary to the practice of such profession. Note: The individual licensing board at the Department of Business and Professional Regulation or the Department of Health should be contacted to determine if the individual licensing board requires registration regardless of the exemption stated in 865.09 F.S.. The Division of Corporations does not make this determination.

5. **When would the Division of Corporations not require the filing of a fictitious name?**
   a. When the applicant is a licensed attorney forming a business for the practice of law in the State of Florida.

   b. When the applicant is registered with the Department of Business and Professional Regulation and their licensing board has not imposed requirements for the registration as a fictitious name.

   c. When the applicant is a corporation, partnership or other legal entity filed or registered and in good standing with the Division of Corporations and is not transacting business under any other name.

   d. When the applicant is a Federally chartered corporation and is not transacting business under any other name.

FLORIDA DEPARTMENT OF STATE
DIVISION OF CORPORATIONS

Detail by Entity Name

Designation of Agent

WELLS FARGO BANK, N.A.

Filing Information

Document Number Q95000000097
FEI/EIN Number 941347393
Date Filed 07/25/1995
State OC
Status ACTIVE

Principal Address
420 MONTGOMERY ST.
SAN FRANCISCO, CA 94163

Mailing Address

420 MONTGOMERY ST.
SAN FRANCISCO, CA 94163

This is not a change of address
submitted for information purposes only

Registered Agent Name & Address

CORPORATION SERVICE COMPANY
1201 HAYS STREET
TALLAHASSEE, FL 32301-2525

Name Changed: 09/07/2000

Address Changed: 09/07/2000

Officer/Director Detail

NONE

Annual Reports

No Annual Reports Filed

Office of the Comptroller of the Currency

Washington, DC 20219

CERTIFICATE OF CORPORATE EXISTENCE AND FIDUCIARY POWERS

I, Brian Brooks, Acting Comptroller of the Currency, do hereby certify that:

1. The Comptroller of the Currency, pursuant to Revised Statutes 324, et seq, as amended, and 12 USC 1, et seq, as amended, has possession, custody, and control of all records pertaining to the chartering, regulation, and supervision of all national banking associations.

2. "Wells Fargo Bank, National Association," Sioux Falls, South Dakota (Charter No. 1), is a national banking association formed under the laws of the United States and is authorized thereunder to transact the business of banking and exercise fiduciary powers on the date of this certificate.

IN TESTIMONY WHEREOF, today, July 6, 2020, I have hereunto subscribed my name and caused my seal of office to be affixed to these presents at the U.S. Department of the Treasury, in the City of Washington, District of Columbia.

Acting Comptroller of the Currency

SEAL OF THE Comptroller OF THE CURRENCY · CURRENCY BUREAU · TREASURY DEPARTMENT

2020-00764-C

FEDERAL DEPOSIT INSURANCE CORPORATION

WASHINGTON, D.C.

FDIC

Hereby certifies that the deposits of each depositor in this institution are insured to the maximum amount provided by the Federal Deposit Insurance Act

CHAIRMAN OF THE BOARD OF DIRECTORS

EXECUTIVE SECRETARY

FDIC-007-2004

SECRETARY'S CERTIFICATE

WELLS FARGO BANK, NATIONAL ASSOCIATION

I, Deanna J. Ernst, hereby certify that I am an Assistant Secretary of Wells Fargo Bank, National Association, a national banking association organized and existing under the laws of the United States of America (the "Bank"), and I hereby further certify as follows:

1. The following is a true and correct extract from resolutions duly adopted by the Board of Directors of the Bank on May 15, 2018, and no modification, amendment, rescission or revocation of such resolutions has occurred affecting such extract as of the date of this certificate:

RESOLVED**,** that agreements, instruments, or other documents, including amendments and modifications thereto, relating to or affecting the property or business and affairs of the Bank, whether acting for its own account or in a fiduciary or other representative capacity, may be executed in its name by the persons hereinafter authorized;

RESOLVED, that for the purposes of these resolutions, "Senior Executive Officer" shall mean any person appointed, designated or otherwise elected President, Chief Executive Officer, Senior Executive Vice President, Executive Vice President or designated an Executive Officer by resolution of the Board of Directors of the Bank, and "Signing Officer" shall mean any Senior Executive Officer, any Senior Vice President, the Treasurer, any Vice President, any Assistant Vice President, any person whose title includes the word "Officer" (e.g., Commercial Banking Officer, Personal Banking Officer, Trust Officer), or any other person whose title has been or is hereafter designated by the Board of Directors as a title for an officer of the Bank, and such officers are hereby authorized to sign agreements, instruments and other documents on behalf of the Bank in accordance with the signing authorities conferred in Parts A, B and C of these resolutions;

* * *

B. Vice Presidents and Above

RESOLVED, that any Senior Executive Officer, any Senior Vice President and any Vice President, acting alone, may execute on behalf of the Bank:

1. Deeds, leases, assignments, bills of sale, purchase agreements and other instruments of conveyance to purchase, sell, lease or sublease to or from a third party real property, or any interest therein, and any and all management agreements, construction contracts, permits and other contracts or documents required to be executed or delivered to or filed with any person, entity or jurisdiction in the course of the management, maintenance,

improvement and/or operation of any real or personal property owned, held or leased by the Bank for its own account; *provided*, *however*, that such agreements, instruments and other documents may also be signed as hereinafter provided with respect to real property acquired by the Bank in connection with collateral for a loan.

2. Confidentiality agreements, bonds of indemnity and powers of attorney (including any instruments revoking such power of attorney); *provided*, *however*, that (a) proxies to vote stock in a corporation or to vote other interests in other legal entities or to service or enforce the Bank's rights with respect to real property and (b) stock and bond powers may also be signed as hereinafter provided.

C. Signing Officers

RESOLVED, that any Signing Officer, acting alone, may execute on behalf of the Bank, whether acting for its own account or in a fiduciary or other representative capacity:

* * *

15. Agreements (including any amendments, terminations and any other documents or ancillary agreements related thereto) and proposals to provide services to or receive services from third parties.

* * *

2. On the date hereof, the following person was a duly appointed, qualified and acting officer of the Bank, that his correct title appears beside his name, and that on said date he was duly authorized to act on behalf of the Bank as set forth in the foregoing resolutions:

Name	**Title**
Vincent Mattio	Senior Vice President

IN WITNESS WHEREOF, I have hereunto signed my name this 8th day of October, 2020.

Deanna J. Ernst, Assistant Secretary

* * * Redacted [Indicates portions of the resolution which have been omitted because they are not relevant to the transaction for which this certificate has been requested.]

Commercial Account Agreement

Effective June 23, 2020

Contents

Welcome to Wells Fargo

Thank you for opening an account with us. We value your relationship and hope we answered all your questions when you opened your account. Please review this account agreement for further details about your account and related services.

What words do we use to refer to you (the customer), Wells Fargo, and this account agreement?

- Customer is "company", "you", "your", or "yours".
- Wells Fargo Bank, N.A. is "Wells Fargo", "bank", "we", "us" or "our".
- This Commercial Account Agreement and the disclosures listed below constitute the "Agreement":
  - The pricing information and other account-related information
  - Our collection schedule
  - Our privacy policy
  - Our rate sheets for interest-bearing accounts
  - Any additional disclosures we provide to you about your account and related services

What information does the Agreement contain?

The Agreement:

- Explains the terms of your banking relationship with Wells Fargo and is the agreement between you and us for your account and related services, and
- Replaces all prior deposit agreements including any oral or written representations.

You are responsible for ensuring that any authorized signer on your account is familiar with the Agreement.

We suggest you keep a copy of the Agreement - and any further information we provide you about changes to the Agreement - for as long as you maintain your Wells Fargo accounts.

Words with specific meanings

Certain words have specific meanings as they are used throughout this Agreement. These words and their meanings are defined in this section, and others are found later in this Agreement.

Affiliate

A bank or other entity that is, directly or indirectly, a wholly or substantially owned subsidiary of Wells Fargo & Company.

Authorized signer

A person who has your actual or apparent authority to use your account, even if they have not signed the account application. We may rely solely on our records to determine the form of ownership of and the authorized signers on your account.

Account

Any business deposit account or commercial deposit account that is not held or maintained primarily for personal, family or household purposes. Examples of accounts include an account owned by an individual acting as a sole proprietor, a partnership, a limited partnership, a limited liability partnership, a limited liability company, a corporation, a joint venture, a non-profit corporation, an employee benefit plan or a governmental unit including an Indian tribal entity.

Business day

Every day is a business day except Saturday, Sunday, and federal holidays.

Collected balance

The collected balance is the ledger balance in your account less the deposit float.

Deposit float

The deposit float is the total dollar amount of items deposited in your account that has yet to be credited as part of your collected balance as a result of the Bank's or applicable affiliate's collection schedule.

Investable balance

The investable balance is the collected balance in your account less the portion required by law to be held at a Federal Reserve Bank and other adjustments.

Item

An item is an order, instruction, or authorization to withdraw or pay funds or money from your account. Examples include checks, drafts, and electronic transactions, including ACH. Paper items may be referred to as checks in this Agreement.

Ledger balance

The ledger balance is the balance in your account after all debits and credits for the business day have been posted.

Overdraft

An overdraft is a negative balance in your account.

Are we allowed to change the Agreement?

Yes. We can change the Agreement by adding new terms or conditions, or by modifying or deleting existing ones. We refer to each addition, modification, or deletion to the Agreement as a modification.

Notice of a modification: If we are required to notify you of a modification to the Agreement, we will describe the modification and its effective date by a message in your account statement or by any other appropriate means.

Waiver of a term of the Agreement: If we waive a right related to your account under this Agreement on one or more occasions, it does not mean we are obligated to waive the same right on any other occasion.

How do I consent to the Agreement and any future modifications to the Agreement?

By signing the Agreement or using your account or service, you consent to this Agreement. Continuing to maintain or use the account or service after a modification to the Agreement means that you have consented to the changes.

Can you consent to the Agreement electronically?

Yes. You may consent to the Agreement using your "Electronic Signature", as defined in the Electronic Signatures in Global and National Commerce Act ("ESIGN Act"), and we may accept your Electronic Signature on any other account-related document. Under the ESIGN Act, your Electronic Signature will constitute your original and binding signature. The fact that you sign using your Electronic Signature will not, by itself, be grounds for invalidating the document.

What happens if a term of the Agreement is determined to be invalid?

Any term of the Agreement that is inconsistent with the laws governing your account will be considered to be modified by us and applied in a manner consistent with those laws. Any term of the Agreement that a court of competent jurisdiction determines to be invalid will be modified accordingly. In either case, the modification will not affect the enforceability or validity of the remaining terms of the Agreement.

Who will communicate with you about your account?

We may provide you or an authorized signer with information about your account. When we receive information from an authorized signer, we treat it as a communication from you. You agree to notify us promptly in writing if an authorized signer no longer has authority on your account.

Resolving disputes through arbitration

Arbitration Agreement between you and Wells Fargo

Upon demand of by you or us, any dispute or claim arising from or relating to this Agreement, or the breach thereof, must be submitted to arbitration administered by the American Arbitration Association ("AAA") under its Commercial Arbitration Rules, and must be heard before three arbitrators if the amount in dispute is US $5,000,000 or more or its equivalent in any other currency, and before one arbitrator for amounts less than US $5,000,000 or its equivalent in any other currency. Arbitration will proceed in a location selected by AAA in the state of the applicable Governing Law, and if there is no such state, the place of arbitration must be New York, NY. The language of the arbitration must be English. Judgment on the award rendered by the arbitrators may be entered in any court having competent jurisdiction. This arbitration requirement does not limit the right of you or us to: (a) exercise self-help remedies, including setoff or (b) obtain provisional or ancillary remedies such as injunctive relief or attachment, before, during or after the pendency of any arbitration proceeding. This exclusion does not constitute a waiver of the right or obligation of you or us to submit any dispute to arbitration hereunder, including those arising from the exercise of the actions detailed in (a) and (b) of this subsection.

Can either Wells Fargo or you participate in class or representative actions?

No. Wells Fargo and you agree that the resolution of any dispute arising from the terms of this Agreement will be resolved by a separate arbitration proceeding and will not be consolidated with other disputes or treated as a class. Neither Wells Fargo nor you will be entitled to join or consolidate disputes by or against others as a representative or member of a class, to act in any arbitration in the interests of the general public, or to act as a private attorney general. If any provision related to a class action, class arbitration, private attorney general action, other representative action, joinder, or consolidation is found to be illegal or unenforceable, the entire Arbitration Agreement will be unenforceable.

Important legal information

What laws govern your account?

The laws governing your account include:

- Laws, rules, and regulations of the United States, and
- Laws of the state in which the office that maintains your account is located, without regard to its conflicts of laws principles.

If a different state law applies, we will notify you.

Any funds transfer (including a wire transfer) that is a remittance transfer as defined in Regulation E, Subpart B, will be governed by the laws of the United States and, to the extent applicable, the laws of the state of New York, including New York's version of Article 4A of the Uniform Commercial Code, without regard to its conflict of laws principles.

What are our rules on illegal transactions?

You must not use your account or any relationship you may have with us for any illegal purpose, including "restricted transactions" as defined in the Unlawful Internet Gambling Enforcement Act of 2006 and its implementing regulation, Regulation GG. In our discretion, we may block or otherwise prevent or prohibit those transactions and, further, we may close the account or end our relationship with you.

Are we your fiduciary?

No. Our relationship to you concerning your account is that of a debtor and creditor. There is no fiduciary, quasi-fiduciary, or special relationship between you and us.

Will any person or entity be considered a third party beneficiary under this Agreement?

No. No other person or entity will be considered to be a third party beneficiary under this Agreement.

Can you use our name or refer to our relationship without our consent?

No. You and we will not use each other's name or refer to our relationship in any solicitation, marketing material, advertisement, news release or other written, online or oral communication without specific prior written consent for each such use or release, except that we may use your name as a reference in service proposals if we obtain your prior oral or written approval for such use.

What is the controlling language of our relationship?

English is the controlling language of our relationship with you. If there is a discrepancy between our English-language and translated materials, the English version prevails over the translation.

How will we contact you about your account?

For us to service your account or collect any amount you owe, we may contact you by telephone, text, email, or mail. We are permitted to use any address, telephone number or email address you provide. You agree to provide accurate and current contact information and only give us telephone numbers and email addresses that belong to you.

When you give us a telephone number, you are providing your express consent permitting us (and any party acting on behalf of Wells Fargo) to contact you by calling or texting that telephone number. When we call you, you agree that we may leave prerecorded or artificial voice messages. You also agree that we may use automatic telephone dialing systems in connection with calls or text messages sent to any telephone number you give us, even if it is a mobile phone number or other communication service for which the called party may be charged.

What courts may be used to resolve a dispute?

Wells Fargo and you each agree that any lawsuits, claims, or other proceedings arising from or relating to your account or the Agreement, including the enforcement of the Arbitration Agreement and the entry of judgment on any arbitration award, will be venued exclusively in the state or federal courts in the state whose laws govern your account, without regard to conflict of laws principles.

Statements and other notices relating to your deposit account

How do we make account statements and notices available to you?

We will mail, send electronically, or otherwise make available to you an account statement reflecting your account activity for each statement period. We will do the same with notices. We will send all account statements and notices to the postal or electronic address associated with your account.

Combined account statements: To reduce the number of separate account statements you receive each month, we may combine statements if you have more than one deposit account.

If we provide a combined account statement for your accounts, we consider your first account as your primary account. You will receive your account statement at the address listed for your primary account. Statements for accounts in a combined statement will be delivered according to the delivery preference of the primary account.

When are your account statements and notices considered received?

If there is more than one authorized signer on your account, we may send statements and notices to any one of them (unless you have otherwise instructed us in writing). You assume the risk of loss in the mail.

Mailed account statements: When we mail your account statement or notices, we consider it received by you on the second business day after mailing it.

Electronic delivery of account statements: Account statements will be made available through *Wells Fargo Business Online*® Banking or the *Commercial Electronic Office*®, as applicable, after the end of the statement period. You will be notified by email that the account statement is available for viewing. We consider the account statement to be delivered to you when it is available online.

What happens if your account statement or notices are returned or undeliverable?

Unless otherwise prohibited by the laws governing this Agreement, your account statements or notices will be considered unclaimed or undeliverable if:

- Two or more account statements or notices are returned to us through the mail because of an incorrect address, or
- We notify you electronically that your account statement or notices are available for viewing at *Wells Fargo Business Online*® Banking or the *Commercial Electronic Office*®, as applicable, and we receive email notifications that our message is undeliverable.

In either event, we may:

- Discontinue sending account statements and notices, and
- Destroy account statements and notices returned to us as undeliverable

How can you or Wells Fargo change your address for your account?

Address change requests you make: You can change the postal or email address or other means by which we make your account statements and notices available to you at any time by notifying us of your request by telephone or email. We will act on your request within a reasonable time after we receive it. Unless you instruct otherwise, we may change the postal or email address only for the accounts you specify or for all or some of your other accounts with us.

Address changes we make: We may update your listed address without a request from you if we:

- Receive an address change notice from the U.S. Postal Service,
- Receive information from another party in the business of providing correct address details that your actual address does not match the listed address for your account or card, or
- Identify a need to rely on another address you have provided us.

When are notices you send to us effective?

Any notice from you is effective once we receive it and have a reasonable opportunity to act on it.

What obligations do you have to review account statements and notices and notify us of unauthorized transactions or errors?

You are obligated to:

- Examine your account statement and notices promptly and carefully.
- Notify us promptly of any errors.
- Notify us **within 30 days** after we have made your account statement or notices available to you of any unauthorized transaction on your account. *Note:* If the same person has made two or more unauthorized transactions and you do not notify us of the first one within this 30-day period, we will not be responsible for unauthorized transactions made by the same wrongdoer.

- Notify us **within 6 months** after we have made your account statement or a notice available to you if you identify any endorsements which are unauthorized or missing, or other errors relating to endorsements on your checks.

You can notify us of unauthorized transactions or errors on your account statement by promptly:
- Calling the telephone number listed on your account statement or in notices, or
- Sending us a written report (if instructed by us) as soon as possible, and at least within the specified timeframes.

Funds transfers are subject to different time periods for notification of errors, as described in the "Fund transfer services" part of this Agreement. Common examples of fund transfers are ACH, wire transfers, and *Real-Time Payments (RTP®)*.

What happens if you do not notify us of an unauthorized transaction within the time frames specified above?

If you do not notify us of any unauthorized transaction, error, or claim for a credit or refund within the time frames specified above, your account statement or transaction will be considered correct. We will not be responsible for any unauthorized transaction, error, or claim for transactions included in this statement.

When is a transaction unauthorized?

A check is unauthorized when it is:
- Missing a required signature or you have not otherwise authorized it,
- Forged, or
- Altered (for example, the amount of a check or the payee's name is changed).

What happens when you report an unauthorized transaction?

We investigate any reports of unauthorized activity on your account. After you submit a claim, we may require you to:
- Complete and return the claim form and any other documents we require,
- Notify law enforcement, and
- Cooperate fully with us in our investigation.

We can reverse any credit made to your account resulting from a claim of unauthorized transaction if you do not cooperate fully with us in our investigation or recovery efforts, or we determine the transaction was authorized.

Are you responsible for taking reasonable steps to help prevent fraud on your account?

Yes. You agree to take reasonable steps to ensure the integrity of your account and items drawn on your account or deposited to it. You acknowledge that there is a growing risk of losses resulting from unauthorized items. To help prevent fraud and protect your assets, we recommend that you take these preventive measures:
- Assign responsibilities for your account to multiple individuals. The individuals who reconcile statements for your account should be different from the individuals who issue items drawn on your account.
- Reconcile statements for your account as you receive them; notify us promptly of any problem.
- Contact us promptly if you do not receive the statement for your account when you would normally expect to.
- Watch for checks cashed out of sequence or made out to cash. These are classic red flags for embezzlement.
- Secure your supply of checks at all times. Stolen checks are a common method of fraud.
- Periodically reassign accounting duties, such as reconciling your account or making a deposit.
- Review your transaction activity for unexpected fluctuations. For example, compare the percentage of cash deposits to total deposit size. Most businesses will maintain a constant average. A large fluctuation might indicate fraud.

- Destroy any checks that you do not intend to use.
- Use tamper resistant checks at all times.
- Notify us promptly when an authorized signer's authority ends so that his/her name can be deleted from our records for your account, and any cards that we have issued to him/her or online access can be cancelled.
- Do not sign blank checks.
- Obtain insurance coverage for these risks.

This is not an exhaustive list and there may be additional preventive measures you may take to prevent fraud and protect your account.

Protection against unauthorized items

Does Wells Fargo offer services to help prevent fraud on your account?

Yes. We offer services for your account that provide effective means for controlling the risk from unauthorized items.

Examples of these services include:

- Positive pay, positive pay with payee validation, and reverse positive pay
- ACH fraud filter, and
- Payment authorization service.

In addition, we may recommend you use certain fraud prevention practices to reduce your exposure to fraud. Each of these practices is an "industry best practice." Dual custody is an example of an industry best practice. With dual custody, when one user initiates an action, like a payment or a change in the set-up of a service, the action does not take effect until a second user approves the action using a different computer or mobile device than one used to initiate the action.

What are potential consequences if you do not implement a fraud prevention service or industry best practice Wells Fargo has recommended?

If we have expressly recommended you use a fraud prevention service or industry best practice and you either (a) decide not to implement or use the recommended service or industry best practice, or (b) fail to use in accordance with the applicable service description or our other applicable documentation, then you will be treated as having assumed the risk of any losses that could have been prevented or mitigated by correct use of the recommended service or industry best practice.

Lost or stolen checks; unauthorized items

If any of your unissued checks have been lost or stolen, or if you learn that unauthorized items are being issued on your account, you agree to notify us at once. To the extent that your failure to notify us hampers our ability to prevent loss, we will be relieved of any liability for those items. Upon receipt of any notice from you, we - without any liability to you - will dishonor any item you, or any authorized signer, has indicated is unauthorized and may:

- Close your account and open a new account for you, or
- Pay any item presented for payment on your account, provided you have instructed us to pay that item and given us its number.

If we open a new account for you and you have authorized a third party to automatically make regular deposits to or withdrawals from your account (such as wire or ACH transfers), we will have no liability to you if you do not receive any regularly scheduled deposit or if a regularly scheduled payment is not made for you because you did not notify that third party in a timely fashion of the number of your new account.

When does my account become dormant?

Checking accounts, savings accounts, and time accounts *(CDs)*

Generally, your account becomes dormant if you do not initiate an account-related activity for:

- 12 months for a checking account,
- 34 months for a savings account, or
- 34 months after the first renewal for a time account.

An account-related activity is determined by the laws governing your account. Examples of account-related activity are depositing or withdrawing funds at a banking location or ATM, or writing a check which is paid from the account.

Automatic transactions (including recurring and one-time), such as pre-authorized transfers, payments and electronic deposits (including direct deposits), set up on the account may not prevent the account from becoming dormant.

What happens to a dormant account?

We put safeguards in place to protect a dormant account which may include restricting the following transactions:

- Transfers by telephone,
- Transfers or payments through *Wells Fargo Business Online*® Banking or the *Commercial Electronic Office*®, and
- Wire transfers (incoming and outgoing).

Normal monthly service and other fees continue to apply (except where prohibited by law).

If you do not initiate an account-related activity on the account within the time period as specified by state unclaimed property laws, your account funds may be transferred to the appropriate state. This transfer is known as "escheat." If your account becomes escheatable, account statements will no longer be available. Your account will be closed. To recover your account funds, you must file a claim with the state.

What are checking subaccounts?

For each checking account you maintain with us, we may establish on your behalf a master account and two subaccounts. All information that is made available to you about your account will be at the master account level. The subaccounts are composed of a savings account and a checking account.

On the first day of each month, we will allocate funds between the two subaccounts as appropriate. Items received by us that are drawn against your master account will be presented for payment against the checking subaccount. Funds will be transferred from the savings subaccount as may be needed to cover checks presented on the checking subaccount. On the sixth transfer from the savings subaccount during a statement period, all of the funds on deposit in the savings subaccount will be transferred to the checking subaccount. If your account earns interest, the use of subaccounts will not affect the interest you earn.

Rights and responsibilities

What responsibilities do you and Wells Fargo have to each other?

You and we are responsible for complying with the Agreement. We exercise ordinary care when we provide services. When we take a check for processing by automated means, ordinary care does not require us to examine the check. In all other cases, ordinary care requires only that we follow standards that do not vary unreasonably from the general standards followed by similarly situated banks.

Except to the extent we fail to exercise ordinary care or to comply with the Agreement, you agree to indemnify and hold us harmless from all claims, demands, losses, liabilities, judgments, and expenses (including attorney's fees and expenses) arising out of or in any way connected with our performance under the Agreement. You agree this indemnification will survive termination of the Agreement.

In no event will either Wells Fargo or you be liable to the other for any special, consequential, indirect, or punitive damages. The limitation does not apply where the laws governing your account prohibit it.

We will not have any liability to you if your account has non-sufficient available funds to pay your items due to actions we have taken according to the Agreement.

Circumstances beyond your control or ours may arise and make it impossible for us to provide services to you or for you to perform your duties under the Agreement. If this happens, neither Wells Fargo nor you will be in violation of the Agreement.

Are you obligated to pay our fees?

Yes. By continuing to maintain your account you agree to pay our fees according to the pricing information.

Why do we charge a recoupment fee?

We assess the recoupment fee to partially recover insurance premiums we pay to the FDIC for deposit insurance. The amount of the recoupment fee appears on the periodic statement or client analysis statement for your account and is based on the monthly average ledger balance you maintain in your account. The recoupment fee is subject to change by us at any time without notice.

Note: The FDIC charges each insured bank a fee to cover its share of the cost of providing deposit insurance to depositors. The FDIC does not charge a bank's depositors for deposit insurance or require banks to pass the cost of deposit insurance on to their depositors. The FDIC does, however, permit a bank to recoup the cost of deposit insurance from its depositors, so long as the fee the bank charges its depositors does not reveal information that could be used to determine the bank's confidential supervisory ratings or mislead depositors by implying the FDIC is charging the fee.

Is my account subject to a deposit balance fee?

We reserve the right to assess a monthly deposit balance fee on the average positive collected balance in your business and commercial deposit account(s) with us. When we assess the deposit balance fee, the amount of the fee will appear on the periodic statement or client analysis statement for your account(s). The deposit balance fee is subject to change by us at any time without notice.

Are you responsible for paying taxes?

Yes. Fees may be subject to state and local sales taxes, which vary by location, and will be assessed as appropriate. You also agree to pay an amount equal to any other applicable taxes, including backup withholding tax.

How do you pay our fees and expenses?

We are permitted to either directly debit your account or invoice you for our fees, expenses, and taxes incurred in connection with your account and related services. We will debit service fees on the day of each calendar month we separately disclose to you, or if that day is not a business day, on the next business day. If there are non-sufficient funds in your account to cover the debit, we may create an overdraft on your account.

You agree to promptly pay any invoiced amount. We may assess finance charges on any invoiced amounts that are not paid within 45 days of the date of invoice. Finance charges are assessed at a rate of 1.5% per month (18% per annum) or the highest amount permitted by the laws governing this Agreement, whichever is less. Charges for accrued and unpaid interest and previously assessed finance charges will not be included when calculating finance charges. Payments and other reductions of amounts owed will be applied first to that portion of outstanding fees attributable to charges for accrued and unpaid interest and previously assessed finance charges, then to other fees and charges.

If an earnings allowance accrues, do we apply it to your fees and expenses?

Yes. If an earnings allowance accrues on your account, we will periodically apply your accrued earnings allowance to eligible fees and expenses (unless we otherwise indicate in writing). If both an earnings allowance and interest accrue on your account, the interest may be shown as an offset to the earnings allowance on the client analysis statement for your account. If your earnings allowance exceeds your total maintenance and activity fees for the statement cycle for your account, the excess credit is not paid to you, nor is it carried forward to the following statement cycle. We may debit your account (or any other account you maintain with us) or invoice you for any amount by which the fees and expenses exceed the accrued earnings allowance on your account.

Note: Your earnings allowance is calculated by applying the earnings credit rate to the investable balance available in your account. The earnings credit rate is a variable rate that we may change at any time.

May we use the funds in your accounts to cover debts you owe us?

Yes. We have the right to apply funds in your accounts to any debt you owe us. This is known as setoff. When we set off a debt you owe us, we reduce the funds in your accounts by the amount of the debt. We are not required to give you any prior notice to exercise our right of setoff.

A debt includes any amount you owe individually or together with someone else, both now and in the future. It includes any overdrafts and our fees. We may set off for any debt you owe us that is due or past due as allowed by the laws governing your account.

If your account is an unmatured time account, then we may deduct any early withdrawal fee or penalty. This may be due as a result of our having exercised our right of setoff.

If you have a sweep account, you authorize us to redeem your shares in the designated money market fund and apply the proceeds to any amount you owe us. Our right to setoff is in addition to and apart from any other rights under any other security interest you may have granted to us.

Do you grant us a security interest in your accounts with us?

Yes. To ensure you pay us all amounts you owe us under the Agreement (e.g., overdrafts and fees), you grant us a lien on and security interest in each account you maintain with us, including your accounts with any affiliate. By opening and maintaining each account with us, you consent to our asserting our security interest if the laws governing the Agreement require your consent. Our rights under this security interest are in addition to and apart from any other rights under any other security interest you may have granted to us.

Can Wells Fargo benefit from having the use of funds in customers' non-interest bearing accounts?

Yes. We may use these funds to reduce our borrowing from other sources such as the Fed Funds market, or invest them in short-term investments such as our Federal Reserve Account. This benefit may be referred to as spread. It is not possible to quantify the benefit to us that may be attributable to a particular customer's funds. That's because funds from all customers' non-interest earning accounts are aggregated to reduce our borrowing costs and for investment, and our use of funds may vary depending on a number of factors including interest rates, Federal Funds rates, credit risks, and our anticipated funding needs. Our use of funds as described in this paragraph has no effect or impact on your use of and access to funds in your account.

What is the applicable exchange rate?

The applicable exchange rate is the exchange rate we set and use for you when we convert one currency to another currency. It includes a markup over our cost of sourcing the relevant currency. The markup factors include without limitation costs incurred, market risks, and our desired return. The exchange rate we provide to you may be different from exchange rates you see elsewhere. Foreign exchange markets are dynamic and rates fluctuate over time based on market condition, liquidity, and risks. We reserve the right to refuse to process any request for a foreign exchange transaction.

What is FDIC "pass-through" insurance?

FDIC "pass-through" insurance is FDIC insurance that could exceed the standard maximum deposit insurance amount (currently $250,000 per depositor in the same ownership right and capacity). When you use your account to hold funds on behalf of third parties who are the beneficial owners of the funds, your account may qualify for FDIC pass-through insurance, provided you meet FDIC account titling and recordkeeping requirements. With FDIC pass-through insurance, each beneficial owner's funds held in your account are aggregated with other funds the beneficial owner holds in accounts with us in the same ownership right and capacity. The beneficial owner's aggregated funds are insured by the FDIC up to the standard maximum deposit insurance amount. Examples of holding funds on behalf of third parties include funds you hold as an agent, nominee, guardian, executor, custodian or funds held in some other capacity for the benefit of others.

What are the FDIC's recordkeeping requirements for pass-through FDIC insurance when your account has "transactional features"?

For any account with "transactional features", you agree to provide the FDIC (a) with the required information about the beneficial owners of the funds in your account, (b) in the required format, (c) within 24 hours of our failure. Your account has "transactional features" when funds can be transferred from the account, as detailed in 12 CFR 370.2(j).

What are the consequences if you are unable to provide the FDIC with the necessary data on the beneficial owners of funds in your account in the required format in the specified time frame?

As soon as the FDIC is appointed as our receiver, a hold may be placed on your account so that the FDIC can conduct the deposit insurance determination. This hold will not be released until the FDIC obtains the necessary data to enable it to calculate the deposit insurance. You understand and agree that your failure to provide the necessary data to the FDIC in the required format and in the specified time frame may result in a delay in receipt of insured funds by the beneficial owners of the funds in your account and legal claims against you from the beneficial owners.

Detailed information about the FDIC's requirements for pass-through FDIC insurance coverage are available at the FDIC's website. Notwithstanding other provisions in this Agreement, these three FDIC subsections survive after the FDIC is appointed as our receiver, and the FDIC is considered a third party beneficiary of these subsections.

What are we allowed to do if there is an adverse claim against your account?

An adverse claim occurs when:

- Any person or entity makes a claim against your account funds,
- We believe a conflict exists between or among your authorized signers, or
- We believe a dispute exists over who has account ownership or authority to withdraw funds from your account.

In these situations, we may take any of the following actions without any responsibility to you:

- Continue to rely on the documents we have on file for your account.
- Honor the claim against your account funds if we are satisfied the claim is valid.
- Freeze all or a part of the funds in your account until we believe the dispute is resolved to our satisfaction.
- Close your account and send a check for the available balance in your account payable to you or to you and each person or entity who claimed the funds.
- Pay the funds into an appropriate court.

We also may charge any account you maintain with us for our fees and expenses in taking these actions (including attorney's fees and expenses).

How do we handle legal process?

Legal process includes any levy, garnishment or attachment, tax levy or withholding order, injunction, restraining order, subpoena, search warrant, government agency request for information, forfeiture or seizure, and other legal process relating to your account.

We will accept and act on any legal process we believe to be valid, whether the process is served in person, by mail, by electronic notification, or at any banking location.

If we incur any fees or expenses (including attorney's fees and expenses) due to responding to legal process related to your account, we may charge these costs to any account you maintain with us.

If you carry special insurance for employee fraud or embezzlement, can we require you to file your claim with your insurance company before making any claim against us?

Yes. If you have special insurance for employee fraud or embezzlement, we reserve the right to require you to file your claim with your insurance company before making any claim against us. In that event, we will consider your claim only after we have reviewed your insurance company's decision, and our liability to you, if any, will be reduced by the amount your insurance company pays you.

Are there any minimum balance requirements or other restrictions?

We may impose minimum balance requirements or other restrictions on your account, which we may disclose to you.

Are we allowed to restrict access to your account?

Yes. If we suspect any suspicious, unauthorized, or unlawful activities, we can restrict access to your account and other accounts with us that you maintain or control.

Are we allowed to convert your account without your request?

Yes. We can convert your account to another type of account (by giving you any required notice).

Are we allowed to terminate or suspend a service related to your account?

Yes. We can terminate or suspend specific services (e.g., wire transfers) related to your account without closing your account and without prior notice to you. You can discontinue using a service at any time.

When can we close your account?

- We reserve the right to close your account at any time.
- If we close your account, we may send the remaining balance on deposit in your account by mail or credit it to another account you maintain with us.
- We will not be liable for any loss or damage that may result from not honoring items or recurring payments or withdrawals that are received after your account is closed.
- After your account is closed, you will remain responsible for any negative balance.

When can you close your account?

- You can request to close your account at any time if the account is in good standing (e.g., does not have a negative balance or restrictions such as holds on funds, legal order holds, or court blocks on the account). At the time of your request, we will assist you in withdrawing or transferring any remaining funds, bringing your account balance to zero. Whether you or we close the account, you agree to maintain on deposit in your account sufficient funds (determined in our sole discretion) to cover outstanding items to be paid from your account, charge-backs including returned deposited items, and our fees and expenses.
- All outstanding items need to be processed and posted to your account before you make a request to close. Once the account is closed, items will be returned unpaid.
- Any recurring payments or withdrawals from your account need to be cancelled before you make a request to close (examples include bill payments and direct deposits). Otherwise, they may be returned unpaid.
- We will not be liable for any loss or damage that may result from not honoring items or recurring payments or withdrawals that are received after your account is closed.
- At the time of your request to close:
- For interest-earning accounts, your funds stop earning interest from the date of your request.
- The Agreement continues to apply.
- If you have requested closing your account and a positive balance remains, we may send you a check for the remaining balance.
- After your account is closed, you will remain responsible for any negative balance.

Are transactions subject to verification by us?

Yes. All transactions are subject to our verification. This includes cash, items, or other funds offered for deposit for which we have provided a receipt. We do not verify all transactions. We reserve the right to reverse or otherwise adjust, at any time without prior notice to you, any debit or credit we believe we have erroneously made to your account.

Are we required to accept all deposits to your account?

No. We may decline all or part of a deposit, including a cash deposit. Some examples are:

- An item made out to a payee not on your account,
- An item with an endorsement we are unable to verify,
- A check or draft issued on a credit account,
- A very large cash deposit, and
- A non-U.S. item.

When we are unable to verify an endorsement on an item, we can also decline to pay, cash, or send the item for collection. We can require all endorsers to be present and we may require you to deposit the item instead of permitting you to cash it. For non-U.S. items, please see the response to "How do we handle non-U.S. items?". We may require any person wanting to make a cash deposit to provide an acceptable form of identification before we accept the deposit for processing.

Who is responsible to make sure the declared amount of funds offered for deposit is accurate?

It is your responsibility, and we have no obligation to make sure the declared amount of your deposit is accurate. If we find a discrepancy exists between the declared and the actual amount of the funds, we are permitted to debit or credit your account and we may notify you if any adjustments are made. We are also permitted to use the declared amount as the correct amount to be deposited and to not adjust a discrepancy if it is less than our standard adjustment amount. We are permitted to vary our standard adjustment amount from time to time without notice to you and to use different amounts depending on account type.

You may arrange for us to adjust all discrepancies identified during any verification without using our standard adjustment amount by contacting your relationship manager.

What happens if there is an error in the amount of a deposit?

If you notify us of an error in the amount of a deposit shown on your account statement within 30 days after receiving your account statement or it is made available to you, we will review the deposit and make any adjustment we determine is appropriate, subject to any applicable fees. If you do not notify us during this timeframe, we will consider the deposit amount on your statement to be correct. This means that if the actual amount is less than the amount on the statement, the difference will become your property. If the actual amount is more than the amount shown on the statement, the difference will become our property.

Are we allowed to obtain credit reports or other reports about you?

Yes. We can obtain a credit or other report about you to help us determine whether to open or maintain an account. Other reports we can obtain include information from the following: 1) motor vehicle departments, 2) other state agencies, or 3) public records.

Are we required to obtain a tax identification number certification from you?

Yes. U.S. Treasury regulations require us to determine the tax residency of all customers and payees who could receive income that is reportable to the IRS. We accomplish this by obtaining a Form W-9 from all U.S. taxpayers and a type of Form W-8 from all foreign customers.

- For U.S. taxpayers, the Form W-9 is how we document U.S. tax residency and obtain a Taxpayer Identification Number ("TIN") from the primary owner of each account that earns reportable income. Until we have received the Form W-9 and TIN, we are required to apply backup withholding to that income.
- Foreign individuals (also referred to as nonresident aliens) and foreign entities document their tax residency outside the U.S. on the applicable type of Form W-8. That form also allows us to apply the correct withholding rate or exemption to your income earned in the U.S. If you do not provide a valid type of Form W-8, we are required to apply the 30% withholding rate, or in some cases, presume you are an uncertified U.S. taxpayer subject to backup withholding on all income and gross proceeds regardless of whether or not it is U.S. sourced.
- Accounts jointly owned by at least one foreign individual or entity must provide a Form W-8 or Form W-9 for all of the joint owners.

- Foreign individuals provide a Form W-8BEN. Foreign entities that are the beneficial owner of the income provide a Form W-8BEN-E unless they can make a special withholding exemption claim and instead provide either a Form W-8EXP or Form W-8ECI.
- Entities that act as intermediaries or flow-through entities receiving income on behalf of someone else provide a Form W-8IMY. In some cases, that Form W-8IMY must also include a withholding statement that allocates the income to each of the beneficial owners and copies of the tax certification documentation for those underlying beneficial owners.

If you own your account as an individual or sole proprietor, upon your death we must be provided with the estate's or successor's IRS Form W-9 or Form W-8. If these are not provided, we may either refuse to pay interest earned on your account from the date of your death or apply backup withholding on the income earned after the date of your death.

When do we share information about your account with others?

Generally, if we do not have your consent, we will not share information about your account. However, we may share information about your account under the following circumstances:

- To comply with the laws governing this Agreement;
- In connection with examinations by state and federal banking authorities;
- To comply with any legal process, including a subpoena, search warrant, or other order of a government agency or court;
- When we determine that disclosure is necessary or appropriate in order to complete a transaction;
- To verify the existence and condition of your account for a third party, such as a merchant or credit bureau;
- To provide information to your legal representative or successor;
- When reporting the involuntary closure of your account;
- When we conclude that disclosure is necessary to protect you, your account, or our interests;
- To our agents, independent contractors, and other representatives in connection with the servicing or processing of your account or account transactions, account analysis, or similar purposes;
- To our affiliates and affiliated companies; and
- If you give your permission.

How do we protect your data?

We are part of an international business with affiliated companies, employees, and service providers (collectively "Personnel") located in the United States and a number of countries around the world. Any information or data we obtain in connection with or relating to your accounts or services, including personal information (collectively "Data"), may be accessed by Personnel in any of these countries. Any of these Personnel will be subject to the requirements of our information security program, which includes policies to protect Data and limit access to those Personnel with a reasonable business need to know.

Are we allowed to monitor and record our communications with you?

Yes. We can monitor, record, and retain your communications with us at any time without further notice to anyone, unless the laws governing your account require further notice.

Monitored and recorded communications include:

- Telephone conversations,
- Electronic messages,
- Electronic records, or
- Other data transmissions.

Is your wireless operator authorized to provide information to assist in verifying your identity?

Yes. As a part of your account relationship, we may rely on this information to assist in verifying your identity.

You authorize your wireless operator (AT&T, Sprint, T-Mobile, US Cellular, Verizon, or any other branded wireless operator) to use your mobile phone number, name, address, email, network status, customer type, customer role, billing type, mobile device identifiers (IMSI and IMEI) and other subscriber status details, if available, solely to allow verification of your identity and to compare information you have provided to Wells Fargo with your wireless operator's account profile information for the duration of the business relationship.

Checking and savings accounts

What are the requirements for a correct endorsement?

An endorsement is a signature, stamp, or other mark on the back of a check. If you have not endorsed a check that you deposited to your account, we may endorse it for you. We may also send for collection any unendorsed check that is payable to you that you have deposited to your account.

Are we bound by restrictions or notations on checks?

No. We are not bound by restrictions or notations, such as "void after six months," "void over $50," or "payment in full."

When you cash or deposit a check with a notation or restriction, you are responsible for any loss or expense we incur relating to the notation or restriction.

What is a substitute check?

A substitute check is created from an original check; under federal law, it is legally equivalent to that original check. A substitute check contains an accurate copy of the front and back of the original check and bears the legend: "This is a legal copy of your check." You can use it the same way you would use the original check. As noted in the legend, a substitute check is the same as the original check for all purposes, including proving that you made a payment. Any check you issue or deposit that is returned to you may be returned in the form of a substitute check. You agree that you will not transfer a substitute check to us, by deposit or otherwise, if we would be the first financial institution to take the substitute check, unless we have expressly agreed in writing to take it.

What happens if you breach a warranty associated with an item?

If you breach any warranty you make to us under the laws governing your account with respect to any item, you will not be released or discharged from any liability for the breach so long as we notify you of the breach within 120 days after we learn of the breach. If we fail to notify you within this 120 day period, you will be released from liability and discharged only to the extent our failure to notify you within this time period caused a loss to you.

How do we handle non-U.S. items?

A non-U.S. item is an item 1) payable in a currency other than U.S. dollars or 2) drawn on a financial institution that is not organized under U.S. law. We are not required to accept a non-U.S. item for deposit to your account or for collection. We may accept non-U.S. items on a collection basis without your specific instruction to do so. We can reverse any amount we have credited to your account and send the item on a collection basis even if we have taken physical possession of the item.

If we accept a non-U.S. item, the U.S. dollar amount you receive for it will be determined by our applicable exchange rate that is in effect at the time of deposit or our receipt of final payment (less any associated fees) of the collection item. If the non-U.S. deposited item is returned unpaid for any reason, we will charge the amount against your account (or any other account you maintain with us) at the applicable exchange rate in effect at the time of the return. For information on the applicable exchange rate, see "What is the applicable exchange rate?" in the "Rights and responsibilities" section of this Agreement.

Our funds availability policy does not apply to a non-U.S. item.

What is our responsibility for collecting a deposited item?

We are responsible for exercising ordinary care when collecting a deposited item. We will not be responsible for the lack of care of any other bank involved in the collection or return of a deposited item, or for an item lost in collection or return.

What happens if we send an item for collection?

We may, upon notice to you, send an item for collection instead of treating it as a deposit. This means that we send the item to the issuer's bank for payment. Your account will not be credited for the item until we receive payment for it.

Our funds availability policy does not apply to an item we accept for collection.

What happens when a deposited or cashed item is returned unpaid?

We can deduct the amount of the deposited or cashed item from your account (or any other account you maintain with us). We can do this when we are notified that the item will be returned. We do not need to receive the actual item (and usually do not receive it). We can do this even if you have withdrawn the funds and the balance in your account is not sufficient to cover the amount we hold or deduct and your account becomes overdrawn. In addition, we will charge you all applicable fees and reverse all interest accrued on the item.

We may place a hold on or charge your account for any check or other item deposited into your account if a claim is made or we otherwise have reason to believe the check or other item was altered, forged, unauthorized, has a missing signature, a missing or forged endorsement, or should not have been paid, or may not be paid, or for any other reason. When the claim is finally resolved, we will either release the hold or deduct the amount of the item from your account. We are not legally responsible if we take or fail to take any action to recover payment of a returned deposited item.

What happens when an electronic payment is reversed?

We may deduct the amount of an electronic payment credited to your account (e.g., direct deposit) that is reversed. We can deduct the amount from any account you have with us at any time without notifying you. You agree to promptly repay any overdrafts resulting from the reversed payment.

Are you responsible for assisting in reconstructing a lost or destroyed deposited item?

If a deposited item is lost or destroyed during processing or collection, you agree to provide all reasonable assistance to help us reconstruct the item.

Electronic check indemnifications

What warranties do we provide for electronic checks and electronic returned checks?

An "electronic check" and an "electronic returned check" mean an electronic image of, and electronic information derived from, a paper check or a paper returned check. When we transfer or present an electronic check or electronic returned check, we provide the following warranties:

- Image Quality Warranty: We guarantee that the electronic image of a check accurately represents all of the information on the front of the check as of the time that the original check is truncated, and the electronic information includes an accurate record of all MICR line information required for a substitute check and the amount of a check.
- No Double Debit Warranty: We guarantee that the warrantee will not receive a presentment of or otherwise be charged for an electronic check, an electronic returned check, the original check, a substitute check, or a paper or electronic representation of a paper substitute check, in a way that the warrantee will be asked to make payment on a check that it has already paid.

When we transfer an electronic check for collection or payment, we make the image quality warranty and the no double debit warranty to the transferee bank, any subsequent collecting bank, the paying bank, and the drawer. When we transfer an electronic returned check for return, we make the image quality warranty and the no double debit warranty to the transferee returning bank, the depository bank, and the owner.

What indemnities are applicable to electronic checks and electronic returned checks?

You will indemnify, defend, and hold us harmless from and against all liabilities, damages, claims, obligations, demands, charges, costs, or expenses (including reasonable fees and disbursements of legal counsel and accountants) awarded against or incurred or suffered (collectively, "losses and liabilities") by us arising directly or indirectly from or related to the transfer or return of an electronic check or an electronic returned check on your behalf. If we suffer any losses or liabilities arising directly or indirectly from or related to a breach of either the image quality warranty or the no double debit warranty, you will reimburse us and not hold us responsible or liable.

What indemnities are applicable to remote deposit capture services?

By providing the remote deposit capture service to you, we are required to indemnify and reimburse a depository bank that accepts the original check from which an electronic check is created for losses incurred by that depository bank if the loss is due to the check having already been paid. If we suffer any losses or liabilities arising directly or indirectly from or related to that type of depository bank indemnity obligation, you will indemnify and reimburse us and not hold us responsible or liable.

What indemnities are applicable to electronically created items?

If we transfer or present an "electronically created item" and receive settlement or other consideration for it, we are required to indemnify and reimburse each transferee bank, any subsequent collecting bank, the paying bank, and any subsequent returning bank against losses that result from the fact that:

- The electronic image or electronic information of the electronically created item is not derived from a paper check;
- The person on whose account the electronically created item is drawn did not authorize the issuance of the electronically created item or to the payee stated on the item; or
- A person receives a transfer, presentment, or return of, or otherwise is charged for an electronically created item in such a way that the person is asked to make payment based on an item or check it has paid.

If we suffer any losses or liabilities arising directly or indirectly from or related to that type of electronically created item indemnity obligation, you will indemnify and reimburse us and not hold us responsible or liable.

Funds availability policy

When can you withdraw funds?

Our funds availability policy is to make funds from your checking deposit available to you on the first business day after the day we receive your deposits.

Funds from the deposits listed below are available on the first business day after the day of your deposits, if you make the deposit in-person to one of our employees or agents and you use a special deposit slip we provide:

- State and local government checks that are payable to your company.
- Cashier's, certified, and teller's checks that are payable to your company where we are not the issuer or drawee.

While we generally make funds from your check deposits available to you on the first business day after the day we receive the deposits, our policy makes funds available according to an availability schedule or schedules we provide or make available to you, subject to, among other things, the location of the deposit transaction or the manner in which the deposit is made.

Our funds availability policy relating to other types of deposits is described below. If we delay the availability of a deposit, the length of the delay varies depending on the type of deposit as explained below.

Once they are available, you can withdraw the funds in cash. We will use the funds to pay checks and other items presented for payment and applicable fees that you have incurred.

When is your deposit considered received?

For determining the availability of your deposits, every day is a business day, except Saturdays, Sundays, and federal holidays. If you make a deposit before our established cutoff time on a business day that we are open, we will consider that day to be the day your deposit is received by us. For deposits granted same calendar day availability as described below, the calendar day you make the deposit will be considered the day of deposit. For all other deposits, if you make a deposit after our cutoff time or on a day we are not open, we will consider the day your deposit is received by us to be the next business day we are open.

Our established cutoff time is when a branch closes for business and may vary by location. The cutoff time for checks deposited at a Wells Fargo ATM is 9:00 p.m. local time (8:00 p.m. in Alaska).

Any deposits placed in a "night depository" before the established deadline on a business day we are open will be credited to your account by the close of business that day. Deposits placed in the "night depository" after the established deadline will be credited to your account by the close of the next business day we are open.

Same business day availability

The following deposits will be available on the business day we receive the deposit:

- Incoming wire transfers.
- Electronic direct deposits.
- Cash deposited at a teller window.
- Checks drawn on us.

If you do not make your deposit in person to one of our employees (for example, if you mail the deposit), funds from these deposits will be available on the second business day after the day we receive your deposit. For example, if we receive your mailed deposit on Monday, the funds will be available on Wednesday.

Longer delays may apply

In some cases, we will not make all the funds that you deposit by check available to you on the first business day after the day of your deposit. Depending on the type of check you deposit, funds may not be available until the second or third business day after the day of your deposit. The first $225 of your deposit, however, may be available on the first business day after the day of your deposit.

Except as otherwise explained in this paragraph, if we are not going to make all funds from your deposit available on the business day of deposit or the first business day after the day of deposit, we will notify you at the time you make your deposit. We will also tell you when the funds will be available. If your deposit is not made directly to a Wells Fargo employee, or if we decide to take this action after you have left the premises, we will mail you the notice by the first business day after we receive your deposit.

If you need the funds from a deposit right away, you may ask us when the funds will be available.

In addition, funds you deposit by check may be delayed for a longer period under the following circumstances:

- We believe a check you deposit will not be paid.
- You deposit checks totaling more than $5,525 on any one day.
- You redeposit a check that has been returned unpaid.
- You have overdrawn your account repeatedly in the last 6 months.
- There is an emergency, such as a failure of computer or communications equipment.

We will notify you if we delay your ability to withdraw funds for any of these reasons, and we will tell you when the funds will be available. The funds will generally be available no later than the seventh business day after the day of your deposit.

Holds on other funds (check cashing)

If we cash a check for you that is drawn on another bank, we may withhold the availability of a corresponding amount of funds that are already in your account. Those funds will be available at the time funds from the check we cash would have been available if you had deposited it.

Holds on other funds (other account)

If we accept a check for deposit that is drawn on another bank, we may make funds from the deposit available for withdrawal immediately but delay your ability to withdraw a corresponding amount of funds that you have on deposit in another account with us.

The funds in the other account would then not be available until the time periods that are described in this policy.

Available balance, posting order, and overdrafts

How do we determine your account's available balance?

Your account's available balance is our most current record of the amount of money in your account available for your use or withdrawal. We use the available balance to authorize your transactions during the day. We also use the available balance to pay your transactions in our nightly processing. We calculate your available balance as follows:

- We start with the ending daily account balance from our prior business day nightly processing that includes all transactions deposited to or paid from your account.
- We subtract from this amount any holds placed on a deposit to your account and any holds placed due to legal process.

- We add pending deposits that are immediately available for your use.
- We subtract pending withdrawals that we have either authorized or are known to us but have not yet processed.

Important note: We may place a hold on your account if we receive an electronic notice that an item will be presented for payment or collection against your account (Notice of Presentment). This hold may remain in effect from the time the Notice of Presentment is received until the item is presented or notice is received that the item will not be presented, whichever occurs first. We may conclusively rely on the information we receive in an electronic presentment or notification when determining the available balance in your account. We will not have any liability for refusing to honor any of your items because of insufficient funds, even if the electronic presentment or notification incorrectly describes the item, including its amount. We may debit your account on the day an item is presented by any means, including electronically, or at an earlier time based on a notification received by us that an item drawn on your account will be presented for payment or collection. A determination of the balance in your account for purposes of making a decision about whether not to honor an item due to insufficiency or unavailability of funds may be made at any time between the presentment of the item (or earlier upon receipt of any Notice of Presentment) and the time the item is returned. Only one such determination needs to be made.

How do we process (post) transactions to your account?

We process transactions each business day during a late night process. Once we process your transaction, the results are posted to your account. There are three key steps to this process. The most common types of transactions are processed as described below.

First, we determine the available balance in your account (as described above) that can be used to pay your transactions.
Note: Certain pending transactions can affect your available balance:

- Cash deposits or transfers from another Wells Fargo account that are made **after** the displayed cutoff time (where the deposit was made) will be added to your available balance if they are made before we start our nightly process.
- Your available balance will be reduced by pending withdrawals, such as electronic transactions we have authorized and are required to pay when they are sent to us for payment. These pending withdrawals may be sent to us for payment at a later date. In some circumstances, these transactions may be paid into overdraft if other posted transactions or fees have reduced your balance before the pending transactions are presented for payment.

Then, we sort your transactions into categories before we process them.

- First, we credit your account for deposits, including cash, check deposits and incoming transfers, received before the cutoff time at the location the deposit or transfer was made.
- Then, we process withdrawals/payments we have previously authorized and cannot return unpaid, such as ATM withdrawals, account transfers, Online Bill Pay transactions, and teller-cashed checks. If we receive more than one of these transactions for payment from your account, we will generally sort and pay them based on the date and time you conducted the transactions. For some transactions, such as Online Bill Pay transactions or teller-cashed checks, the time may be assigned by our systems and may vary from the time it was conducted. Multiple transactions that have the same time will be sorted and paid from highest to lowest dollar amount.
- Finally, we use your remaining funds to pay your checks and preauthorized automatic ACH payments (such as bills you pay by authorizing a third party to withdraw funds directly from your account). If there is more than one of these types of transactions, they will be sorted by the date and time that they are received by us. Multiple transactions that have the same time will be sorted and paid from highest to lowest dollar amount.

How do we handle overdrafts?

At our discretion, we are permitted to pay items into overdraft rather than returning them unpaid.

You agree to pay the applicable fee associated with an overdraft or returned item. Any overdraft on your account is immediately due and payable, unless we agree otherwise in writing. You agree to reimburse us for any attorneys' fees and other costs and expenses we incur in recovering the overdraft (including overdraft and associated fees).

On any business day when we determine there are sufficient funds in your account to pay one or more but not all of the items presented for payment on your account, the order in which we post these items may affect the number of items paid and the overdraft and returned item fees that are assessed. When we post items in the order of highest to lowest dollar amount, the overdraft and returned item fees may be more than these fees would be if we were to post the items in the order of lowest to highest dollar amount.

Additional rules for checks and withdrawals

What identification do we request to cash items presented over the counter by a non-customer?

For these transactions, we require acceptable identification, which can include a fingerprint from the person presenting your item. We may not honor the item if the person refuses to provide us with requested identification.

Are there special rules if you want to make a large cash withdrawal or deposit?

We may place reasonable restrictions on a large cash withdrawal. These restrictions include requiring you to provide five business days' advance notice to ensure we have sufficient cash on hand. We do not have any obligation to provide security if you make a large cash withdrawal. If you want to deposit cash for a very large amount, we have the right to require you to provide adequate security or exercise other options to mitigate possible risks.

Can you perform transactions at an affiliate?

Yes. You may make deposits to and withdrawals from your account at an affiliate, provided the affiliate agrees. If you make a deposit to your account at an affiliate, that affiliate's collection schedule and funds availability policy will determine when the deposited funds will be considered collected and available. If an affiliate cashes an item for you, we may place a hold on your account for a corresponding amount of funds. If the item is later returned to the affiliate for any reason, we may debit one or more of your accounts for the amount of the item.

Are we responsible for reviewing checks for multiple signatures?

No. We are not responsible for reviewing the number of signatures on your account. We do not accept any duty to enforce multiple signature requirements. If you indicate that more than one signature is required, this indication is for your own internal procedures and is not binding on us.

Are we required to honor dates and special instructions written on checks?

No. We may, without inquiry or liability, pay a check even if it:

- Has special written instructions indicating we should refuse payment (e.g., "void after 30 days" or "void over$100");
- Is stale-dated (i.e., the check's date is more than 6 months in the past), even if we are aware of the check's date;
- Is post-dated (i.e., the check's date is in the future); or
- Is not dated.

We may also pay the amount encoded on your check in U.S. dollars, even if you wrote the check in a foreign currency or made a notation on the check's face to pay it in a foreign currency. The encoded amount is in the line along the bottom edge of the front of the check where the account number is printed.

Can you use a facsimile or mechanical signature?

Yes. If you use a facsimile or mechanical signature (including a stamp), any item appearing to use your facsimile or mechanical signature will be treated as if you had actually signed it.

Are we liable for paying a consumer ACH debit entry on your account?

No. Under the ACH operating rules, certain types of ACH debit entries may only be presented on a consumer account ("a consumer ACH debit entry"). We will have no obligation to pay, and no liability for paying, any consumer ACH debit entry on your account.

What is the acceptable form for your checks?

Your checks must meet our standards, including paper stock, dimensions, and other industry standards. Your checks must include our name and address, as provided by us. Certain check features, such as security features, may impair the quality of a check image that we or a third party create.

We reserve the right to refuse checks that do not meet these standards or cannot be processed or imaged using our equipment. We are not responsible for losses that result from your failure to follow our check standards.

How do you reorder checks?

You can reorder checks by mailing the reorder form enclosed in your current order of checks or by calling us at the telephone number shown on your account statement. If you or a third party prints its items, we shall have no liability to you if we are unable to process these checks by automated means.

How do you stop payment on a check?

You may request a stop payment on your check in a time and manner allowing us a reasonable opportunity to act on it before we pay, cash, or otherwise become obligated to pay your check.

Each stop payment order is subject to our verification that we have not already paid or otherwise become obligated to pay the check from your account. This verification may occur after we accept your stop payment order.

In order to issue a stop payment order on a check, we request the following information:

- Your bank account number,
- The check number or range of numbers,
- The check amount or amounts,
- The payees' names, and
- The date on the check.

We are not responsible for stopping payment on a check if you provide incorrect or incomplete information about the check. We are also not responsible if we do not pay a check for which a valid stop payment order is in effect.

What is the effective period for a stop payment order?

A stop payment order on an item is valid for 6 months. We may pay a check once a stop payment order expires. If you do not have our STOP AUTO-RENEWAL Service on your account, you must place a new stop payment order if you do not want it to expire. We treat each renewal as a new stop payment order. We will charge you for each stop payment order you place (as well as each renewal).

If you have our STOP AUTO-RENEWAL Service on your account, your stop payment order renews annually for up to six 12- month periods, unless you otherwise notify us in writing.

How do you cancel a stop payment order?

To cancel a stop payment order, we must receive your request in a time and manner allowing us a reasonable opportunity to act on it.

Are you still responsible if we accept a stop payment on a check?

Yes. Even if we return a check unpaid due to a stop payment order, you may still be liable to the holder (e.g., a check cashing business) of the check, and potentially additional amounts that the holder may be due under the laws governing this Agreement.

How can you prevent a post-dated item from being paid before its due date?

A post-dated item is an item you issue with a date in the future. We are not responsible for waiting to honor the item until that date, unless you instruct us to do so through the use of a stop payment order for the item. You are responsible for notifying us to cancel the stop payment order when you are ready to have that item paid.

How do you stop payment for preauthorized electronic fund transfers?

For information on placing a stop payment order on an ACH debit entry, please refer to "Fund transfer services" In the "Electronic banking services" section of this Agreement.

Your account ownership

Can you assign ownership of your account?

No. No assignment of your account will be valid or binding on us, and we will not be considered to have knowledge of it, until we consent and the assignment is noted in our records. However, by noting the assignment, we do not have any responsibility to assure that the assignment is valid. Any permitted assignment of your account is subject to our setoff rights.

What if an owner does not sign account documentation?

If a customer identified in our records as an owner or a co-owner of an account does not sign the account application or other account-related documentation, it does not prevent us from treating the customer as an owner or a co-owner of that account; we are not liable to anyone as a result.

Are all joint owners responsible for liabilities on your account?

Yes. All joint owners are each individually and jointly responsible for any overdraft on your account, regardless of who caused or benefited from the overdraft. If there is a setoff, an enforcement of our security interest in your account, or legal action (such as a third party garnishment, seizure, forfeiture, or tax levy) affecting any co-owner, we have the right to treat all funds in the account as belonging to the customer against whom the setoff, enforcement of the security interest, or other legal action is directed. If your account is closed for unsatisfactory handling, we may report all joint owners to the consumer reporting agencies.

What happens upon death or incompetence of an authorized signer or account owner?

Please notify us promptly if you learn or suspect an account owner or signer has been declared incompetent by a court or a legal authority, or has died. When we receive proper notice, we may:

- Freeze the account until we receive documents verifying the incapacity or death and instructions for the funds remaining in the account,
- Pay (without inquiring) any item authorized by the account owner before being declared incompetent or dying,
- Return or reverse deposits made to the account, and
- Apply funds in the account to any debt the account owner owes us before recognizing the rights to any remaining funds of a surviving joint owner or other person.

If we are liable for taxes because we released funds in an account after the account owner's death, the account owner's estate is responsible for reimbursing us for those taxes.

Upon notifying us of the death or incompetence of a business owner, the business entity will need to provide documentation evidencing any change in the ownership or control of the entity following applicable legal formalities.

Interest earning accounts

What interest rate applies to an interest earning account?

When you open an interest earning account, we will provide you with the current interest rate and Annual Percentage Yield (APY) for your account. Interest earning accounts earn interest at a variable rate, except time accounts. We may change the interest rate for variable-rate accounts at any time. The interest rate may vary depending on your daily balances.

How do we calculate earned interest?

We may use either the daily balance method or the average daily balance method to calculate interest. Unless we have specified otherwise in writing, we will use the daily balance method to calculate interest. The daily balance method applies a daily periodic rate to principal each day.

The average daily balance method applies a periodic rate to the average daily collected balance for the period. The average daily balance is calculated by adding principal each day and dividing by the number of days in the period.

If your account is a tiered-rate account, we may pay the same interest rate on more than one tier.

When does a deposit begin accruing interest?

Cash deposits begin accruing interest the same business day a deposit is credited to your account. If you deposit an item such as a check, interest begins accruing on the business day we receive credit for the item.

Is interest compounded and when is it credited?

Interest will compound on a daily basis. For checking and savings accounts, interest will be credited on a monthly basis. For time accounts, we will notify you separately as to the frequency with which interest will be credited to your account.

Can I specify a target balance on my accounts?

Yes. If you maintain multiple accounts with us, you may, with our consent, designate in writing one of these accounts as your "principal account" and one or more additional accounts as "target balance accounts." For each target balance account, you will separately specify to us in writing the ledger balance or collected balance which you wish to maintain in that account (the "target balance"). At the end of each business day, we will determine the applicable balance on deposit in each target balance account. If the applicable balance in a target balance account is greater than its target balance, we will transfer to the principal account the funds necessary to bring the applicable balance to the target balance. If the applicable balance is less than the target balance, we will transfer to the target balance account the funds necessary to bring the applicable balance to the target balance. We may, but will not be required to, transfer funds even if the transfer would create an overdraft or exceed the collected balance on deposit in the principal account.

When are interest adjustments disclosed in your account statement?

An interest adjustment may be reflected on your account statement in a month later than the month in which it occurs.

What is the difference between Annual Percentage Yield (APY) and Annual Percentage Yield Earned (APYE)?

- The Annual Percentage Yield (APY) is a percentage rate reflecting the total amount of interest paid on an account based on the interest rate and the frequency of compounding for a 365-day period.
- The Annual Percentage Yield Earned (APYE) is an annualized rate that reflects the relationship between the amount of interest actually earned on your account during the statement period and the average daily balance in the account for the statement period.

We calculate both your APY and APYE according to formulas established by federal regulations. The APYE appears on your account statement.

Do we have the right to require 7 days written notice before you withdraw money from your savings account?

Yes. We have the right to require 7 days written notice before you withdraw money from your savings account.

Regulation D savings account transaction limit and other limited activity

Regulation D and Wells Fargo limit certain types of withdrawals and transfers from a savings or money market account to a combined total of 6 per monthly statement period (exceptions to the statement period may apply).

Limited by Regulation D:

- Transfers by telephone using our automated banking service or speaking with a banker on the telephone.
- Transfers or payments through online, mobile, and text banking (including Bill Pay and person-to-person payments such as *Zelle®*).
- Overdraft Protection transfers to a checking account.
- Pre-authorized transfers and withdrawals (including recurring and one time).
- Payments to third parties such as checks, drafts, or similar transactions (counted when they are posted to your account and not when they are written).

Limited by Wells Fargo:

- Transfers and payments to Wells Fargo credit cards, lines of credit, and loans.
- Outgoing wire transfers whether made in person, on the telephone, or online.

Not limited

Except as limited above, there are no limits on withdrawals or transfers made in person at a Wells Fargo ATM or banking location or on any types of deposits.

What happens if you exceed your limit?

If you exceed the limits stated above, you will be charged an excess activity fee ($10 per excess transaction).

If the limit is exceeded on more than an occasional basis, Wells Fargo may be required to convert the savings or money market account to a checking account, or close the account.

If the withdrawal and transfer limit is reached, we may decline withdrawals and transfers for the remainder of the monthly statement period (exceptions to the statement period may apply) to help you avoid a fee and account conversion or closure.

Time Accounts (CDs)

What are time accounts?

Time accounts include deposits which are payable at the expiration of a specified term, no less than 7 calendar days after the date of deposit. We may also refer to a time account as a CD or a Certificate of Deposit, even though we do not issue a paper certificate when opening the account or require a paper certificate to close the account. The time account's maturity date is the last day of the term for the time account. The maturity date is printed on your receipt.

When can you withdraw funds from your time account?

You may withdraw funds from your time account on the maturity date without a penalty. You may also generally withdraw funds without a penalty within the 7 calendar days after the maturity date (grace period). You may be charged a penalty if you make a withdrawal at any other time.

How is the early withdrawal penalty assessed?

If you withdraw funds from your time account before the maturity date, an early withdrawal penalty will be assessed. For terms:

- Less than three months (or less than 90 days), the fee is one month's interest.
- Three months (or 90 days) through 12 months (or 365 days), the fee is three months' interest.
- Over 12 months through 24 months, the fee is six months' interest.
- Over 24 months, the fee is 12 months' interest.

The minimum fee is $100.

The early withdrawal penalty is based on the principal amount withdrawn, at the interest rate on your time account at the time of withdrawal. For purposes of determining the amount of the early withdrawal penalty, one month's interest is equal to one year's interest - at the interest rate in effect at the time of withdrawal - divided by 12. The amount of the early withdrawal penalty is deducted from earned interest. If the penalty is greater than the earned interest, the difference is deducted from the principal. In no event will the early withdrawal penalty for a withdrawal during the first six days after the date of deposit be less than seven days' simple interest.

Can you deposit additional funds into your time account?
You can only deposit additional funds during the grace period.

Will your Annual Percentage Yield (APY) change if you withdraw interest before maturity?

The APY we disclose to you assumes the interest you earn will remain on deposit until your time account matures. If you withdraw your earned interest before maturity, your account will earn less interest over time and the actual APY will be less than the disclosed APY.

How does your time account renew?
Your time account will automatically renew at maturity:

- Typically for a similar term unless we inform you prior to maturity of a different term; and
- At our interest rate in effect on the maturity date for a new time account of the same term and amount, unless we have notified you otherwise.

Electronic banking services

Fund transfer services
The following terms and conditions apply to funds transfers to or from your account. These terms and conditions are in addition to, and not in place of, any other agreements you have with us about funds transfers. The terms "funds transfer," "funds-transfer system," "payment order," and "beneficiary" are used here as defined in Article 4A of the Uniform Commercial Code, as adopted by the state whose laws govern this Agreement.

Rules of funds transfer systems
Funds transfers to or from your account will be governed by the rules of any funds transfer system through which the transfers are made, including Fedwire, the National Automated Clearing House Association, the Electronic Check Clearing House Organization, any regional association (ACH), the Clearing House Interbank Payments System (CHIPS), the Society for Worldwide Interbank Financial Telecommunications (SWIFT), and the RTP system (RTP System).

We are under no obligation to honor, in whole or in part, any payment order or other instruction that could result in our violation of applicable law, including requirements of the U.S. Department of the Treasury's Office of Foreign Assets Control and the Financial Crimes Enforcement Network.

Sending funds transfers
In acting on your transfer instructions, we may use any means of transmission, funds transfer system, clearing house, or intermediary bank that we reasonably select.

Notice of funds transfers
We will notify you of funds electronically debited from or credited to your account through the account statement covering the period in which the transaction occurred. We are under no obligation to provide you with any additional notice or receipt

Reliance on identification numbers

- If a payment order or other instruction to transfer funds describes the party to receive payment inconsistently by name and account number, we may make the payment based on the account number, even if it identifies a party different from the named recipient.

- If an instruction or order to transfer funds describes a participating financial institution inconsistently by name and identification number, we may rely on the identification number as the proper identification of the financial institution.

Duty to report unauthorized or erroneous funds transfers

You will exercise ordinary care to determine whether a funds transfer to or from your account was either not authorized or erroneous. You will also notify us of the facts within a reasonable time, not exceeding 14 days after you have received your account statement from us on which the funds transfer appears or you otherwise have notice of the funds transfer, whichever is earlier. You must notify us within 14 days to be entitled to a refund from us. If you do not notify us within 14 days, we will be entitled to retain payment for the funds transfer.

Erroneous payment orders

We have no obligation to detect errors you make in payment orders - for example, an instruction to pay a beneficiary not intended by you, or to pay an amount greater than the amount you intended, or a transmission of a duplicate payment order previously sent by you. If we detect an error on one or more occasions, we will not be obligated to detect errors in any future payment order.

ACH transactions

In addition to the other terms in the Agreement, the following terms and conditions apply to payments to or from your account that you transmit through an ACH:

- Your rights for payments to or from your account will be based on the laws governing your account.
- When we credit your account for an ACH payment, the payment is provisional until we receive final settlement through a Federal Reserve Bank or otherwise receive payment.
- If a payment is credited to your account and we do not receive final settlement or payment, we are entitled to a refund from you for the amount credited to your account.
- You authorize any Originating Depository Financial Institution (ODFI) to initiate, according to ACH Operating Rules, ACH debit entries to your account for presentment or re-presentment of items written or authorized by you.

Reversal or return of ACH transactions

Under the ACH Rules, we can return any non-consumer ACH debit entry as unauthorized until midnight of the business day following the business day we post the entry to your account. (For example, if we post the entry on Tuesday, we can return it up to midnight on Wednesday.) For us to meet this deadline, you are required to notify us to return any non-consumer ACH debit entry as unauthorized by the cutoff time we separately disclose. The cutoff time is currently 3:00 PM Central Time. (In the example above, you would need to notify us by 3:00 PM Central Time on Wednesday).

If you do not notify us in a timely manner of the unauthorized non-consumer ACH debit entry, we will not be able to return it without the cooperation and agreement of the originating bank and the originator of the debit entry. Any other effort to recover the funds must occur solely between you and the originator of the entry.

Stop payment orders on ACH debit entries

You may request a stop payment order for an ACH debit entry that has not already been paid from your account. An "ACH debit entry" is an order or request for the withdrawal of money from your account through ACH. To be effective, a stop payment order must be received in a time and manner that gives us a reasonable opportunity to act on it. If you provide oral instructions to stop payment on an ACH debit entry, we may require confirmation in writing. If that written confirmation is not received, we may remove the stop payment order after 14 days. An instruction to revoke a stop payment order must be received in a time and manner that gives us a reasonable opportunity to act on it.

To place a stop payment order on an ACH debit entry, you must provide:
- Your account number,
- Amount of the ACH debit entry,
- Effective date of the ACH debit entry, and
- Name associated with the originator of the debit entry.

We may request additional information and may use only a portion of the required information to identify the ACH debit entry. We may be able to place a stop payment order based on the company identification number of the originator of the ACH debit entry, but this may stop all ACH entries received from this sender.

Additional information on ACH debit entries

Any information provided by you that is incorrect or subject to change (for example, if the originator changes its company identification number or individual identification number) may result in payment of the ACH debit entry. You acknowledge this risk and agree that you are responsible for notifying the originator of the ACH debit entry that your authorization has been revoked. You agree to indemnify and reimburse us and hold us harmless from and against any loss incurred by us as a result of our paying an ACH debit entry if any of the information relied on in the stop payment order is incorrect or incomplete (or as a result of us not paying an ACH debit entry for which a valid stop payment order is in effect).

Receiving RTP payments

The following additional terms apply to any real-time payments we receive for credit to your account through the RTP System. The terms "sender," "receiver," and "sending participant" are used here as defined in the System Rules governing RTP payments ("RTP Rules"). In addition to the RTP Rules, RTP payments will be governed by the laws of the state of New York, including New York's version of Article 4A of the Uniform Commercial Code, as applicable, without regard to its conflict of laws principles.

- The RTP System may be used only for eligible payments between a sender and receiver with accounts located in the United States. You may not send or receive payments on behalf of any person or entity not domiciled in the United States. RTP payments that are permitted under the RTP Rules and our requirements will be considered eligible payments for purposes of this Agreement.
- RTP payments cannot be cancelled or amended by the sender. If we receive a message from a sending participant requesting return of an RTP payment received for credit to your account, we may notify you of that request. You are not obligated under the RTP Rules to comply with any such request for return of funds. Any dispute between you and the sender of an RTP payment should be resolved between you and the sender.
- If you do not wish to accept an RTP payment received for credit to your account, you may request that we return that payment to the sender. We may, at our sole discretion, attempt to honor that request, but will have no liability for our failure to do so.
- RTP payments are typically completed within 30 seconds of transmission of the RTP payment by the sender, unless the RTP payment fails or is delayed due to a review by us or the sending participant, such as for fraud, regulatory, or compliance purposes. Transaction limits imposed by the RTP System or sending participant may also prevent RTP payments from being received for credit to your account.

Selected services

***Stagecoach Deposit*® - ATM Deposit Only Card Service.**
You may elect to use Wells Fargo's *Stagecoach Deposit*® Deposit Only Card Service by completing and returning to us the setup form for the service. This service allows you to make deposits to your account using a *Stagecoach Deposit*® ATM Deposit Only card ("Deposit Card") at a designated Wells Fargo® ATM ("ATM") or in a Wells Fargo branch.

When you make deposits at a designated Wells Fargo ATM, you will make those deposits according to the instructions we provide. You will gain access to the ATM using the Deposit Card and a Personal Identification Number ("PIN"); you assume the risk of misuse of both. We will provisionally credit each deposit to your account based on the amount you key into the ATM. Your ATM deposits are subject to the standard cut-off time established for the ATM into which the deposit was made and our funds availability policy applicable to your account. If the dollar amount of your deposit - as determined by us - differs from your total (as shown on your ATM receipt), we will send you a statement showing the amount of this difference. You agree that our count of the dollar amount of your deposit will be conclusive and binding on you. You will have full responsibility for each deposit and its contents until the deposit has been completely and physically accepted into the ATM. If you claim any portion of a deposit was lost or stolen while in our custody, you acknowledge that you have the burden of proving your claim. If you order supplies for the ATM Deposit Service through the ATM, you authorize us to initiate debits to your account and credits to the accounts of third party vendors to cover the cost of those supplies provided to you. Those transfers may be processed through an automated clearing house or any other means chosen by us, and will be subject to the rules of the funds transfer system used by us. Your authorization for the transfers will remain in full force and effect until we have received written notification from you of its termination in a time and manner as to afford us and any third-party vendor a reasonable opportunity to act on it.

***Stagecoach Deposit*® - Post Verify Service.**
If you elect to use our *Stagecoach Deposit*® - Post Verify Service, you will prepare, package, and deliver Stagecoach deposits to us according to our instructions. We will provisionally credit your account for the currency shown on the deposit ticket enclosed in your Stagecoach deposit bag as follows:
- Same day credit for deposits delivered to one of our offices before that office's cut-off time on any business day we are open or for deposits placed in night depository before 6:00 a.m. on any business day we are open; or
- Next business day credit for deposits delivered to one of our offices on any business day we are open on or after the office's cut-off time or on any non-business day.

All Stagecoach deposits are subject to our acceptance and verification. We will verify the currency in your Stagecoach deposit bag either at a later time in our office or when your Stagecoach deposit bag is delivered to our cash vault. Checks will be verified when they are delivered to our check processing center. We reserve the right to adjust (debit or credit) your account if we determine that the amount shown on your deposit ticket is incorrect. Because the frequency of armored courier transportation from our offices to our vaults varies from office to office, the time it takes to verify your Stagecoach deposit may vary, depending on the office to which your Stagecoach deposit bag is delivered. In most cases, adjustments will be made and notification will be sent within three business days. Adjustments will be effective when they are processed.

Treasury Management Product Enrollment

Customer Information

Customer Name ______________________ *CEO* Company ID ______________________

Street Address ______________________

City ______________ State ______________ Zip ______________

Country Name ______________________ Country Code (if applicable) ______________________

Primary Contact ______________________ Phone ______________________

Email Address ______________________ Fax ______________________

CEO® Users Set-up

User Name	User ID (if existing)

Select one or more *CEO* Products for the user(s) listed above:

☐ ACH Payments[1] User ☐ ACH Payments[1] Administrator ☐ ACH Fraud Filter ☐ Cards[2] ☐ Payment Manager Online

☐ Other Treasury Management Products not in Administration[3] ☐ Other Treasury Management Products in Administration[4]

☐ Cash Vault (specify): ☐ Deposit Inquiry ☐ Change Orders Inquiry ☐ Change Orders ☐ Supply Order

Accounts: ______________________

ACH IDs (File ID/Company ID): ______________________

1 *This only covers giving users access to the high level product in the CEO and the ACH application. Additional approval is required to set up detailed product entitlement within the ACH application.*
2 *Recognition Card.*
3 *Autolink, Bill Manager, Document Retrieval, Electronic Document Delivery, Invoice Manager, Payment and Delivery Preferences, Receivables Manager, Retail Lockbox Image Archive, Reverse Positive Pay, Sweep & Fed Funds - Statements & Confirmations, & Wells Fargo Business Online (Single Sign On).*
4 *Alerts, ARP Register Maintenance, Basic Banking, Canadian Treasury Services, Cash Concentration, Centralized Disbursements, Centralized Disbursements – Clients, Claims Payments, Deposit Maintenance (Smart Decision), Desktop Deposit, E-Box Decisioning, Fed Funds, Image, Image Positive Pay, Item Detail Inquiry Service, Lockbox, Lockbox Correspondence, Payment Manager File Validation Tool, Returned Items, SAFE Transmission, Statements & Notices (Client Analysis Statements, Commercial Checking/Savings Account Statements, Deposit Adjustment Notices, Merchant Notices, Multi Currency Account Statements and Stop Notices), Supplier Payments, Transaction Search, Treasury Information Reporting, & WellsTAX®.*

INTERNAL BANK USE ONLY

Does the customer have Administration, or is it included in the current request? ☐ Yes ☐ No

CEO® Users Set-up

User Name	User ID (if existing)

User Name	User ID (if existing)

Select one or more *CEO* Products for the user(s) listed above:

☐ ACH Payments[1] User ☐ ACH Payments[1] Administrator ☐ ACH Fraud Filter ☐ Cards[2] ☐ Payment Manager Online

☐ Other Treasury Management Products not in Administration[3]

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Accounts: ______________________________

ACH IDs (File ID/Company ID): ______________________________

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2 *Recognition Card.*
3 *Autolink, Bill Manager, Document Retrieval, Electronic Document Delivery, Invoice Manager, Payment and Delivery Preferences, Receivables Manager, Retail Lockbox Image Archive, Reverse Positive Pay, Sweep & Fed Funds - Statements & Confirmations, & Wells Fargo Business Online (Single Sign On).*
4 *Alerts, ARP Register Maintenance, Basic Banking, Canadian Treasury Services, Cash Concentration, Centralized Disbursements, Centralized Disbursements – Clients, Claims Payments, Deposit Maintenance (Smart Decision), Desktop Deposit, E-Box Decisioning, Fed Funds, Image, Image Positive Pay, Item Detail Inquiry Service, Lockbox, Lockbox Correspondence, Payment Manager File Validation Tool, Returned Items, SAFE Transmission, Statements & Notices (Client Analysis Statements, Commercial Checking/Savings Account Statements, Deposit Adjustment Notices, Merchant Notices, Multi Currency Account Statements and Stop Notices), Supplier Payments, Transaction Search, Treasury Information Reporting, & WellsTAX®.*

INTERNAL BANK USE ONLY
Does the customer have Administration, or is it included in the current request? ☐ Yes ☐ No

RSA SecurID Token Request Set-up

Please complete the information below to manage RSA SecurID Tokens for Company and Users

RSA SecurID tokens are mailed to Company Administrators. If the Company Administrator's mailing address is different than the address listed above in the Customer Information section, please indicate the correct mailing address below:

Company Administrator Name		**Phone Number**	
Street Address (tokens cannot be shipped to post office boxes):		**City**	
		State	**Zip**

For new users

- *New Token:* To order a token for the first time for a user.
- *Assign Token:* To assign a token to a new user from the supply of tokens accumulated in your Company Token Pool.

For users who have a token today (to request changes for existing users):

- *Replace Token:* To order a replacement token for an existing user if there are no tokens available in the Company Token Pool.
- *Assign Token:* To assign a token to a new user from the supply of tokens available in your Company Token Pool.
- *Un-assign Token:* To remove a token from a user and return the token to you Company Token Pool for reassignment. Please begin collecting and securely retaining unassigned tokens instead of discarding them.
- *Delete Token:* To delete a token completely. This option will remove the token from a user and your Company Token Pool. Once a token is deleted, it can no longer be reused and should be discarded. Follow your local e-waste disposal regulations to dispose of old tokens.

User Name # 1 ______	User ID (for existing *CEO*® users) ______		
Token Serial #* ______	ACH Payments Admin	☐ Yes	☐ No
New User	☐ New Token	☐ Assign Token*	
Existing User (Select one box only)	☐ Replace Token	☐ Assign Token*	☐ Un-Assign Token* ☐ Delete Token*

CEO® Administration Set-up

Type of Request - Select request type with corresponding start date.

☐ New ☐ Change (Make selections only for options that should change) Start Date: ______

Company Administrator - Complete applicable fields.

Company Administrators automatically gain access to all Administration functions. If selecting Administrator you will need to specify the detailed Administration functionality that should be entitled.

A minimum of two (2) Company Administrators is required for Dual Custody.

Each Administrator will be sent a token (unless one has been assigned already) and will be authorized as an administrator for all or specific company authorized *Commercial Electronic Office® (CEO®)* portal services.

Company Administrator Name	Email Address	Token Serial Number (If reassigning existing token)	User ID (if existing)

Administrators

You will need to specify the detailed Administration functionality that should be entitled to an Administrator level user.

Each Administrator will be sent a token (unless one has been assigned already) and will be authorized as an administrator for all or specific company authorized *Commercial Electronic Office® (CEO®)* portal services.

Administrator # 1 Detailed Setup - Complete applicable fields

Administrator Name	Email Address	Token Serial Number (If reassigning existing token)	User ID (if existing)

User Administration Options

☐ User Maintenance ☐ Administrator Maintenance ☐ Reset Password

If granting User Maintenance or Reset Password what users can the Administrator view and manage?

☐ All Users ☐ Specific Users

User List: ______

If granting User Maintenance what CEO Services can the user administer?

☐ All *CEO* Services ☐ Specific *CEO* Services

CEO Services: ______

If granting User Maintenance what Accounts can the user administer?

☐ All Accounts ☐ Specific Accounts

Accounts: ______________________________

If granting User Maintenance what ACH IDs can the user administer?

☐ All ACH IDs ☐ Specific ACH IDs

ACH IDs: ______________________________

WellsOne Commercial Card use only

☐ All Divisions ☐ Specific Divisions

List Divisions that can be administered.

____

Company Administration Options

☐ Manage User Defined Lists

☐ All User List ☐ Specific User List:

Specify User List(s) that can be administered.

____

☐ All Account List ☐ Specific Account List:

Specify Account List(s) that can be administered.

____

☐ Manage Company Dual Custody Settings ☐ Manage Account Nicknames ☐ Manage ACH Custom Names

☐ Access to Administration Reports ☐ Manage Tokens

Company Service Options

☐ Manage Company Alerts Settings ☐ Manage Company Statement and Notices Settings

☐ Manage Company Wires Settings

Custody Option

Single Custody - Non-Standard Security Procedure - Customer has declined to use dual custody, which is part of Bank's standard *CEO®* Administration procedures. With dual custody, an authenticated second user approves select high-risk activities. Customer has instead elected to use single custody. With single custody Secure Validation is used for ACH Payments, Foreign Exchange, Wires, and Administration activities within CEO Administration. Customer acknowledges the significantly reduced security, and recognizes the risks and losses that may materialize as a result of its decision to use single custody.

Dual Custody - Bank's standard *CEO®* Administration procedures also include dual custody for select, high-risk activities. With dual custody, an authenticated second user approves these activities. There is no additional charge for dual custody.

Forced Dual Custody - By selecting this option, you agree that Wells Fargo will control the dual custody settings for all products and transactions initiated in the *CEO®* Administration service. You will not be able to change the dual custody settings in Administration, as these may only be modified by contacting your bank representative.

Customized Forced Dual Custody - By selecting this option, you agree to work with your banker to customize your dual custody preferences and select the Administration transactions that will require dual custody. Once these customizations have been established you will not be able to modify or remove them through the *CEO®* Administration service, as they may only be changed by contacting your banker. If you enroll in a new *CEO®* product, it will not automatically be placed in dual custody, unless you contact you bank representative.

Customized Forced Dual Custody Settings - Select the products you would like under dual custody in the *CEO®* Administration service. Only select products for which your company is enrolled. Additionally, specify the *CEO®* Administration service functions you would like under dual custody.

Product	Custody Settings	
ACH Payments (incl. Domestic and International)	☐ Forced Dual Custody	☐ Single Custody
Administration	☐ Forced Dual Custody	☐ Single Custody
Alerts	☐ Forced Dual Custody	☐ Single Custody
Basic Banking	☐ Forced Dual Custody	☐ Single Custody
Business Track	☐ Forced Dual Custody	☐ Single Custody
Canadian Treasury Solutions	☐ Forced Dual Custody	☐ Single Custody
Cash Concentration	☐ Forced Dual Custody	☐ Single Custody
Centralized Disbursements	☐ Forced Dual Custody	☐ Single Custody
Centralized Disbursements - Clients	☐ Forced Dual Custody	☐ Single Custody
Claims Payments	☐ Forced Dual Custody	☐ Single Custody
Credit Management	☐ Forced Dual Custody	☐ Single Custody
Dealer Inventory Finance	☐ Forced Dual Custody	☐ Single Custody
Deposit Maintenance	☐ Forced Dual Custody	☐ Single Custody
Derivatives Access	☐ Forced Dual Custody	☐ Single Custody
Desktop Deposit	☐ Forced Dual Custody	☐ Single Custody
E-Box Decisioning	☐ Forced Dual Custody	☐ Single Custody
Fed Funds	☐ Forced Dual Custody	☐ Single Custody
Foreign Exchange	☐ Forced Dual Custody	☐ Single Custody
Fraud Manager:		
ACH Fraud Filter	☐ Forced Dual Custody	☐ Single Custody
ARP Register Maintenance	☐ Forced Dual Custody	☐ Single Custody
Image Positive Pay	☐ Forced Dual Custody	☐ Single Custody
Image	☐ Forced Dual Custody	☐ Single Custody
Institutional Investing – Reporting	☐ Forced Dual Custody	☐ Single Custody
Item Detail Inquiry Service	☐ Forced Dual Custody	☐ Single Custody
Lockbox	☐ Forced Dual Custody	☐ Single Custody
Payment Manager®	☐ Forced Dual Custody	☐ Single Custody
Returned Items	☐ Forced Dual Custody	☐ Single Custody
SAFE Transmission	☐ Forced Dual Custody	☐ Single Custody
Statements and Notices	☐ Forced Dual Custody	☐ Single Custody
Supplier Payments	☐ Forced Dual Custody	☐ Single Custody

Product	Custody Settings	
Transaction Search	☐ Forced Dual Custody	☐ Single Custody
Treasury Information Reporting	☐ Forced Dual Custody	☐ Single Custody
Warehouse Lending Finance	☐ Forced Dual Custody	☐ Single Custody
WFED - Wells Fargo Electronic Deposit	☐ Forced Dual Custody	☐ Single Custody
Wells Capital Management	☐ Forced Dual Custody	☐ Single Custody
WellsOne Virtual Card Payments	☐ Forced Dual Custody	☐ Single Custody
WellsTAX Payments	☐ Forced Dual Custody	☐ Single Custody
WF Business Online Banking	☐ Forced Dual Custody	☐ Single Custody
Wires	☐ Forced Dual Custody	☐ Single Custody
Administration Settings	**Custody Settings**	
Add/Edit User	☐ Forced Dual Custody	☐ Single Custody
Password Reset	☐ Forced Dual Custody	☐ Single Custody
Hide Secret Question and Answer	☐ Forced Dual Custody	☐ Single Custody
Wires Limits and Authorizations	☐ Forced Dual Custody	☐ Single Custody
Desktop Deposit Company Preferences	☐ Forced Dual Custody	☐ Single Custody

CEO® Wires Set-up

☐ New ☐ Change

Company Authorization - (For existing *CEO* Wires customers, only complete values in this section if an update is requested. For New requests confirm and update all fields in this section.)

Cumulative Funds Transfer Daily Limit	Duplicate Check No. Of Days (Default - 10)	Default Wire Fee Assignment (select one)
$ ______________________		☐ Shared (Default) ☐ Beneficiary ☐ Originator
Value Date Roll Forward	**File Import (File Import and Payment Manager Import)**	**Get Rate**
☐ Yes ☐ No (Default)	☐ Yes (Default) ☐ No	☐ Yes (Default) ☐ No
Additional Approver Limits (Optional)		
☐ Wires $ __________	☐ Book Transfer $ __________	☐ Drawdown $ __________

Complete the following regarding Funds Transfer Information for specific payment types – (For new and existing CEO Wires customers, only complete values in this section if an update is requested. For New requests; at least one (1) Wire Type must be selected).

Wire Type	Services Allowed	Number of Verifiers for Templated Wires (default is 1)	Numbers of Verifiers for Freeform Wires (default is 1
Wire Transfers (Domestic, Intl & Federal Tax Payment)	☐ Templated Only ☐ Freeform Only ☐ Templated & Freeform	N/A - No Change	N/A - No Change

Drawdown	☐ Templated Only ☐ Freeform Only ☐ Templated & Freeform	N/A - No Change	N/A - No Change
Book Transfer	☐ Templated Only ☐ Freeform Only ☐ Templated & Freeform	N/A - No Change	N/A - No Change
Template Maintenance	Not Applicable	N/A - No Change	Not Applicable

Account Authorization - Account Services Limits

(For new and existing CEO Wires customers, only complete values in this section if an update is requested. For New customers without Administration; at least one (1) account in this section is required).

Account Number	Cumulative Daily Limit	Associated Application
	$	☐ Wires ☐ Drawdowns ☐ Book Transfers ☐ Template Maintenance
	$	☐ Wires ☐ Drawdowns ☐ Book Transfers ☐ Template Maintenance
	$	☐ Wires ☐ Drawdowns ☐ Book Transfers ☐ Template Maintenance

Optional Default User Limits

For companies choosing to utilize Default User Limits; complete all fields to specify optional default limits for users. Enter User information below and select the Apply Default Limits checkbox.

Application Type	Individual Create/ Modify/ Delete Limit	Cumulative Daily Create/ Modify/Delete Limit	Individual Approve/Reject Limit	Cumulative Daily Approve/ Reject Limit
Wire Transfers				
Drawdown				
Book Transfer				
Template Maintenance	-------------	-------------	-------------	-------------

User # 1 Information - Complete all fields

User Name ______________________ User ID (if *CEO* user) ______________

User Settings

(For new and existing CEO Wires customers, only complete values in this section if an update is requested. For New customers without Administration; at least one (1) user in this section is required. Note: at least two (2) users are required for customers in Dual Custody. Or Select checkbox to apply Company default limits to this user) ☐

Get Rate	File Import
☐ Yes ☐ No	☐ Yes ☐ No

Services	Type Allowed	Individual Create/Modify/ Delete Limit	Individual Approve/Reject Limit	Cumulative Daily Approve/Reject Limit	Additional Approver Limit*	Cumulative Create/Modify/ Delete Limit
Wire Transfer	☐ Templated Only ☐ Freeform Only ☐ Templated & Freeform					

Services	Type Allowed	Individual Create/Modify/ Delete Limit	Individual Approve/Reject Limit	Cumulative Daily Approve/Reject Limit	Additional Approver Limit*	Cumulative Create/Modify/ Delete Limit
Book Transfers	☐ Templated Only ☐ Freeform Only ☐ Templated & Freeform					
Drawdowns	☐ Templated Only ☐ Freeform Only ☐ Templated & Freeform					

User Account Authorizations - Provide account number and funds transfer service authorization type.

Account Number			**Account Number**		
Wires	☐ Create/Modify/Delete	☐ Approve/Reject	Wires	☐ Create/Modify/Delete	☐ Approve/Reject
Book Transfers	☐ Create/Modify/Delete	☐ Approve/Reject	Book Transfers	☐ Create/Modify/Delete	☐ Approve/Reject
Drawdowns	☐ Create/Modify/Delete	☐ Approve/Reject	Drawdowns	☐ Create/Modify/Delete	☐ Approve/Reject
Template Maintenance	☐ Create/Modify/Delete	☐ Approve/Reject	Template Maintenance	☐ Create/Modify/Delete	☐ Approve/Reject

Voice Wires Set-up

Type of Request: ☐ New ☐ Update Existing Information ☐ Delete Existing Information

Account Numbers (list accounts to be debited for each wire transfer)

1) ____________________ ☐ G/L ☐ DDA

2) ____________________ ☐ G/L ☐ DDA

3) ____________________ ☐ G/L ☐ DDA

Advice Information (additional fees apply for these services)

For Fax or E-mail notification on intraday wire activity use the InfoFax setup form.

Mail Advice (this paper based service is no longer available to add) ☐ Delete Mail Advice

Mailing address for PINs (if blank, items will be mailed to address on primary statement mailing address)

Mail Advice for ☐ PINs	Mail PINs to:

Authorized Callers (people authorized to initiate wires)

$ Limit = Use "N" if unlimited. The limit applies to all functions unless noted otherwise. If no limit is noted we will set the limit as unlimited.

Initiation Type = If no Initiation Type is noted, we will set the individual up for both Repetitive and Non-Repetitive Wire Initiation. Complete by checking appropriate box: R=Repetitive / B=Both Repetitive & Non-Repetitive.

Authorized Callers First & Last Name	$ Limit	Phone Number including area code	Initiation Type
			☐ R ☐ B

Alternate Account to be Charged for Wire Fees

List account only if wire fees are to be assessed to this account

☐ DDA ☐ AU and G/L ____________________

Account Relationship Link

To link accounts to the Master Account number (for Book Transfer pricing) enter the Master Account number.

____

Optional Verify Callback Service (does not apply to repetitive wires)

Selecting this fee-based service requires a minimum of two persons with wire transfer authority because the initiator of a wire cannot also approve the wire. If the form does not indicate an Authorized Approver other than the initiator, the optional Verify Callback Service cannot be provided.

Authorized Approvers first and last name	$ Limit	Phone Number including area code

Payment Authorization Service

This service is part of, and will be subject to the terms and conditions stated in the Commercial Account Agreement ("Agreement"). This set-up form supersedes any and all prior payment authorization service forms set up on the referenced account numbers.

Termination: The Service(s) may be immediately terminated by you or us at any time with or without cause by giving written notice to the other party.

Type of Request - Select request type. (Refer to the reference guide for complete instructions.)

☐ **Account-specific Request**	☐ **Add Payment Authorization Service features checked below to all existing Subaccounts listed under the Master Account** – NOTE: Must attach subaccount list. Does not apply to Maximum Check Amount Authorized Payment Service.	☐ **Blanket Company Level Approval** – Checking this box covers all future accounts and/or subaccounts owned by the specified legal entity. (A separate form must be completed for each legal entity.)

For Account-specific requests, enter individual account number or Master account number. Does not apply to Blanket Company Level Approval and do not list all Subaccounts.

Maximum Check Amount Authorized Payment Service *(not available in conjunction with Positive Pay or Perfect Presentment)*

SERVICE: Under the Maximum Check Amount Authorized Payment Service (the "Service") we will automatically (without your specific approval) return unpaid (marked "REFER TO MAKER") checks presented to us drawn against your account specified below which exceeds the Maximum Dollar Authorized Payment Amount specified below:

Check one: ☐ Add Service ☐ Change Amount ☐ Delete Service

Maximum Dollar Authorized Payment Amount: ______________________________

Account Number(s): ______________________________

Maximum Check Cashing Amount Authorized Payment Service *(not available in conjunction with Positive Pay or Perfect Presentment)*

SERVICE: Under the Maximum Check Cashing Amount Authorized Payment Service (the "Service") we will (without your specific approval) refuse encashment of checks presented to us through our branch/store network drawn against your account specified below which exceed the Maximum Check Cash Amount specified below:

Check one: ☐ Add Service ☐ Change Amount ☐ Delete Service

Maximum Dollar Authorized Payment Amount: ______________________________

Account Number(s): ______________________________

Maximum Over the Counter Amount Authorized Payment Service

SERVICE: Under the Maximum Over the Counter Amount Authorized Payment Service (the "Service") we will (without your specific approval) refuse withdrawal requests presented to us through our branch/store network drawn against your account specified below which exceeds the Maximum Over the Counter Withdrawal Amount specified below

Check one: ☐ Add Service ☐ Change Amount ☐ Delete Service

Maximum Over the Counter Withdrawal: ______________________________

Account Number(s): ______________________________

Checks to Individuals Authorized Payment Service

SERVICE: Under the Checks to Individuals Authorized Payment Service (the "Service") we will (without your specific approval) refuse encashment of checks presented to us through our branch/store network drawn against your account specified below for any item made payable to an individual.

Check one: ☐ Add Service ☐ Delete Service

Account Number(s): ______________________________

Customer Legal Entity Information

The enrollment contains ACH, Wire or Sweep services the following Customer Entities:

Customer Legal Entity Name(s)	Entity ID Type	Entity ID
	Select One	

Designation of Wells Fargo *Stagecoach Sweep*® Option

Customer DDA(s)

Statements and/or Confirmations will be sent to Customer by electronic means unless otherwise requested by Customer. Electronic means include Bank's *Commercial Electronic Office*®, facsimile and/or Secure E-Mail.

The Wells Fargo Stagecoach Sweep® Service Description can be viewed by pasting this link into an internet browser window: https://wellsoffice.wellsfargo.com/ceopub/assets/pdf/stgcoach-swp/Stagecoach_Sweep_Service_Description.pdf

Investment Sweep

Customer elects the Wells Fargo *Stagecoach Sweep* Preferred Option.

Customer elects the Wells Fargo *Stagecoach Sweep* Repurchase Agreement Option with secondary Wells Fargo *Stagecoach Sweep*, Preferred Option.

Customer elects the Wells Fargo *Stagecoach Sweep* Repurchase Agreement Option.

Customer elects the Wells Fargo *Stagecoach Sweep* Fed Funds Purchased Agreement Option. (GFI Only)

Customer elects the Wells Fargo *Stagecoach Sweep* Fed Funds Sold Agreement Option. (GFI Only)

Customer elects the Wells Fargo *Stagecoach Sweep* Fed Funds Purchased & Sold Agreement Option. (GFI Only)

Money Market Mutual Fund Sweep

Customer elects the Wells Fargo Treasury Plus Money Market Fund - Class A - Fund 453 Option.

Customer elects the Wells Fargo Treasury Plus MMF- Service Class - Fund 454 Option.

Customer elects the Wells Fargo 100% Treasury Money Market Fund - Service Class - Fund 8 Option.

Customer elects the Wells Fargo Government MMF Admin Class - Fund 947 Option.

Customer elects the Wells Fargo Government MMF Institutional - Fund 1751 Option.

Customer elects the Wells Fargo Government MMF Select Class - Fund 3802 Option.

Customer elects the Wells Fargo Treasury Plus MMF Institutional - Fund 793 Option.

Credit Sweep

Customer elects Bank's Credit Sweep Option.

Wire Transfer Services - Security Procedure Elections

For detail on the Security Procedure for an applicable initiation method, refer to the language in the Service Documentation. The Initiation Method(s) and Security Procedure(s) Customer has elected for Wire Transfers are:

Commercial Electronic Office® (CEO®) - Dual Custody

Commercial Electronic Office® (CEO®) - Single Custody

Payment Manager® - Secure Application File Exchange Transmission ("SAFE-T")

Payment Manager® - Machine-to-Machine ("M2M")

Payment Manager® - IBM® Connect:Direct® with Secure Plus+

Payment Manager® - Value-Added Network ("VAN")

Payment Manager® - SWIFT® FileAct

Wells Fargo Gateway (API)

Voice

Bank's voice initiation security procedure consists of confirming (a) the personal identification number ("PIN") accompanying a Payment Order corresponds with a valid PIN assigned to Customer for voice-initiated Payment Orders and (b) the voice print provided when placing a Payment Order matches the print registered for the PIN holder.

Verify Callback Service. If Bank receives a voice-initiated, non-repetitive Payment Order of $ ________________ or more, Bank will make one attempt to telephone an individual authorized to approve wires ("Authorized Approver"), not the initiator, to verify that Payment Order is authorized. A PIN and voice print are required to authenticate each Authorized Approver. If Bank is unable to (a) contact and authenticate or (b) obtain approval from an Authorized Approver, the Payment Order will not be processed.

SWIFT®

ACH Origination Services - Security Procedure Elections

For detail on the Security Procedure for an applicable initiation method, refer to the language in the Service Documentation. The Initiation Method(s) and Security Procedure(s) Customer has elected for ACH are:

Commercial Electronic Office® (CEO®) - Dual Custody

Commercial Electronic Office® (CEO®) - Dual Custody with User Approve Own Entitlements

Commercial Electronic Office® (CEO®) - Single Custody

Direct Origination - Secure Application File Exchange Transmission ("SAFE-T")

Direct Origination - IBM® Connect:Direct® with Secure Plus+

Direct Origination - SWIFT® FileAct

Wells Fargo Gateway (API)

Payment Manager® - Secure Application File Exchange Transmission ("SAFE-T")

Payment Manager® - Machine-to-Machine ("M2M")

Payment Manager® - IBM® Connect:Direct® with Secure Plus+

Payment Manager® - Value-Added Network ("VAN")

Payment Manager® - SWIFT® FileAct

Third Party Service Provider

Third Party Service Provider: ______________________________

Contact Person: ______________________________

Telephone: ______________________________ Fax: ______________________________

RTP Services

For detail on the applicable initiation method, refer to the language in the Service Documentation. The Initiation Method(s) and Security Procedure(s) Customer has elected for RTP are:

Wells Fargo Gateway (API)

Bill Manager Service

For detail on the applicable initiation method, refer to the language in the Service Documentation. The Initiation Method and Security Procedure Customer has elected for Bill Manager is:

Commercial Electronic Office® (CEO®)

E-Bill Express Service

For detail on the applicable initiation method, refer to the language in the Service Documentation. The Initiation Method and Security Procedure Customer has elected for E-Bill Express is:

Customer Approval - (Authorized Signature Required)

Each person who signs this form on Customer's behalf is authorized to do so by resolution, agreement or other legally sufficient action of the governing body of Customer, if Customer is not an individual, or is an Authorized Signer on Customer's account.

Printed Name of Authorized Signer	Phone
Signature	Date

Voice Wire Only - Submitter Information & Instructions

Submitter Name	Submitter Phone
Submitter E-mail	Submitter Fax

NOTE: If Voice Wire is a component of this form, once the customer approves and signs the form, the Banker/Relationship Manager must approve and sign the form, then fax it to Wire Implementation at 866-922-6202 from a valid Wells Fargo Fax. File copies in your location's record-retention file.

WELLS FARGO

Acceptance of Services

1. Agreement to be Bound by Service Documentation

By signing this Acceptance of Services ("Agreement"), the customer identified on the signature block ("Customer" or "Company") confirms that it has received and agrees to be bound by the Service Documentation for the Treasury Management Services (each, a "Service"). Customer may also be referred to as "Company" in the Service Documentation. "Service Documentation" is defined in Wells Fargo Bank, N.A.'s ("Bank") Master Agreement for Treasury Management Services. Customer's use of any Service, including each Service Customer enrolls in, confirms Customer's receipt of and agreement to be bound by the Service Documentation relating to that Service.

2. Power and Authority of Signer

Customer has granted the person(s) signing this Agreement the authority on Customer's behalf to (i) enter into this Agreement and other agreements with Bank for Services on or after the Effective Date of this Agreement and (ii) amend, terminate or otherwise act on behalf of Customer with respect to this Agreement and the Services.

3. Security Procedures

Unless otherwise agreed, Customer agrees that "Security Procedure" is the applicable security procedure described in the Service Documentation for Customer's Initiation Method for the Service, which Bank will use to verify the authenticity of a Transaction. The term "Initiation Method" refers to the method Bank offers in the product enrollment form ("Set-up Form") or other Service Documentation for delivering Customer's Transaction instructions to Bank with respect to the applicable Service and includes any applicable transmission protocols. The term "Transaction" means (i) any funds transfer or payment instruction (including any communication cancelling or amending an instruction), and (ii) any instruction, data or other information which Bank receives in Customer's name with respect to a funds transfer.

The purpose of the Security Procedure is to verify the authenticity of the Transaction. Bank will not use the Security Procedure to detect an erroneous or duplicate transaction. Customer will be responsible for any erroneous or duplicate transaction Bank receives in Customer's name. Customer agrees to be bound by each Transaction, whether or not authorized by Customer, issued in Customer's name and accepted by Bank in compliance with the Security Procedure for the Service.

4. Commercially Reasonable

Customer acknowledges that it has had an opportunity to review the Security Procedures offered by Bank in the Security Procedure Reference Guide, available on our *Commercial Electronic Office* portal. Customer agrees that each Security Procedure for the Initiation Method Customer has elected in the Set-up Form or other Service Documentation for each of its Services (a) best meets Customer's requirements with regard to the size, type and frequency of its Transactions, and (b) is commercially reasonable.

If Customer has refused to use a standard Security Procedure and elects a non-standard Security Procedure, then Customer expressly agrees that the non-standard Security Procedure(s) Customer has elected better meets Customer's requirements than any standard Security Procedure with regard to the size, type and frequency of Transactions issued by Customer to Bank and is commercially reasonable.

5. Confidentiality of Security Procedure and Authentication devices/passwords

Customer and Bank will preserve the confidentiality of the Security Procedure(s) and any passwords, codes, security devices and related instructions provided by Bank. If one party becomes aware of a breach, or suspects that a breach may occur, it will promptly notify the other party. Customer will maintain effective internal procedures to safeguard against any unauthorized Transaction and warrants that no individual will be allowed to initiate a Transaction without proper supervision and safeguards.

Customer Name(s)

____

Printed Name of Authorized Representative
Signature
Date

WELLS FARGO

Master Agreement for Treasury Management Services

The Service Documentation contains the terms under which Wells Fargo Bank, N.A. and the banks, branches or subsidiaries listed in Appendix X (each, "Bank") provide you treasury management services ("Services"). "You," "your" or "yours" refer to the Bank customer identified on the Acceptance of Services that is signed when you enroll in Services ("Acceptance"). The terms "we," "us," or "our" refer to the Bank. The Bank customer to which the Services will be provided is identified in the Acceptance. Other capitalized terms used in this Master Agreement for Treasury Management Services ("Agreement") are defined in this document.

You and we agree:

1. **Service documentation.** The Service Documentation contains the terms governing each Service and includes:
    a. The Service Description (which contains terms and conditions applicable to the specific Service),
    b. The Acceptance (which indicates your acceptance of the Service Documentation),
    c. This Agreement (which contains terms and conditions applicable to all Services),
    d. The account agreement governing the account(s) (each, an "Account") you use in connection with the Service,
    e. The Product Enrollment Form (which contains set-up information for each Service in which you are enrolling), and
    f. User Guides (which include Terms of Use, software, software licenses, price schedules, specifications, instructions, and notices).

The documents and individual provisions of the Service Documentation are intended to be read together as one agreement between you and us. This Agreement and the Service Descriptions for Services you enroll in are posted at our *Commercial Electronic Office® (CEO®)* portal. If there is a conflict among the documents that are part of the Service Documentation, they will govern in the order listed above. Your use of a Service confirms your receipt of, and agreement to be bound by, this Agreement and all Service Documentation.

2. **Services.** You and we will agree upon the Services to be provided. Each Service is subject to the approval by our applicable branch or subsidiary. We will notify you when you have completed all requirements for enrolling in the Service and the Service is ready for you to use.

3. **Changes to services.** We may change (or add to) the terms and fees in the Service Documentation at any time. If an enhancement to a Service or other change requires a change to a Service Description, we will post an updated Service Description on the *CEO* portal. When required by Applicable Law, we will notify you of the change. If you continue to use a Service after the change takes effect, you will be bound by the change. As used in this Agreement, the term "Applicable Law" means all applicable laws (including common or customary laws), statutes, constitutions, policies, decrees, judgments, treaties, regulations, directives, by-laws, rulings, orders or operating circulars governing our activities and/or any transaction effected under this Agreement, including, but not limited to, the funds transfer system and clearing and settlement house rules.

Revised September 15, 2020

4. Term and termination. Unless a Service is terminated in accordance with the Service Documentation, this Agreement and each Service will continue in effect until terminated by either party upon 30 days' prior written notice to the other party.

We may suspend or terminate any Service:

a. After we notify you of a breach of any provision of the Service Documentation or any other agreement with us, and you fail to cure the breach (if it can be cured) within 15 days of the date of the notice; or
b. Without prior notice to you if:
    i. We reasonably suspect that an Account associated with a Service has been compromised or otherwise subject to irregular, unauthorized, fraudulent, or illegal activity,
    ii. You become subject to any insolvency or bankruptcy proceeding, or any receivership, liquidation, reorganization, or other similar proceeding, or you enter into any agreement or proceeding for voluntary liquidation, dissolution, composition with or assignment for the benefit of creditors or other winding up,
    iii. We determine in our sole discretion that continuing to provide a Service may place us at risk of financial loss or result in an unacceptable credit exposure,
    iv. Any guaranty of your obligations to us ("Guaranty") is terminated, revoked, or its validity contested by the guarantor ("Guarantor"),
    v. We determine in our sole discretion that a material adverse change has occurred in your ability to perform your obligations under the Service Documentation, or in the ability of a Guarantor to perform its obligations under a Guaranty, or
    vi. The Account necessary to provide a Service is closed.

The termination of a Service will not affect your or our respective rights with respect to transactions occurring before the termination. We will not be liable to you for any losses or damages you may incur as a result of any termination of any Service or termination or restriction of any *CEO* portal access rights under section 9(d) below.

5. Service fees. You will pay us the fees described in the Service Documentation and any taxes applicable to each Service, however designated, but excluding taxes based on our net income. We may debit your Account for any fees not covered by earnings credits and any taxes that are due, or we may send you an invoice for these amounts, which you will promptly pay. Our charges and fees are in the applicable fee schedule for Services used in connection with your Account.

6. Security procedures.

a. Unless otherwise agreed, you agree that "Security Procedure" is the applicable security procedure described in the Service Documentation for your Initiation Method for the Service, which we will use to verify the authenticity of a Transaction. The term "Initiation Method" refers to the method we offer in the product enrollment form ("Set-up Form") or other Service Documentation for delivering your Transaction instructions to us with respect to the applicable Service and includes any applicable transmission protocols. The term "Transaction" means (i) any funds transfer or payment instruction (including any communication cancelling or amending an instruction), and (ii) any instruction, data or other information which we receive in your name with respect to a funds transfer. The purpose of the Security Procedure is to verify the authenticity of the Transaction. We will not use the Security Procedure to detect an erroneous or duplicate transaction. You will be responsible for any erroneous or duplicate transaction we receive in your name. You agree to be bound by each Transaction, whether or not authorized by you, issued in your name and accepted by us in compliance with the Security Procedure for the Service.
b. You agree that each Security Procedure for the Initiation Method in the Set-up Form or other Service Documentation for each of the Services (a) best meets your requirements with regard to the size, type and frequency of your Transactions, and (b) is commercially reasonable. If you have refused to use any standard Security Procedure and elect a non-standard Security Procedure, then you must sign the Non-Standard Security Procedure Elections form.

7. **Confidential information.** Unless otherwise stated in the Service Documentation, "Confidential Information" means all (a) User Guides and Terms of Use, and (b) Security Procedures, passwords, codes, security devices and related instructions. You will not acquire any ownership interest in or rights to Confidential Information as a result of your use of any Service.

   You will:
   a. Maintain the confidentiality of the Confidential Information,
   b. Not disclose (or permit your employees or agents to disclose), copy, transfer, sublicense, or otherwise make any of it available to any person or entity, other than your employees who have a need to use the Confidential Information in connection with the applicable Service, and
   c. Not decompile, reverse engineer, disassemble, modify, or create derivative works of any Confidential Information.

   You will notify us immediately if you know of or suspect any unauthorized disclosure, possession, use, or knowledge (each, an "Unauthorized Use") of any Confidential Information. If you (or your employees or agents) are responsible for the Unauthorized Use, you will, at your expense, promptly take all actions, including initiating court proceedings to recover possession and prevent further Unauthorized Use of the Confidential Information. You will also compensate us for any injury caused to us as a result of the Unauthorized Use.

8. **Currency conversion.** When your instructions require us to convert the amount of a payment order from the currency in which the Account is denominated ("Account Currency") to another currency ("Foreign Currency"), we will do so using the Applicable Exchange Rate in effect at the time we execute your payment order. "Applicable Exchange Rate" means the exchange rate we set and use for you when we convert one currency to another currency and includes a markup over our cost of sourcing the relevant currency. The markup factors include costs incurred, market risks and our desired return. The exchange rate we provide to you may be different from the exchange rates you see elsewhere. Foreign exchange rates are dynamic, and rates fluctuate over time based on market conditions, liquidity, and risks.

   If a financial institution designated to receive the funds does not pay the beneficiary specified in the payment order, and the funds are returned to us, we will not be liable to you for a sum greater than the amount of the payment order after we have converted it from the Foreign Currency to the Account Currency using the Applicable Exchange Rate in effect at the time the funds are returned to us. You accept the risks of any change in the Applicable Exchange Rate between the time you request a payment order and the time the payment order is either completed or is unwound due to a cancellation, an amendment, a rejection, or a return.

9. ***CEO* portal.**
   a. **Description of the *CEO* portal.** The *CEO* portal is our electronic banking portal that is accessed via the Internet. Your Authorized Agents (defined below) may use the *CEO* portal to access (i) Services in which you have separately enrolled (each, an "Accessed Service") and (ii) third-party sites we may make available through the *CEO* portal. We offer different channels through which you may access the *CEO* portal, including personal computers and mobile devices. We may add or eliminate channels at any time. A Service or third party site accessible through one channel may not be accessible through another channel.
   b. **Access to the *CEO* portal.** When you enroll in the *CEO* portal, and as we may determine is necessary after enrollment, we will provide Log-On Credentials (defined below) to the persons who are authorized to access the *CEO* portal on your behalf (each, an "Authorized Agent"). Log-On Credentials mean one or more secure methods we provide to access the Services and may include user IDs, passwords, token IDs, and other methods that we adopt from time to time. We have no obligation to separately verify or authenticate any communication we receive in your name through the *CEO* portal, whether or not it was actually from an Authorized Agent. You assume the entire risk of (i) unauthorized use of your Log-On Credentials and (ii) unencrypted electronic transmissions.

c. **Administration of the *CEO* portal.** We offer two options for administering the *CEO* portal: (i) Administration and (ii) Bank administration.
   i. **Administration.** If you enroll in the Administration option, there are three categories of Authorized Agents: Company Administrator, Administrator, or User. Unless you and we separately agree, we will provide Log-On Credentials only to your initial Company Administrator(s) who will (a) assign Log-On Credentials to other individuals and (b) designate those individuals as one of the following:
      (1) A Company Administrator, who may perform all functions of your initial Company Administrator,
      (2) An Administrator, who may perform all functions of an Administrator including designating other Administrator(s) and User(s), or
      (3) A User, who may access the Services designated by a Company Administrator or an Administrator, as well as those Services in which we permit a User to self-enroll.

   Each Company Administrator and Administrator has the authority to enroll you in additional Services. In addition to your use of Administration as described in this subsection, you may request that we assign Log-On Credentials to Users that you designate in writing to us. Your designation to us will specify the Services which the User is authorized to access in addition to those Services in which we permit a User to self-enroll.

   ii. **Bank administration.** For the Bank administration option, there is one category of Authorized Agent: Users. We will assign Log-On Credentials to each User you designate.

You will promptly revoke the Log-On Credentials of any Authorized Agent or User when that individual is no longer authorized to access the *CEO* portal. If you notify us in writing to revoke the Log-On Credentials of an Authorized Agent or User, we will have a reasonable time after receiving your written notification to revoke the individual's access.

d. **Terminating access.** We may terminate or restrict any Authorized Agent's access to any Service through the *CEO* portal if we determine such use:
   i. Does not comply with any term applicable to the *CEO* portal,
   ii. Is not permitted by Applicable Law,
   iii. Is not authorized by you or any third party whose authorization we believe is necessary, or
   iv. Should be denied for your or our protection (without us agreeing to or being required to make this determination in any circumstance).

e. **Financial information.** Financial market data, quotes, news, research, and other financial information developed by third parties and transmitted to us ("Financial Information") may be available to you at the *CEO* portal. The posting of any Financial Information or any other information or data at the *CEO* portal is not a recommendation by us of any particular Service or transaction. We do not guarantee the accuracy or completeness of any Financial Information, nor are we responsible for (i) the actions or omissions of the third parties developing or transmitting Financial Information or (ii) any decision you make or action you take by relying on any Financial Information.

10. Alerts.

a. **Non-subscribed alerts.** When you enroll in the *CEO* portal or other channels or Services, you consent to receiving by email or other delivery channels, servicing messages that we determine are important or urgent. You do not need to subscribe to receive such alerts and you do not pay additional service fees.

b. **Subscribed alerts.** You may also enroll in fee-based alerts for applicable Services so that you can receive messages you subscribe to at the intervals and through delivery channels that you choose.

11. Liability and indemnification.

a. We are not obligated to honor, in whole or in part, any payment order or other instruction that:
   i. Exceeds the available balance in the Account, unless otherwise provided in the Service Documentation,

   ii. Does not comply with the Service Documentation or our applicable policies, procedures, or practices made available to you,
   iii. We have reason to believe may not have been duly authorized, should not be honored for our or your protection, or involves funds subject to a hold, dispute, restriction, or legal process, or
   iv. Would possibly result in us not complying with Applicable Law.

b. Neither we nor our software vendors make any express or implied representations or warranties with respect to the Services or any software used in connection with the Services, including any warranty as to the merchantability or fitness for a particular purpose, other than those expressly set forth in the Service Documentation.
c. Any claim, action, or proceeding against us for losses or damages arising from a Service, must be brought within one year from the date of the act or omission, except as otherwise stated in the account agreement governing the Account.
d. We will have no liability for our failure to perform or delay in performing a Service if the failure or delay is due to circumstances beyond our reasonable control. If we determine that any funds transfer or communications network, Internet service provider, or other system used to provide a Service is unavailable, inaccessible, or otherwise unsuitable for use by you or us, we may, upon notice to you, suspend or discontinue the affected Service.
e. We will only be liable to you for actual damages incurred as a direct result of our failure to exercise reasonable care in providing the Services. Reasonable care requires only that we follow standards that do not vary unreasonably from the general standards followed by similarly situated banks. Our policies and procedures are general internal guidelines for our use and do not establish a higher standard of care for us than otherwise established under Applicable Law. A mere clerical error or an honest mistake will not be considered a failure by us to perform any of our obligations. Our liability to you will be limited to an amount not greater than 10 times our fees incurred in the calendar month immediately before the calendar month in which the loss or damages were incurred (or, if no fees were incurred in that month, our fees incurred in the month in which the losses or damages were incurred).
f. Except in the case of our negligence or intentional misconduct, you will indemnify and hold us, our directors, officers, employees and agents ("Representatives") harmless from all losses or damages that arise out of:
   i. The performance of a Service in compliance with the Service Documentation, including any warranty we are required to make to a third party in connection with a Service,
   ii. An act or omission of any of your agents, couriers, or Authorized Agents, and
   iii. If the Service includes a license or sublicense of any software, any use or distribution of the software by you or any person gaining access to the software through you that is inconsistent with the license or sublicense.

   You will promptly provide us with written proof of loss, and notify us if you become aware of any third party claim related to a Service. You will cooperate fully (and at your own expense) with us in recovering a loss. If we reimburse you, we or our designee will be subrogated to all of your rights (i.e., we will be entitled to assert any legal rights you had relating to the claim).

g. Except as expressly provided otherwise in the Service Documentation, neither party nor its Representatives will be liable to the other party for:
   i. Any special, consequential, incidental (including court costs and attorneys' fees), indirect, or punitive losses or damages, or
   ii. Business interruption, loss of profits, loss of business, loss of revenue, loss of goodwill, loss of opportunity, loss or injury to reputation, or loss of anticipated savings, whether any claim is based on contract or tort, or whether the likelihood of these losses or damages was known to the other party and regardless of the form of the claim or action.
h. When you send payments on behalf of your third party customers, you agree you are solely liable to your customers for any and all losses those customers may suffer. We exclude all and any liability of whatever nature (including those losses detailed in subsection g above) arising out of your relationship with your customer.

12. **Governing law.** The Service Documentation will be governed by: (a) U.S. federal law and (b) the law of (i) the U.S. state in which the office of Bank that maintains the Account is located or, if there is no such state or no account associated with such Service, (ii) the State of New York, without reference to its principles of conflicts of laws ("Governing Law").

13. **Arbitration agreement.** Upon demand by you or us, any dispute or claim arising out of or relating to this Agreement, or the breach thereof, must be submitted to arbitration administered by the American Arbitration Association ("AAA") under its Commercial Arbitration Rules, and must be heard before three arbitrators if the amount in dispute is U.S. $5,000,000 or more or its equivalent in any other currency, and before one arbitrator for amounts in dispute of less than U.S. $5,000,000 or its equivalent in any other currency. Arbitration will proceed in a location selected by AAA in the state of the applicable Governing Law, and if there is no such state, the place of arbitration must be New York, NY. The language of the arbitration must be English. Judgment on the award rendered by the arbitrator(s) may be entered in any court having jurisdiction thereof. This arbitration requirement does not limit the right of you or us to: (a) exercise self-help remedies including setoff or (b) obtain provisional or ancillary remedies such as injunctive relief or attachment, before, during or after the pendency of any arbitration proceeding. This exclusion does not constitute a waiver of the right or obligation of you or us to submit any dispute to arbitration hereunder, including those arising from the exercise of the actions detailed in (a) and (b) of this section.

14. **Jurisdiction.** For any proceedings regarding this Agreement (not subject to arbitration as provided in this Agreement), you hereby irrevocably submit to the jurisdiction of the courts of the Borough of Manhattan, New York City, in the State of New York or the federal courts located there and irrevocably agree that all claims in relating to the proceeding may be heard or determined in those courts.

15. **Miscellaneous**
    a. **Severability.** Any portion of the Service Documentation which is inconsistent with Applicable Law or Governing Law will be deemed modified and applied in a manner consistent therewith, and we will incur no liability to you as a result of the inconsistency or modification and application to any dispute regarding the Service Documentation. If any portion or provision of the Service Documentation is deemed unenforceable, it will not affect the enforceability or validity of the remaining Service Documentation nor the enforceability or validity of that portion or provision under the law of any other jurisdiction.
    b. **Entire agreement.** The Service Documentation (and any documents referred to therein):
        i. Constitutes the entire agreement between you and us regarding the Services we provide for all Accounts opened with us, and
        ii. Supersedes and extinguishes all prior agreements, understandings, representations and warranties of any nature (including requests for proposals and other sales material), whether oral or written, between you and us relating to any of our Services (including any other Master Agreement for Treasury Management Services, but excluding the current Commercial Account Agreement or Global Commercial Account Agreement, as applicable).
    c. **Electronic agreement.** To facilitate execution, the Service Documentation may be executed by a party in the form of an "Electronic Record" (as defined in the Electronic Signatures in Global and National Commerce Act at 15 U.S.C. §7001 et seq. ["ESIGN Act"]). The Service Documentation may be executed in as many counterparts as may be required to reflect all parties' approval, and all counterparts will collectively constitute a single agreement. An "Electronic Signature" (as defined in the ESIGN Act) that can be authenticated will constitute an original and binding signature of a party. The fact that a document is in the form of an Electronic Record or is signed using an Electronic Signature will not, in and of itself, be grounds for invalidating such document.
    d. **No waiver.** Neither our failure nor any delay by us in exercising any right or remedy will be deemed to be a waiver of the right or remedy. No course of dealing or waiver of any right on one occasion will constitute a modification of the Service Documentation or be a waiver of that right on a subsequent occasion.
    e. **Third party beneficiaries.** Except as otherwise provided in the Service Documentation, no person or entity other than the parties to this Agreement will be deemed to be a third party beneficiary under the Service Documentation.

f. **Financial condition.** You will provide us promptly upon our request any existing financial statements or other information pertaining to your financial condition or any previously unprepared financial statements which we may require you to prepare and/or to be audited or reviewed by independent certified public accountants acceptable to us.

g. **Your representations and warranties.** You represent and warrant that: (i) you will not use any Service in a manner that would violate any Applicable Law by you or us; (ii) if you employ an agent in connection with its use of any Service, you represent and warrant to us that: (1) your governing body has duly authorized the agent; (2) you will exercise appropriate controls to ensure each authorized agent does not exceed the authority granted to it; and (3) you will preserve the confidentiality of the Log-On Credentials and immediately notify us if you become aware or suspect that any Log-On Credential may have been compromised.

h. **Use of names.** You and we will not use each other's name or refer to our relationship in any solicitation, marketing material, advertisement, news release, or other written, online or oral communication without specific prior written consent for each such use or release, except that we may use your name as a reference in service proposals if we obtain your prior written approval for such use.

i. **Notices and communications.** Either party may provide notice to the other party by mail, personal delivery, or electronic transmission.

    i. You will notify us promptly in writing of any change in your name, Address, legal status, or any other changes relevant to the conduct of the Account or affecting your business relationship with us.
    ii. The term "Address" as used in this Agreement refers to a mailing or electronic address.
    iii. You will use the Address where your relationship manager or other manager is located and will address any notice to the attention of the manager.
    iv. Each party will have a reasonable time after receipt of any notice to act on it.
    v. Any communication or notice to us from your agent about your use of a Service will be deemed to be a communication from you, and you authorize us to communicate with your agent about any such communication or Service.
    vi. We are entitled to rely on any communication or notice from you that we believe in good faith was authorized by your authorized representative or Authorized Agent and, we will have no obligation to verify or authenticate an identity of a sender or signature on any notice or communication, except as expressly provided in the Service Documentation.

16. Survival. Sections 7, 9, 11 - 15 will survive termination of the Services and this Agreement.

APPENDIX X

Applicable Branches or Subsidiaries of Bank

1. Wells Fargo Bank, N.A. - London Branch
2. Wells Fargo Bank, N.A. - Cayman Islands Branch

WELLS FARGO

Amendment to Master Agreement for Treasury Management Services

Treasury Management Services

Introduction

This Amendment supplements and modifies the Master Agreement for Treasury Management Services ("Master Agreement") for [Customer Legal Name]. "You," "your" or "yours" refers to the customer identified in the immediately preceding sentence. The terms "we," "us," or "our" refer to the Bank. Capitalized terms used but not defined in this Amendment are defined in the Master Agreement. This Amendment constitutes part of the Service Documentation as defined in the Master Agreement. If there is a conflict between this Amendment and the Master Agreement or other Service Documentation, this Amendment will control. Except as expressly modified by this Amendment, all terms and provisions of Master Agreement and Service Documentation will continue to apply with full force and effect.

Amendment

We agree that the Master Agreement governing our relationship with you is amended as follows:

1. The following text is added at the end of Section 3 of the Master Agreement (titled "**Changes to services**"):

   "Notwithstanding the immediately preceding paragraph, through the Initial Term End Date (as defined below) Bank will not change the fees for Services reflected on Attachment A, except:

   - in order to reflect the impact of any change in Applicable Law;
   - in the event your Service usage volume is materially lower than that reflected on Attachment A;
   - for changes to Bank's pricing methodology for Services, including element IDs associated with a Service, so long as the change does not increase the total price of the Services to you (unless permitted under one of the two immediately preceding bullet points).

   If you implement additional Services not described on Attachment A prior to the Initial Term End Date, the fees for such additional Services will be as disclosed to you in connection with the implementation of such additional Services."

2. The following text is added at the beginning of Section 4 (titled "**Term and termination**") as a new first sentence:

   "Subject to the termination provisions below, the initial term of this Agreement will commence on [Insert Start Date] and expire on [Insert End Date] ("Initial Term End Date")[, and this Agreement may be extended for not more than [Insert Number] additional one-year extension terms by your and our mutual consent]."

3. The text of Section 12 (titled "**Governing Law**") is deleted in its entirety and replaced with the following:

   "**Governing law.** The Service Documentation will be governed by: (a) U.S. federal law and (b) the law of [Insert State Where Customer is Located], without reference to its principles of conflicts of laws ("Governing Law")."

4. The text of Section 14 (titled “**Jurisdiction**”) is deleted in its entirety and replaced with the following:

   “**Jurisdiction**. For any proceedings regarding this Agreement (other than a proceeding subject to arbitration), you and we each hereby irrevocably submits to the jurisdiction of the courts of [Insert State Where Customer is Located] or the federal courts located there and irrevocably agrees that all claims relating to the proceeding may be heard or determined in those courts.”

WELLS FARGO BANK, N.A.	**[INSERT CUSTOMER NAME]**
By: ____________________	By: ____________________
Name: __________________	Name: __________________
Title: __________________	Title: __________________
Date: __________________	Date: __________________

Attachment A
Pricing for Specified Treasury Management Services
See Attached

WELLS FARGO

Commercial Account Signature Card

I. Account Title(s)

Account #1 ______ CoID ______ (Internal Use Only)	**Account #2** ______ CoID ______ (Internal Use Only)
Title Line 1 ______ (Customer's full legal name matching Customer's formation documents and TIN certification documentation- 40 characters max.)	**Title Line 1** ______ (Customer's full legal name matching Customer's formation documents and TIN certification documentation- 40 characters max.)
Optional Account Title Lines (40 characters max per line.) Title Line 2 ______ Title Line 3 ______ Title Line 4 ______ (If applicable, enter DBA name on last available title line)	Optional Account Title Lines (40 characters max per line.) Title Line 2 ______ Title Line 3 ______ Title Line 4 ______ (If applicable, enter DBA name on last available title line)

II. Regulation GG Certification

Is the account holder, or any entity for which the account will be maintained, engaged in the business of internet gambling?

☐ No, this entity is not engaged in the business of internet gambling.

☐ Yes, this entity is engaged in the business of internet gambling.

III. Authorized Account Signers

#1

Signature ______ Printed Name ______

Signer role-Please Select **one**. If no selection default will be limited signer. Refer to section IV for authority definitions.

☐ Limited Signer ☐ Authorized Agent or Key Executive ☐ Owner

Banker must provide CIS customer number: ______

#2

Signature ______ Printed Name ______

Signer role-Please Select **one**. If no selection default will be limited signer. Refer to section IV for authority definitions.

☐ Limited Signer ☐ Authorized Agent or Key Executive ☐ Owner

Banker must provide CIS customer number: ______

#3

Signature ______ Printed Name ______

Signer role-Please Select **one**. If no selection default will be limited signer. Refer to section IV for authority definitions.

☐ Limited Signer ☐ Authorized Agent or Key Executive ☐ Owner

Banker must provide CIS customer number: ______

#4

Signature ______ Printed Name ______

Signer role-Please Select **one**. If no selection default will be limited signer. Refer to section IV for authority definitions.

☐ Limited Signer ☐ Authorized Agent or Key Executive ☐ Owner

Banker must provide CIS customer number: ______

IV. Customer Acknowledgement & Agreement

On behalf of the customer, I hereby certify, by my signature below, that each of the individuals designated in Section III above as

(a) a "Limited Signer" is authorized, acting alone, to (i) sign checks drawn on the account(s) and (ii) instruct Wells Fargo with respect to stop payment order(s).

(b) an "Authorized Agent or Key Executive" is authorized, acting alone, to (i) sign checks drawn on and make cash withdrawals from the account(s), (ii) instruct Wells Fargo with respect to stop payment order(s) and (iii) initiate funds transfers by ACH, wire or other means from the account(s) in accordance with the customer's contractual arrangements with Wells Fargo regarding these services.

(c) an "Owner" is authorized, acting alone, to (i) sign checks drawn on and make cash withdrawals from the account(s), (ii) instruct Wells Fargo with respect to stop payment order(s) and (iii) initiate funds transfers by ACH, wire or other means, including to personal and business account(s) in accordance with the customer's contractual arrangements with Wells Fargo regarding these services. Additional information may be requested from all named Owners according to Wells Fargo's customer due diligence policies.

Wells Fargo may obtain credit reports or other information about the customer. Wells Fargo may disclose information about each account to its affiliates, to credit reporting agencies, and to other persons or agencies that, in Wells Fargo's judgement, have a legitimate purpose for obtaining the information.

I acknowledge that the customer has received the Wells Fargo Commercial Account Agreement and agrees its terms and conditions, as amended from time to time, will govern the account(s).

Printed Name	Position/Title
Authorized Signature	Date

V. Taxpayer Certification

Please provide a copy of the most current version of IRS form W-9 or W-8. Tax forms are subject to review and withholding could apply if forms are incomplete or inaccurate.

☐ W-9 provided for U.S. Entity

Taxpayer Identification Number (TIN)

Enter your TIN on the appropriate line below. The TIN provided must belong to the Customer whose full legal name is provided in Section I, Title Line 1 and match the W-9 provided. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Form W-9 Part I instructions at www.irs.gov for additional information. For other entities, it is your employer identification number (EIN). The number provided below applies to all accounts listed on this signature card.

Social Security Number (SSN)	Employer Identification Number

☐ W-8 provided for non-U.S. Entity

Bank Use Only

Banker Name	Banker Telephone	Banker MAC
AU	RAU	Officer #
Submitter Name	Submitter Phone #	

WELLS FARGO

Amendment to Commercial Account Signature Card

I. Account Title(s)

Account #1	Account #2
Account #1 ______ CoID ______ (Internal Use Only)	**Account #2** ______ CoID ______ (Internal Use Only)
Title Line 1 ______ (Customer's full legal name matching Customer's formation documents and TIN certification documentation- 40 characters max.)	**Title Line 1** ______ (Customer's full legal name matching Customer's formation documents and TIN certification documentation- 40 characters max.)
Optional Account Title Lines (40 characters max per line.)	Optional Account Title Lines (40 characters max per line.)
Title Line 2 ______	Title Line 2 ______
Title Line 3 ______	Title Line 3 ______
Title Line 4 ______ (If applicable, enter DBA name on last available title line)	Title Line 4 ______ (If applicable, enter DBA name on last available title line)

II. Amendment to Authorized Account Signers-add:

#1 ______ Signature ______ Printed Name

Signer role-Please Select **one**. If no selection default will be limited signer. Refer to section IV for authority definitions.

☐ Limited Signer ☐ Authorized Agent or Key Executive ☐ Owner

Banker must provide CIS customer number: ______

#2 ______ Signature ______ Printed Name

Signer role-Please Select **one**. If no selection default will be limited signer. Refer to section IV for authority definitions.

☐ Limited Signer ☐ Authorized Agent or Key Executive ☐ Owner

Banker must provide CIS customer number: ______

#3 ______ Signature ______ Printed Name

Signer role-Please Select **one**. If no selection default will be limited signer. Refer to section IV for authority definitions.

☐ Limited Signer ☐ Authorized Agent or Key Executive ☐ Owner

Banker must provide CIS customer number: ______

#4 ______ Signature ______ Printed Name

Signer role-Please Select **one**. If no selection default will be limited signer. Refer to section IV for authority definitions.

☐ Limited Signer ☐ Authorized Agent or Key Executive ☐ Owner

Banker must provide CIS customer number: ______

III. Amendment to Authorized Account Signers-delete:

#1 ______ Signer Name

#2 ______ Signer Name

#3 Signer Name	#4 Signer Name

IV. Customer Acknowledgement & Agreement

On behalf of the customer, I hereby certify, by my signature below, that each of the individuals designated in Section II above as

(a) a "Limited Signer" is authorized, acting alone, to (i) sign checks drawn on the account(s) and (ii) instruct Wells Fargo with respect to stop payment order(s).

(b) an "Authorized Agent or Key Executive" is authorized, acting alone, to (i) sign checks drawn on and make cash withdrawals from the account(s), (ii) instruct Wells Fargo with respect to stop payment order(s) and (iii) initiate funds transfers by ACH, wire or other means from the account(s) in accordance with the customer's contractual arrangements with Wells Fargo regarding these services.

(c) an "Owner" is authorized, acting alone, to (i) sign checks drawn on and make cash withdrawals from the account(s), (ii) instruct Wells Fargo with respect to stop payment order(s) and (iii) initiate funds transfers by ACH, wire or other means, including to personal and business account(s) in accordance with the customer's contractual arrangements with Wells Fargo regarding these services. Additional information may be requested from all named Owners according to Wells Fargo's customer due diligence policies.

Wells Fargo may obtain credit reports or other information about the customer. Wells Fargo may disclose information about each account to its affiliates, to credit reporting agencies, and to other persons or agencies that, in Wells Fargo's judgement, have a legitimate purpose for obtaining the information.

I acknowledge that the customer has received the Wells Fargo Commercial Account Agreement and agrees its terms and conditions, as amended from time to time, will govern the account(s).

Printed Name	Position/Title
Authorized Signature	Date

Bank Use Only

Banker Name	Banker Telephone	Banker MAC
AU	RAU	Officer #
Submitter Name	Submitter Phone #	

Authorization Certificate

Depository Accounts and Treasury Management Services

The undersigned hereby certifies that he or she is the duly appointed authorized representative of ________________________________

(Account holder's complete legal entity/company name), a ____________________ (description of Account holder's business entity type) ("Customer"), with authority to act on behalf of Customer, and that the following are true and correct resolutions duly adopted by Customer, in accordance with its formation and governing documents, and that these resolutions have not been in any way altered, amended or rescinded, and are now in full force and effect:

The undersigned further certifies that any one of the following named persons, whose signatures are set forth opposite their names (and titles, if applicable):

	Name	Title (if applicable)	Signature or Facsimile Signature[1]	Business Phone Number	Business Email Address
#1	____________	____________	X ____________	X ____________	X ____________
#2	____________	____________	X ____________	X ____________	X ____________
#3	____________	____________	X ____________	X ____________	X ____________
#4	____________	____________	X ____________	X ____________	X ____________
#5	____________	____________	X ____________	X ____________	X ____________
#6	____________	____________	X ____________	X ____________	X ____________

is individually authorized to, and to designate one or more other Customer officers, agents or employees (each such aforementioned person, officer or designee thereof is referred to herein as an "Authorized Representative") to: (a) open or close one or more deposit and/or securities accounts (the "Accounts") with Wells Fargo Bank, National Association ("Bank"); (b) execute and deliver in Customer's name such agreement(s) regarding the Accounts and the services related thereto as Bank may from time to time require; (c) authorize and execute transactions on the Accounts, including, without limitation, (i) signing checks and other instruments withdrawing funds from the Accounts, including those payable to cash or to persons who sign them, (ii) requesting funds transfers by Bank to and from the Accounts, (iii) entering into arrangements for the processing of automated clearing house ("ACH") debit entries and/or ACH credit entries to and from the Accounts, and (iv) endorsing on behalf of Customer, and otherwise negotiating, checks and other items payable to Customer; (d) incur overdrafts and other obligations in the Accounts at Bank in connection with any of the products, services, or activities authorized by these resolutions; and (e) invest Customer's funds on such terms and conditions as such Authorized Representative deems appropriate.

Customer is authorized to enter into any other arrangements, agreements and documents with respect to any of Bank's deposit and treasury management products and services, in such form and on such terms and conditions as may be agreed to by an Authorized Representative signing such agreements and documents.

Customer shall be bound to Bank by, and Bank may rely upon, any communication or act, including telephone communications, purporting to be done by any partner, employee or agent of Customer provided that Bank believes, in good faith, that the same is done by a person authorized to so act.

The authority hereby conferred is in addition to that conferred by any other certificate heretofore or hereafter delivered to Bank and shall continue in full force and effect until Bank shall have received notice in writing from Customer of the revocation hereof. Any such revocation shall be effective only as to actions which are taken by Customer pursuant to the certifications contained herein, subsequent to Bank's receipt of such notice. The authority hereby conferred shall be deemed retroactive, and any and all acts authorized herein which were performed prior to the execution of this certificate are hereby approved and ratified.

The undersigned further certify that the activities covered by the foregoing certifications constitute duly authorized activities of Customer; that said certifications are now in full force and effect; and that there is no provision in any document pursuant to which Customer is organized and/

[1] **Facsimile Signature/Logo.** *Customer authorizes the use of facsimile signatures/logos in connection with its agreements with and instructions to Bank if the facsimile/logo is provided on this form. Customer agrees its use of the facsimile/logo will be governed by Bank's Commercial Account Agreement.*

or which governs Customer's continued existence limiting the power of the undersigned to make the certifications set forth herein, and that the same are in conformity with the provisions of all such documents.

ACKNOWLEDGED & AGREED TO:

By/Signature: ______________________________

Printed Name: ______________________________

(this individual must be a duly appointed representative of the TIN of record)

Title (if applicable): ______________________________

Date: ______________________________

Tax Identification Number of Customer: ______________________________

(TIN of the Account holder as assigned by the IRS)

Public Funds Customers Only: Unless Customer otherwise specifically instructs Bank in writing, Bank will consider each of the Authorized Representatives listed above to be an "Official Custodian" as referenced in 12 C.F.R. 330.15 for the purposes of calculating Customer's deposit insurance coverage.

Commercial Depository Service Description

Treasury Management Services

Introduction

The Service Documentation contains the terms and conditions under which Wells Fargo Bank, N.A. ("Bank") provides you the services described below. "You," "your" or "yours" refer to the Bank customer identified on the Acceptance of Services that is signed when you enroll in Services ("Acceptance"). The terms "we," "us," or "our" refer to the Bank. Other capitalized terms used in this Service Description are defined in the Master Agreement or in the Glossary at the back of this Service Description.

The service ("Service") covered by this Service Description is:

- Commercial Depository
- SafeVantage®

The Service Documentation includes:

a. The Service Description (which contains terms and conditions applicable to the Service),
b. The *SafeVantage* Service Setup Form (the "*SafeVantage* Setup Form"),
c. The Acceptance (which indicates your acceptance of the Service Documentation),
d. The Master Agreement (which contains terms and conditions applicable to all services),
e. The Account Agreement governing your account that you use for the Service ("Account"),
f. The Product Enrollment Form ("Set-up Form") (which contains set-up information for the service in which you are enrolling), and
g. User Guides (which include Terms of Use, software, software licenses, price schedules, specifications, instructions, and notices).

The separate documents and individual provisions of the Service Documentation are intended to be read together as one agreement between you and us. This Service Description and the Master Agreement are posted at our *Commercial Electronic Office® (CEO®)* portal. If there is a conflict among the documents that are part of the Service Documentation, they will govern in the order listed above. Your use of a Service confirms your receipt of, and agreement to be bound by, this Service Description and all Service Documentation.

Commercial Depository Service

1. **Description of services.** With the Service, you may:
   a. Order Cash we prepared and make such Cash available to your Agent at our cash vault, and
   b. Deliver currency, coin, checks and other negotiable instruments to our cash vault or Night Depositories for processing.

2. **Cash orders from our cash vault.**
   a. **Cash Requests.** You may make a Cash Request of a Cash Shipment. The Cash Shipment will be made available to your Agent in Cash Bags at our cash vault. We are authorized to act upon any Cash Request we receive in accordance with this Service Description, and which we believe in good faith has been made by one of your Authorized Representatives. We will have no obligation to verify, and will not be liable for our failure to verify or investigate, any Cash Request.
   b. **Making Cash available to your Agent.** We are authorized to make Cash Shipments available to any person we in good faith believe to be your Agent. We will have no further responsibility, and you assume all risk of loss for Cash made available to any such person. We will make Cash Shipments available only at the locations, on days, and during the hours published by us from time to time. We reserve the right to suspend the Service at any time without notice.

c. **Your Authorized Representatives.** You will promptly certify to us the identity of each Authorized Representative. You will give prior written notice to us of any change in the authority of any Authorized Representative. We will be fully protected in relying on each such notification and on your obligation to promptly notify us of any change in the status of the Authorized Representative. We will have a reasonable period of time to act after receiving such notification.

d. **Security procedures.** For requests made in writing or by fax, operator-assisted telephone call or transmission, a Customer ID assigned by us is required. For *CEO* requests, you must have Log-On Credentials. For touch-tone/automatic response telephone requests, a Passcode is required. Operator limits may also be required. It is your responsibility to establish internal procedures that will minimize the risk of an unauthorized person gaining access to the Customer ID, Log-On Credentials and Passcode(s). Such internal procedures include without limitation requiring users to maintain such number(s) and code(s) in strict confidence. You will notify us immediately in the event a breach of security is suspected.

e. **Debit of Account.** On each Business Day that we make a Cash Shipment available to your Agent, we are authorized to debit your Account for the aggregate amount of the Cash Shipment. You will maintain collected balances in the Account sufficient at all times to fully cover any debit. We have no obligation to release a requested Cash Shipment or any portion thereof to your Agent unless there are sufficient collected funds in the Account to fully cover the amount of the Cash Shipment when it is to be made available to your Agent. If you fail to specify your Account to us, we may debit any account which you maintain with us for the amount of a requested Cash Shipment.

f. **Packing slip; differences in shipment amount.** A packing slip will be included with each Cash Shipment which states:

   i. The aggregate amount of the Cash Shipment,
   ii. The overall number of containers included in the Cash Shipment, and
   iii. The number of containers delivered to your Agent for transmittal to you.

   For each Cash Shipment we make available to your Agent, you will notify us immediately in writing of any difference between the amount specified on the packing slip for that Cash Shipment and the amount, as counted by you, of the Cash Shipment. In the event that the difference cannot be resolved, our count of the amount of the disputed Cash Shipment will be conclusive and binding on you.

3. **Cash vault processing.** The following procedures will govern delivery of Deposit Shipments to our cash vault locations and our processing of such Deposit Shipments:

   a. **Delivery by your Agent.** You will deliver Deposit Shipments in Deposit Bags to one of our cash vaults via your Agent. You are responsible for making all arrangements with your Agent for delivery of Deposit Shipments, and you assume all risk of loss while a Deposit Shipment is in the possession of your Agent. We may accept Deposit Shipments from any person we believe in good faith to be your Agent. The delivery of a Deposit Bag to us or our receipt of it on a manifest will not be deemed proof of our receipt of the contents listed on the deposit slip contained in the Deposit Bag or your records. We will have no responsibility for any Deposit Bag or its contents delivered to one of our cash vaults until we accept the Deposit Bag in accordance with our procedures and we count the contents of the Deposit Bag.

   b. **Delivery procedures.** When you deliver a Deposit Shipment to our cash vault, you agree you (and/or your Agent) will do the following:

      i. Deliver Deposit Bags only at the locations, on the days, and during the hours published by us from time to time,
      ii. Properly endorse all checks and other negotiable instruments included in a Deposit Shipment,
      iii. Use only Deposit Bags approved by us that are properly secured,
      iv. At the time of delivery, your Agent will provide us with a delivery manifest which specifies the number of Deposit Bags you included in the overall shipment delivered to us, as well as the contents of each Deposit Bag,

v. Obtain the signature of our employee who accepts delivery on that portion of the delivery manifest which your Agent retains, and
vi. Retain a copy of the receipt or other document covering each Deposit Bag you deliver to your Agent for at least one year from the date of delivery.

You agree you will only use Deposit Bags for the deposit of Items. You will not use Deposit Bags in any unauthorized manner or for any unlawful purpose. As to any property other than Items included in a Deposit Bag, we will not be deemed a bailee and will have no liability for any loss of or damage to such property.

c. **Cutoff Time; AccountDeposits.** If a Deposit Shipment is received at one of our cash vaults on a Business Day before the Cutoff Time for that cash vault, the total amount of the deposits in such Deposit Shipment will be credited on that Business Day to the Account specified on the deposit slip for that Deposit Shipment. If a Deposit Shipment is received at a cash vault on a Business Day after the Cutoff Time, the total amount of the deposits in that Deposit Shipment will be credited to the Account on the next succeeding Business Day. We will not deposit any Items received in any Deposit Shipment unless the account number of the Account into which the deposit is to be made is specified on the deposit slip for that Deposit Shipment.
d. **Processing of Deposit Shipments.** You authorize us to open each Deposit Bag, count the contents, credit the amount of Items to the Account with us indicated on the deposit slip contained in the Deposit Bag and process, all in accordance with our customary procedures. All deposits are subject to verification, and our count of the Items will be conclusively deemed to be correct and complete for all purposes. No relationship of debtor and creditor will arise between you and us until the count has been completed and the deposit credited to the Account. You acknowledge that you have had an opportunity to have our applicable count and verification procedures explained to your Authorized Representative and agree that the same will be deemed commercially reasonable.
e. **Adjustment procedures.** If the aggregate amount of the Items in any Deposit Shipment, as counted by us, is less than the amount reported on the deposit slip covering that Deposit Shipment, we will debit the Account specified on the deposit slip by such difference and report the difference to you. If that Account has an insufficient collected and available balance to cover the debit, we will debit any of your other accounts with us for the difference. You agree to promptly reimburse us for the difference (or any portion thereof) for which there are insufficient available balances in your accounts with us. If the aggregate amount of the Items in any Deposit Shipment, as counted by us, is more than that reported on the deposit slip covering the Deposit Shipment, we will credit the Account specified on the deposit slip for the difference and notify you.

4. **Night Depository delivery and processing.** The following procedures will govern Night Deposits, and our processing of Night Deposits:
   a. **Night Depositories; issuance of keys.** You may make Night Deposits to your Account by placing the Items to be deposited into a Night Bag and then placing the Night Bags in the Night Depository. Each of your offices listed on the Night Depository Set-up Form will receive one key to the Night Depository at a designated Branch. You will designate to us in writing the individuals to receive the key for each of your offices. We may require such individuals to sign a receipt for the keys they receive.

b. **Contents of Night Bags; deposit of Night Bags.** You agree that Night Bags will be used only for the deposit of Items, and will not be used in any unauthorized manner or for any unlawful purpose. If any property other than Items is included in a Night Bag, we will not be deemed a bailee and will have no liability for any loss of or damage to such property. Each Night Bag must contain one or more deposit slips which:
   i. Lists all the Items contained in that Night Bag and their total dollar amount, and
   ii. Identifies your Account to which the dollar amount of the deposit is to be credited.

   At the time each Night Bag is placed in a Night Depository you agree to securely close each Night Bag, place it completely in the Night Depository and securely lock the Night Depository.

c. **Processing of Night Deposits.** We may open each Night Bag and remove its contents without you or any of your representatives present. The contents of each Night Bag will be processed in accordance with our standard procedures. The Cutoff Time for deposits made through the Night Depository may be different from that for deposits made at the teller line. You understand and agree that the contents of a Night Bag will not be credited to the Account, nor will the relationship between you and us be that of a debtor to a creditor with respect to any Item in a Night Bag, until we have accepted the Item for deposit into the Account after counting all the Items in the Night Bag and calculating the total dollar amount of all such Items.

d. **Counting and adjustments.** If your records regarding the total dollar amount of the Items in any Night Bag differ from our calculation of the total dollar amount of the Items in the Night Bag, you have the burden of proving that your records show the correct amount in the Night Bag or our total will be accepted as final. If there is a difference between our total and your total for the amount of Items in a Night Bag (as shown on the deposit slip(s) in the Night Bag), we will send you a statement indicating the amount of the difference. In the event that the difference cannot be resolved, our count of the dollar amount will be conclusive and binding on you.

e. **Claims of lost or stolen Items.** You agree that you will have total responsibility for each Night Bag and its contents until the Night Bag has dropped completely into a Night Depository. You agree to notify us immediately if you determine that any Night Bag or any Item in a Night Bag has been lost or stolen while at one of our Branches. You will have the burden of proving the amount of any Item which you claim was lost or stolen while it was at a designated Branch and that disappearance of the Item occurred while it was at the designated Branch.

5. **Special instructions.** You may notify us in writing of any special instructions relating to cash orders or deposits of Items at our cash vault or Night Depositories. We may at our option accept or reject the instructions and so notify you. Even if accepted, we may stop complying with the instructions upon prior notice to you if we believe continued compliance would increase our costs or risks, interfere with our established or revised procedures, or diminish the efficiency of our operations. You will be solely liable for any loss attributable to increased risk resulting from a special instruction.

6. **Further assurances.** You agree to do all acts we may consider reasonably necessary or desirable to implement and carry out the intent of this Service Description. You agree to provide us with information we request regarding any Deposit Shipment, including any information necessary to file a Currency Transaction Report and to determine the source of any Cash or Items in a Deposit Shipment.

7. **Representations and warranties.** To be eligible to make Deposit Shipments at a cash vault or Night Depository, you represent and warrant to us at the time of the delivery of each Deposit Shipment that:
   a. **Deposits for own account.** You make Deposit Shipments for your sole account and do not directly or indirectly make any Deposit Shipments on behalf of any other party, unless you have previously disclosed such party to us and we have approved such party in writing, in our sole discretion.

b. **No deposits from outside the United States.** You do not make Deposit Shipments from any source known, or which upon reasonable inquiry would be known to you, to be outside the United States.
c. **No business as a foreign exchange house.** You do not conduct any business, whether in whole or any part, as a foreign exchange house including, without limitation, as a Casa de Cambio.

8. **Contaminated Cash.** You agree not to send contaminated or damaged Cash to our cash vaults unless you or our Agent has prepared such Cash in accordance with the Federal Reserve Banks' applicable specifications and procedures.

9. **Termination of Services.** We may immediately terminate this Service in whole or in part in the event of your breach of any representation or warranty in section 7 (Representations and warranties). Otherwise, we may terminate this Service upon sixty (60) days prior notice to you.

10. **Survival.** Sections 2(e), 2(f), 3(d), 3(e), 4(d), 4(e), 6 and 9 will survive termination of this Service.

SafeVantage® Service

1. **Description of Service.** We make the *SafeVantage* Service available to you in connection with the Commercial Depository Service described above in this Service Description. With the *SafeVantage* Service, we will provide provisional expedited credit to you for the Cash currency properly deposited into the Equipment's currency acceptors. Following our receipt of a Safe Report, we will provide provisional expedited credit to your Account in the total amount set forth in such Safe Report. Credits will only be applied on Business Days in accordance with the *SafeVantage* Setup Form. Currency and other Items inserted using the manual envelope drop of the Equipment will not receive provisional expedited credit, and will be processed and credited in accordance with the cash vault processing procedures for the Commercial Depository Service, as described above in this Service Description.

2. **Conditions to provision of our *SafeVantage* Service.** As conditions to our provision of the SafeVantage Service:
   a. You must enter into a Vendor Agreement,
   b. We must agree that the Equipment is suitable and compatible, in our sole discretion, for the *SafeVantage* Service, and
   c. You must agree to use the Equipment in accordance with the Vendor Agreement and as instructed by us as necessary from time to time in connection with the *SafeVantage* Service.

   You acknowledge that we are not providing the Equipment and have no obligation or liability with respect to the Equipment or any service related thereto other than the *SafeVantage* Service.

3. **Ownership of Cash.** You agree that Wells Fargo-Owned Cash is our Cash currency and will not at any time be your property or the property of any other person, including your Agent. No person, other than us and our Representatives, shall have any possessory or ownership rights to Wells Fargo-Owned Cash under Section 362 or Section 541 of the U.S. bankruptcy code. You shall take all actions necessary, and all additional commercially reasonable actions that we request to ensure and evidence that Wells Fargo-Owned Cash remains our sole and exclusive property. You agree that neither you nor your Agent will commingle Wells Fargo-Owned Cash with Cash currency owned by another financial institution or any other person.

4. **Access to Cash.** You agree that physical access to Wells Fargo-Owned Cash will be restricted to:
   a. Your Agent solely for the purpose of performing services in accordance with the Vendor Agreement, and
   b. If applicable, a maintenance service provider solely for the purposes of providing routine maintenance services or repairs on the Equipment.

   You agree that we will, at all times, have control and immediate access to all Wells Fargo-Owned Cash by having : (1) the ability to recall any of the Wells Fargo-Owned Cash the same Business Day as the day of the request; and (2) unfettered and immediate access to the Wells Fargo-Owned Cash upon your financial distress as determined in our sole discretion. You agree to fully cooperate with us and our representatives in connection with our access to Wells Fargo-Owned Cash, including instructing your Agent to deliver Wells Fargo-Owned Cash to one of our cash vault locations if and as requested by us. You release us and our representatives (including without limitation any armored carrier engaged by us) from any and all Losses arising out of or related to our representative acting on our request or direction to access Wells Fargo-Owned Cash on our behalf and/or to deliver the Wells Fargo-Owned Cash to us, except to the extent any Losses arise from the gross negligence or willful misconduct of our representative. Our representative shall be a third party beneficiary of the release described above in this section.

5. **Risk of loss.** You are responsible for all risk of loss and liability for Wells Fargo-Owned Cash that is not at one of our cash vault locations, including but not limited to loss, damage or contamination of Wells Fargo-Owned Cash, theft or destruction of Wells Fargo-Owned Cash, malfunction of the Equipment or you, your Agent's or any of your representative's negligence or willful misconduct.

6. **Adjustments.** If the total amount of the Cash currency processed and verified for a Safe Report is less than the amount reported for such Safe Report, we may debit the Account without notice to you. If the Account has insufficient funds to cover the debit,we may debit any of your other accounts with us for the difference, and you agree to promptly reimburse us for the difference (or any portion thereof) upon our demand, without setoff or counterclaim. If the total amount of the Cash currency processed and verified for a Safe Report is more than the amount reported on such Safe Report, we will credit the Account for the difference without notice to you. If your Vendor Agreement provides any guarantees or other protection for the contents of the Equipment including Cash currency deposited through the currency acceptors, we reserve the right to require you to file a claim with such vendor before making any claim against us.

7. **Reimbursement.** Unless it results solely from our negligence or willful misconduct, you will reimburse us for Losses we incur from (a) providing the SafeVantage Service to you in accordance with this Service Description, or (b) an action you ask us to take in connection with the SafeVantage Service and this Service Description. You authorize us to recover any such amount by debit to your accounts with us or our affiliates.

8. **Contaminated Cash.** You agree not to send contaminated or damaged Cash to our cash vaults unless you or our Agent has prepared such Cash in accordance with the Federal Reserve Banks' applicable specifications and procedures.

9. **Survival.** Sections 3 - 7 will survive the termination of the SafeVantage Service.

10. **Notice.** You agree to provide us immediate notice of any default or breach of the Vendor Agreement by you or the vendor or termination of the Vendor Agreement.

11. **Termination.** Either party may terminate the *SafeVantage* Service in accordance with the terms of the Master Agreement. In addition, if the Vendor Agreement is terminated for any reason, the *SafeVantage* Service will automatically terminate, unless otherwise agreed by you and us.

Glossary

Account Agreement means the applicable account agreement governing your Account.

Agent means an armored car service approved by us or, in Alaska only, the U.S. Postal Service, in each case, acting as your agent.

Applicable Law is defined in section 3 of the Master Agreement.

Authorized Representative means (a) any person you authorize us to communicate with regarding authorization codes or other security procedures for this Service; (b) your Agent authorized to accept delivery of Cash; and (c) where applicable, the persons who are authorized users of this Service.

Branch means one or more of our branch locations listed on our Night Depository Set-up Form.

Business Day means every day except Saturday, Sunday and federal holidays.

Cash means U.S. denominated currency and coin.

Cash Bag means bags or other containers into which Cash Shipments are placed.

Cash Request means a request you make to us in writing, telephonically by operator-assisted call or by touch tone/automated response, or electronically via transmission, fax, or our *Commercial Electronic Office® (CEO®)* portal for a Cash Shipment in the amount you specify.

Cash Shipment means shipments of Cash in Cash Bags in accordance with this Service Description.

Currency Transaction Report is defined in the regulations implementing the Currency and Foreign Transactions Reporting Act of 1970, as amended from time to time.

Customer ID is a unique identifier given to you by us for each of your locations enrolled in the Service.

Cutoff Time means our cutoff time each Business Day that we separately disclose to you for the Service.

Deposit Bag means bags or other containers into which Deposit Shipments are placed.

Deposit Shipment means your delivery of Items in accordance with this Service Description.

Equipment means certain units of safes provided by vendors, in each case, acceptable to us.

Items mean, collectively, Cash, checks and other negotiable instruments properly endorsed by you.

Losses means all liabilities, losses, damages, claims, obligations, demands, charges, costs, or expenses (including reasonable fees, disbursements of legal counsel and court fees).

Master Agreement means the Master Agreement for Treasury Management Services.

Night Bag means disposable bags used for Night Deposits.

Night Deposit means your delivery of Items to our Night Depositories in accordance with this Service Description.

Night Depository means the night depository receptacle at one of our Branches.

Night Depository Set-up Form means the form required to be completed to receive key(s) to access the Night Depository.

Passcode means a code established to access our Telephony Interface Unit via the telephone number we provide to you.

Safe Report means a transmission report from any unit of Equipment stating the amount of Cash currency inserted into the Equipment's currency acceptors.

Vendor Agreement means a valid and binding agreement with a vendor, acceptable to us, for the provision of the Equipment.

Wells Fargo-Owned Cash means all Cash currency located in the Equipment and the amount of Cash currency removed from the Equipment for delivery to us by your Agent, in each case, for which we have given you provisional expedited credit.

Check Collections Service Description

Treasury Management Services

November 8, 2019

Table of contents

Introduction

The Service Documentation contains the terms and conditions governing each service ("Service") that Wells Fargo Bank, N.A. ("Bank") provides to Company under this Service Description. "Company" is the Bank customer identified on the Acceptance of Services that is signed when you enroll in Services ("Acceptance").

The Service Documentation includes:

a. The Service Description (which contains terms and conditions applicable to the specific Service),
b. The Acceptance (which indicates Company's acceptance of the Service Documentation),
c. The Master Agreement for Treasury Management Services ("Master Agreement") (which contains terms and conditions applicable to all Services),
d. The account agreement governing the account(s) (each, an "Account") Company uses in connection with the Service,
e. The Product Enrollment Form (which contains set-up information for each Service in which Company is enrolling), and
f. User Guides (which include Terms of Use, software, software licenses, price schedules, specifications, instructions, and notices).

This Service Description and the Master Agreement are posted at Bank's *Commercial Electronic Office® (CEO®)* portal. If there is a conflict among the documents comprising the Service Documentation, they will govern in the order listed above. Company's use of the Service confirms Company's receipt of an agreement to be bound by the applicable Service Documentation. If an enhancement to the Service or other change requires a change to this Service Description, Bank will post an updated Service Description on the *CEO®* portal. When required by applicable law, Bank will notify Company of the update. If Company continues to use the Service after the update takes effect, Company will be deemed to have agreed to the update.

Services

Returned Item

1. **Description of Bank's Returned Items Services.** A "Returned Item" is an Item that is returned to Bank unpaid after Company deposits it to an account at Bank (or another financial institution) that Company has enrolled in one or more of Bank's Returned Item Services (each, "Account"). Bank's Returned Item Services include:
   a. Special Instructions regarding the handling of Company's Returned Items (section 3);
   b. Returned Item Decisioning through Bank's *CEO®* portal (section 4);
   c. Electronic Returns through which Bank submits Company's Returned Items as RCK entries in accordance with the National Automated Clearing House Association ("NACHA") Operating Rules and Guidelines as supplemented by any applicable operating rules of any automated clearing house of which Bank is a member, each as may be amended from time to time (together, "NACHA Rules") (sections 5-10);
   d. Centralized Return Processing through which Bank processes Company's Returned Items as Company's centralized return processor (sections 11-14);
   e. Returned Item Forwarding through which Bank forwards Returned Items Bank receives on Company's Accounts at Bank to Company's centralized returns processor (section 16); and
   f. Returned Item Service Fee Recovery through which Bank issues MICR drafts to recover service fees Company assesses on its customers in connection with Returned Items (section 17).

2. **Rules applicable to Bank's Returned Item Services.** Bank will provide the Services to Company in accordance with:
   a. The Service Documentation including without limitation the User Guide that Bank makes available to Company at www.wellsfargo.com; and
   b. State and federal laws and regulations and clearinghouse rules applicable to a Returned Item which may include Federal Reserve Board Regulation CC Subpart C relating to the collection of checks ("Reg CC"), Federal Reserve Board Regulation E ("Reg E") and, in the case of Bank's Electronic Returns Service, when Bank originates an RCK entry on Company's behalf, the NACHA Rules.
3. **Special Instructions Service.** When Company enrolls in Bank's Special Instructions Service, Bank will process Company's Returned Items in accordance with the Special Instructions Company communicates to Bank from time to time.
4. **Returned Item Decisioning Service.** When Company enrolls in Bank's Returned Item Decisioning Service, Bank will use the *CEO®* portal to notify Company of Returned Items Bank receives prior to the cut off time Bank separately discloses to Company each Business Day. Each Returned Item will be listed by the default disposition (redeposit or chargeback) Company separately selects. Prior to the daily deadline Bank separately discloses, Company will review the Returned Items and accept or change the disposition of each Returned Item Bank identifies as eligible for decisioning through the *CEO®* portal. Bank will process each Returned Item not accepted or changed by this deadline according to Company's default disposition on file with Bank.
5. **Electronic Returns Service.** When Company enrolls in Bank's Electronic Returns Service, Bank submits RCK entries for Company's Returned Items that Bank, using a data-based decisioning method, has determined qualify as RCK entries under the NACHA Rules. The financial institution on which a Returned Item was drawn may reject any RCK entry without liability to Bank. The NACHA Rules require the originator of an RCK entry to make certain representations and warranties with respect to the original item for which the RCK entry is initiated. If Bank incurs any liability for breaching any of these warranties, Bank will look to Company to reimburse Bank.
6. **Authorization.** Company represents and warrants to Bank that the issuer of any Returned Item has authorized Company to represent the Returned Item electronically and that such authorization is in all respects legally sufficient under applicable law.
7. **Rejected entries.** In the event any RCK entry submitted on behalf of Company is rejected by the ACH for any reason and sufficient data is available to Bank to permit it to repair the RCK entry, Bank will make the repair. Company will provide to Bank on request all information necessary to repair any RCK entry or file of RCK entries.
8. **Representment/returned check fees.** Company acknowledges that the NACHA Rules do not allow collection of fees associated with a represented item by means of a single RCK entry in the amount of both the represented item and associated fees. Company represents and warrants that each item it deposits to its Account at Bank or another financial institution will only be for the amount of the item, and will not include any amount for a representment/returned item fee or similar fee.
9. **Provisional credit.** Any credit to Company's Account in connection with an RCK entry is provisional until such time as settlement for the RCK entry becomes final. In the event any RCK entry is returned or an adjustment memorandum is received with respect to the RCK entry, Company will immediately deposit with Bank sufficient good and collected funds to cover the returned RCK entry or adjustment memorandum. Company authorizes Bank to debit any of Company's account(s) for the amount of any such returned RCK entry or adjustment memorandum.

10. **Reimbursement.** Unless it results solely from Bank's negligence or intentional misconduct, Company will indemnify and reimburse Bank from and against any and all Losses and Liabilities that Bank incurs either directly or indirectly, in connection with (a) the breach of any warranty Bank makes under the NACHA Rules or Company makes in the Service Description, or (b) any action Company asks Bank to take in connection with Bank's Electronic Returns Service.
11. **Centralized Check Return Service.** When Company enrolls in Bank's Centralized Check Return Service, Bank processes Returned Items from Company's Account(s) at Bank and financial institution(s) other than Bank with which Company arranges for Bank to provide the Service. Company will place a special endorsement on the back of each check or other item it intends to deposit with a financial institution other than Bank that, upon dishonor, it wishes to have returned to Company's Centralized Return Account at Bank. This endorsement is the "centralized returns endorsement". It will include all of the information required by 12 CFR §229.35 (as amended from time to time) to be included in an endorsement made by a bank of first deposit and, to the extent possible, conform to the form of such an endorsement. The centralized returns endorsement will be designed to be more prominent than the endorsement of the actual depositary bank and thereby increase the likelihood that the paying bank or other payor and any subsequent returning bank will identify Bank as Bank of first deposit. Bank, upon request, will supply Company with endorsement stamps or examples of endorsement stamps that satisfy the requirements of this section.

12. **Relation of multiple endorsements.** Company understands (a) the centralized returns endorsement is in addition to, and not in place of, the endorsement placed on an Item by the depositary bank; (b) the centralized returns endorsement may or may not obscure, in whole or in part, the endorsement placed on the Item by the depositary bank; and (c) the endorsement placed on each Deposited Item by the depositary bank may or may not obscure, in whole or in part, the centralized returns endorsement.
13. **Delayed returns; lost instruments; liability; indemnification.** With respect to where to return checks, 12 CFR §§229.30(g) and 229.31(g), respectively, provide that paying and returning banks may rely on any routing number that appears on a returned check as that of the bank of first deposit. This means a Returned Item may be returned to either Bank or to the actual depositary bank. It also means there may be a significant delay in Bank's receipt of a Returned Item. Company, not Bank, is solely responsible for any and all claims, damages, losses, and expenses of any kind including without limitation attorney's fees and costs (collectively, "Losses and Liabilities") that may arise, either directly or indirectly, in connection with any delay in the return of any Returned Item. Company agrees to indemnify and hold Bank, its directors, officers, employees and agents (collectively, "Indemnified Persons") harmless from all Losses and Liabilities arising out of or in any way connected with acts or omissions by Bank or any such indemnified party in connection with the delay in the return of any Item deposited to Company’s account at another financial institution .
14. **Bank's right to chargeback Returned Items.** Bank may chargeback a Returned Item to any account Company owns in whole or in part at Bank or any affiliate of Bank without regard to whether the Returned Item was initially deposited to Company's Account at Bank or at another financial institution.
15. **Returned Item Forwarding.** When Company enrolls in Bank's Returned Item Forwarding Service, Company will place its centralized returns endorsement identifying Company's centralized return processor on the back of each check or other item it deposits to its Account(s) at Bank that, upon dishonor and subsequent receipt by Bank, it wishes Bank to forward to Company's Centralized Return processor. Bank will forward Company's Returned Items that Bank receives to Company's centralized return processor. Company acknowledges the possibility of a delay in its centralized return processor's receipt of a Returned Item that is first received by Bank and agrees Section 13 of this Service Description including Company's agreement to indemnify Indemnified Parties applies to Losses and Liabilities of any Indemnified Party in connection with Bank's Returned Item Forwarding Service. ited to Company's Account at Bank or at another financial institution.
16. **Returned Item Service Fee Recovery.** When Company enrolls in Bank's Returned Item Service Fee Recovery Service, Bank issues a MICR draft on the account of the issuer of a Returned Item in the amount to which Company and Bank separately agree will be Company’s Returned Item service fee. Company represents and warrants to Bank that Company has properly disclosed to all its customers that it assesses a service fee for checks returned unpaid for any reason.

17. **Company's agreement to indemnify Bank.** Company will indemnify, defend, and save harmless the Indemnified Persons from and against all Losses and Liabilities awarded against or incurred or suffered by Indemnified Persons arising directly or indirectly from or related to:
    a. Any material breach in a representation, warranty, covenant, or obligation of Company contained in the Service Documentation;
    b. The violation of any applicable law, statute, or regulation or of the Rules Applicable to Bank's Returned Items Services including without limitation Reg CC, Reg E and the NACHA Rules in the performance of Company's obligations under the Service Documentation;
    c. A breach of any warranty Bank makes under the NACHA Rules in connection with Bank's Electronic Returns Service under this Service Description ; and
    d. Any negligent or intentional act or omission by Company in the performance of its obligations under the Service Documentation.
18. **Survival.** Sections 5, 6, 8, 13, 15 and 17 of this Service Description will survive termination of the Service.

Wells Fargo Remote Deposit Capture and Image Delivery

1. **Description of service.** The Service enables Company to create or process Electronic Checks from eligible paper checks and transmit the Electronic Checks in an electronic file ("Electronic File") to Bank for review and processing for credit to Company's deposit account at Bank ("Account") in accordance with this Service Documentation. An "Electronic Check" means an electronic image of, and electronic information derived from, an eligible U.S. Dollar paper item or check that conforms to ANSI X9.100-187. Bank's Reference Guide for the Service lists eligible U.S. Dollar checks (and ineligible checks). For each Electronic Check Bank determines is eligible for processing, Bank will:
    a. Create a substitute check conforming to ANSI X9.100-140 that Bank will present directly or indirectly to the bank (a) on which the original paper check to which the Electronic Check relates is drawn, or (b) at or through which the original paper check is payable (each, the "Paying Bank");
    b. Include the Electronic Check in an electronic file for presentment directly or indirectly to the Paying Bank; or
    c. Post or present any Electronic Check for which Bank is the Paying Bank.
2. **Creating or processing Electronic Checks and transmitting Company's Electronic File to Bank.** To create or process Electronic Checks and transmit Company's Electronic File to Bank, Company will use either (a) Bank provided software and Bank provided, certified or approved hardware, or (b) Company's software and hardware or third-party provided software and hardware, provided each generates Electronic Checks and Electronic Files that meet Bank's then current standards and specifications. Any third-party processor Company uses to prepare and/or transmit Company's Electronic File is Company's agent, and Company will be responsible for ensuring its agent complies with Company's responsibilities under this Service Description. In particular, each Electronic File Company's agent transmits to Bank will include only Electronic Checks payable or endorsed to Company, unless Bank expressly agrees to permit Company's agent to include Electronic Checks payable to customers of Company or Bank.
3. **Processing Company's Electronic File.** Bank will review each Electronic Check and process the Electronic Checks Bank determines are eligible for processing on the Business Day Company transmits Company's Electronic File to Bank, if Bank receives Company's Electronic File before the processing deadline Bank separately discloses to Company ("Cut-Off Time") on that Business Day and on the next Business Day if Company transmits Company's Electronic File to Bank after Bank's Cut-Off Time. "Business Day" is every day except Saturday, Sunday and any federal holiday.

4. **Exception Checks.** Each Business Day on which Bank processes Company's Electronic File, Bank may, without liability to Company, reject Electronic Checks Bank determines are ineligible for the Service (each, an "Exception Check"). "Exception Check" includes without limitation an Electronic Check that (a) is illegible or contains MICR data that is not machine-readable, (b) was previously processed as an Electronic Check, (c) is drawn on a bank located outside the United States and is not payable at or through a bank located within the United States, (d) fails to conform to ANSI X9.100-187, or (e) any Electronic Check other than one described in (a), (b), (c), or (d) of this section 4 that applicable law prohibits Bank from accepting through a remote deposit capture platform. Bank will notify Company of each Exception Check through Bank's Commercial Electronic Office® service or other communication channel at Bank's discretion. Company will deposit an Exception Check to Company's Account only by depositing the original Paper Check to which the Exception Check relates or as otherwise agreed by Bank and Company. Even if Bank does not identify an Exception Check when Bank processes the Electronic File that includes the Exception Check, the substitute check or purported substitute check Bank creates from the Electronic Check may be returned to Bank because, among other reasons, the Paying Bank determines it is illegible or missing an image. Bank's failure to identify an Exception Check will not limit Company's obligations to Bank under section 8.
5. **Deposits to Company's Account.** Bank will be deemed to have accepted each Electronic Check for deposit to Company's Account (other than any Exception Check) (a) on the Business Day Bank processes the Electronic Check (b) at the Bank office where Company's Account is maintained. Funds from these Electronic Checks will be made available in accordance with Bank's Funds Availability Policy applicable to Company's Account and will be deemed to be collected in accordance with Bank's Electronic Deposit Collected Funds Schedule which Bank will provide to Company upon request and may amend from time to time. If an Electronic Check or substitute check is dishonored by a Paying Bank, Company acknowledges and agrees that Paying Bank may create and return to Company or its customers a return substitute check conforming to ANSI X9.100-140 in lieu of the originally presented Electronic Check or substitute check. Company acknowledges and agrees that if Bank receives a notice of nonpayment from Paying Bank with respect to an Electronic Check or substitute check presented for payment, Bank has no obligation to provide this notice to Company or its customers.
6. **Third-party processors.**
    a. **General.** This section contains additional terms applicable when Company is a third-party processor. Company is a "third-party processor" when it uses the Service either to (a) create and process an Electronic Check on behalf of a customer or (b) process an Electronic Check one of its customers has created and transmitted to Company.
    b. **Prerequisites for acting as a third-party processor.** Prior to acting as a third-party processor with respect to any customer, Company will conduct due diligence appropriate to the type of customer (consumer or business). As part of Company's due diligence, at time a customer initially opens an account with Company, Company will obtain the customer's name, Taxpayer Identification Number, and address. In addition, Company will fulfill obligations under applicable law with respect to (a) establishing and maintaining a Customer Identification Program and an Anti-Money Laundering Program, (b) establishing and maintaining written procedures reasonably designed to identify and verify beneficial owners of legal entity customers and to include such procedures in its Anti-Money Laundering Program and (c) suspicious activity monitoring and reporting. Company will also enter into an agreement with each of its customers which includes (i) provisions paralleling those in this Service Description relating to creating Electronic Checks and maintaining the security of original Paper Checks; (ii) warranties paralleling each of the warranties Company makes to Bank in this Service Description; (iii) an acknowledgement that Bank may at any time refuse to process Electronic Checks for that customer; and (iv) if the customer is a business entity, an obligation that customer, upon request by Company, provide Company the information Company requires to enable Company to understand the nature of the customer's business.

c. **Risk parameters; ongoing monitoring.** For each customer for which Company acts as a third-party processor, Company will, in accordance with reasonable commercial standards, monitor the customer's deposits for suspicious activity including out-of-pattern, duplicate and suspicious Electronic Checks on an ongoing basis and take appropriate actions with respect to the customer's account with Company, up to and including refusing to process Electronic Checks for the customer and/or preventing the customer from transacting on its account(s) with Company. Bank will establish and maintain confidential internal risk parameters for Company's Electronic File but Company is solely responsible for monitoring its customer's Electronic Checks.

7. **Company's representations and warranties.** Company represents and warrants to Bank Company will:

   a. Use the Service only for eligible paper checks payable to or endorsed for deposit by Company or its customers (unless Bank expressly agrees otherwise);
   b. Transmit to Bank only Electronic Checks suitable for processing including without limitation legible Electronic Checks containing machine-readable MICR data;
   c. Not transmit to Bank any Electronic Check that duplicates an Electronic Check previously transmitted to Bank or that did not originate as an eligible paper check;
   d. Maintain control over and sole responsibility for secure retention and destruction of each original eligible paper check for which Company or one of Company's customers has created an Electronic Check (including the security and integrity of nonpublic personal information appearing on the original paper check throughout the transmission flow and while in storage) and properly secure all hardware Company uses in connection with the Service at all times;
   e. Not transmit to Bank, deposit to Company's Account, or otherwise negotiate any original eligible paper check with respect to which Company has transmitted an Electronic Check to Bank, unless Bank has notified Company that the Electronic Check is an Exception Check;
   f. If Company uses an agent to create Electronic Items and/or transmit Company's Electronic File to Bank, Company will ensure its agent includes only Electronic Check payable to Company in an Electronic File, unless Bank expressly agrees to permit the agent to include Electronic Check payable to multiple customers of Bank; an
   g. If Company is a third-party processor as set forth in section 6 of this Service Description, comply with section 6 of this Service Description.

8. **Company's agreement to indemnify Bank.** Company will indemnify, defend, and save harmless Bank, its parent company, and its affiliates and each of their respective directors, officers, employees, and agents (collectively in this section 8, "Indemnitees") from and against all liabilities, losses, damages, claims, obligations, demands, charges, costs, or expenses (including reasonable fees and disbursements of legal counsel and accountants) awarded against or incurred or suffered (collectively, "Losses and Liabilities") by Indemnitees arising directly or indirectly from or related to:

   a. Any negligent or intentional act or omission by Company in the performance of its obligations under this Service Description including without limitation failing to maintain control over and sole responsibility for secure retention and destruction of each original paper check for which Company has created an Electronic Check (including the security and integrity of nonpublic personal information appearing on the original paper item throughout the transmission flow and while in storage), in which event Losses and Liabilities will include without limitation consequential damages;
   b. Any material breach in a representation, warranty, covenant, or obligation of Company contained in this Service Description;
   c. Bank acting as a "reconverting bank" under the Check Clearing for the 21st Century Act through the creation of "substitute checks" or purported substitute checks using an Electronic Check, an Exception Check or an Electronic File, in which event Losses and Liabilities will include without limitation consequential damages; and
   d. Bank posting or presenting an Electronic Check for which Bank is Paying Bank or presenting an Electronic Check to the Paying Bank for payment.

e. Company will further indemnify, defend, and save harmless Indemnitees from and against all Losses and Liabilities by Indemnitees arising directly or indirectly from or related to Regulation CC (12 CFR Part 229) or Regulation J (12 CFR Part 210) as follows:

   i. Bank warrants to a warrantee that (i) the electronic image of a check accurately represents all of information on the front and back of the original check as of the time that the original check was truncated and the electronic information includes an accurate record of all MICR line information required for a substitute check and the amount of the check ("Image Quality Warranty") and (ii) the warrantee will not receive a presentment of or otherwise be charged for an Electronic Check, an Electronic Returned Check, the original check, a substitute check, or a paper or electronic representation of a substitute check, such that the warrantee will be asked to make payment based on a check it has already paid ("No Double Debit Warranty"). In the case of transfers for collection or payment, Bank makes the Image Quality Warranty and the No Double Debit Warranty to the transferee bank, any subsequent collecting bank, the paying bank, and the drawer. In the case of transfers for return, Bank makes the Image Quality Warranty and the No Double Debit Warranty to the transferee returning bank, any subsequent returning bank, the depository bank, and the owner. If any Indemnitee suffers any Losses or Liabilities arising directly or indirectly from or related to a breach of any of these warranties, Company will indemnify the Indemnitee and not hold it responsible or liable.
   ii. Through Bank's providing the Service to Company, Bank is required to indemnify a depository bank that accepts the original paper check from which an Electronic Check is created for losses incurred by that depository bank if the loss is due to the check having already been paid. If any Indemnitee suffers any Losses or Liabilities arising directly or indirectly from or related to such depository bank indemnity obligation, Company will indemnify Indemnitee and not hold it responsible or liable.
   iii. If Bank transfers or presents an "electronically created item" and receive settlement or other consideration for it, Bank is required to indemnify each transferee bank, any subsequent collecting bank, the paying bank, and any subsequent returning bank against losses that result from the fact that (i) the electronic image or electronic information is not derived from a paper check; (ii) the person on whose account the electronically created item is drawn did not authorize the issuance of the item or to the payee stated on the item; or (iii) a person receives a transfer or presentment, or return of, or otherwise is charged for an electronically created item such that the person is asked to make payment based on an item or check it has paid. If any Indemnitee suffers any Losses or Liabilities arising directly or indirectly from or related to such electronically created item indemnity obligation, Company will indemnify Indemnitee and not hold it responsible or liable.

9. **Termination.** In addition to its rights to discontinue providing Services under the Master Agreement, Bank may discontinue providing the Service to Company immediately upon notice if Bank determines in its sole discretion that Company has breached any of Company's obligations under sections 7 or 8 of this Service Description.

10. **Additional controls on Company.**

   a. **General.** In FIL-4-2009, Risk Management of Remote Deposit Capture ("RDC") Guidelines, the FFIEC sets forth guidelines for agreements between a financial institution and its RDC customers. In accordance with these guidelines, Bank has the authority upon reasonable prior notice to Company to (a) mandate specific internal controls at Company's locations, (b) periodically audit or require audits of Company's RDC operations including Company's IT infrastructure at Company's expense, and (c) request additional information about Company.

   b. **Company's Internal Controls.** Company will establish internal controls related to Company's RDC operations. Upon reasonable request, Company will provide Bank with information about its internal controls and will work in good faith with Bank to resolve any concerns that Bank identifies with respect to such internal controls.

c. **Company's Consumer Complaints.** Bank may upon reasonable prior notice to Company request information about:

   i. Company's procedures for handling consumer complaints relating to Company's RDC product ("consumer complaints"),

   ii. The number of consumer complaints Company received in the prior calendar quarter, and

   iii. The then current status of each consumer complaint.

11. **Survival.** Sections 7 and 8 of this Service Description will survive termination of the Service.

Electronic Receivables Service Description

Treasury Management Services

Introduction

The Service Documentation contains the terms and conditions under which Wells Fargo Bank, N.A. ("Bank") provides you the services described below. "You," "your" or "yours" refer to the Bank customer identified on the Acceptance of Services that is signed when you enroll in Services ("Acceptance"). The terms "we," "us," or "our" refer to the Bank. Other capitalized terms used in this Service Description are defined in the Master Agreement or in the Glossary at the back of this Service Description.

The services (each a "Service") covered by this Service Description are:
- E-Bill Express Service
- E-Box Service
- Receivables Manager Service

The Service Documentation includes:
a. The Service Description (which contains terms and conditions applicable to the Service),
b. The Acceptance (which indicates your acceptance of the Service Documentation),
c. The Master Agreement (which contains terms and conditions applicable to all services),
d. The Account Agreement governing your account that you use for the Service ("Account"),
e. The Product Enrollment Form ("Set-up Form") (which contains set-up information for the service in which you are enrolling), and
f. User Guides (which include Terms of Use, software, software licenses, price schedules, specifications, instructions, and notices).

The separate documents and individual provisions of the Service Documentation are intended to be read together as one agreement between you and us. This Service Description and the Master Agreement are posted at our *Commercial Electronic Office® (CEO®)* portal. If there is a conflict among the documents that are part of the Service Documentation, they will govern in the order listed above. Your use of a Service confirms your receipt of, and agreement to be bound by, this Service Description and all Service Documentation.

E-Bill Express Service

1. **Description of services.** With this Service:
   a. You can make electronic bills available to your Customers through the Website,
   b. Customers make payments to you through the Website and other Payment Channels (see section 2) and using the Payment Methods (see section 3) offered in connection with the Service,
   c. We credit the Customer payments to your Account, and
   d. We offer electronic reporting options relating to your bills and your Customers' payments received through the Service (see section 4).

   The specific features for the Service we will provide you, are detailed in the SOW to which you and us agree to separately.

2. **Payment Channels.** The "Payment Channels" we offer to you are detailed in our User Guide for the Service and include the Website, telephone and an optional Interactive Voice Response (IVR) Payment Channel.
   a. We maintain the Website through which Customers may make payments to you.
   b. With the telephone Payment Channel, a Customer arranges for a payment by calling you at a telephone number you maintain. For all Customer payments made through the telephone Payment Channel, you are required to enter information about the payment at the administrative portal for the Service.
   c. With the IVR Payment Channel, we maintain a specific toll-free number for you and custom to you branded greeting and prompts.

3. **Payment Methods.** The "Payment Methods" you may make available to Customers are detailed in our User Guide for the Service and include debit and credit cards and electronic payments through ACH.
   a. If you will accept debit and credit card payments, the Service Documentation includes the Merchant Payment Solutions Service Description.
   b. For ACH payments, the Service Documentation includes the ACH and Related Services Service Description. In the event of a conflict, this Service Description will control over the ACH and Related Services Service Description.
   c. We may withdraw a Payment Method available for the Service at any time.

4. **Information reporting.** We make information and reporting about your bills and Customers' payments available to you through the administrative portal on the Website or automated transmission file.

5. **Verification.** We will not verify the accuracy of your bills or your Customers' payment amounts made through any Payment Channel.

6. **Your privacy policy.** You will provide us with any URL(s) you host for our use at the Website. The URLs you provide will direct Customers to your then-current privacy policy and terms of use. You will maintain current versions of your privacy policy and terms of use.

7. **Licensed Marks.** You grant to us a license to use the service marks, trademarks and or logos listed on the SOW (each, a "Licensed Mark") on the Website. We will not modify a Licensed Mark without your prior written consent. The term of this trademark license will be the same as the term set forth in the Master Agreement, unless either party provides written termination in accordance with this Section 4 of the Master Agreement. Either party may terminate this license at any time, with or without cause, upon notice to the other. Upon termination or expiration of this license, we will discontinue use of all Licensed Marks.

8. **Representations and warranties.** You represent and warrant to us that:
   a. You will issue each bill only for products or services actually provided to the billed Customer and will retain each bill for a minimum of one year from the date of the bill,
   b. The billed amount will be the actual amount charged to the billed Customer for such products or services,
   c. You are the sole owner of each URL you provide to us pursuant to Section 7 and each Licensed Mark,
   d. You will maintain current versions of your privacy policy and terms of use at the URLs provided to us, and
   e. You have received a copy of Federal Reserve Board Regulation E and will comply with it at all times.

9. **Survival.** Section 8 will survive termination of the Service.

E-Box Service

1. **Description of service.** With this Service:
   a. We provide you with information about payments your Customers make to you ("Remittance Information") through online bill payment services and other payment channels described in our User Guide for the Service,
   b. We process Customer payments for credit to your Account, and
   c. We provide information reporting ("Remittance File") on your Payments through our separate Receivables Manager Service. The specific processing services we will provide to you are detailed in the BRD to which you and us agree to separately.

2. **Research and decisioning.** We will make available to you a decisioning tool where you can view all payments, make decisions on exception items, perform payment research, and return payments.

3. **Unfunded payments.** We will process Payments for which we have received Remittance Information but not funding in accordance with the BRD.

4. **Account credit.** Each Business Day, we will credit your Account for Funded Payments through a consolidated ACH credit Entry. We originate each credit Entry in accordance with the ACH Rules.

5. **Service requirement.** In order to enroll in the Service, you will also have to enroll in our Receivables Manager Service.

Receivables Manager Service

1. **Description of service.** With this Service, you may receive consolidated electronic files and/or human readable documents containing information (each, a "File") regarding credits and/or debits to your Account(s) and associated Remittance Information.

2. **User Guide.** The User Guide provides details about the following:
   a. The types of payments for which we provide the Service,
   b. The options we offer for formatting Files,
   c. The secure transmission platforms we offer to deliver Files to you,
   d. The schedule we follow in providing the Service, and
   e. Our Service level goals.

3. **Advice Matching Service.** If you enroll in our Advice Matching Service, we will accept an email or File containing Remittance Information from your payer and attempt to match the information to payments the payer makes separately by ACH, wire transfer, or check, provided the payer does the following:
   a. Sends the remittance Information to us in advance of the payment information being sent to you in the File, and
   b. Includes information we can use to identify the payer and match the Remittance Information and the associated payment based upon criteria you establish.

   You have the ability to manually match any payments we are unable to match automatically using the Receivables Manager application on *CEO*. You may also use this application to set-up payer information to automatically match future payments.

4. **Remittance Repair Service.** If you enroll in our Remittance Repair Service, we will automatically reformat freeform Remittance Information. If we are unable to automatically repair the format, you can manually repair remittance information using the Receivables Manager application on *CEO*. Optionally, you can save the repair instructions as rules to apply to future payments from the payer.

5. **Your receipt of Files; acknowledgments.** We will not monitor Files transmitted to you through the Service including, but not limited to, any acknowledgment your system may generate upon its receipt of a File. If you do not receive a File when you expect to, you must notify us. Upon your request, we will use commercially reasonable efforts to resend a File to you within 14 days after we initially transmitted the File, but we will have no liability for not doing so.

6. **Incorrect, Incorrectly Formatted Information.** We are not responsible for the accuracy of and will not verify Remittance Information we receive from your trading partners and provide to you through the Service

Glossary

Account Agreement means the applicable account agreement governing your Account.

ACH means Automated Clearing House

ACH Rules means the Nacha Operating Rules and applicable local ACH rules.

Applicable Law is defined in section 3 of the Master Agreement.

BRD means Business Requirements Document.

Business Day means every day except Saturday, Sunday and federal holidays. When used in connection with funds transfer Services, "Business Day" means each day on we are open for business related to that Service.

Customer(s) means the purchaser(s) of your products and services.

Cutoff Time means our cutoff time each Business Day that we separately disclose to you for the Service.

Entry is defined in the ACH Rules.

Funded Payment means a payment for which we receive Remittance Information and the funds relating to the Payment.

Losses means all liabilities, losses, damages, claims, obligations, demands, charges, costs, or expenses (including reasonable fees, disbursements of legal counsel and court fees).

Master Agreement means the Master Agreement for Treasury Management Services.

Representatives is defined in section 11(f) of the Master Agreement.

SOW means Statement of Work.

Website means the website we maintain in your name in connection with the E-Bill Service.

Lockbox Service Description

Treasury Management Services

Introduction

The Service Documentation contains the terms and conditions under which Wells Fargo Bank, N.A. ("Bank") provides you the services described below. "You," "your" or "yours" refer to the Bank customer identified on the Acceptance of Services that is signed when you enroll in Services ("Acceptance"). The terms "we," "us," or "our" refer to the Bank. Other capitalized terms used in this Service Description are defined in the Master Agreement or in the Glossary at the back of this Service Description.

The service ("Service") covered by this Service Description is:
- Lockbox

The Service Documentation includes:
a. The Service Description (which contains terms and conditions applicable to the Service),
b. The Acceptance (which indicates your acceptance of the Service Documentation),
c. The Master Agreement (which contains terms and conditions applicable to all services),
d. The Account Agreement governing your account that you use for the Service ("Account"),
e. The Product Enrollment Form ("Set-up Form") (which contains set-up information for the service in which you are enrolling), and
f. User Guides (which include Terms of Use, software, software licenses, price schedules, specifications, instructions, and notices).

The separate documents and individual provisions of the Service Documentation are intended to be read together as one agreement between you and us. This Service Description and the Master Agreement are posted at our *Commercial Electronic Office® (CEO®)* portal. If there is a conflict among the documents that are part of the Service Documentation, they will govern in the order listed above. Your use of a Service confirms your receipt of, and agreement to be bound by, this Service Description and all Service Documentation.

Lockbox Service

1. **Description of lockbox service.**
   a. With this Service we provide you with a lockbox ("Lockbox") and Lockbox Address for receipt and processing of (i) Checks, and (ii) Charge Authorizations (if you elect this service option and subject to the requirements in section 4 below).
   b. The Service will start after we have assigned the Lockbox Address to you, you have opened your Account, delivered to us the Set-up Form selecting your options for the Service and provided us with any other requested information or documents.
   c. You will instruct your customers to mail Checks and Charge Authorizations (if applicable) to the Lockbox Address, or for overnight delivery to the applicable street address. You will also instruct your customers and other payors not to send cash to the Lockbox. Cash that is sent to the Lockbox will be subject to Currency Transaction Reporting.
   d. We or our agents will have exclusive and unrestricted access to the Lockbox.

2. **Lockbox processing.**
   a. **Processing remittance materials.**
      i. Each Business Day we will examine the Remittance Materials in the Lockbox and image them in accordance with section 6.

ii. Cash will be removed from the envelope and a credit advice for the amount of the cash will be placed with the envelope and imaged.

iii. Except as provided in this Service Description or as otherwise agreed, we will not reconcile the Payments in the envelopes to Invoices or to any other Remittance Materials.

iv. Subject to any Business Rules you specify, we will process a Check (1) by automated means when a scannable Invoice is included with the Check ("Automated Processed Check") and (2) manually when a non-standard Invoice is included with the Check or no Invoice is included ("Manually Processed Check").

b. Deposits. Each Business Day, we will deposit Checks (other than Exception Manual Checks described in section 2(d) below) and cash received in the Lockbox to the Account in accordance with the Account Agreement.

c. **Payments processed by automated means.**

i. Except as set forth in section 2(c)(ii) below or in your Business Rules, each Automated Processed Check may be deposited in the Account despite any discrepencies in the amount, any postdating or staledating, missing information or alterations on the Check, as described in the User Guide.

ii. If you elect to use the Decisioning Module described in section 3, you can give us specific processing instructions for Automated Processed Checks before the Cutoff Time.

d. **Payments processed manually.**

i. Except as set forth in your Business Rules, each Manually Processed Check will be deposited in your Account, except:

1. An Exception Manual Check,
2. A Manually Processed Check that has been altered (subject to section 2(e) below),
3. You specifically instruct us to the contrary using the Decisioning Module described in section 3, and
4. You have given us a written list of acceptable payee names and the payee name on the Manually Processed Check does not match an acceptable payee name.

e. **Alterations.** We will use commercially reasonable efforts to identify any alteration to a Manually Processed Check and not accept a Check we have identified as altered for deposit.

f. **Restrictive notations.** We will not inspect Checks to determine whether they bear restrictive notations, such as "Paid in Full."

g. **Foreign checks.** If you and we enter into an agreement to provide services for Foreign Checks we will deposit and process a Foreign Check if both the foreign bank location and the Foreign Check currency appear on our approved list. A Foreign Check not meeting these criteria will not be deposited and will be returned to you in accordance with section 2(h).

h. **Rejected remittance materials.** Unless you elect otherwise in writing, we will mail to you (i) any Remittance Materials which are not imaged in accordance with section 6, and (ii) any Checks or other instruments which are not deposited in accordance with this Service Description.

3. **Decisioning module.** If you elect to use our Decisioning Module for the Service, you can send us processing instructions through the CEO portal for certain Checks which we have determined may be unprocessable (each, an "Unprocessable Check"). Each message related to the processing of an Unprocessable Check (your "Decisioning Instruction") must be received by us by the Cutoff Time. If we do not receive a Decisioning Instruction by the Cutoff Time, we will handle the Unprocessable Check in accordance with your Default Option. "Default Option" means your election for us to take one of the following actions for any Unprocessable Check:

a. "Deposit all," meaning we deposit the Unprocessable Check in your Account (this will be the default option unless you elect otherwise), or

b. "Reject all," meaning we reject the Unprocessable Check and return it to you as described in section 2(h).

4. **Charge authorizations.** If you elect this Service option (and it is available at your Lockbox processing site), you are required to enter into a Merchant Agreement with us and the Merchant Agreement will govern any Charge Authorizations. As set forth in the Merchant Agreement:
    a. We will process each Charge Authorization received in the Lockbox which is completed with the required processing information,
    b. We will not process a Charge Authorization and will return it to you if any required information is missing or it is illegible,
    c. We will seek approval from the issuer of the credit card for the payment on the Charge Authorization,
    d. We will request settlement for each Charge Authorization that the issuer approves, and
    e. Each Business Day we will make information on processed Charge Authorizations available through the channel you and we agree to.

5. **Virtual lockbox service.**
    a. **Description of service.** When you enroll in our optional Virtual Lockbox Service you can:
        i. Create Electronic Checks from eligible paper checks in accordance with the Wells Fargo Remote Deposit Capture Service Description ("RDC Service Description"), which is incorporated by reference into this Service Description,
        ii. Create images of Invoices and other Remittance Materials according to this Service Description, and
        iii. Transmit Electronic Checks and Remittance Materials to us in an Electronic File for processing according to the RDC Service Description and this Service Description.
    b. **Processing.**
        i. **Business Rules.** If you and we have agreed to Business Rules to apply during the processing of your Electronic Files, we will apply them to each Electronic File you send us. Our processing will include data capture of the dollar amount of each Electronic Check, along with data entry related to Remittance Materials, as agreed to by you and us in your Business Rules.
        ii. **Exception Electronic Checks.** If we identify any Electronic Checks that are ineligible for processing, we will identify these exception checks in a report made available to you. You are responsible for reviewing each electronic check identified in this report in a timely manner and arranging for the timely disposition of each check (whether through recapture or physical deposit) outside the process available in connection with this Service.
    c. **Instructions.** If this option is available to you, you can use the CEO portal or another communications channel you and we agree to use to give us specific processing instructions for the Electronic Files.

6. **Imaging and retention.**
    a. **Imaging and access to images.** Unless you and we agree otherwise, we will electronically image all Remittance Materials unless rejected or otherwise unprocessable. You may access images of Remittance Materials through the *CEO* portal or other communications channels or transmission methods we offer to you. We will redact credit card information including account number, signature and expiration date on images of Charge Authorizations.
    b. **Destruction of originals.** All original Checks and other Remittance Materials that we image pursuant to this Service Description will be destroyed 5 Business Days after the processing date. You will notify us of any issues which require inspection of original Checks or Remittance Materials before the end of the 5-day period.
    c. **Intraday image access.** Any images that you access on an intraday basis may not be final and are subject to further value-added keying. You assume all risk associated with your use of or reliance on intradayimages.

7. **Representations and warranties.** You represent and warrant to us that:
    a. Any person you identify in the Set-up Form or any other communication delivered to us is authorized to receive communications and give us instructions regarding the Service. If the authority of any authorized person changes, you will promptly notify us in writing. We will have a reasonable time after receipt of a communication to act on it.
    b. If a payee on a Check received in the Lockbox is a legal entity other than you, you are duly authorized by the payee to have the Check endorsed and deposited into your Account.
    c. Each Charge Authorization received at the Lockbox is legitimate and duly authorized by the account debtor.

8. Indemnification. You agree to indemnify and hold us and our Representatives harmless from and against any and all Losses which we or our Representatives suffer or incur relating to:
    a. A breach of your representations and warranties in section 7,
    b. Any keying errors or misapplied payments resulting from your Decisioning Instructions or errors or delays in your Decisioning Instructions caused by your computer system issues,
    c. Any action taken by us in response to a Decisioning Instruction, except to the extent that any such Losses are directly caused by our gross negligence or willful misconduct, and
    d. The processing of Charge Authorizations.

9. **Limitation on liability.**
    a. We will have no liability or responsibility for Losses arising from:
        i. Any keying errors or misapplied payments resulting from your Decisioning Instructions or errors or delays in your Decisioning Instructions caused by your computer system issues,
        ii. Depositing a Check bearing a restrictive notation in accordance with this Service Description, regardless of whether we have knowledge of the restrictive notation,
        iii. The deposit of any altered Check, unless the loss results directly from the willful misconduct of our officers or employees, or
        iv. Processing a Charge Authorization in accordance with this Service Description.
    b. In addition to the other limitations on our liability contained in the Master Agreement, if you incur a material loss which results directly from our negligence or breach in performing the Service due to our failure to deposit a Payment according to this Service Description, our liability will be limited to direct damages in an amount not to exceed interest on the Payment amount calculated at the Federal Funds rate for the time period such Payment amount is not in your Account, not to exceed 30 days.

10. **Miscellaneous.**
    a. **Service fees.** We may require that you establish a separate analyzed account with us for billing purposes. You authorize us to debit our Service fees and charges from the billing account.
    b. **Termination.** Upon termination of the Service, we will (i) close the Lockbox, and (ii) dispose of the mail addressed to the Lockbox in the manner instructed by you for a period of 3 months after the termination date, unless otherwise agreed between you and us. You will prepay our Service fees to dispose of the Lockbox mail based on our estimate at the time of termination.
    c. **Customer service.** Any questions that you have with respect to the Service should be addressed to our customer service center at the telephone number and address separately provide to you.
    d. **Assignment.** Notwithstanding anything to the contrary in this Service Description or the Service Documentation, our rights and obligations with respect to the Service shall be assignable to any successor in interest without restriction.
    e. **Survival.** Sections 8 and 9 of this Service Description will survive termination of the Service.

Glossary

Account Agreement means the applicable account agreement governing your Account.

Applicable Law is defined in section 3 of the Master Agreement.

Business Day means every day except Saturday, Sunday and federal holidays.

Business Rules mean certain processing rules that you and we agree in writing to apply to the Payments and Electronic Checks.

Charge Authorization means a written authorization to charge your customer's credit card for a payment due to you.

Check means a paper Item (which includes drafts) received at the Lockbox that we accept in payment of obligations to you.

Cutoff Time means our cutoff time each Business Day that we separately disclose to you for the Service.

Decisioning Module means our Online Lockbox Decisioning Module.

Electronic Check means an electronic image of, and electronic information derived from a paper check.

Electronic File means an electronic file transmitted to us with an Electronic Check.

Exception Manual Check means a Manually Processed Check that we determine in our sole discretion is not eligible for processing, as described in the User Guide for the Service.

Foreign Check means a Check drawn on a foreign bank or payable in a currency other than U.S. Dollars.

Invoice means an invoice or remittance coupon included with a Payment received in the Lockbox.

Item is defined in the Account Agreement.

Lockbox Address means the United States Postal Service address we assign to you for the Service.

Losses means all liabilities, losses, damages, claims, obligations, demands, charges, costs, or expenses (including reasonable fees, disbursements of legal counsel and court fees).

Master Agreement means the Master Agreement for Treasury Management Services.

Merchant Agreement means a separate merchant services agreement you and we enter into for us to process your Charge Authorizations.

Payment means a Check, Charge Authorization or cash received in the Lockbox.

Remittance Materials means any Checks, Charge Authorizations, Invoices, correspondence, papers, documents, and other envelope contents (other than cash).

Representatives is defined in section 11(f) of the Master Agreement.

ACH and Related Services Service Description

Treasury Management Services

[REVISED – January 2, 2020]

Table of contents

Introduction

The Service Documentation contains the terms and conditions under which we provide you the services described below. "You," "your" or "yours" refer to the Bank customer identified on the Acceptance of Services that is signed when you enroll in the Services ("Acceptance"). The terms "we," "us," or "our" refer to the Bank. Other capitalized terms used in this Service Description are defined in the Master Agreement or in the Glossary at the end of this Service Description.

The services (each a "Service") covered by this Service Description are:

- ACH Origination Service
- ACH Fraud Filter Service
- Cash Concentration Service
- *Perfect Receivables®* Service
- *WellsTAX®* Payments Service

The Service Documentation includes:

a. The Service Description (which contains terms and conditions applicable to the Service),
b. The Acceptance (which indicates your acceptance of the Service Documentation),
c. The Master Agreement (which contains terms and conditions applicable to all services),
d. The Account Agreement governing the Account,
e. The Product Enrollment Form (which contains set-up information for each service in which you are enrolling), and
f. User Guides (which include Terms of Use, software, software licenses, price schedules, specifications, instructions, and notices).

The documents and individual provisions of the Service Documentation are intended to be read together as one agreement between you and us. This Service Description and the Master Agreement are posted at our *Commercial Electronic Office® (CEO®)* portal. If there is a conflict among the documents that are part of the Service Documentation, they will govern in the order listed above. Your use of a Service confirms your receipt of, and agreement to be bound by, this Service Description and all Service Documentation.

Services

ACH Origination Service

1. **Description of services.** With this Service you can originate ACH credit and debit Entries in accordance with the ACH Rules. Any capitalized terms not specifically defined in the Service Documentation will be as defined in the ACH Rules. By using this Service, you authorize us to originate Entries on your behalf to Receivers' accounts, you agree to be bound by the ACH Rules, and you agree not to originate Entries that violate the laws of the United States.

2. **Preparation of Entries and Files; processing schedules.** You will prepare and deliver each File in accordance with the ACH Rules, User Guides and other guidelines we make available to you. You agree to use the applicable Security Procedure when you send Entries to us. We will process each File under our current processing schedule and any instructions about the Settlement Date of an Entry that you provide, if (a) we receive the File by our Cutoff Time on a Business Day and (b) the ACH is open for business. Your Files will be considered received by us when the transmission is completed and authenticated in compliance with the Security Procedure. If your File is received after our Cutoff Time or on a day when the ACH is not open for business, we will treat the File as having been received prior to our Cutoff Time on the next Business Day on which the ACH is open for business. In processing your Entries or Files, we may use any means of transmission, funds transfer system, clearing house or intermediary bank that we reasonably select.

3. **Inconsistency of name and number.** If an Entry describes the RDFI both by name and identifying number, we, a Gateway Operator or another financial institution handling the Entry may rely on the identifying number to identify the RDFI, even if the identifying number refers to an institution other than the named RDFI. If an Entry describes a Receiver both by name and identifying number, the RDFI may pay the Entry based on the identifying number, even if the number identifies a person different from the named Receiver.

4. **Your payment obligations with respect to entries.** You are obligated to pay us in immediately available funds an amount equal to the sum of all credit Entries you deliver to us before we send your Entries to the ACH or Gateway Operator, or post an on-us Entry. When we act as both the ODFI and RDFI for an Entry, the Entry is an "on-us Entry." You will maintain available funds in each Account sufficient to cover your credit Entries. You authorize us to debit the Account for the total amount of all credit Entries originated from it at any time. We may refuse to process any credit Entries, even if we have done so in the past, without having first been paid by you, but, if we do, the amount is immediately due and payable without notice or demand. We may take other actions to ensure we receive payment for your credit Entries including (a) upon notice to you, placing a hold on funds in any account you hold with us or our affiliate sufficient to cover your credit Entries and (b) setting off against any amount we or our affiliate owes you. In addition, we may charge the Account or any other of your accounts held with us or our affiliate for any debit Entry, including any correcting or Reversal Entry later returned to us. You will reimburse us for any returned debit Entries on the same day you receive notice of the returned Entry. You agree that we do not need to send a separate notice of debit Entries which have been returned unpaid.

5. **Provisional credit.** If we credit your Account for an Entry, the credit is provisional until we receive final settlement. If we do not receive final settlement, we are entitled to debit your Account or any other accounts you own in whole or in part with us or our affiliate for the amount of the Entry. If there is any remaining shortfall, you will pay it immediately upon demand.

6. **Rejected entries.** We may reject an Entry or File if you do not comply with the terms of the ACH Rules and the Service Documentation, and we will attempt to notify you promptly so you may correct the problem. We will have no liability for rejecting an Entry or File or failing to provide notice of a rejection. If you ask us to repair an Entry or File, we will have no liability if we are unable to make the requested repair. You will pay all charges and expenses for any repair or attempted repair.

7. **Cancellation, amendment, reversal.** You have no right to cancel, amend or reverse an Entry or File after we receive it. If you do request that we cancel, amend or reverse an Entry or File, we may, in our sole discretion, attempt to complete the request. If we do not complete the request, we will have no liability and you will reimburse us for any expenses, losses or damages we incur.

8. **Your duty to report erroneous or unauthorized entries.** You will exercise reasonable care to determine whether an Entry we accepted was either erroneous or not authorized and to notify us of the relevant facts within a reasonable time not exceeding 14 days after you receive our notification that the Entry was accepted or that the Account was debited for the Entry, whichever is earlier. If you do not notify us within 14 days, we will not be liable for any loss of interest or for any other loss relating to an erroneous or unauthorized debit to your Account or because of any other discrepancy in the notification.

9. **Re-transmission of returned entries.** We are not required to re-transmit a returned Entry or File to the ACH or Gateway Operator, or to take any further action on a returned on-us Entry.

10. **Audit.** You grant us ongoing access to your Files and the right to audit periodically your Files, ACH processes and controls so we can verify your compliance with the ACH Rules and this Service Description or any other Service Documentation.

11. **Warranties.** We make certain warranties under the ACH Rules and other Applicable Law when you use this Service. You will reimburse us for any Losses we incur, including our reasonable attorneys' fees and legal expenses, as the result of a breach of a warranty we make in connection with any of your Entries, except to the extent that the Losses resulted from our own gross negligence or intentional misconduct.

12. **Indemnification.** WWe indemnify certain persons under the ACH Rules when you use this Service. You agree to reimburse us and our Representatives for any Losses we incur, including our reasonable attorneys' fees and legal expenses, as the result of the enforcement of any such indemnity, except to the extent the Losses resulted solely from our own gross negligence or intentional misconduct. In addition, you will indemnify us and our Representatives from and against all Losses awarded against or incurred or suffered by us arising directly or indirectly from or related to any material breach of a representation, warranty, or covenant you provide regarding this Service.

13. **Termination.** In addition to the termination provisions contained in the Master Agreement, we may terminate this Service immediately upon notice to you if we determine in our sole discretion: the number of returned debit Entries is excessive; you have breached a warranty provided under the ACH Rules or this Service or otherwise failed to comply with the ACH Rules.

14. **Survival.** Sections 3, 5, 6, 8, 9, 12 and 13 will survive termination of this Service.

Additional Terms and Service options

15. **International Entries.** This section contains additional terms that apply when you originate International Entries.
    a. **General.** You agree to comply with, and we will process each International Entry in accordance with:
        i. The laws and payment system rules of the receiving country of your International Entry,
        ii. Any agreement we provide to you governing International Entries between us and the Gateway Operator we use to process the International Entry, and
        iii. The ACH Rules.

    If there is a conflict among these three areas, they will govern in the order listed above.
    b. **Currency conversion.** With respect to International Entries we agree to originate in a Foreign Currency, the currency conversion is governed by section 8 (Currency conversion) of the Master Agreement. For debit Entries, however, we use the Applicable Exchange Rate in effect at the time we receive the funds for settlement of the debit Entry rather than at the time we send (or execute) the debit Entry. If the debit Entry is returned to us, we may charge the applicable Account or any other of your accounts with us or our affiliate for the amount equal to the value of the returned debit Entry, after we have converted the Foreign Currency to the Account Currency at the Applicable Exchange Rate in effect when we process the returned debit Entry. We will not be liable for a sum in excess of the original amount of the debit Entry after conversion.
    c. **Acts or omissions of third parties.** We will not be liable for:
        i. Any failure or delay by a Gateway Operator, any intermediary financial institution, or the financial institution designated to receive the International Entry in the receiving country in processing or failing to process any Entry we transmit to the receiving country, or
        ii. Any acts or omissions by a third party including the delay or failure of any third party to process, credit or debit any International Entry.

16. **Third-party sender activities.** This section contains additional terms that apply when you are a Third-Party Sender.
    a. **General.** Prior to originating any Entry on behalf of each customer or upon our request, you will:
        i. Provide us with the information we require to understand the nature of your customer's business, including the name, Taxpayer Identification Number, business activity and geographic location of your customer, and whether your customer is also a Third-Party Sender,

ii. Timely provide us with information we require for purposes of our registration of you or your customer as a Third-Party Sender in accordance with the ACH Rules ("Registration") and supplemental Registration information requested by us, and
iii. Upon our request, obtain our written approval to originate or continue to originate Entries for that customer (which we may rescind upon written notice to you), and
iv. Enter into a written agreement with that customer in which that customer agrees:
1. To assume the responsibilities of an Originator under the ACH Rules and to be bound by the ACH Rules,
2. Not to originate ACH Entries in violation of the laws or regulations of the United States including without limitation the regulations issued by the Office of Foreign Assets Control,
3. To grant us ongoing access to audit the customer and any ACH Entry that it has transmitted to you for transmission to us, and
4. That we may at any time refuse to process an ACH Entry for that customer.

b. **Updates to registration information.** You will timely notify us of any changes to information you provide to us for the Registration of you or your customer as a Third Party Sender.

c. **Representations and warranties.** With respect to each of your customers for which you are originating transactions through us, you represent and warrant to us that you have conducted the appropriate due diligence to determine that:
i. Each customer is engaged in a legitimate business, and
ii. The type, size and frequency of transactions that each customer is originating is normal and expected for the customer's type of business.

d. **Ongoing monitoring.** You will use reasonable commercial standards to monitor each customer's business and transactions on an ongoing basis, and notify us promptly if you identify any unusual activity by your customer. You will take appropriate actions with respect to the customer, including refusing to originate Entries for your customer.

17. **Perfect NOC service.** With our Perfect NOC Service, we maintain a database of Notifications of Change (each, a "NOC") that we receive. We use this database to update your Entries in accordance with the Service options you select from time to time. We will notify you of each NOC we receive in connection with your Entries. Additional details about this Service are more fully described in the applicable User Guide.

18. **MICR-split processing service.**
a. With our MICR-Split Processing Service, if we determine that an RDFI for a debit Entry you sent is not an ACH participant (or as otherwise reasonably determined by us as appropriate), you authorize us to issue a preauthorized check ("PAC") using the debit Entry data you provided. PACs are drawn upon the Receiver's account with the applicable RDFI and deposited in your Account, but do not contain the signature of the Receiver.
b. You represent and warrant to us that:
i. You have the appropriate authorization from each person owning the Receiver's account shown in the debit Entry data, which remains effective when we issue the PAC, and
ii. You are not a "telemarketer" for purposes of the Federal Trade Commission's Telemarketer Sales Rule (16 C.F.R. Part 310).

19. **Cash Concentration service.** With the Cash Concentration Service, we originate debit Entries to move funds from your Remote Accounts into your Concentration Account. We make summary and detail level reports of your cash concentration transactions available to you through our Cash Concentration Reporting Service. Additional details about this Service and available service options are more fully described in the applicable User Guide.
a. **Options.** You can choose from the following options:
i. **Touchtone or online option.** We originate debit Entries to collect funds from your Remote Accounts for the transfer amounts you specify based on deposit information entered for each location by touch-tone telephone or computer.

    ii. **Automated Cash Concentration option.** We request account balances from the financial institutions holding the Remote Accounts. We calculate transfer amounts and originate debit Entries based on your specified target balances for the Remote Accounts and other transfer parameters you may establish.

b. **Representations and warranties.** With respect to each debit Entry we originate on your behalf, you represent and warrant to us that:
    i. The debit Entry is authorized,
    ii. If you are using the Touchtone/Online option, the corresponding deposit input is accurate, and
    iii. If you are using the Automated Cash Concentration Option, you have authorized each financial institution holding a Remote Account to comply with our request for balance information.

c. **ACH deadlines.** If by our applicable Cutoff Time (i) you do not complete your deposit inputs for the Touchtone or Online option or (ii) we are unable to obtain balance information for a Remote Account for the Automated Cash Concentration option, we will not be responsible for failing to meet the ACH deadlines to originate the debit Entries.

d. **Automated Cash Concentration authorization.** You authorize us in our own name or in your name, to request that each financial institution holding a Remote Account provide us or our designee with the account balance information each Business Day using any method specified by us.

ACH Fraud Filter Service

1. **Description of service.** With this Service, you can manage incoming ACH Entries in accordance with the ACH Rules. Any capitalized terms not specifically defined in the Service Documentation will be as defined in the ACH Rules. You have the following options:
    a. **Stop option.** This option stops all incoming ACH Entries you have not authorized in advance (and not set as preauthorizations). Entries stopped under the Stop Option will be returned to the ODFI as unauthorized.
    b. **Review option.** You review and decision each incoming ACH Entries (not set as preauthorizations) before the applicable cutoff time and select each Entry to be either paid or returned. Entries that you have selected for return under the Review Option will be returned to the ODFI as unauthorized and we will create a reversing adjustment to your Account. If you do not make a pay/return decision on an Entry prior to the applicable cutoff time, the Entry will be paid or returned based on the default action you specified.
    c. **Additional criteria.** You may also set up additional decisioning criteria, including limits and preauthorizations.

2. **Echecks.** You have the following options for incoming ACH Entries that have been converted from a check (Echecks).
    a. **Stop option.** All Echecks will be automatically stopped and returned to the ODFI as unauthorized.
    b. **Post option.** All Echecks will automatically post without your review.
    c. **No additional criteria.** Additional decisioning criteria, including limits and preauthorizations, are not available for Echecks.

3. **Service restrictions.** You agree to be bound by the ACH Rules for all Entries. Regardless of the Service options or other criteria you have in place, we may return any Entry in accordance with the ACH Rules and Applicable Law. We may also accept any Entry, Reversal Entry or adjustment in accordance with our obligations under the ACH Rules and Applicable Law. This Service does not apply to transactions between you and us. We may pay Entries which you have authorized us to originate against your Account (for instance, loan or credit card payments), whether or not you have included these in your decisioning criteria.

4. **Termination.** Upon termination of this Service, you will still have the right to return individual Entries in accordance with the ACH Rules and Applicable Law.

Perfect Receivables® Service

1. **Description of service.** With this Service, you can elect options for posting and reporting information about ACH entries and wire transfers (each, a "Remittance") that we post each Business Day to your Account(s). We provide a range of unique Wells Fargo payment identification codes (WPICs) that can be used to route Remittances to your Account and help you identify and post your receivables to the correct remitter.

2. **WPIC restrictions.**
    a. You may not assign a WPIC to more than one remitter or reuse any WPIC numbers.
    b. If you cannot post the Remittance to your remitter in accordance with the WPIC information, you must return the Remittance.
    c. We have the right to rescind any WPIC number or range of WPIC numbers at any time in our sole discretion. For example, we may do so if we consider it necessary to comply with Applicable Law. We will use reasonable efforts to notify you before rescinding any WPIC number unless we are prohibited from doing so by Applicable Law, or by our applicable policies and standards, as amended from time to time. When you receive notice of the rescission of any WPIC number, you will promptly notify the remitter assigned to the rescinded WPIC number that the WPIC number may no longer be used to receive Remittances. You will use best efforts to prevent the WPIC from being used to receive Remittances and will block or otherwise restrict access to funds received through a rescinded WPIC.

3. **Processing of Remittances; chargebacks.** Each Business Day, we will post to your Account all Remittances we receive prior to the Cutoff Time, except for Remittances we reject. Each credit to your Account for a Remittance is provisional until we receive final settlement for the Remittance. If we do not receive final settlement, we may debit your Account or any other account you own, in whole or in part, with us or any of our affiliates for the amount of the Remittance. You will pay us immediately upon demand for any shortfall remaining after such chargeback.

4. **Rejected Remittances.** We may, but are not obligated to, reject a Remittance:
    a. That does not contain all of the required information specified by us,
    b. If we suspect that you are not entitled to the Remittance,
    c. If at the time we receive the Remittance, you do not maintain an Account with us, the Service has been terminated, or we are not permitted by law to accept credits to any of your Accounts, or
    d. If you are in default under this Service Description or any other Service Documentation.

5. **Reporting.** Each Business Day, we will provide you with the information about Remittances posted to your Accounts through the communications channels you elect.

6. **Violation of Applicable Law.** You represent and warrant to us that you will not use the Service in a manner that could result in a violation of Applicable Law. You will provide us with the information we require to understand the nature of your use of the Service and grant us ongoing access to audit your compliance with Applicable Law. In addition to our other rights to terminate the Service under the Service Documentation, we may terminate the Service upon notice to you if we determine your use of the Service could result in a violation of Applicable Law.

WellsTAX® Payments Service

1. **Description of service.** With this Service, you can use our *CEO*® portal or a touch-tone telephone to request transfers from your Account (each, a "Transfer") to pay your U.S. federal, state or other taxes specified from time to time in our User Guides. By using this Service, you authorize us to originate ACH credit Entries on your behalf to effectuate the Transfers. You agree to be bound by the ACH Rules, and also comply with applicable provisions of the ACH Service Description, which is incorporated by reference into this Service Description.

2. **Procedures for initiating transfers.** You will deliver your requests for Transfers in accordance with the Service Documentation, including the User Guides. You agree to use the applicable Security Procedures for your Initiation Method (including access codes and passwords for touch-tone telephone initiation method) when you send Transfer requests to us.

3. **Accuracy of data.** You will provide us with the information necessary for us to inform the applicable government agency or entity of the tax payment within the time period required by any rule or regulation governing the payment. You authorize us to rely on the accuracy of the information you have provided to us.

4. **Transfer deadline.** Any Transfer request delivered on any Business Day after the applicable Cutoff Time, or on a non-Business Day, will be deemed received on the following Business Day. You must deliver Transfer requests by the applicable Tax Transfer Deadline.

5. **Authorized reporting agent.** If you are a taxpayer required by federal law to make electronic Federal Tax Deposit (FTD) payments to the Internal Revenue Service (IRS) and submit FTD information through the U.S. Department of the Treasury's Electronic Federal Tax Payment System (EFTPS), we will make your Transfers as FTD payments submitted through EFTPS, regardless of any other instructions from you. In performing the Service, we are acting as your authorized reporting agent. You authorize us to accept debit Entries from the IRS to make the Transfers, and to debit your Account for the amount of such payments.

6. **Payment for Transfers.** You authorize us to debit your Account before we process a Transfer. We may refuse to process a Transfer if the Transfer would exceed the available funds in the Account on the Tax Transfer Deadline.

7. **Rejected Transfers.** We also reserve the right to delay or reject any Transfer if we believe the Transfer may violate Applicable Law or if we believe the Transfer will present a risk to you and/or us, or for other reasons. If we do not accept a Transfer request or must delay making a requested Transfer, we will attempt to notify you.

8. **No verification of Transfer Requests.** We are under no obligation whatsoever at any time to verify any Transfer and will have no liability for failing to investigate or verify any Transfer request.

9. **Confirmations.** We will confirm each Transfer on your account statement or on any bank information reporting service that we provide you. You must immediately inform us of any Transfer that is incorrect or unauthorized.

10. **Amendments and cancellations of transfer requests.** You may cancel a Transfer request before the Cutoff Time if we have not processed the Transfer. After we have processed a Transfer, it cannot be canceled, amended or reversed.

11. **Records, information and audits.** You will verify the accuracy of all records and information regarding the Service or any Transfer and you will notify us immediately of any errors. Nothing in the Service Documentation will relieve you of:
    a. Any responsibility imposed by law, regulation or contract with regard to the maintenance of records, or
    b. Any responsibility to perform audits and account reviews customarily conducted by persons or entities whose businesses are similar to your business.

12. **Responsibility for paying taxes.** Any interruption in the Service will not relieve you of any obligation to pay any tax to the IRS, or any other government agency or entity owed the tax, and we will have no liability to you for your failure in such circumstances to pay any tax.

Glossary

Account means your account(s) with us used in connection with the Service.

Account Agreement means the applicable account agreement governing the Account.

Account Currency is defined in section 8 (Currency conversion) of the Master Agreement.

ACH means Automated Clearing House.

ACH Rules means the Nacha Operating Rules and any applicable local ACH rules.

Applicable Exchange Rate is defined in section 8 (Currency conversion) of the Master Agreement.

Applicable Law is defined in section 3 (Changes to service) of the Master Agreement.

Business Day means every day except Saturday, Sunday and federal holidays. When used in connection with funds transfer Services, "Business Day" means each day on we are open for business related to that Service.

***CEO*® portal** means our Commercial Electronic *Office*® portal.

Concentration Account means your Account designated in the Concentration Account Services Set-up Form.

Cutoff Time means our cutoff time each Business Day we separately disclose to you for the applicable Service.

Entry is defined in the ACH Rules.

File is defined in the ACH Rules.

Foreign Currency is defined in section 8 (Currency Conversion) of the Master Agreement.

Gateway or Gateway Operator is defined in the ACH Rules.

Initiation Method is defined in section 6 (Security procedures) of the Master Agreement.

International Entry means an Entry to an account outside the United States.

Item is defined in the Account Agreement.

Log-on Credentials is defined in section 9 (CEO portal) of the Master Agreement.

Losses means liabilities, losses, damages, claims, obligations, demands, charges, costs, or expenses (including reasonable fees and disbursements of legal counsel and court fees).

Master Agreement means the Master Agreement for Treasury Management Services.

NOC or Notification of Change is defined in the ACH Rules.

ODFI (Originating Depository Financial Institution) is defined in the ACH Rules.

Originator is defined in the ACH Rules.

Payment Order means an instruction to us in your name to transfer funds from your Account (and includes any communication cancelling or amending an instruction).

RDFI (Receiving Depository Financial Institution) is defined in the ACH Rules.

Receiver is defined in the ACH Rules.

Remote Account means one or more accounts owned or controlled by you in the United States.

Representatives is defined in section 11(f) (Liability and indemnification) of the Master Agreement.

Reversal or Reversing Entry is defined in the ACH Rules.

Security Procedure is defined in the Product Enrollment Form and in section 6 (Security procedures) of the Master Agreement.

Settlement Date is defined in the ACH Rules.

Tax Transfer Deadline means a date at least one Business Day prior to the date the tax payment is due to the applicable tax authority.

Third Party Sender is defined in the ACH Rules.

Addendum to ACH Origination Service Description for State Tax Refund Return Opt-in Program Participants

1. **Introduction.** This Addendum to ACH Origination Service Description for State Tax Refund Return Opt-In Program Participants ("Addendum") applies to Company in connection with its use of the ACH origination service ("Service") pursuant and subject to the terms of the Service Documentation, including the ACH Origination Service Description ("Service Description"). If there are any conflicts between this Addendum and the Service Description, this Addendum shall control. Any capitalized terms not otherwise defined in this Addendum shall have the meaning set forth in the Service Description or the ACH Rules, unless otherwise indicated.

2. **Description of Program Services**. Company has agreed to participate in the State Tax Refund Return Opt-In Program ("Program") offered by NACHA—The Electronic Payments Association ("NACHA"), through which participating RDFIs can submit Return Entries to Company under operating rules adopted specifically for the Program. In connection with Company's participation in the Program, Company has requested that Bank enter into a State Tax Refund Return Opt-In Program ODFI Agreement with NACHA ("ODFI Agreement"). The ODFI Agreement permits Bank, as ODFI for Company, to receive Return Entries transmitted under an R17 return reason code in accordance with the operating rules adopted for the Program and the ACH Rules (collectively, "Program Rules"). Bank will provide "Program Services" under this Addendum in accordance with its obligations under the ODFI Agreement. In the event of a conflict among the foregoing requirements, the following order of precedence shall apply: (1) the ODFI Agreement; (2) the Program Rules; and (3) the ACH Rules.

3. **Program Returns**. Bank will receive R17 Return Entries on behalf of Company in accordance with the Program Rules. Company understands and agrees that Bank is otherwise permitted to dishonor R17 Return Entries in accordance with the ACH Rules, and that it is Company's responsibility to notify Bank of Program Entries that should be dishonored, in accordance with the time limits set forth in the ACH Rules. Company understands and agrees that all Program Returns (as defined in the Program Rules) may be transmitted for up to 60 days following the Settlement Date of the original Entry. If a Participating RDFI wishes to transmit a Program Return after 60 days from the Settlement Date of the original Entry, the Participating RDFI must contact Bank to obtain permission for a late Program Return and Bank shall accept or deny the late Program Return request at its sole discretion. Company understands and agrees that it is the Participating RDFI's responsibility to provide Bank with the appropriate subcode specifying the nature of each Program Return.

4. **Program Information.** In accordance with the requirements of the Program Rules, Company understands and agrees that Bank is permitted to share information with NACHA regarding Company's participation in the Program, including but not limited to transaction volumes.

5. **Indemnification**. Bank shall have no liability for the acceptance of any Program Return in accordance with this Addendum and the ODFI Agreement. In addition, Company will indemnify Bank from and against all liabilities, losses, damages, claims, obligations, demands, charges, costs, or expenses (including reasonable fees and disbursements of legal counsel and accountants) awarded against or incurred or suffered by Bank arising directly or indirectly from or related to its performance of the Program Services.

6. **Termination**. In addition to the termination provisions contained in the Master Agreement and Service Description, Bank may terminate this Addendum immediately upon notice to Company if it receives notice of termination of the applicable ODFI Agreement.

Wire Transfer Service Description

Treasury Management Services

Introduction

The Service Documentation contains the terms and conditions under which we provide you the services described below. "You," "your" or "yours" refer to the Bank customer identified on the Acceptance of Services that is signed when you enroll in the Service ("Acceptance"). The terms "we," "us," or "our" refer to the Bank. Other capitalized terms used in this Service Description are defined in the Master Agreement or in the Glossary at the back of this Service Description.

The service ("Service") covered by this Service Description is:
- Wire Transfer

The Service Documentation includes:

a. The Service Description (which contains terms and conditions applicable to the Service),
b. The Acceptance (which indicates your acceptance of the Service Documentation),
c. The Master Agreement (which contains terms and conditions applicable to all services),
d. The Account Agreement governing the Account,
e. The Product Enrollment Form (which contains set-up information for each service in which you are enrolling), and
f. User Guides (which include Terms of Use, software, software licenses, price schedules, specifications, instructions, and notices).

The documents and individual provisions of the Service Documentation are intended to be read together as one agreement between you and us. This Service Description and the Master Agreement are posted at our *Commercial Electronic Office® (CEO®)* portal. If there is a conflict among the documents that are part of the Service Documentation, they will govern in the order listed above. Your use of a Service confirms your receipt of, and agreement to be bound by, this Service Description and all Service Documentation.

Wire Transfer Service

1. **Description of service.** With this Service you can instruct us to transfer funds by wire. You agree to comply with all applicable payment system rules, including the national payment system rules and any other Applicable Laws and regulations of the receiving country of the transaction.

2. **Preparation of payment orders; processing schedules.** You will prepare each Payment Order according to guidelines we separately make available from time to time. You will use the applicable Security Procedure when you send a Payment Order to us.

   We will execute each Payment Order in accordance with our then current processing schedule and any accompanying instructions you include regarding the date a Payment Order is to be executed. A Payment Order will be deemed received by us when we have verified it in compliance with the Security Procedure.

   a. If we receive a Payment Order after our Cutoff Time on any Business Day, we will treat the Payment Order as having been received before our applicable Cutoff Time on our next Business Day.
   b. If we execute your Payment Order by sending instructions to another financial institution, we may send the Payment Order by any transmission method and by any route we in our sole discretion consider reasonable.

3. **Inconsistency in name and number.**
   a. If a Payment Order describes the person to receive the funds under the Payment Order both by name and identifying number, we or another financial institution through which the Payment Order is routed may rely solely on the identifying number to identify the person, even if the number identifies a person other than the one named.
   b. If a Payment Order describes a financial institution both by name and identification number, we or another financial institution through which the Payment Order is routed may rely solely on the identification number to identify the financial institution, even if the identification number refers to a financial institution other than the one named.

4. **Authorization to pay.** You authorize us to:
   a. Execute any Payment Order we verify in accordance with the applicable Security Procedure, and
   b. Debit the account specified in the Payment Order even if a debit results in an overdraft on the execution date. If no account is specified, we will debit your Account or any other of your account(s) with us or one of our affiliates.

   You will maintain sufficient available funds in the account specified in the Payment Order at the time of each debit.

5. **Your duty to report erroneous or unauthorized transfer instructions.** You will exercise reasonable care to:
   a. Determine whether a Payment Order accepted by us was either erroneous or not authorized, and
   b. To notify us of the relevant facts within a reasonable time not exceeding 14 days after we notify you that the Payment Order was accepted or that the Account was debited for the Payment Order, whichever is earlier.

   If you do not notify us within 14 days, we will not be liable for any loss of interest or for any other loss relating to an erroneous or unauthorized debit to your account or because of any other discrepancy in the notice.

6. **Rejected payment orders.** If a Payment Order is rejected for any reason, we will attempt to notify you promptly so you can cure the defect. However, we will have no liability to you for a rejected Payment Order or any loss resulting from our delay or failure to notify you.

7. **Cancellation, amendment, reversal.** A Payment Order will be final and not subject to cancellation, amendment or reversal by you, except we may, at your request, make an effort to cancel, amend or reverse a Payment Order without incurring any liability for our failure or inability to do so.

8. **Drawdown requests.** A "drawdown request" is an instruction from you to another depository institution to debit:
   a. An account at that institution and transfer the funds to us (an "outgoing drawdown request"), or
   b. The Account and transfer the funds to that institution (an "incoming drawdown request").

   In this Service description, "Payment Order" includes drawdown requests. We may execute an incoming drawdown request that conforms with instructions we receive through Fed Wire, SWIFT, CHIPs or any other funds transfer system, provided those instructions are not inconsistent with instructions you separately provide in writing. The authority to execute the incoming drawdown request will continue until we receive your express written notice that such authority is revoked and have a reasonable time to act on it.

9. **Limitation of liability.** We will not be liable for any third party's failure to or delay or error in processing a Payment Order. If the beneficiary bank does not pay the beneficiary specified in the Payment Order, a refund will be made only after we have received confirmation of the effective cancellation of the Payment Order and we are in free possession of the funds debited or earmarked in connection with the Payment Order. If we are notified the beneficiary bank did not credit the Account for the full amount stated in a Payment Order, our sole obligation will be to promptly execute a second Payment Order in the amount of the stated deficiency.

   If we execute a Payment Order that is more than the amount stated in the Payment Order, to the extent you do not receive the benefit of the full amount of the Payment Order, we will only be liable for any loss of the principal amount transferred in excess of the amount stated in the Payment Order. Additionally, we will be liable for the amount of interest you have lost due to the transfer of the excess amount, computed at the Federal Funds rate or as otherwise agreed. However, our liability for loss of interest will be limited to 20 calendar days' interest. This section sets forth our complete liability for a Payment Order issued or received under this Wire Transfer Service description.

10. **Survival.** Sections 5, 6, 7 and 9 will survive the termination of the Services.

Glossary

Account means your account(s) with us used in connection with the Service.

Account Agreement means the applicable account agreement governing the Account.

Applicable Law is defined in section 3 of the Master Agreement.

Business Day means every day except Saturday, Sunday and federal holidays. When used in connection with funds transfer Services, "Business Day" means each day on we are open for business related to that Service.

Cutoff Time means our cutoff time each Business Day we separately disclose to you for the applicable Service.

Master Agreement means the Master Agreement for Treasury Management Services.

Payment Order means an instruction to us in your name to transfer funds from your Account (and includes any communication cancelling or amending an instruction).

Security Procedure is defined in the Product Enrollment Form and in section 6 of the Master Agreement.

Wire Transfer Services Customer Setup Form and Agreement

Part I – Setup Information

Treasury Management Customers
Complete Part I and sign as provided in Part III. The information in this setup form and your separate treasury management documents relating to wire transfers govern your use of Wells Fargo's wire transfer service.

All Other Customers (including consumers and non-Treasury Management business customers)
Complete Part I, review the Wire Transfer Services Agreement in Part II, and sign as provided in Part III.

Type of Request: ☐ New ☐ Update Existing Information ☐ Delete Existing Information

A. Account Numbers (list accounts to be debited for each wire transfer)
For additional accounts attach a signed listing with notation of Customer's name and the additional account numbers. Check the appropriate box for each account number to identify the account type.

1) ☐ DDA ☐ G/L	2) ☐ DDA ☐ G/L	3) ☐ G/L ☐ DDA	4) ☐ DDA ☐ G/L
5) ☐ DDA ☐ G/L	6) ☐ DDA ☐ G/L	7) ☐ G/L ☐ DDA	8) ☐ DDA ☐ G/L
9) ☐ DDA ☐ G/L	10) ☐ DDA ☐ G/L	11) ☐ G/L ☐ DDA	12) ☐ DDA ☐ G/L

B. Advice Information (additional fees apply for these services)
For Fax or Email Notification on intraday wire activity use the InfoFax setup form.
Mail Advice (this paper based service is no longer available to add) ☐ Delete Mail Advice

C. Authorized Callers (people authorized to initiate wires)
$ Limit = Use "N" if unlimited. The limit applies to all functions unless noted otherwise. If no limit is noted we will set the limit as unlimited.
Initiation Type = If no Initiation Type is noted, we will set the individual up for both Repetitive and Non-Repetitive Wire Initiation. Complete by checking appropriate box: R = Repetitive / B = Both Repetitive & Non-Repetitive.

Authorized Callers first & last name	**Caller**	**$ Limit**	**Phone Number** including area code	**InitiationType √** **R B**
	☐ Add ☐ Delete	$		☐ ☐
	☐ Add ☐ Delete	$		☐ ☐
	☐ Add ☐ Delete	$		☐ ☐
	☐ Add ☐ Delete	$		☐ ☐
	☐ Add ☐ Delete	$		☐ ☐

D. OPTIONAL Verify Callback Service (does not apply to repetitive wires)
Selecting this fee-based service requires a minimum of two persons with wire transfer authority because the initiator of a wire cannot also approve the wire. If the form does not indicate an Authorized Approver other than the initiator, the optional Verify Callback Service cannot be provided.

Verify Orders exceeding: $ ______________________

Authorized Approvers first & last name	**Approver**	**$ Limit**	**Phone Number** including area code
	☐ Add ☐ Delete	$	
	☐ Add ☐ Delete	$	

Authorized Approvers first & last name	**Approver**	**$ Limit**	**Phone Number** including area code
	☐ Add ☐ Delete	$	
	☐ Add ☐ Delete	$	
	☐ Add ☐ Delete	$	
	☐ Add ☐ Delete	$	
	☐ Add ☐ Delete	$	

E. Alternate Account to be Charged for Wire Fees (Available to Business and Wealth Private Banking customers ONLY)

List account only if wire fees are to be assessed to this account for the accounts listed in Part I-A.

☐ DDA ☐ AU and G/L ____________________________

Part II - Wire Transfer Services Agreement

1. Introduction. This Wire Transfer Services Agreement ("Agreement"), along with the account agreement applicable to the account used in connection with the wire transfer services ("Account"), govern your use of Wells Fargo's wire service. With this service, the Wells Fargo customer identified in this Agreement (“you” or “your”) can instruct Wells Fargo Bank, N.A. ("Wells Fargo") to transfer funds by wire from the Account ("Order").

2. Security Procedure

2.1. General. You agree to use the security procedure described in this Section ("Security Procedure") when you request an Order (except for an Order delivered to Wells Fargo in person by you or your authorized representative). The purpose of the Security Procedure is to verify the authenticity of an Order delivered to us in your name and not to detect errors in the transmission or content of an Order. You agree the Security Procedure is commercially reasonable and, in view of your requirements, is a satisfactory method of verifying the authenticity of Orders. You agree you are bound by any Order, whether or not authorized, issued in your name and accepted by Wells Fargo in compliance with the Security Procedure.

2.2. Voice Initiated Orders. Wells Fargo's standard Security Procedure for a voice-initiated Order consists of confirming the personal identification number ("PIN") accompanying an Order corresponds with a valid PIN assigned to you, and confirming the voice print provided when placing an Order matches the print registered on file for that PIN holder. A PIN and voice print are required for all voice-initiated transfers.

2.3. PIN. Each person authorized to initiate and/or approve Orders for you will be issued a unique PIN. PINs are computer-generated and you cannot choose your own PIN. Wells Fargo employees do not have access to PINs. You agree to safeguard any PIN assigned to you. You must supply the PIN each time you initiate an Order. PINs are issued via a two-part, confidential mailer sent to you. If lost or forgotten, Wells Fargo cannot reconstruct PINs. For your protection, if you suspect a PIN has been compromised, or if an authorized person is no longer authorized, immediately notify Wells Fargo Wire Transfer Services at 888-384-8400. Wells Fargo, in its sole discretion, may cancel or reissue any PIN it believes may have been compromised, including, without limitation, a PIN that has never been acknowledged as having been received and any PIN that has been used by anyone other than the intended authorized user.

2.4. Identify Authorized Persons. You will notify Wells Fargo in writing of the identity of each individual authorized to receive information regarding the Security Procedure. You will promptly notify Wells Fargo in writing of any change in an authorized individual. Your notice will be binding on Wells Fargo if it is received in a time and manner that gives Wells Fargo a reasonable opportunity to act on it. Wells Fargo will be fully protected in relying on your notices.

2.5. OPTIONAL Verify Callback Service. If you select this optional fee-based service by providing the information requested in Section D of Part I, it will become part of your Security Procedure. Wells Fargo will make at least one attempt to telephone an individual authorized to approve wires other than the initiator (an "Authorized Approver") to verify the voice-initiated non-repetitive wire transfer order is authorized when the amount of the wire exceeds the wire transfer order limit designated in Section D of Part I. You may designate a limit up to which an Authorized Approver may authorize an order. A PIN is required to authenticate each Authorized Approver. If Wells Fargo is unable to (a) contact and authenticate or (b) obtain approval from an Authorized Approver, the wire will not be processed.

3. Inconsistency of Name and Number. If an Order describes the person to receive the wire transfer ("Beneficiary") inconsistently by name and account number, the wire transfer may be made on the basis of the account number even if the account number identifies a person different from the Beneficiary. If a wire transfer request describes a financial institution inconsistently by name and identification number, the identification number may be relied upon as the proper identification of the financial institution. ***You further acknowledge the beneficiary account number or beneficiary bank identification number (e.g. IBAN, RTN, or SWIFT BIC) you provide in connection with an Order will be complete and accurate, and you understand you could lose the transfer amount if the information is incorrect.***

4. Responsibility of Wells Fargo. Wells Fargo may send an Order by wire, telegraph, telephone, cable, or whatever other transmission method Wells Fargo considers to be reasonable. Wells Fargo may transmit an Order directly to the Beneficiary's bank, or indirectly to the Beneficiary's bank through another bank, government agency, or other third party that Wells Fargo considers to be reasonable. Wells Fargo may utilize any reasonably selected funds transfer system or intermediary bank, even if its selection differs from instructions in the request.

5. Additional Actions by Wells Fargo. Any action Wells Fargo takes to detect an erroneous Order, or any actions Wells Fargo takes beyond those described above in an attempt to detect an unauthorized Order, will be taken at Wells Fargo's sole discretion. No matter how many times Wells Fargo takes this action, it will not become part of Wells Fargo's standard procedures for attempting to detect such erroneous or unauthorized Orders, and Wells Fargo will not in any situation be liable for failing to take or to correctly perform the action.

6. Liability. Wells Fargo is only responsible for making a good faith effort to execute your Orders and will only be responsible for performing the services specified in this Agreement. For Orders subject to Article 4A of the Uniform Commercial Code ("UCC 4A"), Wells Fargo will be liable to you only for damages required to be paid under UCC 4A. For Orders not subject to UCC 4A and for other obligations under this Agreement, Wells Fargo will only be liable for its negligence or willful misconduct. Wells Fargo will not be liable for any third party's failure to or delay or error in processing an Order. Wells Fargo will not be liable for any delay in performing or failure to perform if the delay or failure results from any cause beyond its reasonable control. In no event will Wells Fargo have any liability for consequential, special, punitive or indirect loss or damage which you may incur in connection with this Agreement.

7. Indemnification. You agree to indemnify and hold Wells Fargo, its directors, officers, employees and agents harmless from all third party claims, demands, judgments, and expenses (including reasonable attorney's fees) arising out of or connected with the performance of any wire transfer service under this Agreement. This indemnification will survive the termination of this Agreement.

8. Cancellation, Amendment, Reversal. An Order will be final and not subject to cancellation, amendment or reversal by you, except Wells Fargo may, at your request, make an effort to effect such cancellation, amendment or reversal without incurring any liability for its failure or inability to do so.

9. Your Duty to Notify Wells Fargo of Unauthorized Activity. If you identify any discrepancies in your account setup (including repetitive wire transfer templates), please contact us immediately at 1-888-384-8400. Wells Fargo will not be responsible for any delays in payment or additional fees caused by your failure to notify us promptly of any such discrepancy. You will exercise ordinary care to determine whether an Order accepted by Wells Fargo was either erroneous or not authorized and to notify Wells Fargo of the facts within a reasonable time not exceeding 14 days after you have received notification from Wells Fargo that the Order was accepted or that your Account was debited or credited with respect to the Order, whichever is earlier. You will be precluded from asserting that Wells Fargo is not entitled to retain payment for an Order unless you object within 14 days.

10. Fees and Taxes. You agree to pay Wells Fargo's current wire transfer service fees. A copy of Wells Fargo's current fee schedule is available to you on request. You also agree to pay amounts equal to any applicable taxes on these wire transfer services (exclusive of taxes based on net income of Wells Fargo).

11. Currency. An Order expressed in U.S. Dollars will be sent in U.S. Dollars. You may request that prior to executing an Order, Wells Fargo convert the amount to be transferred from U.S. Dollars to the currency of a designated foreign government or intergovernmental organization ("Foreign Currency"). Wells Fargo makes money when it converts one currency to another currency for you. The exchange rate provided to you is set by Wells Fargo in its sole discretion, and it includes a markup over Wells Fargo's cost of sourcing the relevant currency or currencies. The markup may be based on several factors, including without limitation costs incurred, market risks, services rendered, the client relationship, the transaction and our desired return.

The exchange rate Wells Fargo provides to you may be different from exchange rates you see online, in publications, at other banks or other foreign exchange providers. Also, different customers may receive different exchange rates for transactions that are the same or similar. The exchange rate may depend on the type of transaction being conducted, the dollar amount, type of currency, the date and time of the exchange and/or the factors noted above. The foreign exchange market is dynamic, so exchange rates can change rapidly. If you delay executing a transaction, the exchange rate may change and could even be significantly different. Wells Fargo reserves the right to refuse to process any request for a foreign exchange transaction.

Wells Fargo will not be liable for a sum in excess of the value of the Order after it has been converted from Foreign Currency to U.S. Dollars at Wells Fargo's buying rate for exchange at the time the cancellation of the Order is confirmed by Wells Fargo.

12. Term and Termination. This Agreement may be terminated by you or Wells Fargo with prior written notice, but will remain in effect with respect to any transaction occurring prior to its termination.

13. Amendments to Agreement. Wells Fargo may, from time to time, notify you of a change to this Agreement or its rules or procedures. By using the wire transfer service after the notice is sent or otherwise made available to you, you will be conclusively deemed to have agreed to the change.

14. Governing Law; Rules and Regulations. Our rights and obligations regarding Orders will be governed solely by this Agreement, your account agreement, and, to the extent applicable, federal law and the state laws governing your Account. All Orders will be subject to the rules and regulations of any funds transfer system used by Wells Fargo, as amended from time to time.

15. Notices; Receipt of Confirmations. If a notice is sent to you, it will be effective if it is delivered in person or sent by first class mail to your last address as shown on Wells Fargo's records. If a notice is sent to Wells Fargo, it will be effective if it is delivered by first class mail to the address shown in Wells Fargo's then current fee schedule (or to such other address as Wells Fargo may from time to time direct) and after Wells Fargo has had a reasonable opportunity to act on it. An optional confirmation or a bank statement showing a wire transaction, sent electronically or by mail, to your last address as shown in Wells Fargo's records and not returned, will be conclusively presumed to have been received by you. Wire Transfer mail confirmations are not available for addresses outside of the United States.

16. Miscellaneous. Wells Fargo's waiver of any term of this Agreement will not constitute a waiver of any other term or impair any of its rights if you breach this Agreement. You agree not to assign your interest in this Agreement to anyone else. If any provision of this Agreement is determined by a court to be invalid, it will not affect the validity of any other provision. In interpreting this Agreement, the headings will not be considered a substantive part of this Agreement. Unless the context requires otherwise, terms not defined in this Agreement have the meanings, if any, provided in UCC4A. This Agreement and any applicable account agreements constitute our entire Agreement with respect to the matters they cover and supersede all prior oral or written communications between us regarding such matters. In the event of conflict between a provision of this Agreement and any other agreement you may have with Wells Fargo (including without limitation, any account agreement between us), the terms of this Agreement will govern the subject matter of this Wire Transfer Agreement.

17. Additional Terms Governing Outgoing Consumer International Wires

17.1. General. This Section contains additional terms applicable only to Orders initiated by a natural person in the United States to transfer funds to a Beneficiary in a foreign country for personal, family, or household purposes (each, an "Outgoing Consumer International Wire"). This Section does not apply to any Order sent to a Beneficiary in the United States, to any Order initiated by a non-consumer, or to any Order initiated by a consumer for any non-personal, non-family, or non-household purposes. In the event of a conflict between a provision in this Section and a provision in the rest of this Agreement or in the agreement governing your Account, the provision in this Section will control.

17.2. Disclosures and Receipts. Prior to sending an Outgoing Consumer International Wire, Wells Fargo will disclose to you, by telephone, the amount that will be transferred to the Beneficiary, a description of any fees and taxes imposed by Wells Fargo, the total amount of the transaction, the exchange rate to be used, the amount to be transferred in the Foreign Currency, a description of any fees and taxes to be applied by any other person to the extent known by Wells Fargo, and the amount that will be received by the Beneficiary. Wells Fargo will mail a receipt for an Outgoing Consumer International Wire within 30 days after payment is made for the Outgoing Consumer International Wire.

17.3. Liability. Wells Fargo is liable only for damages required to be paid as provided under Regulation E, subpart B or, to the extent applicable, UCC4A (except as expressly modified by this Agreement). Except as required by Regulation E, subpart B, Wells Fargo will not be responsible for the acts or omissions of any other person or entity, including but not limited to any processor, any country's central bank, or any other financial institution, and no such person or entity will be deemed Wells Fargo's agent. In no event shall Wells Fargo have any liability for any indirect, incidental, consequential, punitive, or special damages, even if advised of the possibility of such damages.

17.4. Cancellation. You may cancel an Outgoing Consumer International Wire for a full refund within 30 minutes of completing a transaction. To cancel, call the cancellation phone number provided to you at the time of your request.

17.5. Error Resolution. In the event that you believe an error has occurred with respect to an Outgoing Consumer International Wire, you must notify Wells Fargo no later than 180 days after the "Availability Date" (the date when funds will be available to the Beneficiary) disclosed to you by contacting us at 1-888-384-8400 or by mailing Wells Fargo at the address shown in Wells Fargo's then current fee schedule or to such other address as Wells Fargo may from time to time direct. If you fail to notify us within this time period, Wells Fargo will not be liable for any error or loss of interest or any interest equivalent relating to the erroneous transaction.

When you contact us, please tell us: (a) your name, address, and telephone number where we can reach you during business hours; (b) the Beneficiary's name and, if known, his or her telephone number and address; (c) the date, dollar amount and transaction confirmation number of the Outgoing Consumer International Wire; and

(d) the error or problem with the wire transfer, and why you believe it is an error or problem.

17.6. Governing Law. An Outgoing Consumer International Wire is a "remittance transfer" as defined in Regulation E, Subpart B, and will be governed by the laws of the United States and, to the extent applicable, the laws of the state of New York, including New York's version of UCC4A, without regard to its conflict of laws principles.

Part III – Agreement and Approval

Customer Approval - Signatures as required by Certificate of Authority or the Signature Card.

Under the dispute resolution program in your account agreement, you agree our disputes may be decided before one or more neutral persons in an arbitration proceeding and not by a judge or jury trial.

Legal Name as it appears on your Account		Customer's Primary Phone No.	
Mailing address for PINs and mail advice including City, State, and zip code. (If blank, items will be mailed to address on primary statement mailing address.)			
Printed Name of Authorized Signer		Printed Name of Authorized Signer	
Signature	Date	Signature	Date

Bank Approval - Forms submitted without Customer and Banker signatures or older than 90 days will be returned unprocessed.

Customer's 1st ID	ID Type	ID Number	Issued by State/Country	Expiration Date
Customer's 2nd ID	ID Type	ID Number	Issued by State/Country	Expiration Date

Banker/Officer's Phone #	Banker/Officer's Fax #	Bank MAC
Banker's Wells Fargo email address for notification. A reasonable attempt will be made to contact the banker at the Wells Fargo email provided upon completion. Notification will NOT be sent to any email address outside the Wells Fargo system.	Document Prepared by & phone # (in case of questions about this setup)	
Banker/Officer's Printed Name	Banker/Officer Signature — Required	Date

Once the customer's approval/signature is received on the form, the Banker/Relationship Manager must approve/sign the form, then fax to 866-922-6202, or email to imgwiresetups@wellsfargo.com. The form must be submitted from a valid Wells Fargo Fax or email address. File copies in your location's record retention file.

Information Reporting and Image Delivery Service Description

Treasury Management Services

November 8, 2019

Introduction

The Service Documentation contains the terms and conditions under which we provide you the services described below. "You," "your" or "yours" refer to the Bank customer identified on the Acceptance of Services that is signed when you enroll in the Service ("Acceptance"). The terms "we," "us," or "our" refer to the Bank. Other capitalized terms used in this Service Description are defined in the Master Agreement or in the Glossary at the back of this Service Description.

The service ("Service") covered by this Service Description is:

- Information Reporting and Image Delivery

The Service Documentation includes:

a. The Service Description (which contains terms and conditions applicable to the Service),
b. The Acceptance (which indicates your acceptance of the Service Documentation),
c. The Master Agreement (which contains terms and conditions applicable to all services),
d. The Account Agreement governing the Account,
e. The Product Enrollment Form (which contains set-up information for each service in which you are enrolling), and
f. User Guides (which include Terms of Use, software, software licenses, price schedules, specifications, instructions, and notices).

The documents and individual provisions of the Service Documentation are intended to be read together as one agreement between you and us. This Service Description and the Master Agreement are posted at our *Commercial Electronic Office® (CEO®)* portal. If there is a conflict among the documents that are part of the Service Documentation, they will govern in the order listed above. Your use of a Service confirms your receipt of, and agreement to be bound by, this Service Description and all Service Documentation.

Information Reporting and Image Delivery

1. **Description of services.**
   a. With this Service we make data regarding transactions and/or images of Items posted to or processed through your Accounts available to you in order to provide you with timely information on your Account activity. We refer to the data and images as "information." The information and reports you can access are described in the User Guide for the Service. If you elect to use the Cash Flow Analysis Service (described further in the User Guide for the Service), you may also manually populate external data you want to view through this Service.
   b. The methods we use to make information available to you (and we may remove or add methods from time to time) include without limitation BAI File Transfer, InfoFax fax/email, SWIFT messaging, ISO 20022 XML transmission, physical media (CD-ROM and DVD), Machine-to-Machine, our CEO portal, and an Application Programming Interface ("API") through the Wells Fargo Gateway.
   c. The Master Agreement (which contains terms and conditions applicable to all services),
      i. Posted to or processed through the Account,
      ii. Cashed or collected by us or accepted for deposit to the Account, and
      iii Returned unpaid to the Account.

Images of posted paper Items that have been converted to ACH Entries pursuant to the ACH Rules may not be available through this Service.

2. **Accuracy of Information.**
   a. We will not verify the accuracy or completeness of: (i) information from other financial institutions, (ii) information you manually populate, or (iii) cash forecasting information. Forecasting information is not a guarantee of actual performance.
   b. Account balances and other information that reflect intraday activity on your Account may differ from the available balance as determined under our funds availability policy (as described in the Account Agreement) and by our internal risk parameters.

3. **Software Sublicense.** If a software license or sublicense is required for you to access the Service ("Software Sublicense"), we will make the terms of the Software Sublicense available to you as part of the set up process for the Service. You will be required to accept the Software Sublicense before being allowed to access the Service. We may terminate any Service requiring use of a Software Sublicense immediately on written notice to you, including without limitation if you fail to comply with the Software Sublicense.

4. **Stop payment orders.** If you elect a service option through which you can place stop payment orders, your rights and our obligations regarding any stop payment order will be determined as provided in the Account Agreement.

Glossary

Account means your account(s) with us used in connection with the Services.

Account Agreement means the applicable account agreement governing the Account.

ACH means automated clearing house.

ACH Rules means the Nacha Operating Rules and any applicable local ACH rules.

Item is defined in the Account Agreement.

Master Agreement means the Master Agreement for Treasury Management Services.

Check Disbursements and Fraud Prevention Services Service Description

Treasury Management Services

Revised November 6, 2020

Table of contents

Introduction

The Service Documentation contains the terms and conditions under which Wells Fargo Bank, N.A. ("Bank") provides you the services described below. "You," "your" or "yours" refer to the Bank customer identified on the Acceptance of Services that is signed when you enroll in Services ("Acceptance"). The terms "we," "us," or "our" refer to the Bank. Other capitalized terms used in this Service Description are defined in the Master Agreement or in the Glossary at the back of this Service Description.

The services (each a "Service") covered by this Service Description are:
Fraud Prevention and Related Services

- Positive Pay Service
- Reverse Positive Pay Service
- Payment Authorization Service
- Account Reconciliation Plan Service
- Controlled Disbursement Account Service

Specialized Disbursement Services

- Centralized Disbursements Manager Service
- Payable Through Draft Service
- Third Party Drafts Service

The Service Documentation includes:

a. The Service Description (which contains terms and conditions applicable to the Services),
b. The Acceptance (which indicates your acceptance of the Service Documentation),
c. The Master Agreement (which contains terms and conditions applicable to all services),
d. The Account Agreement governing your account(s) that you use for the Service ("Account"),
e. The Product Enrollment Form ("Set-up Form") (which contains set-up information for the service in which you are enrolling), and
f. User Guides (which include Terms of Use, software, software licenses, price schedules, specifications, instructions, and notices).

You agree to the terms and conditions governing the Services in which you have enrolled, as described in this Service Description and in the Service Documentation, which includes details of your enrolled Services. The separate documents comprising of the Service Documentation are intended to be read together as one agreement between you and us. This Service Description and the Master Agreement are posted at our *Commercial Electronic Office® (CEO®)* portal. If there is a conflict among the documents that are part of the Service Documentation, they will govern in the order listed above. Your use of a Service confirms your receipt of, and agreement to be bound by, the applicable terms for the Service in this Service Description and all Service Documentation.

Fraud Prevention and Related Services:

As further described in the Account Agreement, we offer certain Services to help reduce the risk of fraud, including the Services below.

Positive Pay Service

1. **Description of service.** With this Service you can instruct us to pay or return counterfeit Checks, Checks otherwise not validly issued and certain altered Checks presented to us for payment on the Accounts you enroll in this Service. For purposes of this Positive Pay Service Description, "Check" refers to each check presented for payment on your Account, whether it is counterfeit, not validly issued, altered or validly issued by you. Except as otherwise provided in this Service Description, enrollment in our Account Reconciliation Plan Service is required.
   a. **Service summary.** Each Business Day, either before or after posting the Check to your Account, based on the Service option you choose as described in section 1b below:

      i. We electronically compare the serial number and numeric amount of each Check presented to us for payment before our Cutoff Time on the prior Business Day to your Check Issue Data (see section 2),
      ii. We will provide you with a report ("Exception Report") of each Check that does not match your Check Issue Data (an "Exception Check") (see section 4),
      iii. We review each Exception Check, and either correct or reverse and repost each Exception Check with errors that we can correct, depending on the Service option you choose as described in section 1b,
      iv. We will pay or return each Exception Check (see section 5), and
      v. We separately review each "directly-presented Check" (see section 8).

   b. **Service options.** You may enroll an Account in one of two options of the Service:
      i. **Perfect Presentment® Positive Pay.** We electronically compare a Check to your Check Issue Data prior to posting the Check to your Account. Each Check with error(s) that we can correct, such as an encoding error, will be corrected, so that the Exceptions Report includes only unresolved Exception Checks. This option is offered only on an Account enrolled in our Controlled Disbursement Service.
      i. **Positive Pay and Positive Pay Only.** We electronically compare a Check to your Check Issue Data after posting the Check to your Account. We then review each Exception Check, and reverse and repost each Exception Check with error(s) that we can correct, such as encoding errors, so that the Exception Report includes only unresolved Exception Checks. Enrollment in our ARP Service is not required for Positive Pay Only.

2. **Check Issue Data.** You will provide us with the Check Issue Data for all issued Checks, in the format, through the communications channel, and at the place we specify no later than our Cutoff Time. You will not distribute any Check before you have included the Check in the Check Issue Data you have provided to us. In performing this Service:
   a. We will use only the Check Issue Data you provide to us,
   b. If the Check Issue Data includes a post-dated Check (a check you issue with a date in the future), we will not compare that Check against the Checks presented for payment on the Account until that date, and
   c. We will not accept Check Issue Data for Checks with an issue date more than forty-five (45) calendar days in the future.

3. **Payment of Matching Checks.** For each Matching Check, we will make final payment on the Check and charge the Check to your Account (subject to section 11).

4. **Notifying you of Exception Items; providing images.** When we identify an Exception Check through our electronic comparison, we notify you through the Exceptions Report. This report is available on our *CEO* portal. We will use reasonable efforts to provide an image of any Exception Check (including a Holdover Exception Check) to you, but we will have no liability if we are unable to do so before the Decision Deadline.
   a. **Holdover Exception Checks.** This subsection applies when you have enrolled your Controlled Disbursement Account in our Perfect Presentment Positive Pay Service. A "Holdover Exception Check" is an Exception Check we identify after we prepare and transmit the Exceptions Report to you. We will use our best efforts to notify you by calling you at the number we have on file for you.

5. **Decision Deadline.** You will make your pay or return decision based on the information about the serial number and amount of the Exception Check in the Exceptions Report, and if you use our Payee Validation Service (see section 7), on any payee information we provide to you.
   a. **Instructions before the Decision Deadline.** If, before the Decision Deadline, you instruct us to pay or return an Exception Check, we will follow your instructions (subject to section 11). You will use the same communications channel to instruct us that we used to notify you of the Exception Check, except that if we included the Exception Check on the Exception Report we post on the *CEO* portal, you will use the *CEO* portal to communicate your instruction regarding the Exception Check to us.
   b. **No instructions before the Decision Deadline.** If you do not instruct us before the Decision Deadline regarding an Exception Check, we will process the Check in accordance with your Default Option. If we are unable to obtain your instructions prior to the Decision Deadline regarding a Holdover Exception Check described in subsection 4(a) we will process the Holdover Exception Check in accordance with your Default Option.

6. **Default Options.** We return the Exception Check to the bank of first deposit marked "refer to maker" even if you validly issued the Exception Check (and do not charge it to your Account). We recommend the "return all" Default Option because it reduces the risk of unauthorized Checks being paid on your Account (even though it may result in valid Checks being returned unpaid).
   a. **"Return all."** We return the Exception Check to the bank of first deposit marked "refer to maker" even if you validly issued the Exception Check (and do not charge it to your Account). We recommend the "return all" Default Option because it reduces the risk of unauthorized Checks being paid on your Account (even though it may result in valid Checks being returned unpaid).
   b. **"Pay all."** We charge the Exception Check to your Account. This Default Option presents a higher risk of unauthorized checks being paid on your Account. If you elect this Default Option, you assume full liability for any losses resulting from counterfeit, altered or Checks otherwise not validly issued as described in section 9 below.

7. **Payee Validation Service.**
   a. **Description of Payee Validation Service.** When you enroll in our optional Payee Validation Service, we will do the following:
      i. On each Check that is greater than the Payee Validation Threshold, we electronically compare the payee's name on your check to your Check Issue Data. The "Payee Validation Threshold" is the dollar amount we choose above which we will perform the payee validation service.
      ii. If (1) there is a difference between the two names that is not within guidelines we establish, or (2) a notation or legend on the Check prevents the electronic comparison of the payee's name, we will include the Check as an Exception Check in your Exceptions Report.
      iii. If you notify us you have incurred a loss as a result of an unauthorized alteration of the payee's name, we will reimburse you for the face amount of any Check we pay under the Payee Validation Threshold except as provided below, provided that you notify us of your loss in writing within 3 years after the statement or Check is made available to you.

NOTE: When you enroll in our optional Payee Validation Service, you are charged a per-Check fee for each Check presented on your Account during a monthly billing cycle. This fee is separately disclosed to you. The per-Check fee is assessed on each Check presented including without limitation Checks not exceeding the Payee Validation Threshold.

b. **When we do not perform payee validation.** We will not perform any payee validation review with respect to a Check if:
   i. The Check is less than the Payee Validation Threshold,
   ii. The payee's name on the Check is handwritten instead of machine-printed,
   iii. You fail to include the payee's name on the Check in your Check Issue Data,
   iv. We do not receive your Check Issue Data for the Check before our Cutoff Time, or
   v. You request we add the payee's name manually to Check Issue Data you have previously provided to us.

c. **Exceptions to reimbursement.** We will not reimburse you for losses resulting from an unauthorized alteration in the payee's name if:
   i. The Check with the unauthorized alteration is hand-written, or
   ii. We fail to identify an alteration or other discrepancy in the payee's name because:
      1. The payee name in your Check Issue Data did not exactly match the payee name on the Check, or
      2. You used customized zone formatting.

8. **Directly-presented checks.** A "directly-presented Check" is a Check we receive for deposit or cashing at our branch or through another depository channel that may present higher risk. The risk is we may be required to make proceeds from a directly-presented Check available before you can review and make a timely decision on the directly-presented Check identified as an Exception Check in our Exceptions Report. When your Check Issue Data on file with us does not include or match a directly-presented Check:

   a. if we receive the Check for deposit, we will take those steps as we, in our sole discretion, determine are commercially reasonable for the depository channel used, to review and accept the Check or refuse to accept the check, and
   b. if we receive the Check for cashing, we reserve the right to refuse to accept the Check.

   You may instruct us to exclude all directly-presented Checks from this process. In that case, each directly-presented Check will be considered a Matching Check, even if it is not included in your Check Issue Data on file with us at the time we receive it, and we will pay it without further inquiry.

9. **Limitation of liability and indemnification.**
   a. **Liability limit.** We will pay each Check you have authorized us to pay as described in this Service Description (including each Matching Check) and each Check you are considered to have authorized us to pay (including each Check we pay according to your Default Option) without performing any Check verification procedure other than those procedures described with this Service Description. We will have no liability for paying a Matching Check or an Exception Check you are considered to have approved if:
      i. There is an alteration in its serial number or amount,
      ii. It is counterfeit, bears a forged or unauthorized signature, or
      iii. It was otherwise not validly issued.
   b. **Indemnification.** Each Check that we pay according to this Service Description will be considered properly payable, and each Check that we return as provided in this Service Description will be considered not properly payable. Without limiting the indemnification provisions contained in the other Service Documentation, you:
      i. Indemnify and hold us harmless from any and all Losses that we may suffer or incur as a result of our payment or return of a Check at your instruction or otherwise according to sections 5 or 8 of this Service Description, including a Check you issue before including it in your Check Issue Data, and

   ii. Release and forever discharge us from all claims and damages, whether known or unknown, liquidated or unliquidated, contingent, direct or indirect, which you have, or claim to have against us relating to the payment or return of any Check as provided in this Service Description.

10. **Stop payment; cancel and void instructions; stale-dated Checks.**
    a. You will not use this Service as a substitute for our stop payment service. You will follow our standard stop payment procedures described in the applicable Account Agreement if you wish to stop payment on a Check that was validly issued. You will use:
       i. A cancel instruction only to delete an outstanding Check included in your Check Issue Data, and
       ii. A void instruction only to notify us that a Check included in your Check Issue Data has been destroyed and will not be re-issued.
    b. Using notations or legends on a Check is not an effective stop payment order or void instruction. We will not be liable for failing to follow your cancel or void instruction for any Check on which we have made final settlement.
    c. If you choose to use our "stale-dated" feature, we will return each Matching Check (other than a directly presented Check) that is dated past your specified stale-date, unless you instruct us to pay the Check.

11. **Our right to return checks.** Nothing in this Service description will limit our right to return any Check you have authorized us to pay as part of this Service if we determine that:
    a. The Check is not properly payable for any reason (without us agreeing to, or being required to, make such determination in any circumstance), or
    b. There are insufficient collected and available funds in your Account to pay the Check.

    You agree that our determination not to pay a Check will not constitute wrongful dishonor of that Check.

12. **Survival.** Sections 4, 7, 9 , 10 and 11 will survive termination of Services.

Reverse Positive Pay Service

1. **Description of Service.** Our Reverse Positive Pay Service is an alternative to our Positive Pay Service that we provide to select customers, including customers that issue Drafts. The Reverse Positive Pay Service is required when you enroll in the Third Party Drafts or Payable Through Drafts Services. With this Service:
   a. You can detect fraudulent Checks by reviewing information we provide to you each Business Day about Checks that have posted to your Account from the prior Business Day ("Paid Items Report") (see section 2),
   b. You can request we edit Checks that have posted incorrectly to your Account,
   c. If you have elected our Teller Match Service, we may perform a positive pay verification of certain directly-presented Checks (see section 3) as we determine in our sole discretion from time to time, and
   d. You can instruct us to return unauthorized Checks.

   For purposes of this Reverse Positive Pay Service Description, a "Check" is a check, Draft or other paper instrument purportedly issued on your Account, whether it is counterfeit, not validly issued, altered or validly issued by you.

2. **Paid Items Report.** Each Business Day, we will provide you with the Paid Items Report through our *CEO* portal or by other methods you may elect. Each Business Day, you will compare the Paid Item Report to your Check Issue Data and before the Decision Deadline, notify us through the *CEO* portal of any edit requests or return instructions for those Checks described on the Paid Items Report for that Business Day. You will include in your notification the serial number and amount of each Check you wish to edit and the reason for returning each Check you wish to return.

3. **Teller match service.**
   a. You may separately elect to have us perform a positive pay verification on certain directly-presented Checks, in which case the provisions in section 8 (Directly-presented Checks) of the Positive Pay Service Description are incorporated here by reference and shall apply and govern. If you enroll in this Service option, you will provide the Check Issue Data for each Check to us before you issue the Check.
   b. With respect to a directly-presented Check, we will have no liability to you for not performing:
      i. Any positive pay verification, if we do not receive and have a reasonable amount of time to act on your Check Issue Data for the Check before we receive the directly-presented Check, or
      ii. Payee validation, if you fail to include the payee's name in your Check Issue Data for the directly-presented Check.

4. **Your failure to give us timely instructions.** If we do not receive your edit requests and/or return instructions by the Decision Deadline on any Business Day, we will pay each Check described in the Paid Items Report for that Business Day, unless you have already instructed us by effective stop payment order to return that Check unpaid.

5. **Checks to be paid; liability limit and indemnification.**
   a. We will pay each Check you are deemed to have authorized us to pay in accordance with this Service Description without performing any further review of such Check. We will have no responsibility whatsoever for paying such a Check even if its serial number or amount is altered, it is counterfeit, bears forged or unauthorized signature, or is not validly issued. You waive and release us from and agree to protect us against any Losses resulting from a claim that such a Check was not properly payable.
   b. We will have no liability if you instruct us to return a Check (including without limitation a Check that is counterfeit, not validly issued or altered) but your instruction does not reach us in a time and manner affording us a reasonable opportunity to return the Check before we pay, accept, certify, cash or otherwise become obligated to pay the Check as provided in the Uniform Commercial Code.
   c. You will promptly reimburse us for any loss we incur when we make the proceeds from a Check available in accordance with Reg CC prior to our receipt of your instructions regarding the Check.

6. **Edit requests and return instructions.**
   a. **Edit requests.** We reserve the right to deny any of your edit requests based on our evaluation of the edit request. We will not accept edit requests with respect to any Checks that you attempt to communicate to us by any means other than the *CEO* portal.
   b. **Return instructions.** We reserve the right to decline your return instruction based on our evaluation of the return instruction. If your reason for returning a Check is fraud, your return instruction alone will not constitute a claim for a fraudulent transaction. You must file a separate claim with us relating to the fraudulent transaction.

7. **Stop payment and our right to return Checks.** Sections 10a and b (Stop payment and void instructions) and 11 (Our right to return Checks) of the Positive Pay Service Description are incorporated here by reference and shall apply and govern.

8. **Survival.** Sections 3, 5, 6 and 7 will survive termination of Services.

Payment Authorization Service

NOTE: If you have the ability to write checks on your Account, we recommend that you use the Positive Pay Services to prevent check fraud. You understand that the Payment Authorization Service does not provide the same level of protection as the Positive Pay Services. If you decide not to implement the Positive Pay Services, or you do not properly use it, you assume the risk of loss for unauthorized checks.

1. **Description of service.** With this Service you can set limits on paper Items that may be drawn on your Accounts based on the options you choose. You may also prevent any paper checks being paid on your Accounts by choosing to set the applicable limit to zero.

2. **Available options.**

Option (on Product Enrollment Form)	Action we will take
Maximum Check Amount Authorized	We will automatically return unpaid Items drawn against the Account which are presented to us but exceed the "Maximum Check Amount Authorized" you provide us with. These Items are marked "Refer to Maker."
Maximum Check Cashing Amount	We will refuse to cash checks drawn against the Account and presented to us through our branch network, if they exceed the "Maximum Check Cashing Amount" you specify.
Maximum over the Counter Withdrawal Amount	We will refuse withdrawal requests against the Account which are presented to us through our branch network, if they exceed the "Maximum over the Counter Withdrawal Amount" you specify.
Checks to Individuals	We will refuse to cash checks drawn against the Account which are presented to us through our branch network, and which are made payable to an individual.

Account Reconciliation Plan (ARP) Service

1. **Description of Service.** With our ARP Service, you can receive automated reporting to help you reconcile your Accounts. With this Service you can:
   a. Receive Account information reporting, based on the Service options you select,
   b. Store information about Items you issue on your Accounts, and
   c. Process the information in accordance with the Service options that you elect in the Set-up Form. Our User Guide for the Service details the Service options.

2. **Issued check information.** If you elect our full ARP Service, each Business Day prior to the Cutoff Time, you will provide us with the Issued Check Information using the communication channel(s) you elect. For purposes of this Service Description, "Issued Check Information" is the issue date, serial number and dollar amount of each Item (as defined in the applicable Account Agreement) that you issue on your Account. If you elect our Deposit Location Reporting Service, you will provide us with a list of your location numbers and names and may amend the list from time to time by notifying us in writing.

3. **Stop payment orders.** If you use the ARP Service to place a stop payment order on any Item, you understand that:
   a. The Account Agreement governs the stop payment order,
   b. Each stop payment order is subject to our verification that the Item described in the stop payment order has not been paid, and
   c. This verification may occur a minimum of ninety (90) minutes after the time you transmit the stop payment order to us.

Controlled Disbursement Account Service

1. **Description of Service; required Accounts.** The Controlled Disbursement Account ("CDA") Service is available to select customers that qualify based on their credit and other considerations. With the CDA Service, you will establish and maintain:
   a. One or more demand deposit accounts with us (each, a "Funding Account"),
   b. One or more checking accounts with us linked to a Funding Account (each, a "Disbursement Account"), and
   c. The information reporting service specified by us ("Information Reporting Service").

   Each Funding Account and Disbursement Account and the Information Reporting Service will be identified in the Set-up Form for this Service. You will enroll each Disbursement Account in our Positive Pay Service. You will use each Disbursement Account solely to issue Checks, Drafts and electronic debits (each, a "Debit") in accordance with this Service Description. You will not issue any Debits on any Disbursement Account until we notify you that such Disbursement Account is operational.

2. **Determination of Total Net Presentment.** Each Business Day by the Cutoff Time, we will make the Total Net Presentment for each Disbursement Account available to you through the Information Reporting Service. The "Total Net Presentment" consists of the total dollar amount of:
   a. Debits that have posted in the first and, if applicable, second presentment on that Business Day, and
   b. Adjustments to the Disbursement Account reported on our CD Summary report, including without limitation Debits posted after the last presentment on the prior Business Day (these Debits are referred to collectively as the "Prior Day Funding Adjustments").

   If the Total Net Presentment is not available to you through the Information Reporting Service by the Cutoff Time, we will have no liability, and you will estimate the Total Net Presentment.

3. **Your obligation to deposit funds in Funding Account.**
   a. Each Business Day before the Cutoff Time, you will deposit good and collected funds in your Funding Account so that the balance in the Funding Account, as determined in accordance with the Account Agreement, is sufficient to cover either:
      i. The Total Net Presentment or your estimate of the Total Net Presentment, and
      ii. The total of any Debits that have been memo posted to your Disbursement Account before the Cutoff Time on the current Business Day as set forth in the intra-day composite report we make available to you.

   b. If you fail to transfer funds as required in subsection 3(a) above or if such transfer was based on your estimate of the Total Net Presentment and such estimated amount was less than the actual Total Net Presentment, we may, at our sole option:
      i. Advance to the Funding Account(s) sufficient funds to pay the Debits presented for payment on the Disbursement Account and transfer such funds to the Disbursement Account, or
      ii. Return Debits, in any order, unpaid (even though we may have previously established a pattern of paying such Debits).

4. **Transfer of funds to Disbursement Account.** Each Business Day, we will:
   a. Transfer from the Funding Account to the Disbursement Account the amount necessary to cover the Total Net Presentment as shown on the CD Summary Report for that Business Day, and
   b. Advance funds to the Disbursement Account in the amount sufficient to cover Debits that posted to Disbursement Account after the last presentment on that Business Day (and the amount advanced by us will be reported on the CD Summary Report for the next Business Day as the Prior Day Funding Adjustments).

5. **Our obligation to pay debits.** We will have no obligation to pay any Debit if the balance of good and collected funds in the Disbursement Account on which the Debit is drawn is not sufficient to cover the Debit at the time we make our payment decision.

6. **Your agreement to repay our advances to Disbursement Account.** You will unconditionally pay us on demand without setoff or counterclaim in good and collected funds the full amount of any advance we make pursuant to sections 3 and 4 plus our fees and costs incurred in connection with such advance.

7. **Security interest.** As security for the Obligations, you pledge to us, and grant us a lien on and a security interest in, the following property and all proceeds thereof (collectively, the "Collateral") as security for the prompt satisfaction of the Obligations:
   a. Each Funding Account, each Disbursement Account, and all of your other accounts with us and our affiliates, and
   b. Any of your property now or at any time delivered, conveyed, transferred, assigned, pledged or paid to us in any manner whatsoever.

   Our receipt at any time of any kind of security, including cash, will not be a waiver of any of our rights or powers under any agreement between us. Upon our request, you will sign and deliver to us, any security, control or other agreements and documents as we determine are necessary or desirable (in our sole opinion) to grant us or perfect our security interest in the Collateral. At the time any Obligation becomes due and payable, we may apply or dispose of any and all Collateral, received or to be received, at any time or place, for any price and upon terms and conditions as we determine. We may apply the amounts on deposit or net proceeds of the sale or other disposition (together with any sums credited by or due from us to you), to the payment of the Obligations, all without prejudice to our rights with respect to any portion of the Obligations which remain unpaid. You expressly waive any right to require us to make any presentment or demand, or give any notices of any kind, including, but not limited to, any notice of nonpayment or nonperformance, protest, notice of protest, notice of dishonor, notice of intent to accelerate or notice of acceleration. If we are required by Applicable Law to give you reasonable notice before the sale or other disposition of Collateral, that requirement is met if notice is given at least 5 calendar days before the date any sale, application or other disposition will be made. Our rights and remedies under any agreements between us or instruments signed by you in our favor are in addition to, and not exclusive of, any other rights or remedies we have under Applicable Law.

8. **Fraud prevention.** Enrollment in one of our Positive Pay Services is required for enrollment in this Service. You acknowledge there is a growing risk of losses resulting from unauthorized Items. You recognize that Controlled Disbursement Service customers are especially susceptible to losses from unauthorized checks. You are aware that we offer an additional service known as "Payee Validation," which is an effective means of controlling risk from counterfeit checks, altered checks and certain other types of fraudulent checks. We have advised you that if you do not enroll in and properly use our Payee Validation Service, we will be unable to prevent losses from counterfeit, altered and certain other types of fraudulent checks and you will be treated as having assumed the risk of these losses.

9. **Liability and indemnification.** In addition to the liability and indemnification provisions in the Master Agreement, we will not be liable for any Losses paid, suffered or incurred by you, and you will indemnify us from and hold us harmless against any Losses that we suffer or incur, arising directly or indirectly and relating to:
   a. Your performance or failure to perform your obligations in accordance with this Service Description,
   b. Us acting on any information you provide us in any Service Documentation or otherwise,
   c. If we return any Check unpaid because you have not deposited good and collected funds in the Funding Account related to the Disbursement Account on which a Debit is drawn sufficient to cover the Total Net Presentment,
   d. Our dishonor and return of any Debit unpaid if you issue the Debit before we notify you the Disbursement Account on which it was drawn is operational,
   e. Our nonpayment of a Debit, unless the nonpayment results directly and proximately from our gross negligence or willful misconduct,
   f. If any Debit fails which has not been tested and approved by us to satisfy our check specifications, our late return of that Debit and any presentment-related problem resulting from the failure of that Debit,
   g. Except as otherwise provided in the Positive Pay, Reverse Positive Pay, ARP, Payable-Through Draft or Third-Party Draft Service Descriptions, if we provide you with one or more of these Services, our payment of any Check or Draft for which there is an alteration in serial number or amount, is counterfeit, bears a forged or unauthorized signature, or is otherwise not validly issued, or
   h. The exercise of our rights or the performance of our obligations in accordance with this Service Description or the Positive Pay, Reverse Positive Pay, ARP, Payable-Through Draft or Third-Party Draft Service Descriptions, if we provide you with one or more of these Services.

10. **Termination.** In addition to our right to terminate this Service under the Master Agreement, we may terminate this Service and close the Funding Account and Disbursement Account immediately upon sending you written or oral notice (confirmed in writing) of such action if:
    a. You fail at any time to fund the Funding Account as required in this Service Description,
    b. A lawsuit or other proceeding is commenced by any federal or state agency alleging, or we receive an opinion of counsel, that this Service or any material term or condition of this Service Description violates any law or regulation, or
    c. You default in your obligations under the other Service Documentation or under any other agreement or instrument signed by you in our favor including without limitation any loan agreement or promissory note.

    Upon termination of this Service, you will, in accordance with our instructions, stop issuing Debits on the Disbursement Accounts, and we will close the Disbursement Accounts and stop processing Debits. You will continue to be liable for all Debits issued on the Disbursement Accounts prior to termination and for all Debits we are obligated to pay.

11. **Survival.** Sections 2 and 5 – 9 will survive the termination of this Service.

Specialized Disbursements Services

Centralized Disbursements Manager Service

1. **Your relationship to clients.** You have represented to us that you function as claims administrator, property manager, or accounts payable administrator with respect to your clients (each individually a "Client" and collectively, "Clients"), who may be (i) insurance companies or business organizations maintaining a program of self-insurance, (ii) owners of commercial real property, or (iii) other business organizations with a need for administrative services related to accounts payable and other disbursements. The services you provide to your Clients may include (without limitation) evaluation, resolution, and/or payment of claims or other types of accounts payable on behalf of your Clients, facilitating the funding of payments related to claims or other accounts payable, and reconciliation and reporting with regard to the payment process.

2. **Centralized Disbursements Manager ("CDM") desktop.** You will interact with our electronic system for operating the Service through our "CDM Desktop" function, which you will access through the applicable treasury management services internet portal maintained by us.

3. **Account structure.** To facilitate your disbursement and payment funding activities on behalf of your Clients, you will establish and maintain with us, in your name and taxpayer identification number: (i) a zero-balance controlled disbursement account against which all checks you issue on behalf of your Clients will be drawn ("Disbursement Account"), (ii) a master account linked to the Disbursement Account for the purpose of funding payment of items presented against the Disbursement Account ("Master Funding Account"), (iii) at your option, one or more accounts linked to the Master Funding Account and associated with an individual Client for the purpose of funding disbursements for the benefit of such Client (each an "Individual Client Funding Account"), (iv) an account against which exception items that you instruct us to pay are to be temporarily posted ("Default Account"), and (v) one or more accounts to serve as recovery, refund or adjustment-related transactional accounts; alternative funding sources for payment of checks when the appropriate Individual Client Funding Account lacks adequate funds; or for electronic payment settlement (each, a "Recovery Account").

4. **Accounts for the benefit of individual clients.** At your option, you may open one or more Individual Client Funding Accounts in your name, each for the benefit of an individual Client, in a way that permits the Client's taxpayer identification number to be associated with the Account for tax reporting or other purposes. This type of Individual Client Funding Account is referred to herein as a "Beneficial Owner Account", and may be used for the broader purposes of receiving, holding, managing and/or disbursing Client funds. Beneficial Owner Accounts must be non-interest-bearing. For each Beneficial Owner Account that you open, you represent and warrant to us that you have valid and proper authorization from the applicable Client to open the Account for the benefit of such Client, and to receive, hold, manage and/or disburse funds in such Account. In no event will any Client be considered a party to, or a third party beneficiary of, this Service Description or the Master Agreement.

5. **Client profiles.** For each Client for which you make disbursements, you will establish and maintain through the CDM Desktop an electronic client profile (each a "Client Profile"). As part of each Client Profile, you will assign the applicable Client a unique alpha/numeric identifier (a "Client ID") no more than ten characters in length. We will electronically associate each Client ID with an Individual Client Funding Account to facilitate funding of disbursements from the proper funding source.

6. **Client set-up forms.** For each Individual Client Funding Account you open under the Service (including each Beneficial Owner Account), you will, prior to opening the Account, deliver to us a form (each a "Client Set-up Form") in a format approved by us, containing information about the Client for whose benefit Company is opening the Account, including, without limitation, the Client's name, physical address (including zip code, and country, if other than the United States), taxpayer identification number, and business type. If we determine at any time that we do not have a Client Set-up Form for a particular Account, you will upon our request promptly cause such a form to be prepared and forwarded to us.

7. **Delivery of W-9 or W-8 forms.** For each Individual Client Funding Account you open under the Service, you will, prior to opening the Account, deliver to us an original Internal Revenue Service Form W-9, "Request for Taxpayer Identification Number and Certification" (each a "W-9 Form") or Form W-8BEN, "Certificate of Foreign Status of Beneficial Owner for United States Tax Withholding" or other appropriate W-8 series form (each a "W-8 Form"), properly completed and executed by (i) the Client for whose benefit you are opening the Account, or (ii) if the Client lacks legal capacity to execute the W-9 Form or W-8 Form, by an individual whom the appropriate taxing authority and applicable law recognizes as being authorized to execute a W-9 Form or W-8 Form on the Client's behalf (an "Authorized Representative"). You represent and warrant that each W-9 Form or W-8 Form which you deliver to us in relation to an Account has been duly and lawfully executed by the Client for whose benefit the Account is opened or an Authorized Representative of such Client. If we determine at any time that we do not have a W-9 Form or W-8 Form for a particular Client, you will upon our request promptly cause such a form to be prepared and forwarded to us.

8. **Disbursements by check; use of Positive Pay.** All checks you issue in payment of claims or other obligations on behalf of your Clients ("CDM Checks") must be drawn on the Disbursement Account, which will be a controlled disbursement account governed by our standard Controlled Disbursement Service Description. You may not draw checks, or authorize the drawing or presentment of checks, drafts or other instruments against any of the Accounts other than the Disbursement Account or the Recovery Accounts. You must at all times use our Positive Pay Service in connection with the Disbursement Account. Your use of our Positive Pay Service will be governed by our Positive Pay Service Description and other documentation in effect from time to time with respect to that Service.

9. **CDM check issuance; Issue Files.** You must identify and describe each CDM Check you issue in an electronic issue file (each an "Issue File"), which you must transmit to us in connection with the CDM's Check issuance. You must create and transmit each Issue File to us in compliance with our published standards for creation and transmission of issue files for use with the Service. You must include in each entry for a CDM Check listed in a particular Issue File (each an "Issue Record") the appropriate Client ID for the Client on whose behalf you issued the CDM Check. You agree that you will not mail, transmit, send, deliver or otherwise issue or distribute any CDM Check until you have properly transmitted to us an Issue File containing the corresponding Issue Record for that check. We will compile the information in each Issue File and incorporate that information in our cumulative CDM data base of issued and outstanding CDM Checks (the "Issue File Data Base").

10. **Presentment and payment of CDM checks.** Upon presentment of a check against the Disbursement Account, we will, as part of our Positive Pay Service, compare certain data fields on such item with certain information in the Issue File Data Base. If we identify the item as a CDM Check that matches a corresponding Issue Record in the Issue File Data Base (a "Matching Check"), we will ascertain the Client ID accompanying the Issue Record. To the extent that the Individual Client Funding Account associated with the Client ID contains sufficient collected and available funds to pay all Matching Checks presented on the same Business Day which are associated with the same Client ID, we will pay all such Matching Checks. We will cause the applicable Individual Client Funding Account to be debited, with the resulting credit made to the Master Funding Account. To the extent that the Individual Client Funding Account associated with the Client ID does not contain sufficient collected and available funds to pay all Matching Checks associated with such Client ID which are presented on the same Business Day, we may, in our sole discretion (i) return all such Matching Checks unpaid, unless specific alternative funding arrangements have been made between you and us in advance, or (ii) pay such Matching Checks and cause the applicable Individual Client Funding Account to be overdrawn in the amount of the shortfall. Any overdraft on an Individual Client Funding Account is immediately due and payable from you to us.

11. **Default Account.** If, after comparison with the Issue File Data Base, a presented item cannot be associated with an Issue Record, but you nevertheless instructs us to pay the item, we will cause the item to be posted to the Default Account. For each item posted to the Default Account that causes the Default Account to become overdrawn, you will promptly provide us with instructions via CDM Desktop or in the form of an Issue Record incorporated in an Issue File, to repost the item to an Individual Client Funding Account.

12. **Minimum balance requirement for Recovery Accounts.** You must at all times maintain in one or more Recovery Accounts an aggregate balance of collected and available funds which equals or exceeds the aggregate amount of negative balances, if any, maintained in Individual Client Funding Accounts and the Default Account. Any positive balances maintained in any Individual Client Funding Accounts and/or the Default Account are expressly excluded from this calculation. We may return unpaid any CDM Checks presented for payment against the Disbursement Account during any period in which you fail to maintain the balance requirement set forth in this section 12. We may at any time, in our sole discretion, set off some or all of the balances in the Recovery Accounts against any negative balances in any Individual Client Funding Accounts or the Default Account.

13. **Funding basis.** Each Issue File, as it pertains to each Client on whose behalf you issue CDM Checks, will be funded on either an "Issue Funding" basis or a "Presentment Funding" basis. You must identify the funding basis for each Client as part of the Client Profile for such Client. Once the funding basis for a particular Client has been established, you agree that it will not be changed without our written consent.
    a. Issue Funding Basis. If you are funding the Issue File for a particular Client on an Issue Funding basis, then the funding of the corresponding Individual Client Funding Account is determined with reference to our receipt of each Issue File from you that pertains to the Client.
    b. Presentment Funding Basis. If you are funding the Issue File for a particular Client on a Presentment Funding basis, then the funding of the corresponding Individual Client Funding Account is determined with reference to presentment against the Disbursement Account of items related to the Client.

14. **Funding method.** You will fund each Individual Client Funding Account by using one of the funding methods set forth in this section 14. The process of funding by any of these funding methods will be governed by the Master Agreement, this Service Description and other Service Documentation. **YOU WILL NOT, AT ANY TIME OR UNDER ANY CIRCUMSTANCES, FUND OR PERMIT FUNDING OF ANY INDIVIDUAL CLIENT FUNDING ACCOUNT, IN WHOLE OR IN PART, BY MEANS OF A CASH DEPOSIT OR A DEPOSIT MADE BY A THIRD PARTY.** Each Client Debit account must be owned by your Client. As used in this section 14, the term "Funding Day" has the meaning given to it in section 15.

a. **ACH Debit Entries.** You may use ACH debit entries to debit the account of the corresponding Client with us or at another financial institution ("Debit Account"). If you use this funding method, then prior to sending an Issue File for a particular Client, you will ensure that the corresponding Client Profile contains adequate information about that Client's Debit Account to enable us to generate an ACH debit entry from the Debit Account. Provided that we have adequate information about the Debit Account, we will transmit an ACH debit entry file to the designated receiving depository financial institution through the applicable clearing house channel on the same day that (i) we receive an Issue File for a particular Client, if you are using an Issue Funding Basis for the Client, or (ii) one or more items related to the Client are presented against the Disbursement Account, if you are using a Presentment Funding Basis for the Client. However, if that day is not a Funding Day, then the debit entry file will be created and transmitted on the next Funding Day. You authorize us to create and transmit each such debit entry file, and represent and warrant to us that each debit entry created using information you provide to us in a Client Profile and/or an Issue File is properly authorized by the owner of the account to be debited. Funds in the amount of an ACH debit entry must be received in the applicable Individual Client Funding Account on the Business Day following our transmission of the file containing such ACH debit entry.
b. **ACH credit entries.** You may use ACH credit entries to transfer funds to an Individual Client Funding Account from an account of the applicable Client with us or another financial institution. Provided that we have adequate address information about the Client on whose behalf the Individual Client Funding Account is maintained, we will transmit an automatic ACH credit entry funding notice, by e-mail and/or fax at your option, to you and the Client on the same day that (i) we receive an Issue File for the Client, if you are using an Issue Funding Basis for the Client, or (ii) one or more items related to the Client are presented against the Disbursement Account, if you are using a Presentment Funding Basis for the Client. However, if that day is not a Funding Day, then the funding notice will be transmitted on the next Funding Day. Funds in the amount specified in a funding notice must be received in the applicable Individual Client Funding Account on the Business Day following our transmission of the funding notice.
c. **Wire credit transfers.** You may use wire credit transfers to transfer of funds to an Individual Client Funding Account from an account of the applicable Client with us or another financial institution. Provided that we have adequate address information about the Client on whose behalf the Individual Client Funding Account is maintained, Bank will transmit an automatic wire credit transfer funding notice, by e-mail and/or fax at your option, to Company and the Client on the same day that (i) we receive an Issue File for the Client, if you are using an Issue Funding Basis for the Client, or (ii) one or more items related to the Client are presented against the Disbursement Account, if you are using a Presentment Funding Basis for the Client. However, if that day is not a Funding Day, then the funding notice will be transmitted on the next Funding Day. Funds in the amount specified in a funding notice must be received in the applicable Individual Client Funding Account on the same day we transmit the funding notice.
d. **Drawdown wires.** You may use drawdown wires to debit the Debit Account. If you use this funding method, prior to sending an Issue File for a particular Client, you will ensure that the corresponding Client Profile contains adequate information about that Client's Debit Account to enable us to generate a drawdown wire from the Debit Account. Provided that we have adequate information about the Debit Account, we will cause a drawdown wire to be automatically initiated and transmitted to the designated depository financial institution through the applicable channel on the same day that (i) we receive an Issue File for a particular Client, if you are using an Issue Funding Basis for the Client, or (ii) one or more items related to the Client are presented against the Disbursement Account, if you are using a Presentment Funding Basis for the Client. However, if such day is not a Funding Day, then the drawdown wire will be initiated on the next Funding Day. You authorize us to create and transmit each drawdown wire, and represent and warrant to us that each drawdown wire created using information you provide to us in a Client Profile and/or an Issue File is properly authorized by the owner of the account to be debited. Funds in the amount of the drawdown wire must be received in the applicable Individual Client Funding Account on the same day we initiate the drawdown wire.

e. **Internal book transfers.** You may use internal book transfers to debit the Debit Account, so long as the Debit Account is maintained with us. If you use this funding method, then prior to sending an Issue File for a particular Client, you will ensure that the corresponding Client Profile contains adequate information about such Client's Debit Account to enable us to generate an internal book transfer from the Debit Account. Provided that we have adequate information about the Debit Account, we will cause an internal book transfer to be initiated from the Debit Account on the same day that (i) we receive an Issue File for a particular Client, if you are using an Issue Funding Basis for the Client, or (ii) one or more items related to the Client are presented against the Disbursement Account, if Company is using a Presentment Funding Basis for the Client. However, that if that day is not a Funding Day, then the internal book transfer will be initiated on the next Funding Day. You authorize us to initiate and execute each such internal book transfer, and represent and warrant to us that each internal book transfer initiated using information you provide to us in a Client Profile and/or an Issue File is properly authorized by the owner of the account to be debited. Funds in the amount of the internal book transfer must be received in the applicable Individual Client Funding Account on the same day we initiate the internal book transfer.

15. **Funding Frequency.** You will fund each Individual Client Funding Account according to one of the funding frequency options set forth in this section 15. Each day on which funding is to occur under a particular funding frequency option is hereinafter referred to as a "Funding Day."
    a. **Daily funding.** Under the "Daily Funding Frequency Option", funding will occur (i) each day that we receive an Issue File for a particular Client, if you are using an Issue Funding Basis for the Client, or (ii) each day on which one or more items related to the Client are presented against the Disbursement Account, if you are using a Presentment Funding Basis for the Client.
    b. **Weekly funding.** Under the "Weekly Funding Frequency Option", funding will occur once a week, on the same day of the week as you select.
    c. **Monthly funding.** Under the "Monthly Funding Frequency Option", funding will occur one day each month, on either (i) the same numeric day of the month, or (ii) the first or last day of the month, as you select.
    d. **Semi-monthly selected date funding.** Under the "Semi-Monthly Funding Frequency Option", funding will occur twice each month, on the same two numeric days, as selected by you.
    e. **P.A.L. funding.** The "P.A.L. Funding Frequency Option" is only available for accounts you are funding on an Issue Funding Basis. Under this option, funding will occur each time an aggregate dollar amount of items accumulates within one or more Issue Files, with a dollar limit you specify.
    f. **Threshold funding.** The "Threshold Funding Frequency Option" is only available for accounts you are funding on a Presentment Funding Basis. Under this option, funding will occur each time an aggregate dollar amount of items is presented for payment in relation to a particular Client, with a dollar limit you specify.

16. **Supplemental funding days.** You may, at your option, establish one or more additional Funding Days that supplement the funding frequency options chosen for a particular Client under section 15 above. Each additional funding day may be designated as either a "Clean-up Date" or "End-of-Contract Date", depending on the purpose of the supplemental funding. Funding on each supplemental Funding Day will take place according to the Funding Basis and Funding Method previously selected for the applicable Client.

17. **Right of setoff.** In the event that any negative balance is maintained in an Individual Client Funding Account or the Default Account, whether created by action of you or us, we may at any time, and without prior notice to you, set off the amount of such negative balance against funds on deposit in any Recovery Account or any other deposit account you maintain with us; provided, however, that we may not set off against any other Individual Client Funding Account.

18. **Security interest in Recovery Accounts.** As security for the Obligations, you grant us a security interest in and lien on the Recovery Accounts, and all amounts from time to time on deposit in, or withdrawable from, the Recovery Accounts (the "Collateral"). Our receipt at any time of any kind of security, including cash, will not be a waiver of any of our rights or powers under any agreement between us. Upon our request, you will sign and deliver to us, any security, control or other agreements and documents as we determine are necessary or desirable (in our sole opinion) to grant us or perfect our security interest in the Collateral. At the time any Obligation becomes due and payable, we may apply or dispose of any and all Collateral, received or to be received, at any time or place, for any price and upon terms and conditions as we determine. We may apply the amounts on deposit or net proceeds of the sale or other disposition (together with any sums credited by or due from us to you), to the payment of the Obligations, all without prejudice to our rights with respect to any portion of the Obligations which remain unpaid. You expressly waive any right to require us to make any presentment or demand, or give any notices of any kind, including, but not limited to, any notice of nonpayment or nonperformance, protest, notice of protest, notice of dishonor, notice of intent to accelerate or notice of acceleration. If we are required by Applicable Law to give you reasonable notice before the sale or other disposition of Collateral, that requirement is met if notice is given at least 5 calendar days before the date any sale, application or other disposition will be made. Our rights and remedies under any agreements between us or instruments signed by you in our favor are in addition to, and not exclusive of, any other rights or remedies we have under Applicable Law.

19. **Account closure or debit block.** We reserve the right to either close or place a debit block on any Individual Client Funding Account which, in our sole judgment, is subject to repeated overdrafts or overdrafts of an excessive amount, or in the event that the Client associated with such Account is subject to a bankruptcy proceeding or makes a general assignment for the benefit of creditors.

20. **Business Associate Agreement.** If you are an organization that performs any function or activity involving the use, transmission, or disclosure of individually identifiable health information, you and we must enter into a Business Associate Agreement (addressing certain requirements of Subtitle F of the Health Insurance Portability and Accountability Act of 1996 and its implementing regulations) in form and substance satisfactory to us.

21. **Compliance with Applicable Laws.** You represent, warrant, and covenant to us that you will at all times comply with all Applicable Laws governing the receipt, holding, management and/or disbursement of funds in any Beneficial Owner Account.

22. **Indemnification.** You agree to indemnify, defend, and hold us harmless from and against any and all Losses which we suffer or incur as a result of or in connection with (i) your failure to have proper authorization to act on behalf of any Client, (ii) any Client Set-up Form or related information you provide to us which is incomplete or erroneous, and (iii) your failure to comply with Applicable Laws governing the receipt, holding, management and/or disbursement of funds for the benefit of Clients.

23. **Ownership dispute.** In the event that any Client asserts ownership rights to an Account held for the benefit of such Client, or any of the funds therein, then absent the mutual written consent of both you and the Client to dispose of the Account and related funds, we reserve the right, in its sole discretion, to suspend all activity on that Account and to interplead the funds into court.

24. **Termination.** Unless terminated sooner in accordance with the terms of the Master Agreement or this Service Description, this Service Description and the Service will continue in effect until terminated by either party upon ninety (90) days prior written notice to the other party. We may terminate the Service following notice to you (i) if you breach any material provision of the Master Agreement or this Service Description and fail to cure the breach within fifteen (15) days after we give notice of the breach, or (ii) notwithstanding the foregoing, if you fail at any time to maintain the minimum balance in the Recovery Accounts required under section 12 of this Service Description. Termination of the Service will not affect your or our rights with respect to transactions which occurred before termination.

25. **Survival.** Sections 4, 10, 12, 14, 17- 19, 22- 24 will survive termination of the Services.

Payable Through Draft Service

1. **Description of Service.** With this Service, we provide you with information about payable-through Drafts that are purportedly drawn on you and received by us so that you can determine if you will pay, edit or dishonor each Draft.

2. **Requirements for Draft stock.** You will ensure each Draft contains:
   a. The legend *"PAYABLE THROUGH WELLS FARGO BANK, N.A.";* and
   b. Our routing number on the MICR line of the Draft. You will also comply with all other requirements we communicate to you. You will not issue any Draft until we notify you that your Draft stock meets our specifications.

3. **Electronic presentment.** Each Business Day, we will present to you each Draft we receive before the Cutoff Time. We will electronically present you with a report or transmission ("Activity Report") containing the serial number and amount of each Draft available to you through your chosen information reporting service. No physical delivery of a Draft or of a substitute check or a purported substitute check in lieu of a Draft will occur.

4. **Images of Drafts; identifying Unauthorized Drafts.** We will make an electronic image of each Draft available to you through our *CEO*® portal. If for any reason we cannot make an electronic image of a Draft available to you, you remain solely responsible for determining whether a Draft described in each Activity Report is an Unauthorized Draft.

5. **Funding.** You will maintain immediately available funds in your Account sufficient to cover the full amount of Drafts you issue. We have no obligation to honor any Draft if you do not have immediately available funds in your Account sufficient to cover the full amount of the Draft. If an arbitrator or a court determines a Draft has been paid under circumstances that we incur any liablility for the Draft under Applicable Law or any agreement having the force of law, you will pay us on demand for the amount of the Draft.

6. **Decisioning.** You must notify us of any presented Draft that is to be edited (section 8 [Edits to Drafts]) or dishonored (section 9 [Drafts to be dishonored]) by the Cutoff Time on the next Business Day following the Business Day on which we made the Activity Report available to you ("Decision Deadline"). You will notify us through our *CEO* portal as set forth in the Reverse Positive Pay Service Description or, in the case of dishonor instructions only, through a means acceptable to us. If we do not receive your edit requests or dishonor instructions by the applicable Decision Deadline, you will be deemed to have instructed us to pay each Draft described in the Activity Report(s) for that Business Day, and you will be obligated to pay the amount of each Draft.

7. **Provisional payment of Drafts.** Any payment or other settlement for a Draft, except a Draft cashed in accordance with section 10, will be provisional and subject to revocation by:
   a. You, if you direct us to dishonor a Draft before the applicable Decision Deadline, or
   b. Us at any time before midnight of the day we presented the Draft to you.

8. **Edits to Drafts.** You may request edits of the serial number and/or amount of any Draft described on the Activity Report(s) for any current Business Day. You will notify us of each edit request by means acceptable to us. We may deny your edit request based on our evaluation.

9. **Drafts to be dishonored.**
   a. **General.** We are subject to requirements regarding the return of Drafts under Applicable Law, including the requirement to provide notice of a dishonored Drafts. We may be liable for the amount of the Draft and other damages if we do not meet these requirements. You are solely responsible for dishonoring any Draft including any Unauthorized Draft. If you decide to dishonor any Draft we present to you, you will notify us prior to the Decision Deadline in accordance with the Reverse Positive Pay Service Description.
   b. **Reimbursement obligation; revocation instructions.** You will promptly reimburse us for any Losses we suffer or incur as a result of our dishonor of a Draft in accordance with your notice to us. Any payment or other settlement of a Draft will be provisional and can be revoked by:
      i. You, if you direct us to dishonor a Draft before the Decision Deadline, and
      ii. Us, at any time before midnight of the first Business Day after the day we presented the Draft to you.

      To be effective, we must receive your revocation instruction in a time and manner that gives us a reasonable opportunity to act on it before the payee deposits, cashes or otherwise negotiates the Draft.

   c. **Fraud.** If your reason for dishonoring a Draft is fraud, your return instruction alone will not constitute a claim for a fraudulent transaction. You must file a separate claim with us relating to the fraudulent transaction.

10. **Draft Cashing.** We offer a Draft Cashing Service (see our User Guide for more information). If you enroll in this Service, you waive any rights to dishonor or issue an edit request with respect to any Draft we cash at our teller line.

11. **Liability and Indemnification.**
   a. **Indemnification.** You will indemnify, defend, and hold us, and our Representatives harmless from and against all Losses arising out of or relating to:
      i. (1) our failure to identify an Unauthorized Draft, (2) our refusal to cash a Draft, (3) our failure to meet any requirement to which section 9 (Drafts to be dishonored) of this Service Description refers, (4) our payment of an Unauthorized Draft, or (5) our exercise of our rights, or our performance of our obligations, in accordance with this Service Description,
      ii. A breach of either the Image Quality Warranty or the No Double Debit Warranty (as defined below),
      iii. Our obligation to indemnify and reimburse a depository bank that accepts the original paper check from which an electronic check is created, if the loss is due to the check having already been paid, and
      iv. If we transfer or present an "electronically-created item" and receive settlement or other consideration for it, our obligation to indemnify and reimburse each transferee bank, any subsequent collecting bank, the paying bank, and any subsequent returning bank against Losses that result from the fact that:
         1. The electronic image or electronic information of the electronically-created item is not derived from a paper check,
         2. The person on whose account the electronically-created item is drawn did not authorize the issuance of the electronically-created item or to the payee stated on the item, and

3. A person receives a transfer, presentment, or return of, or otherwise is charged for an electronically-created item in such a way that the person is asked to make payment based on an item or check it has paid.

"Electronically-created item" means an electronic image that has all the attributes of an electronic check or electronic returned check but was created electronically and not derived from a paper check. "Image Quality Warranty" means our guarantee that the electronic image of the check accurately represents all of the information on the front of the check as of the time the original check is truncated, and the electronic information includes an accurate record of all MICR line information required for a substitute check and the amount of the check. "No Double Debit Warranty" means our guarantee that the warrantee will not receive a presentment of or otherwise be charged for an electronic check, an electronic returned check, the original check, a substitute check, or a paper or electronic representation of a paper substitute check, in a way that the warrantee will be asked to make payment on a check that it has already paid.

When we transfer an electronic check for collection or payment, we make the Image Quality Warranty and the No Double Debit Warranty to the transferee bank, any subsequent collecting bank, the paying bank, and the drawer. When we transfer an electronic returned check for return, we make the Image Quality Warranty and the No Double Debit Warranty to the transferee returning bank, the depository bank, and the owner. For purposes of this section 11.a, the term "check" and "electronically created item" includes a Draft.

b. **Unauthorized Draft.** With respect to each Draft, we:
   i. Will be deemed to be a collecting bank and not a drawee bank, and
   ii. Disclaim all liability applicable to a payor bank under the Transfer and Presentment Warranties in Articles 3 and 4 of the UCC.

   In the event any Draft paid by you is subsequently determined to be an Unauthorized Draft, we will take any action reasonably requested by you to enforce against prior parties (including prior collecting banks, endorsers and other holders) whatever rights you may have against those prior parties, but we will not be liable to you with respect to the Unauthorized Draft and will not be obligated to take any action with respect to the Unauthorized Draft unless you first indemnify us for all costs, expenses and liabilities, including reasonable attorneys' fees and legal expenses, which we may incur as a result of such action.

c. **Delayed Return.** You are responsible to any party that incurs a loss in connection with a Draft, if:
   i. The loss is due to a delay in the return of the Draft, and
   ii. The delay is caused, in whole or in part, by any presentment-related problem resulting from:
      1. The failure of any Draft to meet our draft specifications (section 2), or
      2. Material appearing on the back of the Draft when it was issued by you including without limitation carbon blanks, blacked-out areas and printed or written text or numbers.

12. **Survival.** Sections 3, 4, 6, 9, 10, and 11 of this Service Description will survive termination of the Service.

Third Party Drafts Service

1. **Description of Service.** You provide draft stock to your customers (each, a "third party") that issue third party drafts. With this Service, we will provide you with a controlled disbursement service for third party drafts. You will establish and maintain:
   a. One or more demand deposit accounts with us (each, a "Funding Account"), and
   b. One or more demand deposit accounts with us (each, a "Disbursement Account"), each of which is linked to a Funding Account and assigned to one of our controlled disbursement end points (each, an "End Point").

2. **Requirements for Draft stock.** You will ensure each Draft contains:
   a. The legend *"PAYABLE THROUGH WFB, N.A.";* and
   b. Our routing number on the MICR line of the Draft. You will also comply with all other requirements we communicate to you. You will not provide Draft stock to any third party until we notify you that your Draft stock meets our specifications.

3. **Electronic presentment.** Each Business Day, we will present to you each Draft we receive before the Cutoff Time. We will electronically present you with a report or transmission ("Activity Report") containing the serial number and amount of each Draft available to you through your chosen information reporting service. No physical delivery of a Draft or of a substitute check or a purported substitute check in lieu of a Draft will occur.

4. **Images of Drafts; identifying Unauthorized Drafts.** We will make an electronic image of each Draft available to you through our *CEO®* portal. If for any reason we cannot make an electronic image of a Draft available to you, you remain solely responsible for determining whether a Draft described in each Activity Report is an Unauthorized Draft.

5. **Funding.** You will maintain immediately available funds in your Account sufficient to cover the full amount of Drafts you issue. We have no obligation to honor any Draft if you do not have immediately available funds in your Account sufficient to cover the full amount of the Draft. If an arbitrator or a court determines a Draft has been paid under circumstances that we incur any liablility for the Draft under Applicable Law or any agreement having the force of law, you will pay us on demand for the amount of the Draft.

6. **Decisioning.** You must notify us of any presented Draft that is to be edited (section 8) or dishonored (section 9) by the Cutoff Time on the next Business Day following the Business Day on which we made the Activity Report available to you ("Decision Deadline"). You will notify us through our CEO portal as set forth in the Reverse Positive Pay Service Description or, in the case of dishonor instructions only, through a means acceptable to us. If we do not receive your edit requests or dishonor instructions by the applicable Decision Deadline, you will be deemed to have instructed us to pay each Draft described in the Activity Report(s) for that Business Day, and you will be obligated to pay the amount of each Draft that is not timely returned by us.

7. **Provisional payment of Drafts.** Any payment or other settlement for a Draft, except a Draft cashed in accordance with section 10 [Draft cashing], will be provisional and subject to revocation by:
   a. You, if you direct us to dishonor a Draft before the applicable Decision Deadline, or
   b. Us at any time before midnight of the day we presented the Draft to you.

8. **Edits to Drafts.** You may request edits of the serial number and/or amount of any Draft described on the Activity Report(s) for any current Business Day. You will notify us of each edit request by means acceptable to us. We may deny your edit request based on our evaluation.

9. **Drafts to be dishonored.**
   a. **General.** We are subject to requirements regarding the return of Drafts under Applicable Law, including the requirement to provide notice of a dishonored Draft. We may be liable for the amount of the Draft and other damages if we do not meet these requirements. You are solely responsible for dishonoring any Draft including any Unauthorized Draft. If you decide to dishonor any Draft we present to you, you will notify us prior to the Decision Deadline in accordance with the Reverse Positive Pay Service Description.

b. **Reimbursement obligation; revocation instructions.** You will promptly reimburse us for any Losses we suffer or incur as a result of our dishonor of a Draft in accordance with your notice to us. Any payment or other settlement of a Draft will be provisional and can be revoked by:
   i. You, if you direct us to dishonor a Draft before the Decision Deadline, and
   ii. Us at any time before midnight of the first Business Day after the day we presented the Draft to you.

   To be effective, we must receive your revocation instruction in a time and manner that gives us a reasonable opportunity to act on it before the payee deposits, cashes or otherwise negotiates the Draft.

c. **Fraud.** If your reason for dishonoring a Draft is fraud, your return instruction alone will not consitute a claim for a fraudulent transaction. You must file a separate claim with us relating to the fraudlent transaction.

10. **Draft cashing.** We, or an affiliate, will not cash any Draft presented for encashment at our teller line, except at our own discretion.

11. **Liability and indemnification.**
   a. **Indemnification.** You will indemnify, defend, and hold us, and our Representatives harmless from and against all Losses arising out of or relating to:
      i. (1) our failure to identify an Unauthorized Draft, (2) our refusal to cash a Draft, (3) our failure to meet any requirement to which section 9 (Drafts to be dishonored) of this Service Description refers, (4) our payment of an Unauthorized Draft, or (5) our exercise of our rights, or our performance of our obligations, in accordance with this Service Description,
      ii. A breach of either the Image Quality Warranty or the No Double Debit Warranty (as defined below),
      iii. Our obligation to indemnify and reimburse a depository bank that accepts the original paper check from which an electronic check is created, if the loss is due to the check having already been paid, and
      iv. If we transfer or present an "electronically-created item" and receive settlement or other consideration for it, our obligation to indemnify and reimburse each transferee bank, any subsequent collecting bank, the paying bank, and any subsequent returning bank against Losses that result from the fact that:
         1. The electronic image or electronic information of the electronically-created item is not derived from a paper check,
         2. The person on whose account the electronically-created item is drawn did not authorize the issuance of the electronically-created item or to the payee stated on the item, and
         3. A person receives a transfer, presentment, or return of, or otherwise is charged for an electronically-created item in such a way that the person is asked to make payment based on an item or check it has paid.

   "Electronically-created item" means an electronic image that has all the attributes of an electronic check or electronic returned check but was created electronically and not derived from a paper check. "Image Quality Warranty" means our guarantee that the electronic image of the check accurately represents all of the information on the front of the check as of the time the original check is truncated, and the electronic information includes an accurate record of all MICR line information required for a substitute check and the amount of the check. "No Double Debit Warranty" means our guarantee that the warrantee will not receive a presentment of or otherwise be charged for an electronic check, an electronic returned check, the original check, a substitute check, or a paper or electronic representation of a paper substitute check, in a way that the warrantee will be asked to make payment on a check that it has already paid.

   When we transfer an electronic check for collection or payment, we make the Image Quality Warranty and the No Double Debit Warranty to the transferee bank, any subsequent collecting bank, the paying bank, and the drawer. When we transfer an electronic returned check for return, we make the Image Quality Warranty and the No Double Debit Warranty to the transferee returning bank, the depository bank, and the owner. For purposes of this section 11.a, the term "check" and "electronically created item" includes a Draft.

b. **Unauthorized Draft.** With respect to each Draft, we:
   i. Will be deemed to be a collecting bank and not a drawee bank, and
   ii. Disclaim all liability applicable to a payor bank under the Transfer and Presentment Warranties in Articles 3 and 4 of the UCC.

   In the event any Draft paid by you is subsequently determined to be an Unauthorized Draft, we will take any action reasonably requested by you to enforce against prior parties (including prior collecting banks, endorsers and other holders) whatever rights you may have against those prior parties, but we will not be liable to you with respect to the Unauthorized Draft and will not be obligated to take any action with respect to the Unauthorized Draft unless you first indemnify us for all costs, expenses and liabilities, including reasonable attorneys' fees and legal expenses, which we may incur as a result of such action.

c. **Delayed return.** You are responsible to any party that incurs a loss in connection with a Draft, if:
   i. The loss is due to a delay in the return of the Draft, and
   ii. The delay is caused, in whole or in part, by any presentment-related problem resulting from:
      1. The failure of any Draft to meet our draft specifications (section 2), or
      2. Material appearing on the back of the Draft when it was issued by you including without limitation carbon banks, blacked-out areas and printed or written text or numbers.

12. **Anti-money laundering and sanctions controls.** While this Service Description is in effect, you will:
    a. Be solely responsible for monitoring, interpreting and complying with all laws, regulations, judicial and administrative decisions, and executive orders that apply to you as a provider of accounts to your customers on which Drafts are issued, including the U.S. anti-money laundering and anti-terrorist financing ("AML") and sanctions laws and regulations;
    b. Maintain policies and procedures to reasonably ensure compliance with applicable provisions of the U.S. AML laws and regulations, including but not limited to the USA PATRIOT Act ("PATRIOT Act"), and regulations promulgated by the Office of Foreign Assets Control ("OFAC") of the United States Department of the Treasury;
    c. Where you qualify under section 314(b) of the PATRIOT Act, maintain an effective notice with FinCEN evidencing your intent to engage in information sharing pursuant to section 314(b) of the PATRIOT Act;
    d. If subject to the PATRIOT Act, maintain policies and procedures that include a risk assessment of its products and services, designate a Board-approved AML Compliance Officer responsible for overseeing the components of the AML Program, and include processes for training, monitoring of Drafts, recordkeeping and reporting;
    e. Provide copies of your policies, procedures and practices designed to comply with this section 12, as we may request from time to time; and (b) upon our request and sole expense, allow us, or our designee, to make such on-site visits to you as we deem necessary or appropriate to review your policies, procedures and practices designed to comply with this section 12; and
    f. Work with us in good faith to minimize the number of on-site visits and to limit the impact of the on-site visits on your business.

13. **Survival.** Sections 3, 4, 6, 9, 10 and 11 of this Service Description will survive termination of the Service.

Glossary

Account Agreement means the applicable account agreement governing your Account.

Applicable Law is defined in section 3 of the Master Agreement.

Business Day means every day except Saturday, Sunday and federal holidays. When used in connection with funds transfer Services, "Business Day" means each day on we are open for business related to that Service.

Check Issue Data means for any Check or Draft, the complete serial number and numeric amount. If you have elected the Payee Validation service option under the Positive Pay Service, Check Issue Data also includes the payee's name.

Cutoff Time means our cutoff time each Business Day that we separately disclose to you for the Service.

Decision Deadline means on any Business Day, (i) for the Positive Pay Service, the time we establish by which you must choose to pay or return each Exception Check, and (ii) for the Reverse Positive Pay Service, the time we establish by which you must choose to edit or return each Check on the Paid Items Report.

Draft means each payable-through draft or third party draft we present to you in accordance with this Service Description and includes an Unauthorized Draft.

Item has the meaning given in the Account Agreement.

Losses means all liabilities, losses, damages, claims, obligations, demands, charges, costs, or expenses (including reasonable fees, disbursements of legal counsel and court fees).

Master Agreement means the Master Agreement for Treasury Management Services.

Matching Check is a Check presented to us that matches the Check Issue Data you have provided to us.

Obligations means any and all advances, debts, loans, obligations and liabilities that you owe us and our affiliates pursuant to the terms of this Service Description, including any advances we make to the Funding Account pursuant to Section 3 of the Controlled Disbursements Service Description and any advances we make to the Disbursement Account pursuant to Section 4 of the Controlled Disbursements Service Description.

Representatives is defined in section 11(f) of the Master Agreement.

Unauthorized Draft means a counterfeit or altered Draft, a reproduction of a duly authorized Draft, a Draft with a forged or other unauthorized signature, or a forged, unauthorized, incorrect or illegible endorsement.

CHECK CASHING SERVICE DESCRIPTION

1. **Introduction.**
The Service Documentation contains the terms governing the Wells Fargo Bank, N.A. ("Bank") check cashing service ("Service") and includes:

(a) this Service Description;

(b) the Acceptance of Services or Treasury Management Product Enrollment form;

(c) the Master Agreement for Treasury Management Services ("Master Agreement");

(d) the account agreement governing the account(s) Company uses in connection with the Service; and

(e) User Guides which include Terms of Use, software, software licenses, price schedules, specifications, instructions, and notices;

This Service Description and the Master Agreement are posted at Bank's Commercial Electronic Office® (CEO®) portal. If there is a conflict among the documents comprising the Service Documentation, they will govern in the order listed above. Company's use of the Service confirms Company's receipt of and agreement to be bound by the applicable Service Documentation. If an enhancement to the Service or other change requires a change to this Service Description, Bank will post an updated Service Description on the CEO® portal. When required by applicable law, Bank will notify Company of the update. If Company continues to use the Service after the update takes effect, Company will be deemed to have agreed to the update.

2. **Description of Bank's Service.** Bank's Service enables Company to have Bank and Bank's affiliates (each an "Affiliate" and unless otherwise specified, along with Bank, collectively "Bank") cash checks drawn on Company's accounts held at other banks.

2.1. Company's Request to Cash Checks. Company requests Bank cash checks each of which: (a) has a face amount equal to or less than the amount separately agreed to by Company and Bank in the Setup Form for the Service ("Setup Form"); (b) purports to be drawn by Company on an account identified on the Setup Form for the Service (each an "Account" and collectively "Accounts") at a drawee bank identified on the Setup Form ("Drawee") (each such check a "Check") whether actually issued by Company or not; and (c) is presented in person by the payee at an office of Bank.

2.2. Check Cashing Procedures. Company authorizes Bank to cash any Check that it does not have actual knowledge bears an unauthorized signature, contains a material alteration, or is otherwise not properly payable so long as Bank has followed its then current check cashing procedures in connection with the cashing of the Check. Bank reserves the right to require Company to consult with Bank with respect to any information concerning Bank that is printed on Company's check stock. **COMPANY UNDERSTANDS THIS SERVICE IS NOT AVAILABLE AT CERTAIN AFFILIATES OR BANK BRANCHES LOCATED IN CERTAIN STATES AS SEPARATELY DISCLOSED TO COMPANY.**

3. **Fees.** Company agrees to pay Bank a periodic fee for the Service, which fee will be charged whether any Check is cashed during a period and may be changed by Bank from time to time upon prior written notification to Company, in accordance with the Service Documentation. In addition, a per-check check cashing fee may apply. Company agrees to inform its payees in writing that a per-check check cashing fee may apply.

4. **Termination of Service.** In addition to the termination provisions contained in the Master Agreement, Bank may immediately and without prior notice terminate the Service whenever it has any basis to believe that there will not be sufficient available funds in the Account to pay a Check when presented. The provisions of this Service Description and the other Service Documentation will continue in effect with respect to all Checks cashed by Bank prior to termination of the Service.

5. **Company's Guarantee of Payment and Obligation of Reimbursement.**

    5.1. **Guarantee of Check Payment.** Company unconditionally guarantees payment of all Checks even though at the time any particular Check is presented for payment (a) the endorsement of the named payee is unauthorized; (b) the Check was not drawn, issued or authorized by Company; (c) the Drawee has received a valid stop payment order regarding the Check; (d) Company does not have sufficient funds in the Account to cover the Check; (e) the Account has been closed or the Drawee is prohibited from paying Checks drawn against the Account; or (f) the Drawee has knowledge that the Check bears an unauthorized signature, contains a material alteration, or is otherwise not properly payable.

    5.2. **Obligation of Reimbursement.** If a Check is dishonored or if Bank is obligated to reimburse the Drawee or a collecting bank with respect to a Check, upon written demand accompanied by evidence of such dishonor or reimbursement, Company agrees to promptly reimburse Bank for all resulting loss. Company waives presentment and other notice of dishonor. In addition, Bank has the right to debit or chargeback any account of Company at Bank for any such loss.

6. **Bank's Limitation of Liability and Company's Agreement to Indemnify Bank.** Bank will have no liability including liability for any consequential, special, punitive or indirect loss or damage which Company, a payee, the Drawee, a collecting bank or any other person may incur or suffer in connection with a Check. Company will indemnify, defend, and save harmless Bank, and each of its directors, officers, employees, and agents (collectively in this section, "Indemnified Persons") from and against all liabilities, losses, damages, claims, obligations, demands, charges, costs, or expenses (including reasonable fees and disbursements of legal counsel and accountants) (collectively, "Losses and Liabilities") awarded against or incurred or suffered by Indemnified Persons arising directly or indirectly from or related to the cashing of any Check by Bank in accordance with this Service Description and/or the breach of any material obligation of Company hereunder.

7. **Survival.** Sections 4, 5 and 6 of this Service Description survive termination of the Service.

Automated Payables Service Description

Treasury Management Services

Introduction

The Service Documentation contains the terms and conditions under which we provide you the services described below. "You," "your" or "yours" refer to the Bank customer identified on the Acceptance of Services that is signed when you enroll in the Services ("Acceptance"). The terms "we," "us," or "our" refer to the Bank. Other capitalized terms used in this Service Description are defined in the Master Agreement or in the Glossary at the back of this Service Description.

The services (each a "Service") covered by this Service Description are:

- Payment Manager
- Invoice Manager
- Bill Manager

The Service Documentation includes:

a. The Service Description (which contains terms and conditions applicable to the Service),
b. The Acceptance (which indicates your acceptance of the Service Documentation),
c. The Master Agreement (which contains terms and conditions applicable to all services),
d. The Account Agreement governing the Account,
e. The Product Enrollment Form (which contains set-up information for each service in which you are enrolling), and
f. User Guides (which include Terms of Use, software, software licenses, price schedules, specifications, instructions, and notices).

The documents and individual provisions of the Service Documentation are intended to be read together as one agreement between you and us. This Service Description and the Master Agreement are posted at our *Commercial Electronic Office® (CEO®)* portal. If there is a conflict among the documents that are part of the Service Documentation, they will govern in the order listed above. Your use of a Service confirms your receipt of, and agreement to be bound by, this Service Description and all Service Documentation.

Services

Payment Manager

1. **Description of Service.**
   a. ***Payment Manager*® service.** With the *Payment Manager*® Service, you can send a Payment File to us directly from your treasury workstation, Enterprise Resource Planning (ERP) system, or other accounts payable system. Based on your Payment File, we generate (a) payments to your Payees from your Account, and (b) remittance data regarding each payment. Payment types include ACH, SEPA or other similar automated transfer, wire transfer, check, Disbursements with *Zelle*®, and certain cards. We may add, modify or eliminate a payment type at any time. The payments are governed by the Service Documentation applicable to the payment type(s) you use. In the event of a conflict between the Service Documentation that applies to the payment type and this Service Description, the Service Documentation that applies to the payment type will control.

   b. ***Payment Manager Plus*℠ enhanced remittance service.** With *Payment Manager Plus*℠, we use the delivery channel to which you and we separately agree to make Remittance Documents available to each of your Payees.
      i. **Remittance Document.** A Remittance Document may be sent to a Payee via fax, email, secure document delivery and print and mail. You acknowledge that documents sent by fax or unencrypted email are not secure. A Remittance Document will conclusively be deemed to have been received by the Payee when we make it available. We will not confirm receipt of or be liable for corruption or loss of data in a Remittance Document after we make it available.

2. **Payment File transmission.** You will prepare each Payment File and deliver it to us in accordance with the User Guides for the Service we separately make available to you. You will only use the Transmission Protocol to which you and we separately agree. You may use the *CEO* portal to upload Payment Files (within our applicable size limit). You agree to use the applicable Security Procedure when you send us Payment Files. You may deliver Payment Files to us, and we will acknowledge receipt of Payment Files, twenty-four hours a day, seven days a week.

3. **Payment File processing.** Each Business Day we will process Payment Files and make payments only according to the processing schedule we separately make available to you.

4. **Payment File validation.** We will inspect each Payment File we receive to confirm its format meets the requirements in the User Guide. Our inspection will not detect erroneous or missing information or unauthorized payments.

5. **Incomplete, rejected Payment Files.** If a Payment File is missing a required data field for a payment described in it or if we have identified other errors that prevent us from processing the Payment File, we may, without liability to you, reject the entire Payment File.

6. **Positive Pay Service.** If you enroll in this Service and issue checks through Payment Manager, we strongly recommend that you enroll in our Positive Pay Service. On the Business Day we print a check through the Payment Manager Service, we will update your check issue data to include such checks, in accordance with the Positive Pay Service options you have enrolled in.

7. **Payment and delivery preferences.** If you elect to make our Payment and Delivery Service available to your Payees, we will securely store Payee bank account and routing information provided by your Payees. We will have no liability to you if a person we reasonably believe is authorized to act on your or a Payee's behalf (a) provides inaccurate Payee information to us, or (b) is not actually authorized to act on your or the Payee's behalf. You will promptly notify us if you receive information indicating a scheduled payment may have been misdirected. We offer three options for a Payee to provide this information to us:
   a. **Non-verified.** With this option, a Payee uses an online self-enrollment portal to provide us with their bank account and routing information. We do not verify any of this information and will have no liability to you or the Payee if any of this information is incorrect.
   b. **Supplier analysis and onboarding.** By using our Supplier Analysis and Onboarding Service as described in the Wells Fargo Supplier Analysis & Onboarding Commercial Card Conversion Service Description.
   c. **Electronic document delivery.** With our Electronic Document Delivery ("EDD") service, you provide Payee contact information to us via file transmission. Payee contact information may include Payee account information. We will not verify any of this contact information and will have no liability to you or the Payee if any of this contact information including any Payee account information is incorrect. We use this information to populate a Payee database that you will use to originate ACH template payments. By transmitting the file to us, you certify that the Payee information in it is correct and complete.

8. **Record retention.** You will keep a copy of a Payment File for 30 days from the date you send it to us. We will retain a copy of each Remittance Document for 120 days from the date it is first sent to a Payee.

9. **Survival.** Sections 1(a), 5, 7 and 8 of this Service Description will survive the termination of Services.

Invoice Manager

1. **Description of Service.** With this Service, you can receive, validate, and approve Invoices for payment. You may direct invoices to the Service in either paper, email, or electronic format. We will capture data from your paper or emailed

Invoices based on your Business Rules. We can match Invoices against PO or receipt data. You will receive an approved invoice file containing information regarding your processed Invoices.

2. **Third-party service provider.** We may use a TSP in providing the Service to you. We may change or add a TSP at any time. You agree that we have the right to provide information about you and your use of the Service to the TSP.

3. **Paper Invoice capture.** If you enroll in our Invoice paper capture service, you can direct paper Invoices to a U.S. Postal Service P.O. Box and email Invoices to a unique email address. Subject to section 8, (a) we will scan and capture a standard set of data from each Invoice, and (b) we can also capture PO line item data.

4. **Electronic Invoice capture and supplier enablement.** With our supplier enablement service, you provide supplier contact information to us. We use this information to contact Suppliers about enrolling in our supplier network. Enrolled Suppliers can submit electronic Invoices to you via online manual entry, file upload, PO-Flip, or electronic file submission. If you send an invoice status file to the Service, Suppliers can view payment remittance information on the supplier network user interface.

5. **Purchase order match.** With this Service, you can send us a file containing PO and receipt information, and we will attempt to match incoming Invoices to the POs and receipts based upon your Business Rules. We will confirm that (a) an Invoice is being applied against the correct PO, (b) the amount Invoiced is correct, and (c) the goods and services as referenced in the PO have been received.

6. **Payment discounts.** If you elect to use our dynamic discounting option, you can apply payment discounts to Invoice payments, including:
   a. **Auto-slope discount.** With this option, you can apply a pro-rated discount on an Invoice containing early payment discount terms once the term dates have passed. The Invoice payment amount automatically adjusts based on the original payment terms and the actual payment date, and
   b. **Early pay.** With this option, you can offer a Supplier that enrolls in the supplier network an early pay discount based on the payment date and terms that you approve.

7. **Record retention.** We will retain Invoices images, data, and history for 18 months after receipt, unless you enroll in the Invoice archive service option. All paper Invoices that we receive through this Service will be retained for the time period we separately disclose to you, unless otherwise agreed. You can also elect to receive your archived Invoice data via a flash drive.

8. **Liability.** Invoices provided to us through the Service are not the official record of your Invoices. You are responsible for keeping your own records of your Invoices processed through the Service. We are not responsible for Invoices that are lost, damaged or destroyed. We are not responsible for the accuracy of and will not verify Invoice information we receive from your Suppliers and provide to you through the Service. Neither we nor the TSP shall be liable for any loss or damage arising out of the inaccuracy of the information or data provided by you via the Service. This section will survive the termination of the Service.

Payables Reconcilement

1. **Description of Service.** With this Service, we make information regarding payment transactions processed through your Account(s) available to you in a single, consolidated electronic file ("File") on the first Business Day after they post to your Account(s). The information we make available and the File specifications are described in the User Guide for the Service. The methods we use to make information available to you include without limitation BAI File Transfer and ISO 20022 XML transmission. We reserve the right to modify the File specifications or remove or add to the methods we use to make information available to you from time to time upon notice.

Bill Manager

1. **Description of Service.** You may access both the Payables Service and the Receivables Service through our *CEO* portal.
    a. **Payables Service.** You may send Bill Payments to your Payees from your Payables Account.
    b. **Receivables Service.** You may send Bills to your Customers and initiate Receivables Payments from them. We will credit the Receivables Payments to your Receivables Account.
    c. **Third-Party Service Provider.** We may use a TSP in providing the Service to you, including Bill.com. We may change or add a TSP at any time. You agree that we have the right to, and when you enroll in the Service you direct us to, provide information and documentation about you and your use of the Service to Bill.com or another TSP, including without limitation your name, address, taxpayer identification number and related forms or documents, entity organizational documents (such as articles or certificate of incorporation/formation/organization), bank account information (including with respect to the Payables Account and Receivables Account) and Authorized Users. Bill.com is a money services business and a licensed money transmitter, and the provider of money transmission services for the Service. Additional information on Bill.com's licenses is available at https://app.bill.com/licenses. Bill.com (or any successor TSP) is a third-party beneficiary of Sections 2 - 19 of this Service Description.

2. **Payables Service.**
    a. **Bill Payments.** You may make a Bill Payment using the CEO portal. You agree to use the applicable Security Procedure when you make a Bill Payment. We or the TSP may send the payment electronically or by mailing a check to your Payee. We or the TSP may update the Payee's address and data, including bank routing information and account information, to match the account number, data or format required by the Payee's bank. We or the TSP will try to inform you of any returned Bill Payment and to provide you with a choice to void the Bill Payment and credit your Payables Account or to attempt to resend the payment to the Payee. If you don't provide us with instructions on what to do, you authorize us or the TSP to void the Bill Payment and credit your Payables Account. Neither we nor the TSP will be liable for any returned or resent Bill Payment.
    b. **Payment Date.** We or the TSP will make the Bill Payments only on Business Days in accordance with the processing schedule made available to you separately online. You are responsible for making sure there is sufficient time for your Bill Payment to be paid by the appropriate due date. Where we use a TSP, if you invite a Payee to set up a Bill.com Network account, it may take several days to complete the verification process, and accordingly, any Bill Payments to your Payee may be delayed. You are solely responsible for all penalties, interest charges, and other late payment fees associated with Bill Payments delivered after the due date.
    c. **Your authorization for debit.** You authorize us and the TSP to debit your Payables Account in increments or as a lump sum to make the Bill Payments. You also authorize us and the TSP to: (i) resend any ACH debits, to fund Bill Payments from your Payables Account, that are returned for insufficient or uncollected funds or for any other reason; and/or (ii) verify available funds in your Payables Account prior to resending any such ACH debits. You agree that your Payables Account will be enabled for ACH debits, and you agree to reimburse us and the TSP for all penalties and fees resulting from the rejection of an ACH debit relating to a Bill Payment (for insufficient funds or any other reason) or from your Payables Account not being enabled for ACH debits (such as the account being subject to an ACH debit block service). If a debit from your Payables Account is returned, we and the TSP may decline to make any additional Bill Payments or terminate your use of the Service. We also reserve the right to stop payment on any pending Bill Payments until the funding ACH debit is successfully paid. We and the TSP may make appropriate reports to credit reporting agencies, other financial institutions, tax agencies and law enforcement authorities, and we may cooperate with them in any resulting investigation or prosecution. We and the TSP also reserve the right to debit a Payee's account in the amount of any Bill Payment paid to the Payee on your behalf if the ACH debit from your Payables Account is returned because of insufficient funds or any other reason.
    d. **Right to reject payment.** We and the TSP reserve the right to decline a Bill Payment. If a Bill Payment is missing required information or if we or the TSP have found other errors that prevent us from processing a Bill Payment, we or the TSP may, without liability to you, reject the Bill Payment less the cost of applicable fees. We and the TSP

are not required to confirm or authenticate the Bill Payment. We and the TSP have no duty to you to monitor or verify any Bill Payment. If we or the TSP take any actions in an attempt to detect unauthorized or erroneous Bill Payments, we and the TSP are not liable for not taking steps to correctly perform such actions. You must have sufficient collected and available funds in your Payables Account to cover the Bill Payment. If there are insufficient collected and available funds to cover a Bill Payment, we or the TSP may decline to process the Bill Payment. We and the TSP will have no liability or responsibility resulting from the rejection of any Bill Payment pursuant to this paragraph, including without limitation for any fees or penalties for late payment.

e. **Cancellation, amendment, stop payment.** You may request cancellation, amendment or modification of scheduled Bill Payments by following the directions within the Service. Once processing has begun, you cannot cancel, reschedule or modify a Bill Payment, but you may make a stop payment request. Our ability to process a stop payment request depends on the payment method and whether or not the payment has been processed or the check has cleared. Stop payment requests should be made through the Service. While we will try to accommodate stop payment requests, we and the TSP will not be liable if we cannot stop the payment. We may charge you for additional fees associated with a stop payment request.

f. **Errors and liability.** We and the TSP will not be liable or responsible for verifying that the amount of any Bill Payment is correct. Neither we nor the TSP will have any liability relating to or be involved in any dispute between you and your Payee regarding any Bill Payment, including disputes related to the timeliness of the Bill Payment, the account to which the Bill Payment was sent, or any overpayment and/or underpayment.

3. **Receivables Service.**

a. **Receivables Payments.** By using the Service, you authorize us or the TSP to collect Receivables Payments from your eligible Customers for deposit into your Receivables Account. We or the TSP may decide whether your Customers may be eligible to send payments to you, and we may evaluate the financial condition and creditworthiness of your Customers. We or the TSP may refuse to initiate or accept any Receivables Payment. You are responsible for the payment instructions provided for any Receivables Payment, including any required authorizations or consents. Neither we nor the TSP will be obligated to credit a Receivables Payment to your Receivables Account if funding for the payment is not received from your Customer for any reason. Neither we nor the TSP will verify the accuracy of Bills or your Customers' payment amounts. Your initiation of a Receivables Payment through the Service authorizes us and the TSP to initiate an ACH debit on your behalf against an account of your Customer. You agree your Receivables Account is enabled to receive Receivables Payments, and you agree to reimburse us or the TSP for all penalties and fees resulting from the rejection of an ACH credit relating to a Receivables Payment or to the Receivables Account not being properly configured to accept Receivables Payments.

b. **Provisional credit; returns and reversals.** Any credit to your Receivables Account for a Receivables Payment is provisional until we or the TSP successfully collect the funds from your Customer. If we or the TSP do not receive the funds from your Customer, or if any Receivables Payment is subject to a return, reversal or correction, you authorize us and the TSP to:

   i. Debit your Receivables Account or any other Account for the amount of the Receivables Payment, and
   ii. Deduct the amount of such Receivables Payment from other payments to be credited to your Receivables Account, whether or not received from the same Customer. You will pay any shortfall remaining after any such debit or deduction.

In some cases under Applicable Law, a Receivables Payment may be reversed up to several months after we receive it or may be invalidated. In that case, we or the TSP may debit the funds from your Receivables Account or deduct the amount from other payments to be credited to your Receivables Account as described above. You or your Customer are responsible for all penalties, interest charges, late payment fees and service fees associated with a failed Receivables Payment or any returned debits or credits.

c. **Your representations and warranties.** Your represent and warrant to us and the TSP the following:

   i. You have:

- Obtained your Customer's authorization to debit the Customer's account for the Receivables Payment when you provide your Customer's bank account information to us or the TSP to debit, or

- Instructed us, or the TSP through a Bill.com Network invitation, to obtain your Customer's authorization for the Receivables Payment on your behalf, when you do not provide your Customer's bank account information to us or the TSP.

ii. You will issue each Bill only as agreed and authorized under your contract with the Customer and/or for products or services provided to your Customer, and will keep each Bill for a minimum of one year from the date of the Bill,

iii. The Receivables Payment amount will be the actual amount owed to you by your Customer under your agreement or for products or services, and

iv. You have received a copy of Federal Reserve Board Regulation E and will comply with that regulation at all times when using the Service.

4. **Other services.** You may also have access to the following additional Service options:
   a. **Bill indexing and document management.** You may upload invoices, bills and other statements from your Payees to your Inbox. You should review your Inbox regularly, and you must designate each Inbox item as a new or existing bill or other document, and input details as required.
   b. **Workflow.** Within the Payables Service, you may record and approve bills.
   c. **Sync.** You may install software from the TSP that enables you to sync transactions processed through the Service with eligible accounting software programs.
   d. **Invoice management, creation and import.** You may send invoices to Customers by email, issue reminders to Customers and also track the status of invoices. You may create invoices by entering Customer name and other information, or you may import invoices from eligible accounting software programs.

5. **Client Money Account.** We may credit to the CMA that the TSP maintains with us the funds we receive by debiting your Payables Account for Bill Payments or the funds we receive from your Customers for Receivables Payments. You acknowledge and agree that:
   a. The funds will be held in the CMA by the TSP, as agent and custodian, for the purposes of sending and receiving funds on your behalf. Even though the funds will be held in an account owned by the TSP, the funds are held solely for your benefit (subject to Section 5.e. below) and, as between you and the TSP, you are the principal with respect to those funds.
   b. You appoint us as your agent to make and resolve any claims and enforce any rights on your behalf relating to your funds credited to the CMA.
   c. The TSP may commingle your funds with other funds similarly collected from or for the benefit of others.
   d. Your funds may become subject to garnishment, levy, subpoena and legal process served on us or the TSP, and to applicable escheatment laws.
   e. We or the TSP may deduct and apply amounts held for your benefit in the CMA as described in Section 3.b. above, and we may otherwise setoff against amounts held for your benefit in the CMA for any obligation you owe us, as allowed by Applicable Law.
   f. You have no right to directly access funds held in the CMA.

6. **Authorized Users.** Each Authorized User will have their own Credentials. You authorize us and the TSP to follow any payment instructions or approvals provided by an Authorized User, whether or not the payment instructions are authorized by you. You will be responsible for any loss that occurs from the disclosure of any Credentials to a person who is not an Authorized User.
   a. **Super Users.** A Super User is an Authorized User with elevated entitlements. There are two different types of Super Users, as described below.
      i. **Administrator:** An Administrator may perform administrative functions on your behalf, which may and can include the following functions:

- Setting up and terminating other Super Users or Collaborators,
- Setting up and informing Authorized Users of any limits or restrictions on their use of the Service, and controlling and enforcing any such limits or restrictions, and
- Immediately notifying us of any actual or suspected loss, theft or unauthorized use of the Service, or of any actual or suspected security breach.

ii. **Payer:** A Payer has the authority to make payments on your behalf.

b. **Collaborators.** A Collaborator does not have the same entitlements as a Super User, but may perform certain functions within the Service. A Collaborator may include a Bill Approver, Clerk, Accountant, or Auditor.

7. **Transaction restrictions.** For security and risk management reasons, we or the TSP may set and/or modify restrictions regarding your use of the Service. These restrictions are solely for the protection of us and the TSP.

8. **License.** We grant you a nonexclusive, limited and revocable right to use the Service and Products as described in this Service Description. You shall not use the Service or Products for any other purpose, and will not copy, modify, or create derivative works of the Products or display, assign, sublicense, distribute, or otherwise transfer any interest in Products to any third party. Except for the rights granted here, all rights and title to all Products, including any improvements, modifications, and derivative works, shall at all times remain with us or the TSP. Products constitute trade secrets, and you agree to maintain them as secret, confidential and proprietary.

9. **Bill.com Network.** Where we use Bill.com as a TSP, you become a member of the Bill.com Network. By becoming a member of the Bill.com Network, you agree not to dispute any payments made from your accounts to another member of the Bill.com Network, provided that the transactions correspond to the terms of the contract(s) between you and the other member. You represent that your designated Payables Account and Receivables Account are enabled for ACH debits initiated on behalf of other Bill.com Network members and are not subject to an ACH debit block service that will prevent such debits. If such an ACH debit is charged to your designated accounts and rejected for insufficient funds, you agree the charge may be processed again at any time within thirty (30) days.

10. **Further agreements.** You further agree as follows:
    a. You will at all times maintain enough funds in the Payables Account and Receivables Account to meet all payment obligations, including returns, reversals, and associated fees, and will add funds immediately if we or the TSP notify you that the funds in an Account are insufficient.
    b. You are responsible for verifying the accuracy of all information provided to us and the TSP, including payment instructions and other information related to Bill Payments and Receivables Payments, when using the Service.
    c. You will be bound by and comply with all applicable electronic funds transfer laws and regulations and funds transfer system and clearing house rules then in effect, including but not limited to the NACHA Rules and RPPS Rules.
    d. You agree to make the same representations and warranties, and agree to provide the same indemnities, to us or the TSP as we or the TSP must provide under the NACHA Rules, RPPS Rules or any other applicable funds transfer system or clearing house rules, for any transaction originated via the Service.

11. **Disclaimer of Service warranties.** You acknowledge that we and the TSP have not made any warranties to you relating to the Service. Your use of the Service is at your own risk. The Service is provided on an "as is" "where-is" and "where available" basis, and is subject to change at any time without notice. If you determine that the Service is not performing satisfactorily, your exclusive remedy shall be to stop using and terminate the Service.

12. **Prohibited use of Service.** The Service is not intended for the payment of employee payroll or reimbursement, alimony, child support, taxes or court-directed or government payments, or payments to settle securities transactions. We and the TSP are not, and will not be, a "business associate" of you for purposes of The Health Insurance Portability and Accountability Act of 1996, as amended ("HIPAA"), and you will not send or transmit any

"Protected Health Information" (as defined in HIPAA) to us or the TSP through the Service. You represent and warrant that you will not use the Service for any purpose that is unlawful or is not permitted by the terms of the Service Documentation (including without limitation the two preceding sentences) or by any Applicable Law, including the sanctions laws administered by the Office of Foreign Assets Control. You further represent and warrant that you will not use the Service in any way that could damage, disable, overburden, or impair the Service or interfere with any other party's use of the Service.

13. **Data.** Any information or data you submit through the Service may not have been reviewed by us or the TSP, or may be updated, adjusted, and corrected at any time by us or the TSP, and should not be relied upon by you. Any

information or data you provide through the Service is not the official record of your accounts, and neither we nor the TSP shall be liable for any loss or damage arising out of the inaccuracy of the information or data provided by you via the Service. You are responsible for keeping your own records of your accounts and all transactions made through the Service, and you may not rely on us or the TSP to be your record keeper.

14. **Inconsistency of name and account number.** You must provide accurate information for both Bill Payments and Receivables Payments. We, the TSP, any intermediary bank, and any Payee or Customer bank may rely solely on the account number and/or bank routing or identification number provided for Payee or Customer in connection with any payment instructions, whether or not the name of Payee or Customer, or Payee's or Customer's bank, matches the account number and/or routing or identification number. You shall provide us or the TSP with such information as we or the TSP may request for any requested transaction, including without limitation, Payee or Customer and Payee's or Customer's bank account information and name and address. You are responsible for any loss resulting from any error in Payee's or Customer's account number or any routing or identification number for the Payee or Customer bank.

15. **Termination.** We reserve the right to terminate the Service immediately for any reason.

16. **Limitation of liability.** Neither we nor the TSP, nor our respective directors, officers, employees or agents will be liable to you for:
    a. Any special, consequential, incidental (including without limitation court costs and attorneys' fees), indirect, or punitive losses or damages, or
    b. Business interruption, loss of profits, loss of business, loss of revenue, loss of goodwill, loss of opportunity, loss or injury to reputation or loss of anticipated savings, whether any claim is based on contract or tort, or whether the likelihood of such losses or damages was known to the other party and regardless of the form of the claim or action.

17. **Arbitration agreement and class action waiver.** Upon demand of either party, any controversy or claim arising out of or relating to this Service ("Dispute") must be submitted to arbitration administered by the American Arbitration Association ("AAA") under its Commercial Arbitration Rules, and must be heard before three arbitrators if the amount in controversy is US $5,000,000 or more or its equivalent in any other currency, and before one arbitrator for amounts in controversy of less than US $5,000,000 or its equivalent in any other currency. Arbitration will proceed in a location selected by AAA in the state of the applicable Governing Law (as defined in the Master Agreement), and if there is no such state, the place of arbitration must be New York, NY. The language of the arbitration must be English. Judgment on the award rendered by the arbitrator(s) may be entered in any court having jurisdiction thereof. This arbitration requirement does not limit the right of either party to: (a) exercise self-help remedies including setoff, or (b) obtain provisional or ancillary remedies such as injunctive relief or attachment, before, during or after the pendency of any arbitration proceeding. This exclusion does not constitute a waiver of the right or obligation of either party to submit any dispute to arbitration hereunder, including those arising from the exercise of the actions detailed in (a) and (b) of this subsection. You and we agree that the resolution of any Dispute shall not be consolidated with other Disputes or treated as a class. Neither you nor we shall be entitled to join or consolidate Disputes by or against others in any arbitration, or to include in any arbitration any Dispute as a representative or

member of a class, or to act in any arbitration in the interest of the general public or in a private attorney general capacity.

18. **Jury trial waiver.** WE AND YOU EACH IRREVOCABLY WAIVE ANY AND ALL RIGHTS TO TRIAL BY JURY IN ANY LEGAL PROCEEDING ARISING OUT OF OR RELATING TO THIS SERVICE DESCRIPTION.

19. **Survival.** Sections 3(c), 4, 5, 7, 10, 12, 13, 15, 16, 17, and 18, and the other terms of this Service Description that by their nature are intended to survive, will survive termination of the Service.

Glossary

ACH means the Automated Clearing House.

Administratormeans an Authorized User who may perform administrative functions on your behalf.

Account means your account(s) with us used in connection with the Service.

Account Agreement means the applicable account agreement governing the Account.

Applicable Law is defined in section 3 of the Master Agreement.

Authorized User means an individual (i) who you designate and authorize to act on your behalf in using the Service and to provide instruction to us or the TSP, and (ii) on whose behalf you accept the terms of this Service Description.

Bill.com is Bill.com LLC, a TSP that we may use in connection with the Service.

Bill.com Network means the network of entities or persons, including your Customers and Payees, who have enrolled directly with Bill.com and agreed to Bill.com's terms of service.

Bill is an electronic communication we or the TSP send to your Customers on your behalf for payments they owe you for services or products you provide to your Customer.

Bill Payment means a payment you initiate through the Service to be paid to your Payee.

Business Day means every day except Saturday, Sunday and federal holidays. When used in connection with funds transfer Services, "Business Day" means each day on we are open for business related to that Service.

Business Rules means the business rules for the Service that you and we separately agree to in writing.

CMA means the client money deposit account maintained by the TSP with us.

Collaborator means an Authorized User who does not have the same entitlements as a Super User, but may perform certain functions within the Service.

Credentials means an Authorized User's identification, unique password, and unique security device.

Customers are your customers or other persons who may make Receivables Payments to you through the Service from their U.S. deposit accounts.

Cutoff Time means our cutoff time each Business Day that we separately disclose to you for the Service.

Inbox means the electronic mailbox available within the Service where you may upload invoices, bills and other statements from your Payees.

Invoice means an invoice for products or services from your Suppliers received through the Invoice Manager Service, in paper, Web entry or electronic format.

Losses means all liabilities, losses, damages, claims, obligations, demands, charges, costs, or expenses (including reasonable fees, disbursements of legal counsel and court fees).

Master Agreement means the Master Agreement for Treasury Management Services.

NACHA Rules means the National Automated Clearing House Association Operating Rules and any applicable local ACH rules.

PO-Flip means data from your purchase order can be used to create an Invoice.

Payables Account means the demand deposit account you have with us that you designate as the account from which we or the TSP will debit funds in order to make Bill Payments to your Payees.

Payee means a third party to whom you make a payment through one of the Services in this Service Description. For purposes of the Bill Manager Service Description, "Payee" means entities or persons, including vendors and other service providers, with U.S. bank accounts, to whom you may make Bill Payments through the Bill Manager Service.

Payment File means an electronic file you send to us containing multiple payment types and accompanying remittance information.

Products are the software and related applications supplied by us or the TSP in connection with the Service.

Receivables Account means the demand deposit account you have with us that you designate as the account to which we or the TSP will credit Receivables Payments received from Customers.

Receivables Payment means a payment to you from your Customer collected through the Service.

Remittance Document means a human-readable document describing the remittance data for a payment.

RPPS Rules means the Mastercard RPPS® Operating Rules.

Representatives is defined in section 11(f) of the Master Agreement.

Security Procedure is defined in the Product Enrollment Form and in section 6 of the Master Agreement.

Super User means an Authorized User with elevated entitlements.

Supplier means your suppliers that send Invoices for products and services provided to you.

Third-Party Service Provider or TSP is a third party that performs functions related to the processing of payments, including a "third-party service provider" as that term is defined in the NACHA Rules.

Transmission Protocol means the various methods we offer to transmit a Payment File to and from us, as described in the applicable User Guide for the Service.

SECTION 4

PROPOSAL SUBMITTAL FORM
RFP No. 2020-27

THIS PROPOSAL IS SUBMITTED TO:

City of Doral
8401 NW 53rd Terrace
Doral, Florida 33166

1. The undersigned Bidder proposes and agrees, if this Proposal is accepted, to enter into an agreement with The City of Doral to perform and furnish all goods and/or services as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this RFP and in accordance with the other terms and conditions of the Contract Documents.

2. Proposer accepts all of the terms and conditions of the Advertisement or Request for Proposal and Instructions to Bidders, including without limitation those dealing with the disposition of Bid Security. This Proposal will remain subject to acceptance for 90 days after the day of Proposal opening. Proposer agrees to sign and submit the Agreement with the Bonds and other documents required by the Bidding Requirements within ten days after the date of City's Notice of Award. (If applicable)

3. In submitting this Proposal, Proposer represents, as more fully set forth in the Agreement, that:
   (a) Proposer has examined copies of all the Proposal Documents and of the following Addenda (receipt of all which is hereby acknowledged.)

   Addendum No. 1 Dated: 1/4/2021
   Addendum No. 2 Dated: 1/14/2021
   Addendum No. 3 Dated: 1/15/2021
   Addendum No. ________ Dated: ________

   (b) Proposer has familiarized themselves with the nature and extent of the Contract Documents, required goods and/or services, site, locality, and all local conditions and Law and Regulations that in any manner may affect cost, progress, performance, or furnishing of the Work.
   (c) Proposer has studied carefully all reports and drawings of subsurface conditions and drawings of physical conditions.
   (d) Proposer has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests and studies (in addition to or to supplement those referred to in (c) above) which pertain to the subsurface or physical conditions at the site or otherwise may affect the cost, progress, performance, or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, and no additional examinations, investigations, explorations, tests, reports or similar information or data are or will be required by Bidder for such purposes.
   (e) Proposer has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents.

(f) Proposer has given the City written notice of all conflicts, errors, discrepancies that it has discovered in the Contract Documents and the written resolution thereof by the City is acceptable to Proposer.

(g) This Proposal is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; Proposer has not directly or indirectly induced or solicited any other Proposer to submit a false or sham Proposal; Proposer has not solicited or induced any person, firm or corporation to refrain from submitting; and Proposer has not sought by collusion to obtain for itself any advantage over any other Proposer or over the City.

4. Proposer understands that the quantities provided are only provided for proposal evaluation only. The actual quantities may be higher or lower than those in the proposal form.

5. Proposer understands and agrees that the Contract Price is Unit Rate Contract to furnish and deliver all of the Work complete in place as such the Proposer shall furnish all labor, materials, equipment, tools superintendence, and services necessary to provide a complete Project.

6. Proposer agrees that the work will be completed as scheduled from the date stipulated in the Notice to Proceed.

7. Communications concerning this Proposal shall be addressed to:

Bidder:	Wells Fargo Bank, N.A.
Address:	100 South Ashley Drive, #820
	Tampa, FL 33602
Telephone	813-225-6539
Facsimile Number	813-225-4450
Attention:	Vincent Mattio

8. The terms used in this Proposal which are defined in the General Conditions of the Contract included as part of the Contract documents have the meanings assigned to them in the General Conditions.

CITY OF DORAL PROCUREMENT
RFP REFERENCE SURVEY
RFP. NO. 2020-27
BANKING SERVICES

FROM:	Anna Otiniano	TO: PROCUREMENT MANAGER
COMPANY:	City of Plantation	DUE DATE: January 8th, 2021
PHONE NO.:	954-797-2163	TOTAL #. OF PAGES: 1
FAX NO.		PH. #: 305-593-6725 EXT. 4003 / 4006
EMAIL:	aotiniano@plantation.org	EMAIL:procurement@cityofdoral.com
SUBJECT:	Reference for work completed regarding banking services.	

Additional Details:

You as an individual or Your company has been given to us as a point of contact for a reference on a project completed for you (identified above). Description of City Project:

- *By way of this RFP, the City of Doral is requesting proposals from qualified, licensed, insured and experienced financial institutions interested in providing basic and specialized banking services on an annual basis in accordance with the specifications detailed herein.*

A complete copy of the solicitation document can be obtained via the City of Doral's Procurement webpage at the link below.
City of Doral - Bid Opportunities

Company you are providing a reference for: Wells Fargo Bank, N.A.

Indicate:	"YES" or "NO"
1. Was the scope of work performed similar in nature?	Yes
2. Did this company have the proper resources and personnel by which to get the job done?	Yes
3. Were any problems encountered with the company's work performance?	No
4. Were any change orders or contract amendments issued, other than owner initiated?	No
5. Was the job completed on time based on the original established timeline, not including change orders?	Yes
6. Was the job completed within budget based on the original established budget, not including change orders?	Yes
7. On a scale of one to ten (1-10), ten being best, how would you rate the overall work performance, considering professionalism, final product, personnel, resources. Rate from 1 to 10 (10 being the highest)	10
8. If the opportunity were to present itself, would you rehire this company?	Yes

9. Please provide any additional comments pertinent to this company and the work performed for you:
The City of Plantation is very satisified with the services provided by Wells Fargo. Wells staff respond timely to inquires and provide excellent customer service.

PLEASE COMPLETE AND RETURN TO THE ATTENTION OF:
Tanya Donigan – Procurement@cityofdoral.com
Subject: Reference for RFP No. 2020-27

Anna C. Otimiano

Reference Print Name

Finance Director

Reference Title

Reference Signature

CITY OF DORAL PROCUREMENT
RFP REFERENCE SURVEY
RFP. NO. 2020-27
BANKING SERVICES

FROM:	Winsome Freeman	TO: PROCUREMENT MANAGER
COMPANY:	City of Miramar	DUE DATE: January 8th, 2021
PHONE NO.:	954-602-3071	TOTAL #. OF PAGES: 1
FAX NO.		PH. #: 305-593-6725 EXT. 4003 / 4006
EMAIL:	wafreeman@ci.miramar.fl.us	EMAIL:procurement@cityofdoral.com
SUBJECT:	Reference for work completed regarding banking services.	

Additional Details:

____

____

You as an individual or Your company has been given to us as a point of contact for a reference on a project completed for you (identified above). Description of City Project:

- *By way of this RFP, the City of Doral is requesting proposals from qualified, licensed, insured and experienced financial institutions interested in providing basic and specialized banking services on an annual basis in accordance with the specifications detailed herein.*

A complete copy of the solicitation document can be obtained via the City of Doral's Procurement webpage at the link below.

City of Doral - Bid Opportunities

Company you are providing a reference for: Wells Fargo Bank, N.A.

Indicate:	"YES" or "NO"
1. Was the scope of work performed similar in nature?	YES
2. Did this company have the proper resources and personnel by which to get the job done?	YES
3. Were any problems encountered with the company's work performance?	NO
4. Were any change orders or contract amendments issued, other than owner initiated?	NO
5. Was the job completed on time based on the original established timeline, not including change orders?	YES
6. Was the job completed within budget based on the original established budget, not including change orders?	YES
7. On a scale of one to ten (1-10), ten being best, how would you rate the overall work performance, considering professionalism, final product, personnel, resources. Rate from 1 to 10 (10 being the highest)	10
8. If the opportunity were to present itself, would you rehire this company?	YES

9. Please provide any additional comments pertinent to this company and the work performed for you:

Wells Fargo has provided exceptional service throughout the 25 year relationship with the City of Miramar. The City has found them to be responsive and competent, serving in the capacity of a business partner and building a good working relationship in their dealings with the City.

PLEASE COMPLETE AND RETURN TO THE ATTENTION OF:
Tanya Donigan – Procurement@cityofdoral.com
Subject: Reference for RFP No. 2020-27

Winsome Freeman

Reference Print Name

Assistant Director of Financial Services

Reference Title

Reference Signature

DocuSigned by:

01AE122B4843419...

CITY OF DORAL PROCUREMENT
RFP REFERENCE SURVEY
RFP. NO. 2020-27
BANKING SERVICES

FROM:	Mirtha Dziedzic	TO: PROCUREMENT MANAGER
COMPANY:	City of Miami Gardens	DUE DATE: January 8th, 2021
PHONE NO.:	305-622-8000 ext. 2400	TOTAL #. OF PAGES: 1
FAX NO.		PH. #: 305-593-6725 EXT. 4003 / 4006
EMAIL:	mdziedzic@miamigardens-fl.gov	EMAIL:procurement@cityofdoral.com
SUBJECT:	Reference for work completed regarding banking services.	

Additional Details:

____

____

You as an individual or Your company has been given to us as a point of contact for a reference on a project completed for you (identified above). Description of City Project:

❖ *By way of this RFP, the City of Doral is requesting proposals from qualified, licensed, insured and experienced financial institutions interested in providing basic and specialized banking services on an annual basis in accordance with the specifications detailed herein.*

A complete copy of the solicitation document can be obtained via the City of Doral's Procurement webpage at the link below.
City of Doral - Bid Opportunities

Company you are providing a reference for: Wells Fargo Bank, N.A.

Indicate:	**"YES" or "NO"**
1. Was the scope of work performed similar in nature?	Yes
2. Did this company have the proper resources and personnel by which to get the job done?	Yes
3. Were any problems encountered with the company's work performance?	No
4. Were any change orders or contract amendments issued, other than owner initiated?	No
5. Was the job completed on time based on the original established timeline, not including change orders?	Yes
6. Was the job completed within budget based on the original established budget, not including change orders?	Yes
7. On a scale of one to ten (1-10), ten being best, how would you rate the overall work performance, considering professionalism, final product, personnel, resources. Rate from 1 to 10 (10 being the highest)	10
8. If the opportunity were to present itself, would you rehire this company?	Yes

9. Please provide any additional comments pertinent to this company and the work performed for you:
The Wells Fargo team is always very responsive and helpful. We can always reach someone and know that our issues will be addressed in a quick and courteous manner.

PLEASE COMPLETE AND RETURN TO THE ATTENTION OF:
Tanya Donigan – Procurement@cityofdoral.com
Subject: Reference for RFP No. 2020-27

Mirtha Dziedzic Reference Print Name	
Finance Director City of Miami Gardens Reference Title	Mirtha Dziedzic Digitally signed by Mirtha Dziedzic DN: cn=Mirtha Dziedzic, o=City of Miami Gardens, ou=Finance Department, email=mdziedzic@miamigardens-fl.gov, c=US Date: 2020.12.17 14:50:53 -05'00' Reference Signature

CITY OF DORAL PROCUREMENT
RFP REFERENCE SURVEY
RFP. NO. 2020-27
BANKING SERVICES

FROM:	Sharon Haynes	TO: PROCUREMENT MANAGER
COMPANY:	City of Deerfield Beach	DUE DATE: January 29th, 2021
PHONE NO.:	954-798-9497	TOTAL #. OF PAGES: 1
FAX NO.	954-480-4223	PH. #: 305-593-6725 EXT. 4003 / 4006
EMAIL:	Assistant Finance Director	EMAIL:procurement@cityofdoral.com
SUBJECT:	Reference for work completed regarding banking services.	

Additional Details: Wells Fargo provides banking and treasury management services to the City of DFB.

You as an individual or Your company has been given to us as a point of contact for a reference on a project completed for you (identified above). Description of City Project:

- *By way of this RFP, the City of Doral is requesting proposals from qualified, licensed, insured and experienced financial institutions interested in providing basic and specialized banking services on an annual basis in accordance with the specifications detailed herein.*

A complete copy of the solicitation document can be obtained via the City of Doral's Procurement webpage at the link below.
City of Doral - Bid Opportunities

Company you are providing a reference for: Wells Fargo Bank, N.A.

	Indicate:	"YES" or "NO"
1.	Was the scope of work performed similar in nature?	Yes
2.	Did this company have the proper resources and personnel by which to get the job done?	Yes
3.	Were any problems encountered with the company's work performance?	NO
4.	Were any change orders or contract amendments issued, other than owner initiated?	NO
5.	Was the job completed on time based on the original established timeline, not including change orders?	Yes
6.	Was the job completed within budget based on the original established budget, not including change orders?	N/A
7.	On a scale of one to ten (1-10), ten being best, how would you rate the overall work performance, considering professionalism, final product, personnel, resources. Rate from 1 to 10 (10 being the highest)	9
8.	If the opportunity were to present itself, would you rehire this company?	Yes

9. Please provide any additional comments pertinent to this company and the work performed for you: The Wells Fargo team shows great initiative in helping the City of Deerfield Beach manage cash flows & investment.

PLEASE COMPLETE AND RETURN TO THE ATTENTION OF:
Tanya Donigan – Procurement@cityofdoral.com
Subject: Reference for RFP No. 2020-27

SHARON HAYNES
Reference Print Name

Assistant FINANCE Director
Reference Title

Reference Signature S. Haynes

CITY OF DORAL PROCUREMENT
RFP REFERENCE SURVEY
RFP. NO. 2020-27
BANKING SERVICES

FROM:	Michael Villella	TO: PROCUREMENT MANAGER
COMPANY:	Town of Jupiter	DUE DATE: January 8th, 2021
PHONE NO.:	561-741-2218	TOTAL #. OF PAGES: 1
FAX NO.		PH. #: 305-593-6725 EXT. 4003 / 4006
EMAIL:	michaelv@jupiter.fl.us	EMAIL:procurement@cityofdoral.com
SUBJECT:	Reference for work completed regarding banking services.	

Additional Details:

____

____

You as an individual or Your company has been given to us as a point of contact for a reference on a project completed for you (identified above). Description of City Project:

- *By way of this RFP, the City of Doral is requesting proposals from qualified, licensed, insured and experienced financial institutions interested in providing basic and specialized banking services on an annual basis in accordance with the specifications detailed herein.*

A complete copy of the solicitation document can be obtained via the City of Doral's Procurement webpage at the link below.
City of Doral - Bid Opportunities

Company you are providing a reference for: Wells Fargo Bank, N.A.

	Indicate:	**"YES" or "NO"**
1.	Was the scope of work performed similar in nature?	Yes
2.	Did this company have the proper resources and personnel by which to get the job done?	Yes
3.	Were any problems encountered with the company's work performance?	No
4.	Were any change orders or contract amendments issued, other than owner initiated?	No
5.	Was the job completed on time based on the original established timeline, not including change orders?	Yes
6.	Was the job completed within budget based on the original established budget, not including change orders?	Yes
7.	On a scale of one to ten (1-10), ten being best, how would you rate the overall work performance, considering professionalism, final product, personnel, resources. Rate from 1 to 10 (10 being the highest)	9
8.	If the opportunity were to present itself, would you rehire this company?	Yes

9. Please provide any additional comments pertinent to this company and the work performed for you:
The Town of Jupiter has had an outstanding working relationship with both Vincent Mattio and Jackie Kobialko at Wells Fargo Bank and I highly recommend them to provide municipal banking services.

PLEASE COMPLETE AND RETURN TO THE ATTENTION OF:
Tanya Donigan – Procurement@cityofdoral.com
Subject: Reference for RFP No. 2020-27

Michael Villella

Reference Print Name

Town of Jupiter
Finance Director

Reference Title

Reference Signature

STATEMENT

I understand that a "person" as defined in Para. 287.133(1)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding Contract and which Bids or applies to Bid on Contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "persons" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of any entity.

SUBMITTED THIS DAY December 14, 2020.

Person Authorized to sign Proposal: [signature] (Signature)

Vincent Mattio (Print Name)

Senior Vice President (Title)

Company Name: Wells Fargo Bank, N.A.

Company Address: 100 South Ashley Drive, #820

Tampa, FL 33602

Phone: 813-225-6539

Fax: 813-225-4450

Email: vincent.mattio@wellsfargo.com

STATEMENT OF NO RESPONSE

RFP No. 2020-27

If you are not proposing on this service/commodity, please complete and return this form to City of Doral Procurement at procurement@cityofdoral.com. Failure to respond may result in deletion of your firm's name from the qualified vendor list for the City of Doral.

COMPANY NAME: Wells Fargo Bank, N.A.

ADDRESS: 100 South Ashley Drive, #820, Tampa, FL 33602

TELEPHONE: 813-225-6539

SIGNATURE: ______

DATE: 1/26/2021

We, the undersigned have declined to submit a Bid on the above because of the following reasons:

____________ Specifications/Scope of Work too "tight", i.e., geared toward brand or manufacturer only (explain below)
____________ Insufficient time to respond
____________ We do not offer this product, service or an equivalent
____________ Our schedule would not permit us to perform
____________ Unable to meet bond requirements
____________ Specifications unclear (explain below)
____________ Other (specify below)

REMARKS: This form is NOT applicable to Wells Fargo.

BIDDER INFORMATION WORKSHEET
RFP No. 2020-27

COMPANY/AGENCY/FIRM NAME: Wells Fargo Bank, N.A.

ADDRESS: 100 South Ashley Drive, #820, Tampa, FL 33602

BUSINESS EMAIL ADDRESS: vincent.mattio@wellsfargo.com **PHONE No.:** 813-225-6539

CONTACT PERSON & TITLE: Vincent Mattio; Senior Vice President

CONTACT EMAIL ADDRESS: vincent.mattio@wellsfargo.com **PHONE No.:** 813-225-6539

BUSINESS HOURS: Monday - Friday

BUSINESS LEGAL STATUS: (circle one) CORPORATION / PARTNERSHIP/JOINT VENTURE / LLC

BUSINESS IS A: (circle one) PARENT / SUBSIDIARY / OTHER ______

DATE BUSINESS WAS ORGANIZED/INCORPORATED: 1853

ADDRESS OF OFFICE WHERE WORK IS TO BE DONE FOR THIS PROJECT
(if different from address provided above):

______

______

INDIVIDUALS(S) AUTHORIZED TO MAKE REPRESENTATIONS FOR THE BIDDER:

(First, Last Name)	(Title)	(Contact Phone Number)
Vincent Mattio	Senior Vice President	813-225-6539
Jackie Kobialko	Senior Vice President	954-654-1645

SIGNATURE: [signature] **DATE:** 12/14/2020

PRINT NAME: Vincent Mattio

BIDDER QUALIFICATION STATEMENT

RFP No. 2020-27

The Bidder's response to this questionnaire will be utilized as part of the City's overall Bid Evaluation to ensure that the Bidder meets, to the satisfaction of the City of Doral, the minimum requirements for participating in this solicitation.

The following minimum experience is required for this project as specified in Section 2.

ON THE FORM BELOW, BIDDER MUST PROVIDE DETAILS FULFILLING ABOVE MINIMUM EXPERIENCE REQUIREMENTS. IT IS MANDATORY THAT BIDDERS USE THIS FORM IN ORDER TO INDICATE THAT THE MINIMUM EXPERIENCE REQUIREMENT IS MET. NO EXCEPTIONS WILL BE MADE.

1. Project Name/Location: Banking Services

   Owner Name: Wells Fargo Bank, N.A.

   Contact Person: Vincent Mattio

   Contact Telephone No.: 813-225-6539

   Email Address: vincent.mattio@wellsfargo.com

   Yearly Budget/Cost: Flucuates based on City volumes

   Dates of Contract: From: 1/8/2016 To: 12/31/2020

   Project Description: Full Service Treasury Management Services

2. Project Name/Location: Merchant Services

   Owner Name: Wells Fargo Bank, N.A.

   Contact Person: Vincent Mattio

   Contact Telephone No.: 813-225-6539

   Email Address: vincent.mattio@wellsfargo.com

   Yearly Budget/Cost: Flucuates based on City useage.

Dates of Contract From: 11/13/2017 To: 12/31/2020

Project Description Merchant Processing

3. Project Name/Location

Owner Name

Contact Person

Contact Telephone No.

Email Address:

Yearly Budget/Cost

Dates of Contract From: To:

Project Description

4. Project Name/Location

Owner Name

Contact Person

Contact Telephone No.

Email Address:

Yearly Budget/Cost

Dates of Contract From: To:

Project Description

5. Project Name/Location ______________________

Owner Name ______________________

Contact Person ______________________

Contact Telephone No. ______________________

Email Address: ______________________

Yearly Budget/Cost ______________________

Dates of Contract From: ____________ To: ____________

Project Description ______________________

END OF SECTION

BUSINESS ENTITY AFFIDAVIT
(VENDOR / BIDDER DISCLOSURE)
RFP No. 2020-27

I, Vincent Mattio, being first duly sworn state:

The full legal name and business address of the person(s) or entity contracting or transacting business with the City of Doral ("City") are (Post Office addresses are not acceptable), as follows:

94-1347393
FEDERAL EMPLOYER IDENTIFICATION NUMBER (IF NONE, SOCIAL SECURITY NUMBER)

Wells Fargo Bank, N.A.
Name of Entity, Individual, Partners, or Corporation

Doing business as, if same as above, leave blank

STREET ADDRESS	SUITE	CITY	STATE	ZIP CODE
101 North Phillips Ave		Sioux Falls	SD	57104

OWNERSHIP DISCLOSURE AFFIDAVIT

1. If the contact or business transaction is with a corporation, the full legal name and business address shall be provided for each officer and director and each stockholder who holds directly or indirectly five percent (5%) or more of the corporation's stock. If the contract or business transaction is with a trust, the full legal name and address shall be provided for each trustee and each beneficiary. All such names and addresses are (Post Office addresses are not acceptable), as follows:

Full Legal Name	Address	Ownership
WFC Holdings, LLC	420 Montgomery St, San Francisco, CA, 94104	100 % of WFBNA
Wells Fargo & Company	420 Montgomery St, San Francisco, CA, 94104	100% of WFC Holdings, LLC
		%

2. The full legal names and business address of any other individual (other than subcontractors, material men, suppliers, laborers, or lenders) who have, or will have, any interest (legal, equitable, beneficial or otherwise) in the contract or business transaction with the City are (Post Office addresses are not acceptable), as follows:

Signature of Affiant

12/15/2020

Date

Vincent Mattio

Printed Name of Affiant

The foregoing Affidavit was acknowledged before me, by means of ☑ physical presence or ☐ online notarization, this 15th day of December, 2020 (year), by Vincent Mattio who is personally known to me or who has produced a Florida driver's license as identification.

Personally known ____________

OR

Produced identification FL Driver License

Notary Public-State of Florida

FL Driver License

Type of Identification

My commission expires: 08/29/2022

Printed, typed, or stamped commissioned name of Notary Public

JOSE MUNIZ
NOTARY
My Comm. Expires
August 29, 2022
No. GG 253755
PUBLIC
STATE OF FLORIDA

NON-COLLUSION AFFIDAVIT
RFP No. 2020-27

State of Florida)
) SS
County of Hillsborough)

BEFORE ME, the undersigned authority, personally appeared Vincent Mattio, who, after being duly sworn, deposes and states that all of the facts herein are true:

(1) He/She/They is/are the Officer

(Owner, Partner, Officer, Representative or Agent) of Wells Fargo Bank, N.A., the BIDDER that has submitted the attached Bid;

(2) He/She/They is/are fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

(3) Such Bid is genuine and is not a collusive or sham Bid;

(4) Neither the said BIDDER nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, have in any way colluded, conspired, connived or agreed, directly or indirectly, with any other BIDDER, firm, or person to submit a collusive or sham Bid in connection with the Work for which the attached Bid has been submitted; or to refrain from bidding in connection with such Work; or have in any manner, directly or indirectly, sought by agreement or collusion, or communication, or conference with any BIDDER, firm, or person to fix any overhead, profit, or cost elements of the Bid or of any other BIDDER, or to fix any overhead, profit, or cost elements of the Bid Price or the Bid Price of any other BIDDER, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against (Recipient), or any person interested in the proposed Work; and

(5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the BIDDER or any other of its agents, representatives, owners, employees or parties in interest, including this affiant.

FURTHER AFFIANT SAYETH NOT

By: [signature]

Print Name: Vincent Mattio

The foregoing Affidavit was acknowledged before me, by means of ☑ physical presence or ☐ online notarization, this 15th day of December, 2020 (year), by Vincent Mattio who is personally known to me or who has produced a Florida driver's license as identification.

Personally known_______________________

OR

Produced Identification ✓ Type of Identification FL Driver License
Notary Public-State of Florida

My commission number: GG253755 My commission expires: 08/29/2022

Jose Muñiz

Printed, typed, or stamped commissioned name of Notary Public

[Notary Seal]

JOSE MUNIZ
NOTARY
My Comm. Expires
August 29, 2022
No. GG 253755
PUBLIC
STATE OF FLORIDA

Signature:

NO CONTINGENCY AFFIDAVIT
RFP No. 2020-27

State of Florida)
) SS
County of Hillsborough)

BEFORE ME, the undersigned authority, personally appeared Vincent Mattio, who, after being duly sworn, deposes and states that all of the facts herein are true:

(1) He/She/They is/are Officer Owner, Partner, Officer, Representative or Agent) of Wells Fargo Bank, N.A., the BIDDER that has submitted the attached Bid;

(2) Bidder warrants that neither it, nor any principal, employee, agent, representative or family member has promised to pay, and Firm has not, and will not; pay a fee the amount of which is contingent upon the City of Doral awarding this contract. Firm warrants that neither it, nor any principal, employee, agent, representative has procured, or attempted to procure, this contract in violation of any of the provisions of the Miami-Dade County conflict of interest and code of ethics ordinances; and

(3) Further, Firm acknowledges that a violation of this warranty may result in the termination of the contract and forfeiture of funds paid, or to be paid, to the Firm, if the Firm is chosen for performance of the contract.

FURTHER AFFIANT SAYETH NOT

By: [signature]

Print Name: Vincent Mattio

The foregoing Affidavit was acknowledged before me, by means of ☑ physical presence or ☐ online notarization, this 15th day of December, 2020 (year), by Vincent Mattio who is personally known to me or who has produced a Florida driver's license as identification.

Personally known ________

OR

Produced Identification ✓

Type of Identification FL Driver License

Notary Public-State of Florida

My commission number: GG 253755

My commission expires: 08/29/2022

José Muñiz

Printed, typed, or stamped commissioned name of Notary Public

[Notary Seal]

Signature: [signature]

JOSE MUNIZ
NOTARY
My Comm Expires
August 29, 2022
No GG 253755
PUBLIC
STATE OF FLORIDA

AMERICANS WITH DISABILITIES ACT (ADA)
DISABILITY NONDISCRIMINATION STATEMENT

RFP No. 2020-27

THIS FORM MUST BE SIGNED AND SWORN TO IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATHS.

This sworn statement is submitted to the City of Doral, Florida

by: Vincent Mattio; Senior Vice President
(print individual's name and title)

for: Wells Fargo Bank, N.A.
(print name of entity submitting sworn statement)

whose business address is: 100 South Ashley Drive, #820, Tampa, FL 33602
and (if applicable) its Federal Employer Number (FEIN) is: 94-1347393
(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement: _____ - _____ - _____.)

I, being duly first sworn state: Vincent Mattio

That the above-named firm, corporation or organization is in compliance with and agreed to continue to comply with, and assure that any subcontractor, or third party contractor under this project complies with all applicable requirements of the laws listed below including, but not limited to, those provisions pertaining to employment, provision of programs and services, transportation, communications, access to facilities, renovations, and new construction.

The American with Disabilities Act of 1990 (ADA), Pub. L. 101-336, 104 Stat 327, 42 USC 1210112213 and 47 USC Sections 225 and 661 including Title I, Employment; Title II, Public Services; Title III, Public Accommodations and Services Operated by Private entities; Title IV, Telecommunications; and Title V, Miscellaneous Provisions.

The Florida Americans with Disabilities Accessibility Implementation Act of 1993, Section 553.501 553.513, Florida Statutes:

The Rehabilitation Act of 1973, 229 USC Section 794;
The Federal Transit Act, as amended 49 USC Section 1612;
The Fair Housing Act as amended 42 USC Section 3601-3631.

SIGNATURE

The foregoing Affidavit was acknowledged before me, by means of ☑ physical presence or ☐ online notarization, this 15th day of December, 2020 (year), by Vincent Mattio who is personally known to me or who has produced a Florida driver's license as identification.

Personally known________________________

OR

Produced Identification ✓ Type of Identification

Florida Driver License

Notary Public-State of Florida

My commission number: GG 253755 My commission expires:

08/29/2022

José Muñiz

Printed, typed, or stamped commissioned name of Notary Public

[Notary Seal]

JOSE MUNIZ
NOTARY
My Comm. Expires
August 29, 2022
No GG 253755
PUBLIC
STATE OF FLORIDA

Signature: ________________________

Note: This form is completed to the best knowledge of the relationship management team preparing this response and subject to the limitation that the information available on the topic is for a 10-year lookback and does not lookback to 1989.

SWORN STATEMENT PURSUANT TO SECTION 287.133(3)(a)

FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

RFP No. 2020-27

THIS FORM MUST BE SIGNED AND SWORN TO IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATHS.

1. This sworn statement is submitted to the City of Doral, FL
by Vincent Mattio
for Wells Fargo Bank, N.A.
whose business address is 100 South Ashley Drive, #820, Tampa, FL 33602
and (if applicable) its Federal Employer Identification number (FEIN) is 94-1347393 (IF the entity had no FEIN, include the Social Security Number of the individual signing this sworn statement:______________.

2. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any Bid or Contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.

3. I understand that "convicted" or "conviction" as defined in Para. 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trail court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.

4. I understand that an "affiliate" as defined in Para. 287.133(1)(a), Florida Statutes, means:
   1. A predecessor or successor of a person convicted of a public entity crime; or
   2. Any entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executors, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prime facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

5. I understand that a "person" as defined in Para. 287.133(1)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding Contract and which Bids or applies to Bid on Contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "persons" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of any entity.

6. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Indicate which statement applies.)

* Note: This form is completed to the best of the knowledge of the team preparing this response and subject to the limitation that the information available on the topic is for a 10-year lookback and does not lookback to 1989.

__X__ Neither the entity submitting this sworn statement, nor any of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, nor any affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_______ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_______ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989. However, there has been a subsequent proceeding before a Hearing Officer of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Hearing Officer of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Hearing Officer determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (Attach a copy of the final order.)

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUTES, FOR CATEGORY TWO OF ANY, CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

By: ____________________

(Printed Name) Vincent Mattio

(Title) Senior Vice President

The foregoing Affidavit was acknowledged before me, by means of ☑ physical presence or ☐ online notarization, this 15th day of December, 2020 (year), by ________________ who is personally known to me or who has produced a Florida driver's license as identification.

Personally known ________________

OR

Produced Identification ✓ Type of Identification FL Driver License

Notary Public-State of Florida

My commission number: GG253755 My commission expires: 08/29/2022

José Muñiz

Printed, typed, or stamped commissioned name of Notary Public

JOSE MUNIZ
NOTARY
My Comm. Expires
August 29, 2022
No. GG 253755
PUBLIC
STATE OF FLORIDA

DRUG-FREE WORKPLACE PROGRAM
RFP No. 2020-27

The undersigned firm in accordance with Florida statute 287.087 hereby certifies that

Wells Fargo Bank, N.A. does:
(Name of Firm)

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform Employees about the dangers of drug abuse in the workplace, the business' policy of maintaining drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).

4. In the statement specified in subsection (1), notify the employees that, as a conditions of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.

6. Make good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Vincent Mathis; Senior Vice President
Name and Title

12/14/2020
Date

[signature]
Signature

Wells Fargo Bank, N.A.
Firm

100 South Ashley Drive, #820, Tampa, FL 33602
Street address City, State, Zip code

COPELAND ACT ANTI-KICKBACK AFFIDAVIT
RFP No. 2020-27

STATE OF Florida }

}SS:

COUNTY OF Hillsborough }

I, the undersigned, hereby duly sworn, depose and say that no portion of the sum herein bid will be paid to any employees of the City of Doral, its elected officials, and Wells Fargo or its design consultants, as a commission, kickback, reward or gift, directly or indirectly by me or any member of my firm or by an officer of the corporation.

By: Vincent Mattio

Title: Senior Vice President

The foregoing Affidavit was acknowledged before me, by means of ☑ physical presence or ☐ online notarization, this 15th day of December, 2020 (year), by Vincent Mattio who is personally known to me or who has produced a Florida driver's license as identification.

Personally known ____________

OR

Produced Identification ✓

Type of Identification FL Driver License

Notary Public-State of Florida

My commission number: GG253755

My commission expires: 08/29/2022

José Muñiz

Printed, typed, or stamped commissioned name of Notary Public

[Notary Seal]

Signature: ____________

JOSE MUNIZ NOTARY PUBLIC STATE OF FLORIDA My Comm. Expires August 29, 2022 No. GG 253755

EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION
RFP No. 2020-27

I, Vincent Mattio, Senior Vice President
(Individual's Name) (Title)

of the Wells Fargo Bank, N.A., do hereby certify that
(Name of Company)

I have read and understand the Compliance with Equal Employment Opportunity requirements set forth under sub-section 2.14.3 of this document.

Attachment of this executed form, as such, is required to complete a valid bid.

[signature]
Individual's Signature

12/14/2020
Date

CONE OF SILENCE CERTIFICATION
RFP No. 2020-27

I, Vincent Mattio, Senior Vice President
(Individual's Name) (Title)

of the Wells Fargo Bank, N.A., do hereby certify that
(Name of Company)

I have read and understand the terms set forth under section 1.11 of this document titled 'Cone of Silence'.

Attachment of this executed form, as such, is required to complete a valid bid.

[signature]
Individual's Signature

12/14/2020
Date

TIE BIDS CERTIFICATION
RFP No. 2020-27

I, Vincent Mattio, Senior Vice President
(Individual's Name) (Title)

of the Wells Fargo Bank, N.A., do hereby certify that
(Name of Company)

I have read and understand the requirements/procedures for Tie Bids set forth under sub-section 2.14.5 of this document.

Attachment of this executed form, as such, is required to complete a valid bid.

[signature]
Individual's Signature

12/14/2020
Date

RESPONDENT'S CERTIFICATION

RFP No. 2020-27

I have carefully examined the Invitation to Bid, Instructions to Respondents, General and/or Special Conditions, Vendor's Notes, Specifications, proposed agreement and any other documents accompanying or made a part of this Invitation to Bids.

I hereby propose to furnish the goods or services specified in the RFP. I agree that my Proposal will remain firm for a period of 365 days in order to allow the City adequate time to evaluate the Proposals.

I certify that all information contained in this Proposal is truthful to the best of my knowledge and belief. I further certify that I am duly authorized to submit this proposal on behalf of the firm as its act and deed and that the firm is ready, willing and able to perform if awarded the contract.

I further certify, under oath, that this proposal is made without prior understanding, agreement, connection, discussion, or collusion with any other person, firm or corporation submitting a Proposal for the same product or service; no officer, employee or agent of the City of Doral or any other Respondent is interested in said Respondent; and that the undersigned executed this Respondent's Certification with full knowledge and understanding of the matters therein contained and was duly authorized to do so.

A person or affiliate who has been placed on the convicted vendor list following a conviction for public entity crimes may not submit a proposal on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to public entity, may not be awarded or perform work as a contractor, supplier, sub-contractor, or consultant under a contract with a public entity , and may not transact business with any public entity in excess of the threshold amount provided in Sec. 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

Wells Fargo Bank, N.A.
Name of Business

Vincent Mattio 12/15/2020

The foregoing Affidavit was acknowledged before me, by means of ☑ physical presence or ☐ online notarization, this 15th day of December, 2020 (year), by Vincent Mattio who is personally known to me or who has produced a Florida driver's license as identification.

Personally known ______________________

OR

Produced Identification ✓

Type of Identification Florida Driver License

Notary Public-State of Florida

My commission number: GG253755

My commission expires: 08/29/2022

José Muñiz

Printed, typed, or stamped commissioned name of Notary Public

[Notary Seal]

JOSE MUNIZ
NOTARY
My Comm. Expires
August 29, 2022
No. GG 253755
PUBLIC
STATE OF FLORIDA

Signature:

Note: As a national bank, WFBNA is not required to be qualified to do business in each state, which is something that a corporation would have to do. Because WFBNA is not qualified in the state of Florida, we do not have a Certificate of Authority from the state of Florida. However, we've attached the most recent Certificate of Corporate Existence and Fiduciary Powers from the OCC, which is the Bank's primary regulator, which evidences the existence of WFBNA and its authority to transact business. Furthermore, we have included the Secretary's Certificate for Vincent Mattio, dated 10/8/2020, who is duly authorized to act on behalf of Wells Fargo.

CERTIFICATE OF AUTHORITY (IF CORPORATION)

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Board of Directors of the

____

____

a Corporation existing under the laws of the State of________________, held on_______________, 20_____, the following resolution was duly passed and adopted:

"RESOLVED, that, as President of the Corporation, be and is hereby authorized to execute the Bid dated, _________________, 20_____ , to the City of Doral and this Corporation and that their execution thereof, attested by the Secretary of the Corporation, and with the Corporate Seal affixed, shall be the official act and deed of this Corporation."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the Corporation this _______, day of___________________, 20____.

Secretary: ________________________________

(SEAL)

*Note: This form is not applicable to Wells Fargo for this RFP.

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, ________________________________, certify that I am the Secretary of the Corporation named as Principal in the foregoing Payment Bond; that ____________________________, who signed the Bond on behalf of the Principal, was then ____________________________ of said corporation; that I know his/her their signature; and his/her their signature thereto is genuine; and that said Bond was duly signed, sealed and attested to on behalf of said Corporation by authority of its governing body.

(CORPORATE SEAL)

____
(Name of Corporation)

END OF SECTION

* Note: This form is not applicable to Wells Fargo for this RFP as we do not plan to have Subcontractors of any kind.

ACKNOWLEDGMENT OF CONFORMANCE WITH OSHA STANDARDS

To the City of Doral,

We ______________________________, hereby acknowledge and
Prime Contractor

agree that we, as the Prime Contractor for City of Doral, **Banking Services**, as specified, have the sole responsibility for compliance with all the requirements of the Federal Occupational Safety and Health Act of 1970, and all State and local safety and health regulations, and agree to indemnify and hold harmless the City of Doral, against any and all liability, claims, damages losses and expenses they may incur due to the failure of:

____
(Subcontractor's Names)

____
to comply with such act or regulation.

____
CONTRACTOR

______________________________ BY: ______________________________
ATTEST

END OF SECTION

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ Go to *www.irs.gov/FormW9* for instructions and the latest information.

Give Form to the requester. Do not send to the IRS.

Print or type.
See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

WELLS FARGO BANK, N.A.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☑ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) 5

Exemption from FATCA reporting code (if any) E, J

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

550 S 4TH STREET (MAC N9310-076)

Requester's name and address (optional)

6 City, state, and ZIP code

MINNEAPOLIS, MN 55415

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN,* later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

_ _ _ - _ _ - _ _ _ _

or

Employer identification number

9 4 - 1 3 4 7 3 9 3

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here Signature of U.S. person ▶ Jeffrey L. Mason Date ▶ 2 January 2020

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9.*

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.

City of Doral

RFP No. 2020-27
Addendum No. 1

ATTENTION:

The bid due date has been extended to
Friday, January 29th, 2021 at 10:00 A.M.

This Addendum is to extend the bid due date to Friday, January 29th, 2021 at 10:00 a.m. The City will be publishing Addendum No. 2 responding to all questions submitted.

City of Doral
RFP No. 2020-27
Banking Services
Addendum No. 2

The bid due date was extended to <u>Friday, January 29th, 2021</u> at 10:00 A.M.

Below are questions/ clarifications that were received regarding this project as well as the City's responses. This Addendum is and does become a part of the above-mentioned solicitation. This addendum is issued to modify the subject solicitation as follows:

1. Regarding items 2.2.4 within this RFP, as banking services isn't a credit item is this item mandatory requirement? "Issuer Credit rating of A+ or A1 as measured by Standard & Poor's or Moody's, respectively. Rating must be current."
   - Issuer credit rating not required but provide if rated. In addition, provide Bauer Financial rating for your institution.

2. Do you anticipate extending the bid due date?
   - Yes, the bid due date was extended to Friday January 29th, 2021 at 10:00 A.M.

3. What additional details are you willing to provide, if any, beyond what is stated in bid documents concerning how you will identify the winning bid?
   - Please refer to section 2.8 Method of Award.

4. Is question 69 on page 71 still applicable?
   - No.

5. Should question 72 on page 71 reflect 2019 rather than 2014?
   - Yes, **<u>2019</u>** is correct.

6. Exhibit "B" spread through pages 61-63. Is that a true or close representation of the expected activity for the city?
   - It is an estimate based on current activity. Please refer to the attached client analysis statements.

7. Does the City need liquid signatures on all form submissions, or will copies suffice?
   - Copies will suffice.

8. Can we submit a copy of the notarized form, or do you need the original?
   - A copy of the notarized form will suffice.

9. How many references are needed?
   - A total of five (5) reference will be required via the reference survey provided in the solicitation document.

10. Can the City confirm if the "Banking Telecommunications Certification" request is applicable to the services provided by the Bank in this RFP? (Page 67, Question 14)?
    - Certification not required.
11. Please provide an overview of the pre-bid conference meeting held on December 2nd, 2020 as at times the audio was choppy on the dial in.
    - Please refer to Sections 2 & 3 as they cover the requirements and scope of services for this solicitation. These were the main topics covered during the Pre-Bid meeting.

12. Please indicate if Zero Balance accounts are in place for the City's current account structure?
    - There are only three (3) zero balance accounts, two (2) of which clear through the main operating account. The remaining account is used for bond issuances.

13. Do you utilize an ERP system and if so, what ERP system are you using?
    - Tyler Munis

14. Please provide the last three (3) months of analysis and bank statements?
    - See attached.

15. Regarding the Proposal Format, please clarify where the Pricing Form and other pricing related information should be placed?
    - Exhibit "B" Pricing Form.

16. The City requests that a "solicitation response form shall be attached to the outside of the sealed submittal." Please provide this Solicitation Response form or clarify where this form is can be located. (Pg.17)
    - Please disregard this requirement. Since this will be an electronic submittal, The Solicitation Response Form will not be required.

17. Statement of No Response – Does the City require that we include this form within in our Proposal Response? Can this form be omitted from our Proposal Response as we are intending to bid? (Pg. 32)
    - Please provide the form and respond with N/A if you intend to submit a proposal.

18. Certificates of Authority – Does the City require that we include all forms in our Proposal Response even if they do not apply? Can non-applicable forms be omitted from our Response? (Pages 53-55)
    - Please provide all forms within the bid document, respond with N/A if not applicable to your institution.

19. Please provide an Attachment E as indicated here, if applicable. (Page 69, Question 40)

- There will be no Attachment E, please disregard the reference to the Exhibit as the City is no longer interested in Lockbox products and services.

20. Is the City currently utilizing Account Payable? (Pg. 70)
    - Currently the accounts payable process is in-house.

21. If the City could change anything about its banking relationship what would it be?
    - We would like a simpler administrative process to assign user roles in the online system.

22. Who is the City's current provider?
    - Wells Fargo Bank.

23. What is the value of the investment portfolio?
    - There is a separate RFP for investment services - RFP No. 2020-26 – Investment Management Services. Solicitation documents can be accessed via the City's website, DemandStar or Vendor Registry.

24. Would you provide a copy of a recent statement or identify the number and type of securities held?
    - See response to question # 23.

25. Approximately how many transactions do you anticipate in a given month?
    - See attached for Client Analysis statement.

26. There does not appear to be a line item for safekeeping fees on the pricing pro forma. How would you like us to present these fees?
    - Please provide in Exhibit "B" Pricing Form. You may add extra line(s) if needed.

27. Page 24-25, Section 3.10 COMPLIANCE WITH OCCUPATIONAL HEALTH AND SAFETY (OSHA) STANDARDS; Page 57, ACKNOWLEDGEMENT OF CONFORMANE WITH OSHA STANDARDS. Could the City please constitution if OSHA requirements are applicable to the services provided by the Bank in this RFP?
    - Yes, your institution must be in conformance with all OSHA requirements and standards.

28. Does the City currently utilize a lockbox or is this a new service? If the City has a lockbox:
    - Please provide the number of and location of the current lockboxes.
    - Are the boxes retail or wholesale lockboxes?
    - Would the City be willing to provide a sample of the coupons for each lockbox?
    - Would the City be willing to provide the processing instructions for each lockbox?
    - If not, would the City please provide an overview of the processing of each?

- Would the City share monthly processing volumes for each lockbox, or analysis statements reflecting volumes?
  - Lockbox services are no longer required.

29. If the City does not currently utilize a lockbox:
    - How many lockboxes would the City need?
    - Will they be retail or wholesale lockboxes?
    - What are the anticipated monthly volumes? Any peak processing months?
    - Do you require any data entry? If so, what fields and number of anticipated ks/mo.
    - How many correspondence items (non-check items, letters/notes, etc) does the City anticipate being received in the lockbox?
    - Does the City anticipate using an online system for viewing and/or decisioning?
    - What documents received should be imaged? (Coupons, letters, envelopes?)
    - Does the City require a daily transmission file for each box?
    - Does the City require the Bank to sort payments into categories before processing? How many categories and for what purposes?
      - N/A

30. What method is used to send ACH Files to the bank? (File Transmission through Secure FTP, or File Upload through online portal)
    - Currently the City uses check and/or wire-transfers to pay vendors.

31. What is the frequency of the ACH Files? (daily/weekly/monthly)
    - The City does not utilize ACH payments currently; however this is a service we would like to utilize moving forward so please include in your proposal if these services are available.

32. How is ACH Origination being utilized? (vendor payments/payroll/collection etc.)
    - N/A

33. What are the daily/weekly/monthly amounts for the Debit (collection) files?
    - N/A

34. What are the daily/weekly/monthly amounts for the Credit (payment) files?
    - N/A

35. Are funds held the day the ACH file is transmitted to the bank (prefund) or are they deducted from the account on the settlement date? (underwritten exposure)
    - N/A

36. Are any ACH Debit blocks or filter services utilized? If so, please indicate which accounts?

- Yes, on all accounts.

37. Describe the method used to send Positive Pay issue files to the bank? (File Transmission through Secure FTP, or File Upload through online portal)
    - File upload through online portal.
38. Is there currently a Purchase Card program in place? If there is not a current program, what is the estimated annual spend that will be charged to the card program?
    - There is no Purchasing Card program in place, however these are services that the City may later acquire from the awarded firm in accordance with Section 2.16 – Goods/ Services may be Added or Deleted, of the solicitation.

39. What is the average balance for all accounts in the last year that the City has maintained?
    - Approximately $17 million.

40. How many over the counter checks does the City anticipate will be presented monthly?
    - Refer to the attached client analysis statement.

41. Please describe the City's need for Electronic Data Interchange (EDI). Does the City need translation for invoice information that may be included with an ACH credit or are there other needs?
    - At this time the City does not need EDI services.

42. Is there a requirement for a specific statement and/or repayment cycle for the commercial card program?
    - See response to question # 38.

43. For the Commercial Card - can you please provide an excel vendor file including the following:
    - Vendor name, address, city, state and zip code
    - Vendor phone
    - Vendor transactions count
    - Vendor spends
    - Vendor current payment method
      - This information will be provided to the awarded firm.

44. Would your organization be available to attend a web-based demo of the commercial card program's card management Tool?
    - See response to question # 38.

45. Section 3.3.2 Please explain the bagged coins process – is this going through an armored car provider or coming directly to the Bank.

- Bagged coins are sent through the armored car provider. We may have at most one such transaction at month.

46. Section 3.3.3 Are the 9 accounts all eligible for an Earnings Credit Rate (ECR) or are some of the accounts stand alone with required interest earnings?
    - Only the main operating account is eligible for the ECR. The rest of the accounts require interest earnings.

47. Does the City utilize deposit scanners? If so, how many and what are the models?
    - Yes, one scanner (Digital Check Teller Scan TS240)

48. Does the City utilize night drop services?
    - No

49. Does the City currently utilize an armored car service? Yes If so: Does the City have an existing armored car relationship? Yes. If so, who is the provider?
    - Brinks – The City intends to continue with Brinks.
    - Will the City share existing cost of this service as set-up today? N/A
    - Does the City pay for this cost with a hard fee, compensating balance arrangement or does the current Financial Institution absorb the cost? N/A
    - Does the City's deposits go to the Financial Institution's branch location or the bank's vault? N/A
    - Please describe typical change ordering requests. N/A
    - Please provide a list of all locations (with address) that will utilize this service. N/A

50. Is the City interested in evaluating the merchant services (card processing) component?
    - Merchant services are not being requested nor will they considered under this RFP.
    - Please provide 3 months of merchant statements. N/A
    - What type of equipment does the City utilize today? N/A
    - How many terminals and stations are required? N/A
    - How many locations utilize card processing and how does each location process? N/A
    - Who is your current Merchant Services processor? N/A
    - How does the City process online payments? N/A
    - What solutions are in place? Does the City utilize any software in conjunction with merchant services? N/A

51. Is the City interested in a procurement card program for hard plastic / payables?

- See response to question # 38.

- What is the average monthly spend on the current card program and current credit limit on the program? N/A
- Are transactions limited to travel and entertainment charges? Is there a single transaction limit restriction for cardholders? N/A
- How are cardholders currently coding and submitting their transactions/statements? How are receipts provided? N/A
- Do you currently pay any vendors (one-time or reoccurring) with a card? If so, are they paid with a static (same) card # each time or is a single-use virtual card account used? N/A
- Are reward points or a cash rebate/statement credit associated with the account? N/A
- What is your settlement frequency (monthly, bi-weekly, weekly) and grace period? N/A
- Is the City's logo on the cards? N/A
- Does the City receive any data transmissions or file extracts related to the current program? N/A

52. How many of the City's employees are administrators of online banking?
    - Currently there is only one administrator.

53. How many of the City's employees approve funds leaving the bank (ACH, wires, positive pay)
    - Two employees.

54. What are the average and maximum dollar amounts of payroll and vendor files?
    - The City is not interested in a debit card program for payroll.

55. What is the annual AP dollar amount excluding payroll?
    - Approximately $3 million per month.

56. Please provide more information on needed banking supplies (tamper evident bags, bank bags, deposit slips (duplicate / triplicate), stamps, etc. Monthly or annual volumes.
    - Minimal supplies are needed, they include deposit slips, tamper evident bags and stamps.

57. ATMS – please outline the sites where this is required, location in the building and volumes
    - ATMS not needed if institution has a branch in the City.

58. Are links acceptable for the financial statements
    - Links are not acceptable as a security precaution.

CLIENT ANALYSIS STATEMENT

0182 0000 0002656 7526.
DECEMBER 2020

RELATIONSHIP SUMMARY

WELLS FARGO BANK, N.A.
PO BOX 63020
SAN FRANCISCO, CA 94163

Officer: MATTIO, VINCENT
Phone No.: 813-225-6539

CITY OF DORAL
8401 NW 53RD TER
DORAL*FL*33166-4517

LEARN ABOUT STATEMENT CHANGES THAT ARE
EFFECTIVE JANUARY 1, 2021. VISIT
WELLSFARGO.COM/ACCOUNTANALYSIS
AND SELECT "ALL CHANGES (PDF)".

ANALYSIS SUMMARY

Average Positive Collected Balance	$	30,513,107.91
Investable Balance Available for Services	=	30,513,107.91
Earnings Allowance @ 0.25%	$	6,461.10
Net Earnings Allowance	=	6,461.10
Current Month Analyzed Charges	-	5,717.93
Current Month Position	=	743.17
Total Amount Due	**$**	**0.00**

Number of days this cycle:		31
Investable balance required to offset $1.00 of analyzed charges:	$	4,724
Balance required to offset all current month analyzed charges: (Note: Balance required can vary monthly based on the month's volume, services, earnings credit rate and pricing.)	$	27,003,403
Interest rate on excess balances:		0.17%
Interest paid on excess balances:	$	505.36

BALANCE SUMMARY

Account Number	Account Name	Average Ledger	Average Collected	Average Daily Negative Coll	Negative Coll Use of Fund Rate	Service Charge
	CITY OF DORAL	30,407,901.30	30,351,824.85	0.00	0.00%	5,405.41
	CITY OF DORAL	0.00	0.00	0.00	0.00%	177.53
	CITY OF DORAL	0.00	0.00	0.00	0.00%	29.45
	CITY OF DORAL	14,798.80	14,798.80	0.00	0.00%	29.89
	CITY OF DORAL	10,910.88	10,910.88	0.00	0.00%	29.54
	CITY OF DORAL	135,894.76	135,573.38	0.00	0.00%	46.11

* Indicates billing account

SERVICE DETAIL

Svc Code	AFP Code	Service Description	Unit Price	Volume	Service Charges
IAMIB	00 0230	RECOUPMENT MONTHLY IB	0.12750	30,569.50	3,897.62
		BALANCE & COMPENSATION INFORMATION			**3,897.62**
15007	01 0101	DESKTOP DEPOSIT-DEPOSIT CREDITED	1.25000	31.00	38.75
DS510	01 0020	ZERO BALANCE MASTER ACCOUNT MAINT	0.00000	1.00	0.00
22051	01 0000	ACCT MAINTENANCE	8.00000	6.00	48.00
DS001	01 0021	ZERO BALANCE MONTHLY BASE	0.00000	2.00	0.00
CK021	01 0100	DEBITS POSTED	0.05000	76.00	3.80
46106	01 0102	CEO BASIC BANKING - TRANSFER	1.50000	3.00	4.50
		GENERAL ACCOUNT SERVICES			**95.05**
36709	05 011R	WLBX MONTHLY BASE	125.00000	1.00	125.00
36778	05 002Z	WLBX IMAGE WEB REPORTING MTHLY BASE	0.00000	1.00	0.00
36731	05 0530	WLBX CORRESPONDENCE / REJECTS	0.25000	2.00	0.50
36755	05 0100	WLBX STANDARD ITEM PROCESSED	0.25000	161.00	40.25
03905	05 011R	WLBX DOCUMENT SCANNED	0.03000	691.00	20.73
36727	05 0600	WLBX 7 YR ARCHIVE BW	0.01000	691.00	6.91
03303	05 0410	WLBX PKG US MAIL DELIVERY	1.05000	6.00	6.30
36724	05 0301	WLBX DAILY DEPOSIT CUT	1.00000	21.00	21.00
36732	05 011P	WLBX RESTRICTIVE/SPECIAL PROCESSING	0.10000	161.00	16.10
34220	05 031Z	LOCKBOX CEO SUBSCRIPTION MTHLY BASE	35.00000	1.00	35.00
		LOCKBOX SERVICES			**271.79**
34235	10 0416	CEO RETN ITEM SUBSCRIPTION PER ACCT	0.00000	4.00	0.00
08025	10 0015	MISCELLANEOUS CREDITS POSTED	0.45000	21.00	9.45
08052	10 0006	BRANCH DEPOSIT	0.50000	1.00	0.50
08132	10 0100	CASH VAULT MONTHLY BASE	35.00000	1.00	35.00
08290	10 0199	CASH VAULT CURRENCY/COIN DEPOSITED	0.00130	4,601.00	5.98
002	10 0225	DEPOSITED CHECK	0.05000	3.00	0.15
701	10 0220	DESKTOP DEPOSIT-DEPOSITED ITEM ONUS	0.15000	48.00	7.20
706	10 0224	DESKTOP DEPOSIT-DEPOSITED ITEM	0.15000	419.00	62.85
311	10 0225	WHOLESALE LOCKBOX - DEPOSITED CHECK	0.02500	161.00	4.03
08173	10 0100	CV CASH ONLY OR CHECK ONLY DEPOSIT	0.00000	21.00	0.00
CK061	10 0400	RETURN ITEM - CHARGEBACK	5.00000	1.00	5.00
CK064	10 0416	CEO RETURN ITEM SERVICE MTHLY BASE	0.00000	4.00	0.00
		DEPOSITORY SERVICES			**130.16**
34336	15 0724	POSITIVE PAY EXCEPTION - CEO IMAGE	0.00000	11.00	0.00
MD091	15 0240	PYMT AUTH MAX CHECK MTHLY BASE	10.00000	2.00	20.00
12505	15 0222	POSITIVE PAY EXCEPTION CHECKS RETND	2.00000	2.00	4.00
12670	15 0410	STOP PAYMENT - ONLINE	8.00000	3.00	24.00
12681	15 0030	POSITIVE PAY ONLY MONTHLY BASE	10.00000	4.00	40.00
12682	15 0120	POSITIVE PAY ONLY - ITEM	0.03000	744.00	22.32
12812	15 1352	CEO IMAGE VIEW < 90 DAYS - ITEM	0.00000	36.00	0.00
12815	15 1352	CEO IMAGE VIEW > 90 DAYS - ITEM	0.00000	5.00	0.00
12816	15 1352	DESKTOP DEPOSIT IMAGES RETRIEVED	0.50000	124.00	62.00
12903	15 0310	POSITIVE PAY EXCEPTIONS - ITEM	1.00000	13.00	13.00
12908	15 0310	POS PAY CHECKS WITH NO ISSUE RECORD	0.00000	7.00	0.00
22225	15 0240	CHECK CASHING THRESHOLD MO BASE	0.00000	2.00	0.00
22235	15 0240	OTC DEBIT BLOCK MONTHLY BASE	0.00000	2.00	0.00
22245	15 0240	CHECKS PAY TO INDIV BLOCK MO BASE	0.00000	2.00	0.00
22202	15 0100	DDA CHECKS PAID	0.08000	523.00	41.84
DS191	15 0122	PAYEE VALIDATION STANDARD-ITEM	0.02000	515.00	10.30
22030	15 0412	STOP PAYMENT - AUTO RENEWAL	0.00000	12.00	0.00
		PAPER DISBURSEMENT SERVICES			**237.46**
12687	20 9999	ARP AGED ISSUE RECORDS ON FILE-ITEM	0.00000	1,759.00	0.00
		PAPER DISBURSEMENT RECON SERVICES			**0.00**
34330	25 0703	ACH CEO SUBSCRIPTION - ACCOUNT	0.00000	4.00	0.00
CK018	25 0201	ELECTRONIC CREDITS POSTED	0.05000	160.00	8.00
ES344	25 0202	ACH RECEIVED ITEM	0.05000	49.00	2.45
34333	25 1050	ACH CEO FRAUD FILTER REVIEW MO BASE	10.00000	6.00	60.00
34335	25 1053	ACH CEO FRAUD FILTER REVIEW - ITEM	1.00000	10.00	10.00
		GENERAL ACH SERVICES			**80.45**
34240	30 0010	CEO EDI PMT DETAIL SUBSC MO BASE	5.00000	1.00	5.00
		EDI PAYMENT SERVICES			**5.00**
ES139	35 0100	WIRE OUT DOMESTIC - CEO	11.00000	23.00	253.00
		WIRE & OTHER FUNDS TRANSFER SERVICE			**253.00**
15003	40 0231	DESKTOP DEPOSIT REPORT PER ITEM	0.25000	124.00	31.00
15017	40 0003	DESKTOP DEPOSIT MONTHLY BASE	70.00000	1.00	70.00
34207	40 0274	CEO WIRE XFR DETAIL US ACCT ITEM	0.00000	21.00	0.00
27707	40 0340	CEO SEARCH	0.00000	44.00	0.00
34100	40 0052	CEO PREV DAY REPORTING MAINTENANCE	40.00000	7.00	280.00
34115	40 0272	CEO PREV DAY REPORTING ITEMS LOADED	0.10000	864.00	86.40
34120	40 0055	CEO INTRADAY REPORTING MAINTENANCE	40.00000	7.00	280.00

34123	40 022Z	CEO EVENT MESSAGING SERVICE - EMAIL	0.00000	160.00	0.00
34205	40 0003	CEO WIRE XFR DETAIL US ACCT MO BASE	0.00000	7.00	0.00
34253	40 0800	INFO REPORTING HISTORY STORAGE 120	0.00000	2,650.00	0.00
46100	40 005Z	CEO BASIC BANKING - MONTHLY BASE	0.00000	1.00	0.00
46102	40 005Z	CEO BASIC BANKING ADDL ACCT-MO BASE	0.00000	9.00	0.00
		INFORMATION SERVICES			**747.40**

Total Analyzed Charges	**5,717.93**
Total Fee Based Charges	**0.00**
Total Service Charges	**5,717.93**

TREND ANALYSIS

Month	Average Ledger Balance	Average Positive Collected Balance	Investable Balance Available for Services	Earnings Credit Rate	Earnings Allowance	Fee Based Charges	Analyzed Charges	Monthly Position
JUL 2020	9,994,168	9,976,923	9,976,923	0.25%	2,113	0	2,924	(811)
AUG 2020	11,596,261	11,588,867	11,588,867	0.25%	2,454	0	3,254	(800)
SEP 2020	15,858,188	15,825,660	15,825,660	0.25%	3,243	0	3,982	(739)
OCT 2020	19,402,719	19,378,190	19,378,190	0.25%	4,103	0	4,368	(265)
NOV 2020	18,391,518	18,335,193	18,335,193	0.25%	3,757	0	4,032	(275)
DEC 2020	30,569,506	30,513,108	30,513,108	0.25%	6,461	0	5,718	743
AVG	**17,635,393**	**17,602,990**	**17,602,990**					

Note: Customer must examine this statement and report to Bank any claim for credit or refund within 60 days after Bank makes the statement available. If Bank does not receive notice of error or discrepancy within this time frame, items on the statement will be deemed to be correct.