GOLDMAN SACHS BANK USA AND SUBSIDIARIES

Annual Report
for the year ended December 31, 2018

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PART I

Introduction

Goldman Sachs Bank USA, together with its consolidated subsidiaries (collectively, the Bank), is a New York State-chartered bank and a member of the Federal Reserve System. The Bank is supervised and regulated by the Board of Governors of the Federal Reserve System (FRB), the New York State Department of Financial Services (NYDFS) and the U.S. Bureau of Consumer Financial Protection (CFPB), and is a member of the Federal Deposit Insurance Corporation (FDIC). The Bank's deposits are insured by the FDIC up to the maximum amount provided by law. The Bank is registered with the U.S. Commodity Futures Trading Commission (CFTC) as a swap dealer and as a government securities dealer subject to the rules and regulations of the U.S. Department of the Treasury.

When we use the terms "the Bank," "we," "us" and "our," we mean Goldman Sachs Bank USA and its consolidated subsidiaries. When we use the term "GS Group," we are referring to The Goldman Sachs Group, Inc. (Group Inc.) and its consolidated subsidiaries, including us.

Our principal office is located in New York, New York. We operate two domestic branches, which are located in Salt Lake City, Utah and Draper, Utah. Both branches are regulated by the Utah Department of Financial Institutions. We also have a foreign branch in London, United Kingdom, which is regulated by the Financial Conduct Authority and the Prudential Regulation Authority.

We are a wholly-owned subsidiary of Group Inc. Group Inc. is a bank holding company (BHC) under the U.S. Bank Holding Company Act of 1956 (BHC Act), a financial holding company (FHC) under amendments to the BHC Act effected by the U.S. Gramm-Leach-Bliley Act of 1999, and is subject to supervision and examination by the FRB, as its primary regulator.

References to "this Annual Report" are to our Annual Report for the year ended December 31, 2018. All references to 2018 and 2017 refer to our years ended, or the dates, as the context requires, December 31, 2018 and December 31, 2017, respectively. This Annual Report is dated March 7, 2019. All references in this document to the date of this Annual Report are to March 7, 2019.

Business

We are a financial services provider that engages in banking activities. We are GS Group's primary lending entity, serving corporate borrowers, private bank clients and U.S. consumers. We are also GS Group's primary deposit-taking entity. Our depositors include institutions, corporations, our affiliates, clients of third-party broker-dealers, private bank clients and U.S. consumers. Substantially all of our consumer lending and consumer deposit-taking activities are conducted through our digital platform, *Marcus: by Goldman Sachs*. In addition, we enter into interest rate, currency, credit and other derivatives, and transact in certain related products, for the purpose of market making and risk management.

Lending

We are GS Group's primary lending entity. We provide loans, on a secured and unsecured basis, to corporations, private bank clients and U.S. consumers.

Corporate Lending. We offer term loans, revolving lines of credit, letter of credit facilities and bridge loans to institutions and corporations. The proceeds from these forms of lending are principally used by borrowers for operating liquidity and general corporate purposes, or in connection with acquisitions. We may elect to syndicate portions of these loans either directly or through our affiliates or may retain the loans.

Many of these lending opportunities arise from referrals made by our affiliates. Accordingly, the volume of loans we make largely corresponds to levels of loan demand from clients of GS Group. The loans are all subject to our underwriting criteria and we compensate our affiliates for these referrals as we would a third party, consistent with applicable banking law and regulation. In addition, we may be compensated by Group Inc. or affiliates for participation in certain lending activities.

The type of loan, including whether the loan is secured or unsecured, extended to a borrower varies and is dependent upon the borrower's needs and capital structure and the then-current state of the credit markets. In each case, we underwrite the loan based on our underwriting criteria; however, we rely on services provided by employees of affiliates to assist in this process.

We also provide lending commitments. These commitments are agreements to lend with fixed termination dates. The total commitment amount does not necessarily reflect actual future cash flows because we may syndicate all or portions of these commitments. In addition, commitments can expire unused or be reduced or cancelled at the counterparty's request. See Note 17 to the consolidated financial statements in Part III of this Annual Report for further information about our commitments to extend credit.

Private Bank Lending. We provide loans and lines of credit to private bank clients. Substantially all of these loans are secured by securities, commercial and residential real estate or other assets. We work with clients in order to finance investments in both financial and nonfinancial assets, bridge cash flow timing gaps and provide liquidity for other needs. We underwrite, structure and negotiate pricing for these loans based on our underwriting criteria; however, we rely on services provided by employees of affiliates to assist in this process.

Additionally, we originate secured loans through *Goldman Sachs Private Bank Select* to clients of financial advisors at third-party broker-dealers, registered investment advisors and asset custodians.

Loans extended to private bank clients, including loans originated through *Goldman Sachs Private Bank Select*, are included in PWM loans.

Other Lending. We (i) originate and purchase loans backed by commercial and residential real estate, (ii) lend to clients who warehouse assets that are directly or indirectly secured by commercial and residential real estate, consumer loans, including auto loans and private student loans, and other assets, including unsecured consumer receivables and (iii) originate unsecured fixed-rate loans to U.S. consumers through our digital lending platform.

In the future, we may continue to expand our lending activities, including our consumer-oriented activities. See "Risk Factors — We face enhanced risks as new business initiatives lead us to transact with a broader array of clients and counterparties and expose us to new assets, activities and markets" for further information about how engaging in consumer-oriented lending could impact us.

See "Supplemental Financial Information — Selected Loan Data" and Notes 8 and 9 to the consolidated financial statements in Part III of this Annual Report for further information about our lending activities.

Deposit Taking

We are GS Group's primary deposit-taking entity. We accept deposits from institutions, corporations, affiliates, clients of third-party broker-dealers, private bank clients and U.S. consumers. Deposits are our primary source of funding for our assets.

We accept deposits through our digital deposit platform and through deposit sweep programs with affiliates and third-party broker-dealers. We also issue brokered certificates of deposit (CDs), substantially all of which are in FDIC-insurable amounts and distributed through third-party broker-dealers and Goldman Sachs & Co. LLC (GS&Co.). We also accept institutional time deposits and time deposits through our digital deposit platform.

For further information about our deposits, including the sources and types of our deposits, see "Management's Discussion and Analysis of Financial Condition and Results of Operations — Balance Sheet and Funding Sources — Funding Sources — Deposits" in Part II of this Annual Report and Note 14 to the consolidated financial statements in Part III of this Annual Report.

Market Making

We enter into interest rate, currency, credit and other derivatives, and transact in certain related products, for the purpose of market making and also use derivatives to manage our own risk exposure as part of our risk management processes. Derivatives are instruments that derive their value from underlying asset prices, indices, reference rates and other inputs, or a combination of these factors. Derivative transactions provide liquidity to clients and facilitate the active management of risk exposures, including market, credit and other risks.

We enter into various types of derivatives, including (i) swaps (which are agreements to exchange cash flows, such as currency or interest payment streams), (ii) options (contracts which provide the right but not the obligation to buy or sell a certain financial instrument or currency on a specified date in the future at a certain price) and (iii) futures and forwards (which are contracts to purchase or sell a financial instrument, currency or commodity in the future).

Derivatives may be traded on an exchange (exchange-traded) or they may be privately negotiated contracts, which are referred to as over-the-counter (OTC) derivatives. Certain of these OTC derivatives are cleared and settled through central clearing counterparties, while others are bilateral contracts between two counterparties.

We have entered into derivative transactions with both affiliates and unaffiliated third parties. Affiliate trades are part of Group Inc.'s centralized hedging and risk management processes and practices.

See Note 7 to the consolidated financial statements in Part III of this Annual Report for further information about our derivative products and activities.

Other Activities

We also engage in securities financing transactions, agency lending and risk management activities.

See Notes 10 and 17 to the consolidated financial statements in Part III of this Annual Report for further information about our securities financings and agency lending.

Our Relationship with Group Inc. and our Affiliates

We are a wholly-owned insured depository institution subsidiary of Group Inc. We use and benefit from business relationships, certain processes, support systems and infrastructure, and financial support of Group Inc. and our affiliates. We also provide certain processes, support systems and infrastructure to our affiliates.

Services provided from and to our affiliates are governed under Master Services Agreements and supplemented by Service Level Agreements (collectively, the Master Services Agreement). We benefit from our affiliates' access to third-party vendors, experience and knowledge, and services provided to us by employees of affiliates For further information about our relationship with our affiliates, see "Risk Factors — We are a wholly-owned subsidiary of Group Inc. and are dependent on Group Inc. and certain of our affiliates for client business, various services and capital" and Note 19 to the consolidated financial statements in Part III of this Annual Report.

Business Relationships. Our affiliates are sources of business for our lending and other business activities, and often are counterparties to derivatives transactions with us. See " — Lending — Private Bank Lending," " — Lending — Corporate Lending" and " — Market Making" for further information about our business relationships.

Support Services. We receive operational and administrative support services from Group Inc. and our affiliates pursuant to the Master Services Agreement. All operational and administrative support services we receive from Group Inc. and our affiliates are overseen by our employees. Support services include trade execution, loan origination and servicing, operational and infrastructure services, control and other support services. We also provide certain operational support to our affiliates.

Funding Sources. We accept certain deposit funding from Group Inc. and our affiliates, including overnight deposit sweeps sourced from GS&Co. consisting of deposits from private bank clients.

We have access to funding facilities primarily from Group Inc. and Goldman Sachs Funding LLC (Funding IHC), a wholly-owned subsidiary of Group Inc. See Note 15 to the consolidated financial statements in Part III of this Annual Report for further information about funding facilities from Group Inc. and Funding IHC.

We receive secured funding from Group Inc. and our affiliates. In particular, we enter into collateralized financings, such as repurchase agreements. In addition, our shareholder's equity provides us with a stable and perpetual source of funding. See "Other Activities" above, "Management's Discussion and Analysis of Financial Condition and Results of Operations — Balance Sheet and Funding Sources — Funding Sources" in Part II of this Annual Report and Note 10 to the consolidated financial statements in Part III of this Annual Report for further information about our funding sources.

Group Inc. General Guarantee. Group Inc. has agreed to guarantee our payment obligations (General Guarantee Agreement), subject to certain limitations. Subject to the terms and conditions of the General Guarantee Agreement, Group Inc. unconditionally and irrevocably guarantees complete payment of all of our payment obligations when due, other than non-recourse payment obligations and payment obligations arising in connection with any of our CDs (unless applicable governing documents of the CD expressly state otherwise). In the future, certain of our other debtholders may waive, and not be entitled to, the benefit of the General Guarantee Agreement.

Furthermore, FRB regulation requires Group Inc., as a BHC, to act as a source of strength to us, as its bank subsidiary, and to commit capital and financial resources to support us.

All of our relationships and transactions with our affiliates are closely monitored in accordance with applicable laws and regulations, including, without limitation, Sections 23A and 23B of the Federal Reserve Act and the FRB's Regulation W. See Note 19 to the consolidated financial statements in Part III of this Annual Report for further information about our transactions with related parties.

Employees

As of December 2018, we had 1,805 direct employees and 204 dual employees who perform services for both us and our affiliates pursuant to an Employee Sharing Agreement. Employees of our affiliates also provide services to us under the Master Services Agreement.

Competition

The financial services industry is intensely competitive. Our competitors are other institutions that originate bank and bridge loans, commercial, consumer and mortgage loans; provide deposit-taking products, including consumer deposits; make markets in interest rate, currency, credit and other derivatives, loans and other financial assets and engage in leveraged finance and agency lending. We compete with institutions on a regional and product basis. We compete based on a number of factors, including transaction execution, products and services, innovation, reputation and price. In addition to financial institutions such as commercial banks, broker-dealers and investment banking firms, our competitors also include consumer finance companies and financial technology and other internet-based financial companies.

We also face intense competition in attracting and retaining qualified employees. Our ability to continue to compete effectively will depend upon our ability to attract new employees, retain and motivate our existing employees and to continue to compensate employees competitively amid intense public and regulatory scrutiny on the compensation practices of large financial institutions.

Regulation

We are supervised and regulated by the FRB, the NYDFS, the CFPB and the FDIC and are also regulated by the CFTC and the U.S. Department of the Treasury in respect of our swap dealer and government securities dealer activities, respectively. Bank branches and other offices are also subject to local regulation. Our consumer-oriented activities are subject to extensive regulation and supervision by federal and state regulators with regard to consumer protection laws, including laws relating to fair lending and other practices in connection with marketing and providing consumer financial products.

As a participant in the banking industry, we are subject to extensive regulation of, among other things, our lending and deposit-taking activities, capital adequacy, liquidity, funding, inter-affiliate transactions, the establishment of new businesses and implementation of new activities and the formation of new subsidiaries by both federal and state regulators and by foreign regulators in jurisdictions in which we operate. The FRB, the NYDFS and the CFPB have significant discretion in connection with their supervisory, enforcement and examination policies. Any change in such policies, whether by the FRB, the NYDFS or the CFPB, or through legislation, could have a material adverse impact on our business, financial condition and operations.

Other reforms have been adopted or are being considered by regulators and policy makers worldwide, as described below. Recent developments have added additional uncertainty to the implementation, scope and timing of regulatory reforms and potential for deregulation in some areas. The effects of any changes to the regulations affecting our businesses, including as a result of the proposals described below, are uncertain and will not be known until the changes are finalized and market practices and structures develop under the revised regulations. See "Management's Discussion and Analysis of Financial Condition and Results of Operations — Regulatory Developments" in Part II of this Annual Report for further information about regulatory developments impacting us.

Stress Tests. Under recent amendments to the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act), effective November 2019, depository institutions with total consolidated assets between $100 billion and $250 billion, such as us, will not be required to conduct annual company-run stress tests. We will not be required to conduct the annual company-run stress test in 2019.

Prompt Corrective Action. The U.S. Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA) requires the U.S. federal bank regulatory agencies to take "prompt corrective action" in respect of depository institutions that do not meet specified capital requirements. FDICIA establishes five capital categories for FDIC-insured banks, such as us: well-capitalized, adequately capitalized, undercapitalized, significantly undercapitalized and critically undercapitalized.

An institution may be downgraded to, or deemed to be in, a capital category that is lower than is indicated by its capital ratios if it is determined to be in an unsafe or unsound condition or if it receives an unsatisfactory examination rating with respect to certain matters. FDICIA imposes progressively more restrictive constraints on operations, management and capital distributions, as the capital category of an institution declines. Failure to meet the capital requirements could also require a depository institution to raise capital. An institution also is prohibited from accepting, renewing or rolling over deposits by or through a "deposit broker" (as defined in FDICIA) unless the institution is well-capitalized. The FDIC may waive this prohibition if the institution is adequately capitalized; however, the prohibition cannot be waived if the institution is undercapitalized, significantly undercapitalized or critically undercapitalized.

An institution also is restricted with respect to the deposit interest rates it may offer if the institution is not well-capitalized. Ultimately, critically undercapitalized institutions are subject to the appointment of a receiver or conservator, as described in "Insolvency of an Insured Depository Institution" below.

See "Management's Discussion and Analysis of Financial Condition and Results of Operations — Equity Capital Management and Regulatory Capital" in Part II of this Annual Report and Note 18 to the consolidated financial statements in Part III of this Annual Report for information about the quantitative requirements for a depository institution to be considered "well-capitalized."

Dividends. Dividends are reviewed and approved under our capital management policy. In addition, U.S. federal and state laws impose limitations on the payment of dividends by banks to their shareholders. In general, the amount of dividends that may be paid by us is limited to the lesser of the amounts calculated under a "recent earnings" test and an "undivided profits" test.

Under the recent earnings test, a dividend may not be paid if the total of all dividends declared by the entity in any calendar year is in excess of the current year's net income combined with the retained net income of the two preceding years, unless the entity obtains prior regulatory approval. Under the undivided profits test, a dividend may not be paid in excess of the entity's "undivided profits" (generally, accumulated net profits that have not been paid out as dividends or transferred to surplus).

In addition to the recent earnings test and undivided profits test, capital management decisions are also driven by our capital management policy, which establishes guidelines to assist us in maintaining the appropriate level of capital in both business-as-usual and post-stress conditions.

The applicable U.S. banking regulators have authority to prohibit or limit the payment of dividends if, in the banking regulator's opinion, payment of a dividend would constitute an unsafe or unsound practice in light of the financial condition of the banking organization.

Insolvency of an Insured Depository Institution. Under the Federal Deposit Insurance Act of 1950 (FDIA), if the FDIC is appointed as conservator or receiver for an insured depository institution such as us, upon its insolvency or in certain other events, the FDIC has broad powers, including the power:

- To transfer any of the depository institution's assets and liabilities to a new obligor, including a newly formed "bridge" bank, without the approval of the depository institution's creditors;
- To enforce the depository institution's contracts pursuant to their terms without regard to any provisions triggered by the appointment of the FDIC in that capacity; or
- To repudiate or disaffirm any contract or lease to which the depository institution is a party, the performance of which is determined by the FDIC to be burdensome and the disaffirmance or repudiation of which is determined by the FDIC to promote the orderly administration of the depository institution.

In addition, the claims of holders of domestic deposit liabilities and certain claims for administrative expenses against an insured depository institution would be afforded a priority over other general unsecured claims, including claims of debtholders of the institution, in the "liquidation or other resolution" of such an institution by any receiver. As a result, whether or not the FDIC ever sought to repudiate any of our debt obligations, the debtholders (other than depositors) would be treated differently from, and could receive, if anything, substantially less than, our depositors.

Resolution. We are required to submit to the FDIC a periodic plan for our rapid and orderly resolution in the event of material financial distress or failure (resolution plan). We submitted our resolution plan on June 28, 2018. In August 2018, the FDIC extended the next resolution plan filing deadline to no sooner than July 1, 2020. The guidance applicable to covered insured depository institutions, including us, requires that our resolution plan must, among other things, demonstrate that we are adequately protected from risks arising from Group Inc. and its other subsidiaries. In November 2018, the FDIC indicated that it plans to address proposed resolution plan requirements applicable to covered insured depository institutions through an advanced notice of proposed rulemaking in 2019, and noted that the next resolution plan filing will not be due until after such new rulemaking is finalized.

In addition, each BHC with over $100 billion in assets (including Group Inc.) and each designated systemically important financial institution is required by the FRB and the FDIC to submit a periodic resolution plan. We are included as a material operating entity within Group Inc.'s 2017 resolution plan, which was submitted in June 2017, and will be included as a material operating entity within Group Inc.'s 2019 resolution plan, which is due on July 1, 2019.

If the regulators jointly determine that a BHC has failed to remediate identified shortcomings in its resolution plan and that its resolution plan, after any permitted resubmission, is not credible or would not facilitate an orderly resolution under the U.S. Bankruptcy Code, the regulators may jointly impose more stringent capital, leverage or liquidity requirements or restrictions on growth, activities or operations or may jointly order a BHC to divest assets or operations in order to facilitate orderly resolution in the event of failure, any of which may impact us.

The federal bank regulatory agencies have adopted final rules imposing restrictions on qualified financial contracts (QFCs) entered into by global systemically important banks (G-SIBs), including their subsidiaries. The rules began to phase in on January 1, 2019 and will be fully effective on January 1, 2020. These rules are intended to facilitate the orderly resolution of a failed G-SIB by limiting the ability of the G-SIB to enter into a QFC unless (i) the counterparty waives certain default rights in such contract arising upon the entry of the G-SIB or one of its affiliates into resolution, (ii) the contract does not contain enumerated prohibitions on the transfer of such contract and/or any related credit enhancement, and (iii) the counterparty agrees that the contract will be subject to the special resolution regimes set forth in the Dodd-Frank Act orderly liquidation authority (OLA) and the FDIA. Compliance can be achieved by adhering to the International Swaps and Derivatives Association Universal Resolution Stay Protocol (ISDA Universal Protocol) or International Swaps and Derivatives Association 2018 U.S. Resolution Stay Protocol (U.S. ISDA Protocol) described below.

Group Inc. and certain of its subsidiaries (including us), along with those of a number of other major global banking organizations, have adhered to the ISDA Universal Protocol, which was developed and updated in coordination with the Financial Stability Board (FSB), an international body that sets standards and coordinates the work of national financial authorities and international standard-setting bodies. The ISDA Universal Protocol imposes a stay on certain cross-default and early termination rights within standard ISDA derivative contracts and securities financing transactions between adhering parties in the event that one of them is subject to resolution in its home jurisdiction, including a resolution under the orderly liquidation authority or the FDIA in the U.S. In addition, Group Inc. and certain of its subsidiaries (including us) adhere to the U.S. ISDA Protocol, which was based on the ISDA Universal Protocol and was created to allow market participants to comply with the final QFC rules adopted by the federal bank regulatory agencies.

Capital and Liquidity Requirements. We are subject to consolidated regulatory risk-based capital and leverage requirements that are calculated in accordance with the regulations of the FRB (Capital Framework). The Capital Framework is largely based on the Basel Committee on Banking Supervision's (Basel Committee) framework for strengthening the regulation, supervision and risk management of banks (Basel III). The Basel Committee is the primary global standard setter for prudential bank regulation and its member jurisdictions implement regulations based on its standards and guidelines. The Basel Committee's standards are not effective in any jurisdiction until rules implementing such standards have been implemented by the relevant regulators. The Capital Framework also implements certain provisions of the Dodd-Frank Act. Under the Capital Framework, we are an "Advanced approach" banking organization. We must meet specific regulatory capital requirements that involve quantitative measures of assets, liabilities and certain off-balance-sheet items. The sufficiency of our capital levels is also subject to qualitative judgments by regulators. We are also subject to liquidity requirements established by the U.S. federal bank regulatory agencies that require us to meet specified ratios.

In October 2018, the FRB released two proposals that would generally make the applicable capital and liquidity requirements less stringent for large U.S. banking organizations other than those that are U.S. G-SIBs, such as Group Inc., and their depository institution subsidiaries, such as us, with the revisions based on the size and other risk-based indicators of the organization.

Risk-Based Capital Ratios. We compute our Common Equity Tier 1 (CET1) capital, Tier 1 capital and Total capital ratios in accordance with the risk-based capital and leverage regulations as provided in the Capital Framework.

The Capital Framework, as applicable to us, provides for an additional capital ratio requirement that consists of two components (commonly referred to as buffers): (i) for capital conservation (capital conservation buffer) and (ii) for countercyclicality (countercyclical capital buffer). The additional capital ratio requirement must be satisfied entirely with capital that qualifies as CET1.

The capital conservation buffer began to phase in on January 1, 2016 and continued to do so through January 1, 2019. The countercyclical capital buffer is designed to counteract systemic vulnerabilities and currently applies only to "Advanced approach" banking organizations, including us. The countercyclical capital buffer applicable to us could change in the future and, as a result, the minimum capital ratios to which we are subject could change.

In January 2019, the Basel Committee finalized revisions to the framework for calculating capital requirements for market risk, which is expected to increase market risk capital requirements for most banking organizations, although to a lesser degree than the version of the framework issued in January 2016. The revised framework, among other things, revises the standardized approach and internal models to calculate market risk requirements and clarifies the scope of positions subject to market risk capital requirements. The Basel Committee has proposed that national regulators implement the revised framework beginning January 1, 2022.

In December 2017, the Basel Committee published standards that it described as the finalization of the Basel III post-crisis regulatory reforms. These standards set a floor on internally modeled capital requirements at a percentage of the capital requirements under the standardized approach. They also revise the Basel Committee's standardized and model-based approaches for credit risk, provide a new standardized approach for operational risk capital and revise the frameworks for credit valuation adjustment risk. The Basel Committee has proposed that national regulators implement these standards beginning January 1, 2022, and that the new floor be phased in through January 1, 2027.

The Basel Committee has also published an updated framework for the regulatory capital treatment of securitization exposures. The U.S. federal bank regulatory agencies have not yet proposed rules implementing the December 2017 standards or the revised market risk and securitizations framework. See "Management's Discussion and Analysis of Financial Condition and Results of Operations — Equity Capital Management and Regulatory Capital" in Part II of this Annual Report and Note 18 to the consolidated financial statements in Part III of this Annual Report for information about our capital ratios.

Leverage Ratios. Under the Capital Framework, we are subject to a Tier 1 leverage ratio and a supplementary leverage ratio (SLR) established by the FRB. In April 2018, the FRB and the Office of the Comptroller of the Currency (OCC) issued a proposed rule which would replace the current 6% SLR requirement for depository institution subsidiaries of G-SIBs, including us, to be considered "well-capitalized" with a requirement equal to 3% plus 50% of the G-SIB parent's risk-based capital surcharge. This proposal, as it relates to the SLR buffer for Group Inc., and the proposal to use the Basel Committee's standardized approach for measuring counterparty credit risk exposures in connection with derivative contracts (SA-CCR) for purposes of calculating the SLR would implement certain of the revisions to the leverage ratio framework published by the Basel Committee in December 2017.

The Basel Committee has also issued consultation papers on, among other matters, changes to leverage ratio treatment of client cleared derivatives and the public disclosure of daily average balances for certain components of leverage ratio calculations. See "Management's Discussion and Analysis of Financial Condition and Results of Operations — Equity Capital Management and Regulatory Capital" in Part II of this Annual Report and Note 18 to the consolidated financial statements in Part III of this Annual Report for information about our Tier 1 leverage ratio and SLR.

In October 2018, the U.S. federal bank regulatory agencies issued a proposed rule that would implement SA-CCR. Under the proposal, "Advanced approach" banking organizations would be required to use SA-CCR for purposes of calculating their standardized risk-weighted assets (RWAs) and, with some adjustments, for purposes of determining their SLRs discussed above.

Liquidity Ratios. The Basel Committee's framework for liquidity risk measurement, standards and monitoring requires banking organizations to measure their liquidity against two specific liquidity tests: the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR).

The LCR rule issued by the U.S. federal bank regulatory agencies and applicable to us is generally consistent with the Basel Committee's framework and is designed to ensure that a banking organization maintains an adequate level of unencumbered high-quality liquid assets equal to or greater than the expected net cash outflows under an acute short-term liquidity stress scenario. See "Management's Discussion and Analysis of Financial Condition and Results of Operations — Risk Management — Liquidity Risk Management — Liquidity Regulatory Framework" in Part II of this Annual Report for further information about our LCR.

The NSFR is designed to promote medium- and long-term stable funding of the assets and off-balance-sheet activities of banking organizations over a one-year time horizon. The Basel Committee's NSFR framework requires banking organizations to maintain a minimum NSFR of 100%. In May 2016, the U.S. federal bank regulatory agencies issued a proposed rule that would implement the NSFR for large U.S. banking organizations, including us. The U.S. federal bank regulatory agencies have not released a final rule.

The LCR and proposed NSFR are determined, in part, by applying prescribed supervisory factors to certain categories of liabilities, including deposits that are classified as "brokered". In December 2018, the FDIC released an advance notice of proposed rulemaking announcing a comprehensive review of the regulatory approach to brokered deposits, including the classification of certain types of deposits as "brokered." Any change to the classification of deposits as "brokered" deposits could affect how regulatory liquidity ratios are calculated under the LCR rule and proposed NSFR rule.

Transactions between Affiliates. Transactions between us, on the one hand, and Group Inc. or our affiliates, on the other hand, are regulated by the FRB. These regulations generally limit the types and amounts of transactions (including credit extensions from us to Group Inc. or our affiliates) that may take place and generally require those transactions to be on market terms or better to us. These regulations generally do not apply to transactions within the Bank. The Dodd-Frank Act expanded the coverage and scope of these regulations, including by applying them to the credit exposure arising under derivative transactions, resale and repurchase agreements, and securities borrowing and lending transactions.

Total Loss-Absorbing Capacity. In December 2016, the FRB adopted a final rule establishing loss-absorbency and related requirements for BHCs that have been designated as U.S. G-SIBs, such as Group Inc. The rule became effective in January 2019 with no phase-in period. Although it does not apply to depository institutions, the rule impacts aspects of the operations of depository institutions that are subsidiaries of U.S. G-SIBs, including us. For example, it prohibits Group Inc. from (i) guaranteeing our obligations if an insolvency or receivership of Group Inc. could give the counterparty the right to exercise a default right (for example, early termination) against us, subject to an exception for guarantees permitted by rules of the U.S. federal banking agencies imposing restrictions on QFCs; (ii) incurring liabilities guaranteed by us; and (iii) entering into QFCs with any person that is not a subsidiary of Group Inc.

Moreover, the FRB has indicated that it is considering whether it would be appropriate to propose regulations that would impose total loss absorbing capacity requirements on material operating subsidiaries of U.S. G-SIBs, which may include us.

Deposit Insurance. Our deposits have the benefit of FDIC insurance up to the applicable limits. The FDIC's Deposit Insurance Fund (DIF) is funded by assessments on insured depository institutions. Our assessment (subject to adjustment by the FDIC) is currently based on our average total consolidated assets less our average tangible equity during the assessment period, our supervisory ratings and specified forward-looking financial measures used to calculate the assessment rate.

Lending and Credit Limits. New York State banking law imposes lending limits (which also take into account credit exposure from derivative transactions and securities financing transactions of securities representing debt obligations) and other requirements that could impact the manner and scope of our activities.

We are also subject to limits under state and U.S. federal law that restrict the type and amount of investments we can make.

In June 2018, the FRB issued a final rule regarding single counterparty credit limits, which imposes more stringent requirements for credit exposures among major financial institutions and apply in the aggregate to Group Inc. and its subsidiaries on a consolidated basis. The final rule requires U.S. G-SIBs, such as Group Inc., to comply by January 1, 2020. Accordingly, although not applicable to us on a standalone basis, these limits could have the effect of constraining our management of our credit exposures because of the consolidated application of the limits, including with respect to hedges.

The U.S. federal bank regulatory agencies have issued guidance that focuses on transaction structures and risk management frameworks and that outlines high-level principles for safe-and-sound leveraged lending, including underwriting standards, valuation and stress testing. This guidance has, among other things, limited the percentage amount of debt that can be included in certain transactions. The status of this guidance is uncertain as the U.S. Government Accountability Office has determined that it is a rule subject to review under the Congressional Review Act. The agencies have also issued guidance relating to underwriting standards and general risk management standards in the area of commercial real estate addressing the need for prudent risk management practices by financial institutions engaging in commercial real estate lending activity.

Community Reinvestment Act (CRA). We are subject to the provisions of the CRA. Under the terms of the CRA, we have a continuing and affirmative obligation, consistent with safe and sound operation, to help meet the credit needs of our communities.

The CRA does not establish specific lending requirements or programs for financial institutions nor does it limit an institution's discretion to develop the types of products and services that it believes are best suited to its particular community, so long as they are consistent with the CRA. The CRA requires each appropriate federal bank regulatory agency, in connection with its examination of a depository institution, to assess such institution's record of meeting the credit needs of the community served by that institution, including low- and moderate-income neighborhoods, and to make such assessment available to the public.

The assessment also is part of the FRB's consideration of applications to acquire, merge or consolidate with another banking institution or its holding company, to assume deposits of or acquire assets from another depository institution, to establish a new branch office that will accept deposits or to relocate an office. In the case of a BHC applying for approval to acquire a bank or other BHC, the FRB will assess the records of performance under the CRA of the insured depository institutions involved in the transaction, and such records may be the basis for denying the application.

If any insured depository institution subsidiary of a FHC fails to maintain at least a "satisfactory" rating under the CRA, the FHC would be subject to restrictions on certain new activities and acquisitions.

We are also subject to provisions of the New York Banking Law that impose continuing and affirmative obligations upon a New York State-chartered bank to serve the credit needs of its local community (NYCRA). Such obligations are substantially similar to those imposed by the CRA. The NYCRA requires the NYDFS to make a periodic written assessment of an institution's compliance with the NYCRA, and to make such assessment available to the public. The NYCRA also requires the Superintendent to consider the NYCRA rating when reviewing an application to engage in certain transactions, including mergers, asset purchases and the establishment of branch offices, and provides that such assessment may serve as a basis for the denial of any such application.

The FRB, the federal regulator responsible for monitoring our CRA compliance, approved our designation as a "wholesale bank." A wholesale bank generally is a bank that is not in the business of extending home mortgage, small business, small farm or consumer loans to retail clients and for which a designation as a wholesale bank is in effect. As a result of this designation, we fulfill our CRA obligations through community development loans, qualified investments and community development services, rather than consumer loans. In light of our lending to consumers, we may lose our designation as a wholesale bank and therefore may be required to satisfy CRA obligations through different or expanded activities. See "Risk Factors — We face enhanced risks as new business initiatives lead us to transact with a broader array of clients and counterparties and expose us to new assets, activities and markets" for further information about how new business initiatives could impact our CRA ratings.

Consumer Protection Laws. We are subject to a number of federal and state consumer protection laws, including laws designed to protect clients and customers and promote lending to various sectors of the economy and population. These laws include the Equal Credit Opportunity Act, the Fair Credit Reporting Act, the Truth in Lending Act, the Home Mortgage Disclosure Act, the Real Estate Settlement Procedures Act, the Flood Disaster Protection Act, the Military Lending Act, the Servicemembers Civil Relief Act, and their respective state law counterparts, as well as state laws regarding unfair and deceptive acts and practices.

The CFPB has broad rulemaking, supervisory and enforcement powers under various federal consumer financial protection laws, including the laws referenced above, fair lending laws and certain other statutes. We are supervised by the CFPB, and we are also subject to oversight by the FRB and the NYDFS, with respect to one or more of the foregoing laws and activities.

In connection with our expansion of our consumer-oriented activities, we are subject to enhanced legal and regulatory requirements, in particular, consumer protection laws and regulation, including regulation relating to Truth in Savings, Electronic Funds Transfer, Expedited Funds Availability, the Electronic Signatures in Global and National Commerce Act, Truth in Lending, the Servicemembers Civil Relief Act and unfair and deceptive acts and practices. We have expanded our existing risk management platform and controls and are continuing to enhance, as appropriate, our existing regulatory and legal compliance programs, policies, procedures and processes to cover the activities, products and customers associated with these activities.

Swaps, Derivatives and Commodities Regulation. The commodity futures, commodity options and swaps industry in the U.S. is subject to regulation under the U.S. Commodity Exchange Act (CEA). The CFTC is the federal agency charged with the administration of the CEA. In addition, the SEC is the U.S. federal agency charged with the regulation of security-based swaps.

Goldman Sachs Bank USA and our subsidiary Goldman Sachs Mitsui Marine Derivative Products, L.P. (MMDP) are registered swap dealers with the CFTC and are subject to CFTC regulations. The rules and regulations of various self-regulatory organizations, such as the Chicago Mercantile Exchange, other CFTC-registered clearing houses and exchanges and the National Futures Association, also govern commodity futures, commodity options and swaps activities.

The "swap push-out" provisions of Section 716 of the Dodd-Frank Act restrict the ability of an insured depository institution to enter into "structured finance swaps," which are swaps referencing asset-backed securities, when such swaps are not entered into for hedging or other risk mitigation purposes. An insured depository institution that fails to comply with Section 716 could face restrictions on the institution's access to the Federal Reserve's discount window or FDIC deposit insurance or guarantees.

The terms "swaps" and "security-based swaps" include a wide variety of derivative instruments in addition to those conventionally referred to as swaps (including certain forward contracts and options), and relate to a wide variety of underlying assets or obligations, including currencies, commodities, interest or other monetary rates, yields, indices, securities, credit events, loans and other financial obligations.

CFTC rules require registration of swap dealers, mandatory clearing and execution of interest rate and credit default swaps and real-time public reporting and adherence to business conduct standards for all in-scope swaps. In December 2016, the CFTC proposed revised capital regulations for swap dealers, such as MMDP, that are not subject to the capital rules of a prudential regulator, such as the FRB, as well as a liquidity requirement for those swap dealers.

SEC rules govern the registration and regulation of security-based swap dealers, but compliance with such rules is not currently required. In October 2018, the SEC re-proposed, and requested comment on, a number of its rules for security-based swap dealers, including capital, margin and segregation requirements. We currently engage in transactions involving security-based swaps, and, accordingly, the SEC's rules, if and when adopted, would impact our business and may do so adversely.

We are subject to the margin rules issued by the FRB and MMDP is subject to margin rules issued by the CFTC.

In September 2016, the final margin rules issued by the U.S. federal bank regulatory agencies and the CFTC for uncleared swaps became effective. The phase-in schedule of the initial and variation margin requirements applicable to a particular swap dealer depends on the level of swaps, security-based swaps and/or exempt foreign exchange derivative transaction activity of the swap dealer and the relevant counterparty. Under the final rules, the largest swap market counterparties, including us, were required to implement the initial margin requirements for uncleared swaps between those largest counterparties beginning in September 2016. The initial margin requirements will continue to be phased in through 2020. The variation margin requirements have become effective. In contrast to the FRB margin rules, inter-affiliate transactions under the CFTC margin rules are generally exempt from initial margin requirements.

The CFTC has proposed position limit rules that will limit the size of positions in physically settled commodity derivatives that can be held by any entity, or any group of affiliates or other parties trading under common control, subject to certain exemptions, such as for bona fide hedging positions. These proposed rules would apply to positions in swaps, as well as futures and options on futures.

See "Risk Factors — Our business, and the businesses of our clients, are subject to extensive and pervasive regulation" for further information about how derivatives regulation could impact our business.

Compensation Practices. Our compensation practices, as a subsidiary of Group Inc., are subject to oversight by the FRB and other regulatory bodies worldwide. The scope and content of compensation regulation in the financial industry are continuing to develop, and we expect that these regulations and resulting market practices will evolve over a number of years.

The U.S. federal bank regulatory agencies have provided guidance designed to ensure that incentive compensation arrangements at banking organizations take into account risk and are consistent with safe and sound practices. The guidance sets forth the following three key principles with respect to incentive compensation arrangements: (i) the arrangements should provide employees with incentives that appropriately balance risk and financial results in a manner that does not encourage employees to expose their organizations to imprudent risk; (ii) the arrangements should be compatible with effective controls and risk management; and (iii) the arrangements should be supported by strong corporate governance. The guidance provides that supervisory findings with respect to incentive compensation will be incorporated, as appropriate, into the organization's supervisory ratings, which can affect its ability to make acquisitions or perform other actions. The guidance also provides that enforcement actions may be taken against a banking organization if its incentive compensation arrangements or related risk management, control or governance processes pose a risk to the organization's safety and soundness.

The Dodd-Frank Act requires the U.S. financial regulators, including the FRB, to adopt rules on incentive-based payment arrangements at specified regulated entities having at least $1 billion in total assets (including Group Inc. and us). The U.S. financial regulators proposed revised rules in 2016, which have not been finalized.

In October 2016, the NYDFS issued guidance emphasizing that its regulated banking institutions, including us, must ensure that any incentive compensation arrangements tied to employee performance indicators are subject to effective risk management, oversight and control.

Anti-Money Laundering and Anti-Bribery Rules and Regulations. The U.S. Bank Secrecy Act (BSA), as amended by the USA PATRIOT Act of 2001 (PATRIOT Act), contains anti-money laundering (AML) and financial transparency laws and mandated the implementation of various regulations applicable to all financial institutions, including standards for verifying client identification at account opening, and obligations to monitor client transactions and report suspicious activities.

Through these and other provisions, the BSA and the PATRIOT Act seek to promote the identification of parties that may be involved in terrorism, money laundering or other suspicious activities. AML laws outside the U.S. contain some similar provisions.

The NYDFS adopted a final rule, which came into effect on January 1, 2017, that imposes requirements on regulated institutions, including us, regarding their BSA/AML and sanctions compliance programs and requires us to maintain transaction-monitoring and filtering programs reasonably designed to comply with BSA/AML requirements and to stop transactions prohibited under the sanctions programs of the U.S. Treasury's Office of Foreign Assets Control. The rule also requires us to provide a certification to the NYDFS annually, effective April 2018, that we are in compliance with the transaction-monitoring and filtering program requirements.

In addition, we are subject to laws and regulations worldwide, including the U.S. Foreign Corrupt Practices Act (FCPA) and the U.K. Bribery Act, relating to corrupt and illegal payments to, and hiring practices with regard to, government officials and others. The scope of the types of payments or other benefits covered by these laws is very broad and regulators are frequently using enforcement proceedings to define the scope of these laws. The obligation of a financial institution, including us, to identify its clients, to monitor for and report suspicious transactions, to monitor direct and indirect payments to government officials, to respond to requests for information by regulatory authorities and law enforcement agencies, and to share information with other financial institutions, has required the implementation and maintenance of internal practices, procedures and controls.

Volcker Rule. The provisions of the Dodd-Frank Act referred to as the "Volcker Rule" became effective in July 2015. The Volcker Rule prohibits "proprietary trading," but permits activities such as market making and risk-mitigation hedging, which we currently engage in and will continue to engage in, and requires an extensive compliance program and includes additional reporting and record-keeping requirements.

In addition, the Volcker Rule limits the sponsorship of, and investment in, "covered funds" (as defined in the rule) by banking entities, including us. Collateralized loan obligations and other vehicles in which we invest, subject to certain exclusions, including an exclusion for certain loan securitizations, may be considered "covered funds" under the rule. The rule also limits certain types of transactions between us and covered funds sponsored by Group Inc. and its subsidiaries, similar to the limitations on transactions between depository institutions and their affiliates. The limitation on investments in covered funds requires Group Inc. and its subsidiaries, including us, to limit their investments in each such fund to 3% or less of the fund's net asset value, and to limit their aggregate investments in all such funds to 3% or less of the GS Group's Tier 1 capital.

In July 2018, the FRB, OCC, FDIC, CFTC and SEC issued a notice of proposed rulemaking intended to amend the application of the Volcker Rule based on the size and scope of a banking entity's trading activities and to clarify and amend certain definitions, requirements and exemptions. The ultimate impact of any amendments to the Volcker Rule will depend on, among other things, further rulemaking and implementation guidance from the relevant U.S. federal regulatory agencies and the development of market practices and standards.

Privacy and Cyber Security Regulation. We are subject to laws and regulations enacted by U.S. federal and state governments and by various regulatory organizations or exchanges relating to the privacy of the information of clients, employees or others. The NYDFS also requires financial institutions regulated by the NYDFS, including us, to, among other things, (i) establish and maintain a cyber security program designed to ensure the confidentiality, integrity and availability of their information systems; (ii) implement and maintain a written cyber security policy setting forth policies and procedures for the protection of their information systems and nonpublic information; and (iii) designate a Chief Information Security Officer. In addition, in October 2016, the U.S. federal bank regulatory agencies issued an advance notice of proposed rulemaking on potential enhanced cyber risk management standards for large financial institutions.

We are also subject to the E.U.'s General Data Protection Regulation (GDPR), which took effect on May 25, 2018. The GDPR has heightened our privacy compliance obligations, impacted our businesses' collection, processing and retention of personal data and imposed strict standards for reporting data breaches. The GDPR also provides for significant penalties for non-compliance. In addition, the California Consumer Privacy Act was enacted in June 2018 and is scheduled to take effect on January 1, 2020, and will impose privacy compliance obligations with regard to the personal information of California residents.

Securitizations. We are also subject to rules adopted by federal agencies pursuant to the Dodd-Frank Act that require any person who organizes or initiates certain asset-backed securities transactions to retain a portion (generally, at least five percent) of any credit risk that the person conveys to a third party. For certain securitization transactions, retention by third-party purchasers may satisfy this requirement. The E.U. capital rules set out in the Capital Requirements Regulation also provide that no credit institution may be exposed to a securitization position unless the issuer retains a material net economic interest of at least five percent, which may impact us in the context of our cross-border transactions. Securitizations would also be affected by rules proposed by the SEC to implement the Dodd-Frank Act's prohibition against securitization participants engaging in any transaction that would involve or result in any material conflict of interest with an investor in a securitization transaction. The proposed rules would exempt bona fide market-making activities and risk-mitigating hedging activities in connection with securitization activities from the general prohibition.

Other Regulation. A number of our activities, including our cross-border lending and derivatives activities, require us to obtain licenses, adhere to applicable regulations and be subject to the oversight of various regulators in the jurisdictions in which we conduct these activities.

U.S. and non-U.S. government agencies, regulatory bodies and self-regulatory organizations, as well as state securities commissions and other state regulators in the U.S., are empowered to conduct administrative proceedings that can result in censure, fine, the issuance of cease-and-desist orders, or the suspension or expulsion of a regulated entity or its directors, officers or employees. In particular, state attorneys general have become much more active in seeking fines and penalties in enforcement led by the federal regulators.

The following changes or proposed changes to rules or guidance are directly or indirectly applicable to us:

- In November 2018, the FRB issued a final rule establishing a new rating system for large financial institutions (LFIs), such as Group Inc. and proposed related guidance for the governance and controls component. The guidance presented in these proposals would also apply directly to state member banks, including us; and
- In December 2018, the U.S. federal bank regulatory agencies issued a final rule that would provide an optional three-year phase-in period for the day-one regulatory capital effects of the adoption of the Current Expected Credit Losses (CECL) accounting standard. The FRB also released a statement indicating that it will not incorporate CECL into the calculation of the allowance for credit losses in supervisory stress tests, applicable to certain BHCs, including Group Inc., through the 2021 stress test cycle. See Note 3 to the consolidated financial statements in Part III of this Annual Report for further information about CECL.

Available Information

This Annual Report is available at www.goldmansachs.com/investor-relations/financials/. We also make available annual and periodic reports for prior periods on our website at www.goldmansachs.com/investor-relations/financials/archived/. In addition, certain of our affiliates, including Group Inc., provide annual and periodic reports relating to their businesses and activities, which are available at www.goldmansachs.com/investor-relations/financials/. Information contained on such website is not part of, nor is it incorporated by reference into, this Annual Report.

Cautionary Statement Regarding Forward-Looking Statements

In this Annual Report, we have included statements that may constitute "forward-looking statements." Forward-looking statements are not historical facts, but instead represent only our beliefs regarding future events, many of which, by their nature, are inherently uncertain and outside our control.

These statements include statements other than historical information or statements of current conditions and may relate to our future plans and objectives and results, among other things, and may also include statements about the effect of changes to the capital, leverage, liquidity, and various legal proceedings, governmental investigations or mortgage-related contingencies as set forth in both Notes 17 and 23 to the consolidated financial statements in Part III of this Annual Report.

These statements may also include statements about the results of our stress tests, statements about the objectives and effectiveness of our risk management and liquidity policies, statements about our resolution plan and resolution strategy, statements about our future status, activities or reporting under U.S. or non-U.S. banking and financial regulation, statements about GS Group's preparations for the U.K.'s notification to the European Council of its decision to leave the E.U. (Brexit), including its plan to manage a hard Brexit scenario, and statements about the replacement of LIBOR and other Interbank Offered Rates (IBORs) and the objectives of our program related to the transition from IBORs to alternative risk-free reference rates, and statements about the adequacy of our allowance for credit losses.

By identifying these statements for you in this manner, we are alerting you to the possibility that our actual results and financial condition may differ, possibly materially, from the anticipated results and financial condition indicated in these forward-looking statements. Important factors that could cause our actual results and financial condition to differ from those indicated in these forward-looking statements include, among others, those described in "Risk Factors" in this Annual Report.

We provide in this Annual Report information regarding our capital, liquidity and leverage ratios, including our NSFR. The statements with respect to these ratios are forward-looking statements, based on our current interpretation, expectations and understandings of the relevant regulatory rules, guidance and proposals, and reflect significant assumptions about the treatment of various assets and liabilities and the manner in which the ratios are calculated. As a result, the methods used to calculate these ratios may differ, possibly materially, from those used in calculating our capital, liquidity and leverage ratios for any future disclosures. The ultimate methods of calculating the ratios will depend on, among other things, implementation guidance or further rulemaking from the U.S. federal bank regulatory agencies and the development of market practices and standards.

Risk Factors

We face a variety of risks that are substantial and inherent in our business, including liquidity, market, credit, operational, model, legal, regulatory and reputational risks. The following are some of the more important factors that could affect our business.

Our business has been and may continue to be adversely affected by conditions in the global financial markets and economic conditions generally.

Our business, by its nature, does not produce predictable earnings. We generate a substantial amount of our revenue and earnings from transactions in financial instruments, including in connection with our market-making activities in interest rate and other derivatives and related products, and interest we charge on our lending portfolio.

Our financial performance is highly dependent on the environment in which we operate. A favorable business environment is generally characterized by, among other factors, high global gross domestic product growth, regulatory and market conditions which result in transparent, liquid and efficient capital markets, low inflation, high business and investor confidence, stable geopolitical conditions, clear regulations and strong business earnings. Unfavorable or uncertain economic and market conditions can be caused by: concerns about sovereign defaults; uncertainty concerning fiscal or monetary policy, government shutdowns, debt ceilings or funding; the extent of and uncertainty about tax and other regulatory changes; declines in economic growth, business activity or investor or business confidence; limitations on the availability or increases in the cost of credit and capital; illiquid markets; increases in inflation, interest rates, exchange rate or basic commodity price volatility or default rates; the imposition of tariffs or other limitations on international trade and travel; outbreaks of domestic or international tensions or hostilities, terrorism, nuclear proliferation, cybersecurity threats or attacks and other forms of disruption to or curtailment of global communication, energy transmission or transportation networks or other geopolitical instability or uncertainty, such as Brexit; corporate, political or other scandals that reduce investor confidence in capital markets; extreme weather events or other natural disasters or pandemics; or a combination of these or other factors.

The financial services industry and the financial markets have been materially and adversely affected in the past by significant declines in the values of nearly all asset classes and by a serious lack of liquidity. In addition, concerns about European sovereign debt risk and its impact on the European banking system, the impact of Brexit, the imposition of tariffs by the U.S. and by other countries in response thereto, and changes in interest rates and other market conditions have resulted, at times, in significant volatility while negatively impacting the levels of activity of our clients. Actual changes in interest rates and other market conditions, have also resulted, at times, in significant volatility and negative impact to client activity levels.

General uncertainty about economic, political and market activities, and the scope, timing and impact of regulatory reform, as well as weak consumer, investor and CEO confidence resulting in large part from such uncertainty, continues to negatively impact the activity of GS Group's or our clients, which adversely affects our business. Periods of low volatility and periods of high volatility combined with a lack of liquidity, have at times had an unfavorable impact on our market-making business.

Our revenues and profitability and those of our competitors have been and will continue to be impacted by current and future requirements relating to capital, leverage, minimum liquidity and long-term funding levels, requirements related to resolution and recovery planning, derivatives clearing and margin rules and levels of regulatory oversight, as well as limitations on which and, if permitted, how certain business activities may be carried out by financial institutions. Financial institution returns in many countries may be negatively impacted by increased funding costs due in part to the lack of perceived government support of such institutions in the event of future financial crises relative to financial institutions in countries in which governmental support is maintained. In addition, liquidity in the financial markets has also been negatively impacted as market participants and market practices and structures continue to adjust to new regulations.

The degree to which these and other changes since the financial crisis continue to have an impact on the profitability of financial institutions will depend on the effect of regulations adopted after 2008 and new regulations, the manner in which markets, market participants and financial institutions have continued to adapt to these regulations, and the prevailing economic and financial market conditions. However, there is a significant risk that such changes will negatively impact our absolute level of revenues and profitability and the absolute level of revenues and profitability for GS Group and other financial institutions.

In addition, a significant portion of our business involves transactions with, through, arising from, involving, or otherwise related to other GS Group entities, and any adverse change in the businesses or activity levels of GS Group more broadly can have an adverse impact on us. Accordingly, we are materially affected by conditions in the global financial markets and economic conditions generally, both directly and through their impact on our business levels and the business levels of our affiliates. These conditions can change suddenly and negatively.

Our business, and the businesses of our clients, are subject to extensive and pervasive regulation.

As an FDIC-insured New York State-chartered bank, member of the Federal Reserve System, regulated swap dealer and subsidiary of a systemically important financial institution, we are subject to extensive regulation. Among other things, as a result of regulators, taxing authorities, law enforcement authorities or private parties challenging our compliance with existing laws and regulations, we or our employees could be fined or criminally sanctioned, prohibited from engaging in some of our activities, prevented from engaging in new activities, subjected to limitations or conditions on our activities, including higher capital requirements, or subjected to new or substantially higher taxes or other governmental charges in connection with the conduct of our business or with respect to our and GS Group's other employees. Such limitations or conditions may limit our business activities and negatively impact our profitability.

In addition to the impact on the scope and profitability of our business activities, day-to-day compliance with existing laws and regulations, in particular those adopted since 2008, has involved and will, except to the extent that some of such regulations are modified or otherwise repealed, continue to involve significant amounts of time, including that of our senior leaders and that of a large number of dedicated compliance and other reporting and operational personnel, all of which may negatively impact our profitability.

If there are new laws or regulations or changes in the enforcement of existing laws or regulations applicable to us specifically, GS Group generally or the business activities of either of our or GS Group's clients, including capital, liquidity, leverage and margin requirements, restrictions on leveraged lending or other business practices, reporting requirements, requirements relating to recovery and resolution planning, higher FDIC deposit insurance assessments, tax burdens and compensation restrictions, that are imposed on a limited subset of financial institutions (either based on size, method of funding, activities, geography or other criteria), compliance with these new laws or regulations, or changes in the enforcement of existing laws or regulations, could adversely affect our or GS Group's ability to compete effectively with other institutions that are not affected in the same way. In addition, regulation imposed on financial institutions or market participants generally, such as taxes on financial transactions, could adversely impact levels of market activity more broadly, and thus impact our business.

We are also subject to regulations based on our derivatives activities. The application of new derivatives rules across different national and regulatory jurisdictions has not yet been fully established and specific determinations of the extent to which regulators in each of the relevant jurisdictions will defer to regulations in other jurisdictions have not yet been completed. The full impact of the various U.S. and non-U.S. regulatory developments in this area will not be known with certainty until all the rules are finalized and implemented and market practices and structures develop under the final rules. For example, the Dodd-Frank Act imposes entity-level capital requirements for swap dealers, major swap participants, security-based swap dealers, and major security-based swap participants, but the implementing rules have not been finalized. However, in general, the imposition of these various regulatory schemes could adversely affect our derivatives business by increasing costs, reducing counterparty demand for derivative products and reducing general market liquidity, which could in turn lead to greater volatility. These factors could make it more difficult or more costly to establish and maintain hedging or trading strategies and could increase the risk, and reduce the profitability, of our derivatives business.

U.S. and non-U.S. regulatory developments, in particular the Dodd-Frank Act and Basel III, have significantly altered the regulatory framework within which we operate and have adversely affected and may in the future affect our profitability.

Among the aspects of the Dodd-Frank Act that have affected or may in the future affect us are: increased capital, liquidity and reporting requirements; limitations on activities in which we may engage; increased regulation of and restrictions on OTC derivatives markets and transactions; limitations on incentive compensation; limitations on affiliate transactions; limitations on credit exposure to any unaffiliated company; requirements to reorganize or limit activities in connection with recovery and resolution planning; and increased deposit insurance assessments. The implementation of higher capital requirements, the LCR and the NSFR, and requirements relating to the prohibition on proprietary trading and lending to covered funds by the Volcker Rule may adversely affect our profitability and competitive position, particularly if these requirements do not apply equally to our and GS Group's competitors or are not implemented uniformly across jurisdictions. Such requirements could reduce the amount of funds available to meet our obligations, including debt obligations.

The requirements for us to develop and submit resolution plans to the FDIC, and the incorporation of feedback received from the FDIC, may require us to increase our capital or liquidity levels or otherwise incur additional costs, and may reduce our ability to raise additional debt. Resolution planning may also impair GS Group's ability to structure its intercompany and external activities in a manner that it may otherwise deem most operationally efficient, which may affect our business.

The Fixing America's Surface Transportation Act (FAST Act) enacted in December 2015 reduced the dividend rate applicable to Federal Reserve Bank depository institution stockholders with total assets of more than $10 billion (large member banks), including us. The dividend rate for large member banks has been reduced to the lesser of 6.0% or the most recent 10-year U.S. Treasury auction rate prior to the dividend payment. The FRB issued a final rule in November 2016 implementing these provisions of the FAST Act with effect from January 1, 2017. The change in the applicable dividend rate for large member banks has reduced the semi-annual dividend we receive from the Federal Reserve Bank and may in the future introduce volatility in the dividends we receive, which may adversely affect our results of operations.

We are also subject to laws and regulations, such as the GDPR and the NYDFS cybersecurity rules, relating to the privacy of the information of clients, employees or others, and any failure to comply with these laws and regulations could expose us to liability and/or reputational damage. As new privacy-related laws and regulations are implemented, the time and resources needed for us to comply with such laws and regulations, as well as our potential liability for non-compliance and reporting obligations in the case of data breaches, may significantly increase.

In addition, our business is increasingly subject to laws and regulations relating to surveillance, encryption and data on-shoring. Compliance with these and other laws and regulations may require us to change our policies, procedures and technology for information security, which could, among other things, make us more vulnerable to cyber attacks and misappropriation, corruption or loss of information or technology.

We have entered into new consumer-oriented deposit-taking and lending businesses, and we currently expect to expand the product and geographic scope of our offerings. Entering into such new businesses, as with any new business, subjects us to numerous additional regulations in the jurisdictions in which these businesses operate. Not only are these regulations extensive, but they involve types of regulations and supervision, as well as regulatory compliance risks, that we have not previously encountered. The level of regulatory scrutiny and the scope of regulations affecting financial interactions with consumers is often much greater than that associated with doing business with institutions and high-net-worth individuals. Complying with such new regulations is time-consuming, costly and presents new and increased risks.

We have expanded our consumer-oriented activities, including by accepting deposits directly from U.S. consumers and making personal loans directly to U.S. consumers, in each case, through our digital platform. As a result of this platform, we are subject to enhanced legal and regulatory requirements, in particular, consumer protection laws and regulation, including regulation relating to Truth in Savings, Electronic Funds Transfer, Expedited Funds Availability, the Electronic Signatures in Global and National Commerce Act, Truth in Lending, the Servicemembers Civil Relief Act and unfair and deceptive acts and practices. We have expanded our existing risk management platform and controls and are continuing to enhance, as appropriate, our existing regulatory and legal compliance programs, policies, procedures and processes to cover the activities, products and customers associated with our consumer-oriented activities. Any failure to implement or maintain these enhancements or to comply with these laws and regulations could expose us to liability and/or reputational damage.

Increasingly, regulators and courts have sought to hold financial institutions liable for the misconduct of their clients where such regulators and courts have determined that the financial institution should have detected that the client was engaged in wrongdoing, even though the financial institution had no direct knowledge of the activities engaged in by its client. Regulators and courts continue to seek to establish "fiduciary" obligations to counterparties to which no such duty had been assumed to exist. To the extent that such efforts are successful, the cost of, and liabilities associated with, engaging in market making and other similar activities could increase significantly. Any such wrongdoing by our clients could have materially negative legal, regulatory and reputational consequences.

For information about the extensive regulation to which our business is subject, see "Business — Regulation" in Part I of this Annual Report.

We are a wholly-owned subsidiary of Group Inc. and are dependent on Group Inc. and certain of our affiliates for client business, various services and capital.

We are a wholly-owned subsidiary of Group Inc. As a wholly-owned subsidiary, we rely on various business relationships of Group Inc. and our affiliates generally, including the ability to receive various services, as well as, in part, the capital and liquidity of our parent, Group Inc., as well as the liquidity of Funding IHC. Although we have taken steps to reduce our reliance on our affiliates, we remain an operating subsidiary of a larger organization and therefore our interconnectedness within the organization will continue. Because our business relies upon Group Inc. and our affiliates to a significant extent, risks that could affect these entities could also have a significant impact on us.

We are the primary lender of GS Group, and many of the individuals and corporations to which we lend become our clients based on their other relationships with our affiliates. Similarly, clients of our affiliates, as well as the affiliates themselves, often serve as our counterparties to derivative transactions.

Furthermore, we rely upon certain of our affiliates for various support services, including, but not limited to, trade execution, relationship management, loan origination, settlement and clearing, loan servicing, risk management and other administrative services. Such services are provided to us pursuant to the Master Services Agreement, which is generally terminable upon mutual agreement of Group Inc. and its subsidiaries, subject to certain exceptions, including material breach of the agreement. For example, Group Inc. provides foreign exchange services to us. If Group Inc. were to cease to provide such services, we would be required to seek alternative sources, which could be difficult to obtain on the same terms or result in increased foreign exchange rates paid by us.

As a consequence of the foregoing, in the event our relationships with our affiliates are not maintained, for any reason, including as a result of possible strategic decisions that Group Inc. may make from time-to-time or as a result of material adverse changes in Group Inc.'s performance, our interest and non-interest revenues may decline, the cost of operating and funding our business may increase and our business, financial condition and earnings may be materially and adversely affected.

As of December 2018, 32% of our total deposits consisted of deposits from private bank clients of GS&Co. If clients terminate their relationships with GS&Co. or such relationships become impaired, we may lose the funding benefits of such relationships as well. Furthermore, we receive a portion of our funding in the form of unsecured funding from Group Inc. and from Funding IHC, and collateralized financings from other affiliates. To the extent such funding is not available to us, our growth could be constrained and/or our cost of funding could increase.

A failure by Group Inc. to guarantee certain of our obligations could adversely affect our financial condition.

Group Inc. has guaranteed our payment obligations, other than nonrecourse payment obligations and payment obligations arising in connection with CDs issued by us (unless the applicable governing documents of the CD expressly state otherwise). Certain of our other debtholders may waive and not be entitled to the benefit of this guarantee. If Group Inc. terminates the guarantee, we may have difficulty entering into future contractual arrangements with other counterparties who may request or require such guarantees.

Our business has been and may be adversely affected by declining asset values. This is particularly true for those activities in which we have net "long" positions or receive or post collateral.

We have net "long" positions in loans, derivatives, mortgages and other asset classes, including U.S. government and agency obligations, and may in the future take net long positions in other asset classes. These include positions we take when we commit capital to our clients as part of our lending activities or when we act as a principal to facilitate the activities of our clients or counterparties (including our affiliates) through our market-making activities relating to interest rate and currency derivatives and other derivatives and related products. Because our market-making positions are marked-to-market on a daily basis, declines in asset values directly and immediately impact our earnings, unless we have effectively "hedged" our exposures to such declines.

See "Management's Discussion and Analysis of Financial Condition and Results of Operations — Critical Accounting Policies" in Part II of this Annual Report and Notes 5 through 8 to the consolidated financial statements in Part III of this Annual Report for further information about fair value measurements.

In certain circumstances (particularly in the case of credit products, including leveraged loans or other securities that are not freely tradable or lack established and liquid trading markets), it may not be possible or economic to hedge such exposures and to the extent that we do so the hedge may be ineffective or may greatly reduce our ability to profit from increases in the values of the assets. Sudden declines and significant volatility in the prices of assets may substantially curtail or eliminate the trading markets for certain assets, which may make it difficult to sell, hedge or value such assets. The inability to sell or effectively hedge assets reduces our ability to limit losses in such positions and the difficulty in valuing assets may negatively affect our capital, liquidity or leverage ratios, increase our funding costs and generally require us to maintain additional capital.

We post collateral to support our obligations and receive collateral to support the obligations of our clients and counterparties in connection with market making. When the value of the assets posted as collateral or the credit ratings of the party posting collateral decline, the party posting the collateral may need to provide additional collateral or, if possible, reduce its position. Therefore, declines in the value of asset classes used as collateral mean that either the cost of funding positions is increased or the size of positions is decreased.

If we are the party providing collateral, this can increase our costs and reduce our profitability and if we are the party receiving collateral, this can also reduce our profitability by reducing the level of business done with our clients and counterparties. In our capacity as an agency lender, we indemnify all of our securities lending customers against losses incurred in the event that borrowers do not return securities and the collateral held is insufficient to cover the market value of the securities borrowed, and, therefore, declines in the value of collateral can subject us to additional costs. In addition, volatile or less liquid markets increase the difficulty of valuing assets, which can lead to costly and time-consuming disputes over asset values and the level of required collateral, as well as increased credit risk to the recipient of the collateral due to delays in receiving adequate collateral.

In cases where we foreclose on collateral, sudden declines in the value or liquidity of such collateral may, despite credit monitoring, over-collateralization, the ability to call for additional collateral or the ability to force repayment of the underlying obligation, result in significant losses to us, especially where there is a single type of collateral supporting the obligation.

Our market-making activities have been and may be affected by changes in the levels of market volatility.

Certain of our market-making activities depend on market volatility to provide trading and arbitrage opportunities to our clients, and decreases in volatility have reduced and may in the future reduce these opportunities and the level of client activity associated with them and adversely affect the results of these activities, which could adversely impact our revenues. On the other hand, increased volatility, while it can increase trading volumes and spreads, also increases risk as measured by Value-at-Risk (VaR) and may expose us to increased risks in connection with our market-making activities or cause us to reduce our market-making inventory in order to avoid increasing our VaR. Limiting the size of our market-making positions can adversely affect our profitability.

In periods when volatility is increasing, but asset values are declining significantly, it may not be possible to sell assets at all or it may only be possible to do so at steep discounts. In such circumstances we may be forced to either take on additional risk or to realize losses in order to decrease our VaR. In addition, increases in volatility increase the level of our RWAs, which increases our capital requirements.

Our business, profitability and liquidity may be adversely affected by deterioration in the credit quality of, or defaults by, third parties who owe us money, securities or other assets or whose securities or obligations we hold.

A number of our products expose us to credit risk, including loans, lending commitments and derivatives. We are exposed to the risk that third parties that owe us money, securities or other assets will not perform on their obligations. These parties may default on their obligations to us due to bankruptcy, lack of liquidity, operational failure or other reasons. A failure of a significant market participant, or even concerns about a default by such an institution, could lead to significant liquidity problems, losses or defaults by other institutions, which in turn could adversely affect us.

We are also subject to the risk that our rights against third parties may not be enforceable in all circumstances. In addition, deterioration in the credit quality of third parties whose securities or obligations we hold, including a deterioration in the value of collateral posted by third parties to secure their obligations to us under derivative contracts and loan agreements, could result in losses and/or adversely affect our ability to rehypothecate or otherwise use those securities or obligations for liquidity purposes.

A significant downgrade in the credit ratings of our counterparties could also have a negative impact on our results. While in many cases we are permitted to require additional collateral from counterparties that experience financial difficulty, disputes may arise as to the amount of collateral we are entitled to receive and the value of pledged assets. The termination of contracts and the foreclosure on collateral may subject us to claims for the improper exercise of our rights, including that the foreclosure was not permitted under the legal documents, was conducted in an improper manner or caused a client or counterparty to go out of business. Default rates, downgrades and disputes with counterparties as to the valuation of collateral increase significantly in times of market stress, increased volatility and illiquidity.

We rely on information furnished by or on behalf of clients and counterparties in deciding whether to extend credit or enter into other transactions. This information could include financial statements, credit reports and other financial information. We also rely on representations of those clients, counterparties or other third parties, such as independent auditors, as to the accuracy and completeness of that information. Reliance on inaccurate or misleading financial statements, credit reports or other financial information could have a material adverse impact on our business, financial condition and results of operations.

Although we regularly review credit exposures to specific clients and counterparties and to specific industries, countries and regions that we believe may present credit concerns, default risk may arise from events or circumstances that are difficult to detect or foresee.

Concentration of risk increases the potential for significant losses in our lending, market-making and other activities.

Concentration of risk increases the potential for significant losses in our lending, market-making and other activities. The number and size of such transactions may affect our results of operations in a given period. In particular, we extend large commitments as part of our lending activities. Because of concentration of risk, we may suffer losses even when economic and market conditions are generally favorable for our competitors. Disruptions in the credit markets can make it difficult to hedge these credit exposures effectively or economically.

Rules adopted under the Dodd-Frank Act, and similar rules adopted in other jurisdictions, require issuers of certain asset-backed securities and any person who organizes and initiates certain asset-backed securities transactions to retain economic exposure to the asset, which has affected the cost of and structures used in connection with these securitization activities. See “Business — Regulation — Securitizations” in Part I of this Annual Report and Note 11 to the consolidated financial statements in Part III of this Annual Report for further information about our securitization activities.

Our inability to reduce our credit risk by selling, syndicating or securitizing these positions, including during periods of market stress, could negatively affect our results of operations due to a decrease in the fair value of the positions, including due to the insolvency or bankruptcy of the borrower, as well as the loss of revenues associated with selling such securities or loans.

In the ordinary course of business, we may be subject to a concentration of credit risk to a particular counterparty, borrower, issuer, including sovereign issuers, clearing house or exchange, geographic area or group of related countries, such as the E.U., or industry. A failure or downgrade of, or default by, an entity to which we have a concentration of credit risk could negatively impact our business, perhaps materially, and the systems by which we set limits and monitor the level of our credit exposure to individual entities, industries and countries may not function as we have anticipated.

Regulatory reform, including the Dodd-Frank Act, has led to increased centralization of trading activity through particular clearing houses, central agents or exchanges, which has significantly increased our concentration of risk with respect to these entities. While our activities expose us to many different industries, counterparties and countries, we routinely execute a high volume of transactions with counterparties engaged in financial services activities, including asset managers, investment funds, commercial banks, brokers and dealers, clearing houses and exchanges. This has resulted in significant credit concentration with respect to these counterparties. See “Management’s Discussion and Analysis of Financial Condition and Results of Operations — Risk Management — Credit Risk Management — Credit Exposure by Industry, Region and Credit Quality” in Part II of this Annual Report and Note 22 to the consolidated financial statements in Part III of this Annual Report for further information about our credit concentration and exposure.

Changes in market interest rates could adversely affect our revenues and expenses, the value of assets and obligations, and the availability and cost of funding.

As a result of our lending and deposit-taking activities, we have exposure to market interest rate movements. In addition to the impact on the general economy, changes in interest rates could directly impact us in one or more of the following ways:

- The yield on interest-earning assets, primarily on our loan portfolio, and rates paid on interest-bearing liabilities, primarily our deposit-taking activities, may change in disproportionate ways;
- The value of certain balance sheet and off-balance-sheet financial instruments that we hold could decline; or
- The cost of funding from affiliates or third parties may increase and the ability to raise funding could become more difficult.

Our profitability depends to a significant extent on our net interest income, which is the difference between the interest income we earn on our interest-earning assets, such as loans and securities, and our interest expense on interest-bearing liabilities, such as deposits and borrowed funds. Accordingly, our results of operations depend to a significant extent on movements in market interest rates and our ability to manage our interest-rate-sensitive assets and liabilities in response to these movements. Factors such as inflation, recession and instability in financial markets, among other factors beyond our control, may affect interest rates.

Any substantial, unexpected, prolonged change in market interest rates could have a material adverse effect on our financial condition, liquidity and results of operations. Changes in the level of interest rates also may negatively affect our ability to originate loans, the value of our assets and our ability to realize gains from the sale of our assets, all of which ultimately affect our earnings.

We might underestimate the credit losses inherent in our loan portfolio and have credit losses in excess of the amount reserved.

The credit quality of our loan portfolio can have a significant impact on its earnings. We estimate and establish reserves for credit risks and credit losses inherent in our credit exposure (including unfunded lending commitments). This process requires difficult, subjective and complex judgments of loan collectability. As is the case with any such assessments, there is always the chance that we will fail to identify the proper factors or that we will fail to accurately estimate the impacts of factors that we do identify.

We might underestimate the credit losses inherent in our loan portfolio and have credit losses in excess of the amount reserved. While management uses the best information available to determine this estimate, we may make future adjustments to the allowance based on, among other things, changes in the economic environment or variances between actual results and the original assumptions used.

We may incur losses as a result of ineffective risk management processes and strategies.

We seek to monitor and control our risk exposure through a risk and control framework encompassing a variety of separate but complementary financial, credit, operational, compliance and legal reporting systems, internal controls, management review processes and other mechanisms that cover risks associated with our own activities, as well as activities conducted through third-party relationships. In doing so, we use and benefit from the risk management processes of GS Group. Our risk management process seeks to balance our ability to profit from lending, market-making or other positions with our exposure to potential losses. While we employ a broad and diversified set of risk monitoring and risk mitigation techniques, those techniques and the judgments that accompany their application cannot anticipate every economic and financial outcome or the specifics and timing of such outcomes. Thus, we may, in the course of our activities, incur losses. Market conditions in recent years have involved unprecedented dislocations and highlight the limitations inherent in using historical data to manage risk.

The models that we use to assess and control our risk exposures reflect assumptions about the degrees of correlation or lack thereof among prices of various asset classes or other market indicators. In times of market stress or other unforeseen circumstances, such as those that occurred during 2008 and early 2009, and to some extent since 2011, previously uncorrelated indicators may become correlated, or conversely previously correlated indicators may move in different directions. These types of market movements have at times limited the effectiveness of our hedging strategies and have caused us to incur significant losses, and they may do so in the future.

These changes in correlation can be exacerbated where other market participants are using models with assumptions or algorithms that are similar to ours. In these and other cases, it may be difficult to reduce our risk positions due to the activity of other market participants or widespread market dislocations, including circumstances where asset values are declining significantly or no market exists for certain assets.

In addition, the use of models in connection with risk management and numerous other critical activities presents risks that such models may be ineffective, either because of poor design or ineffective testing, improper or flawed inputs, as well as unpermitted access to such models resulting in unapproved or malicious changes to the model or its inputs.

To the extent that we have positions through our lending, market-making or other activities that do not have an established liquid trading market or are otherwise subject to restrictions on sale or hedging, we may not be able to reduce our positions and therefore reduce our risk associated with such positions.

Prudent risk management, as well as regulatory restrictions, may cause us to limit our exposure to counterparties, geographic areas or markets, which may limit our business opportunities and increase the cost of our funding or hedging activities.

As we have expanded and intend to continue to expand the product and geographic scope of our offerings of credit products to consumers, we are presented with different credit risks and must expand and adapt our credit risk monitoring and mitigation activities to account for these new business activities. A failure to adequately assess and control such risk exposures could result in losses to us.

For further information about our risk management structure and processes, see "Management's Discussion and Analysis of Financial Condition and Results of Operations — Risk Management — Overview and Structure of Risk Management" in Part II of this Annual Report.

Loss of deposits could increase our funding costs and adversely affect our liquidity and ability to grow our business.

We rely primarily on deposits to be a low cost and stable source of funding for the loans we make and the financial transactions in which we engage. We accept savings, demand and time deposits from institutions, corporations, affiliates, clients of third-party broker-dealers, private bank clients and U.S. consumers. Certain deposit accounts do not have significant restrictions on withdrawal, and depositors can generally withdraw some or all of the funds in their accounts with little or no notice.

Furthermore, we compete with banks and other financial services companies for deposits. Competitors may raise the rates they pay on deposits and we may be required to raise our rates to avoid losing deposits.

If we experience significant withdrawals, for any reason, our funding costs may increase as we may be required to rely on more expensive sources of funding. If we are required to fund our operations at a higher cost, these conditions may require us to curtail our activities, which also could reduce our profitability.

All of our deposits held under external deposit sweep program agreements are placed through third-party brokers. As of December 2018, those programs accounted for approximately 12% of our total deposits. These brokers may not unilaterally terminate the currently-existing sweep agreements; however, they could determine not to engage in additional sweep agreements with us in the future. The termination of these broker relationships could result in a significant decrease in deposits and adversely affect our liquidity if we cannot extend such agreements with third-party brokers.

The FDIA prohibits an insured bank from accepting brokered deposits or offering interest rates on any deposits significantly higher than the prevailing rate in the bank's normal market area or nationally (depending upon where the deposits are solicited), unless it is "well-capitalized" for prompt corrective action purposes or it is "adequately capitalized" and receives a waiver from the FDIC. A bank that is "adequately capitalized" and accepts brokered deposits under a waiver from the FDIC may not pay an interest rate on any deposit in excess of 75 basis points over certain prevailing market rates. There are no such restrictions under the FDIA on a bank that is "well-capitalized."

However, there can be no assurance that we will continue to meet all applicable requirements. In the event that we do not continue to meet those requirements in the future, we may be prohibited from accepting brokered deposits, including brokered CDs, pursuant to our deposit sweep agreements. Restrictions or limitations on our ability to accept brokered deposits for any reason (including regulatory limitations on the amount of brokered deposits in total or as a percentage of total assets) in the future could materially and adversely impact our funding costs and liquidity because a substantial portion of our deposits are "brokered deposits" for prompt corrective action purposes.

Any limitation on the interest rates we can pay on deposits could competitively disadvantage us in attracting and retaining deposits and have a material adverse effect on our business.

Our business has been and may be adversely affected by disruptions in the credit markets, including reduced access to credit and higher costs of obtaining credit.

Widening credit spreads for us or Group Inc., as well as significant declines in the availability of credit, may adversely affect our ability to borrow. We obtain a portion of our funding directly or indirectly from Group Inc., which funds itself on an unsecured basis by issuing debt and a variety of financial instruments. We also seek to finance certain of our assets on a secured basis. Any disruptions in the credit markets may make it harder and more expensive for us to obtain secured funding, whether from third parties or affiliates.

If our available funding is limited or we are forced to fund our operations at a higher cost, these conditions may require us to curtail our activities and increase our cost of funding, both of which could reduce our profitability, particularly with respect to our activities that involve lending and market making.

We may also syndicate credit transactions to other financial institutions. Market volatility, a lack of available credit or an increased cost of credit can negatively impact our ability to syndicate financing, and, as a result, can adversely affect our business.

Our liquidity, profitability and business may be adversely affected by an inability to obtain funding or to sell assets or by a reduction in our or Group Inc.'s credit ratings or by an increase in our or Group Inc.'s credit spreads.

Liquidity is essential to our business. It is of critical importance to us, as most of the failures of financial institutions have occurred in large part due to insufficient liquidity. Our liquidity may be impaired by an inability to obtain or maintain sufficient funding — whether through deposits or funding from our affiliates, access to the debt capital markets, sales of assets or access to Federal Home Loan Bank of New York advances — or by unforeseen outflows of cash or collateral.

Any such constraints on liquidity may arise due to circumstances that we may be unable to control, such as a general market disruption or an operational problem that affects third parties or us, or GS Group more broadly, or even by the perception among market participants that we, or other market participants, are experiencing greater liquidity risk.

We employ structured products to benefit our clients and hedge our own risks and risks incurred by our affiliates. The financial instruments that we hold and the contracts to which we are a party are often complex, and these complex structured products often do not have readily available markets to access in times of liquidity stress. In addition, our lending activities may lead to situations where the holdings from these activities represent a significant portion of specific markets, which could restrict liquidity for our positions.

Further, our ability to sell assets may be impaired if there is not generally a liquid market for such assets, as well as in circumstances where other market participants are seeking to sell similar otherwise generally liquid assets at the same time, as is likely to occur in a liquidity or other market crisis or in response to changes to rules or regulations. In addition, financial institutions with which we interact may exercise set-off rights or the right to require additional collateral, including in difficult market conditions, which could further impair our liquidity.

Our credit ratings, as well as the credit ratings of Group Inc. (as described further below), are important to our liquidity. A reduction in our or Group Inc.'s credit ratings could adversely affect our liquidity and competitive position, increase our borrowing costs (including borrowing from our affiliates), limit our access to the capital markets or trigger our obligations under certain provisions in some of our derivatives or collateralized financing contracts. Under these provisions, counterparties could be permitted to terminate contracts with us or require us to post additional collateral or make termination payments.

Termination of our derivatives and collateralized financing contracts could cause us to sustain losses and impair our liquidity by requiring us to find other sources of financing or to make significant cash payments or securities movements.

A downgrade by any one rating agency, depending on the agency's relative ratings of us or Group Inc. at the time of the downgrade, may have an impact which is comparable to the impact of a downgrade by all rating agencies. For further information about our credit ratings, see "Management's Discussion and Analysis of Financial Condition and Results of Operations — Risk Management — Liquidity Risk Management — Credit Ratings" in Part II of this Annual Report.

As noted above, Group Inc.'s credit ratings also are important to our liquidity. Group Inc. generally guarantees our payment obligations, subject to certain limitations. Group Inc. generally raises the majority of non-deposit unsecured funding of GS Group and then lends to Funding IHC and other subsidiaries, including us, to meet subsidiaries' funding needs. Any increase in Group Inc.'s borrowing costs may require us to seek alternative sources of funding, which could result in an increase in borrowing costs for us.

Our cost of obtaining long-term unsecured funding is directly related to our credit spreads (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 respective debt investors). Increases in our credit spreads can significantly increase the cost of this funding. Changes in credit spreads are continuous, market-driven, and subject at times to unpredictable and highly volatile movements. Our credit spreads are also influenced by market perceptions of our creditworthiness. In addition, our credit spreads may be influenced by movements in the costs to purchasers of credit default swaps referenced to our long-term debt. The market for credit default swaps has proven to be extremely volatile and at times has lacked a high degree of transparency or liquidity. Increases in Group Inc.'s credit spreads and negative market perceptions of Group Inc.'s creditworthiness could also impact our ability to obtain long-term unsecured funding, and Group Inc.'s inability to obtain long-term unsecured funding could negatively impact our operations.

Regulatory changes relating to liquidity may also negatively impact our results of operations and competitive position. Recently, numerous regulations have been adopted or proposed to introduce more stringent liquidity requirements for large financial institutions, such as us or Group Inc. These regulations address, among other matters, liquidity stress testing, minimum liquidity requirements, wholesale funding, limitations on the issuance of short-term debt and structured notes and prohibitions on parent guarantees that are subject to certain cross-defaults. New and prospective liquidity-related regulations may overlap with, and be impacted by, other regulatory changes, which could result in unintended cumulative effects, and their full impact will remain uncertain as long as regulatory reforms continue to be adopted and market practices continue to develop in response to such reforms.

A failure to appropriately identify and address potential conflicts of interest could adversely affect our business.

Due to the broad scope of GS Group's businesses and client base, we regularly address potential conflicts of interest within the organization, including situations where our products or services to a particular client or GS Group's investments or other interests conflict, or are perceived to conflict, with the interests of another client, as well as situations where one or more of GS Group's businesses have access to material non-public information that may not be shared within GS Group and situations where we may be a creditor of an entity with which we or one of our affiliates also has an advisory or other relationship.

In addition, in certain areas we or one or more of our affiliates may act as a fiduciary which could give rise to a conflict if we also act as a principal in the same business.

We have extensive procedures and controls that are designed to identify and address conflicts of interest, including those designed to prevent the improper sharing of information among us and our affiliates. However, appropriately identifying and dealing with conflicts of interest is complex and difficult, particularly as we expand our activities, and our reputation, which is one of our most important assets, could be damaged and the willingness of clients to enter into transactions with us may be affected if we or our affiliates fail, or appear to fail, to identify, disclose and deal appropriately with conflicts of interest. In addition, potential or perceived conflicts could give rise to litigation or regulatory enforcement actions.

A failure in our or our affiliates' operational systems or infrastructure, or those of third parties, as well as human error or malfeasance, could impair our liquidity, disrupt our business, result in the disclosure of confidential information, damage our reputation and cause losses.

Our business is highly dependent on our ability to process and monitor, on a daily basis, a very large number of transactions, many of which are highly complex and occur at high volumes and frequencies, across numerous and diverse markets in many currencies. These transactions, as well as the information technology services we provide to clients, often must adhere to client-specific guidelines, as well as legal and regulatory standards.

Many rules and regulations govern our obligations to execute transactions and report such transactions and other information to regulators and exchanges. Compliance with these legal and reporting requirements can be challenging, and GS Group has been, and may in the future be, subject to regulatory fines and penalties for failing to follow these rules or to report timely, accurate and complete information in accordance with such rules. As such requirements expand, compliance with these rules and regulations has become more challenging.

As our client base, including through our consumer businesses, expands, and the volume, speed, frequency and complexity of transactions, especially electronic transactions (as well as the requirements to report such transactions on a real-time basis to clients, regulators and exchanges) increase, developing and maintaining our operational systems and infrastructure becomes more challenging, and the risk of systems or human error in connection with such transactions increases, as well as the potential consequences of such errors due to the speed and volume of transactions involved and the potential difficulty associated with discovering such errors quickly enough to limit the resulting consequences.

Our financial, accounting, data processing or other operational systems and facilities, or operational systems or facilities of affiliates on which we depend, may fail to operate properly or become disabled as a result of events that are wholly or partially beyond our control, such as a spike in transaction volume, adversely affecting our ability to process these transactions or provide these services. These systems must be continuously updated to support our operations and growth and to respond to changes in regulations and markets.

We and our affiliates invest heavily in systemic controls and training to ensure that such transactions do not violate applicable rules and regulations or, due to errors in processing such transactions, adversely affect markets, our clients and counterparties or us.

Enhancements and updates to systems, as well as the requisite training, including in connection with the integration of new businesses, entail significant costs and create risks associated with implementing new systems and integrating them with existing ones.

The use of computing devices and phones is critical to the work done by our employees and the operation of our systems and businesses and those of our clients and our third-party service providers and vendors. Fundamental security flaws in computer chips found in many types of these computing devices and phones have been reported in the past and may be discovered in the future. Addressing this and similar issues could be costly and affect the performance of these computing devices and phones, and operational risks may be incurred in implementing fixes and even after the fix is implemented, there may still be residual security risks.

Additionally, although the prevalence and scope of applications of distributed ledger technology and similar technologies is growing, the technology is also nascent and may be vulnerable to cyber attacks or have other inherent weaknesses that may or may not have been identified, such as the risk that underlying encryption measures may be defeated. We may be, or may become, exposed to technological, legal, regulatory, third-party and other risks related to distributed ledger technology through GS Group’s facilitation of clients’ activities involving financial products linked to distributed ledger technology, such as blockchain or cryptocurrencies, and the use of distributed ledger technology in GS Group’s systems, as well as by third-party vendors, clients, counterparties, clearing houses and other financial intermediaries.

Notwithstanding the proliferation of technology and technology-based risk and control systems, our business ultimately relies on people as our greatest resource, and, from time-to-time, they make mistakes or engage in violations of applicable policies, laws, rules or procedures that are not always caught immediately by our technological processes or by our controls and other procedures, which are intended to prevent and detect such errors or violations. These can include calculation errors, mistakes in addressing emails, errors in software or model development or implementation, or simple errors in judgment, as well as intentional efforts to ignore or circumvent applicable policies, laws, rules or procedures. Human errors and malfeasance, even if promptly discovered and remediated, can result in material losses and liabilities for us.

In addition, we face the risk of operational failure or significant operational delay, termination or capacity constraints of any of the clearing agents, exchanges, clearing houses or other financial intermediaries we use to facilitate our derivatives transactions, and as our interconnectivity with our clients grows, we increasingly face the risk of operational failure or significant operational delay with respect to our clients’ systems.

In recent years, there has been significant consolidation among clearing agents, exchanges and clearing houses and an increasing number of derivative transactions are now, or in the near future will be, cleared on exchanges, which has increased our exposure to operational failure or significant operational delay, termination or capacity constraints of the particular financial intermediaries that we use and could affect our ability to find adequate and cost-effective alternatives in the event of any such failure, delay, termination or constraint. Industry consolidation, whether among market participants or financial intermediaries, increases the risk of operational failure or significant operational delay as disparate complex systems need to be integrated, often on an accelerated basis.

Furthermore, the interconnectivity of multiple financial institutions with central agents, exchanges and clearing houses, and the increased centrality of these entities, increases the risk that an operational failure at one institution or entity may cause an industry-wide operational failure that could materially impact our ability to conduct business. Any such failure, termination or constraint could adversely affect our ability to effect transactions, service our clients, manage our exposure to risk or expand our business or result in financial loss or liability to our clients, impairment of our liquidity, disruption of our business, regulatory intervention or reputational damage.

We also rely on third-party vendors and are ultimately responsible for activities conducted by any third-party service provider and adverse regulatory consequences. Although we take actions to manage the risks associated with activities conducted through third-party relationships, any problems caused by a third-party service provider could adversely affect our ability to deliver products and services to our customers and to conduct our business.

Despite the resiliency plans and facilities we have in place, our ability to conduct business may be adversely impacted by a disruption in the infrastructure that supports our business and the communities in which it is located. This may include a disruption involving electrical, satellite, undersea cable or other communications, internet, transportation or other services facilities used by us, our employees or third parties with which we conduct business, including cloud service providers. These disruptions may occur as a result of events that affect only GS Group's buildings or systems or those of such third parties, or as a result of events with a broader impact globally, regionally or in the cities where those buildings or systems are located, including, but not limited to, natural disasters, war, civil unrest, terrorism, economic or political developments, pandemics and weather events.

In addition, although we seek to diversify our third-party vendors to increase our resiliency, we are also exposed to the risk that a disruption or other information technology event at a common service provider to our vendors could impede their ability to provide products or services to us. We may not be able to effectively monitor or mitigate operational risks relating to our vendors' use of common service providers.

Many of our and other GS Group employees work in close proximity to one another in GS Group's facilities in New York and New Jersey. Notwithstanding our and GS Group's efforts to maintain business continuity, given that GS Group's headquarters and many of its employees are in the New York metropolitan area, and GS Group's two principal office buildings in the New York area both are located on the waterfront of the Hudson River, depending on the intensity and longevity of the event, a catastrophic event impacting the New York metropolitan area offices, including a terrorist attack, extreme weather event or other hostile or catastrophic event, could negatively affect our business. If a disruption occurs in one location and our employees in that location are unable to occupy the offices or communicate with or travel to other locations, our ability to service and interact with our clients may suffer, and we may not be able to successfully implement contingency plans that depend on communication or travel.

A failure to protect our computer systems, networks and information, and our clients' information, against cyber attacks and similar threats could impair our ability to conduct our business, result in the disclosure, theft or destruction of confidential information, damage our reputation and cause losses.

Our operations rely on the secure processing, storage and transmission of confidential and other information in GS Group's computer systems and networks, and our technology risk function uses and benefits from the processes and resources of the GS Group technology risk function. There have been a number of highly publicized cases involving financial services companies, consumer-based companies, governmental agencies and other organizations reporting the unauthorized disclosure of client, customer or other confidential information in recent years, as well as cyber attacks involving the dissemination, theft and destruction of corporate information or other assets, as a result of failure to follow procedures by employees or contractors or as a result of actions by third parties, including actions by foreign governments. There have also been several highly publicized cases where hackers have requested "ransom" payments in exchange for not disclosing customer information or for restoring access to information or systems.

We and our affiliates are regularly the targets of attempted cyber attacks, including denial-of-service attacks, and must continuously monitor and develop systems to protect technology infrastructure and data from misappropriation or corruption. We and our affiliates may face an increasing number of attempted cyber attacks as we and our affiliates expand our mobile- and other internet-based products and services, as well as usage of mobile and cloud technologies and as we provide more of these services to a greater number of consumers. The increasing migration of our communication and other platforms from Bank-provided devices to employee-owned devices presents additional risks of cyber attacks. In addition, due to our interconnectivity with other GS Group entities, third-party vendors (and their respective service providers), central agents, exchanges, clearing houses and other financial institutions, we could be adversely impacted if any of them is subject to a successful cyber attack or other information security event. These effects could include the loss of access to information or services from the third party subject to the cyber attack or other information security event, which could, in turn, interrupt our business.

Despite efforts to ensure the integrity of our systems and information, we and our affiliates may not be able to anticipate, detect or implement effective preventive measures against all cyber threats, especially because the techniques used are increasingly sophisticated, change frequently and are often not recognized until launched. Cyber attacks can originate from a variety of sources, including third parties who are affiliated with or sponsored by foreign governments or are involved with organized crime or terrorist organizations. Third parties may also attempt to place individuals within GS Group or induce employees, clients or other users of GS Group's systems to disclose sensitive information or provide access to GS Group's data or that of GS Group's clients, and these types of risks may be difficult to detect or prevent.

Although we and GS Group take protective measures and endeavor to modify them as circumstances warrant, our and GS Group's computer systems, software and networks may be vulnerable to unauthorized access, misuse, computer viruses or other malicious code, cyber attacks on our vendors and other events that could have a security impact. Due to the complexity and interconnectedness of GS Group's systems, the process of enhancing GS Group's protective measures can itself create a risk of systems disruptions and security issues.

If one or more of such events occur, this potentially could jeopardize GS Group's or its clients' or counterparties' confidential and other information processed and stored in, and transmitted through, its computer systems and networks, or otherwise cause interruptions or malfunctions in GS Group's, its clients', its counterparties' or third parties' operations, which could impact their ability to transact with us or otherwise result in legal or regulatory action, significant losses or reputational damage. In addition, such an event could persist for an extended period of time before being detected, and, following detection, it could take considerable time for us to obtain full and reliable information about the extent, amount and type of information compromised. During the course of an investigation, we may not know the full impact of the event and how to remediate it, and actions, decisions and mistakes that are taken or made may further increase the negative effects of the event on our business, results of operations and reputation.

The increased use of mobile and cloud technologies can heighten these and other operational risks. GS Group expects to expend significant additional resources on an ongoing basis to modify its protective measures and to investigate and remediate vulnerabilities or other exposures, but these measures may be ineffective and GS Group, including us, may be subject to legal or regulatory action, and financial losses that are either not insured against or not fully covered through any insurance that it maintains. Certain aspects of the security of such technologies are unpredictable or beyond GS Group's control, and the failure by mobile technology and cloud service providers to adequately safeguard their systems and prevent cyber attacks could disrupt GS Group's operations and result in misappropriation, corruption or loss of confidential and other information.

In addition, there is a risk that encryption and other protective measures, despite their sophistication, may be defeated, particularly to the extent that new computing technologies vastly increase the speed and computing power available.

In addition, the issue of cyber security has been the subject of heightened regulatory scrutiny. On March 1, 2017, a robust cyber security regulation promulgated by the NYDFS became effective. The new rule requires covered entities, including us, to, among other things, implement and maintain written cyber security policies and procedures covering a wide range of areas, including ensuring the security of sensitive data or systems accessible to third-party service providers, and provide notice to the NYDFS of certain material cyber security incidents.

We routinely transmit and receive personal, confidential and proprietary information by email and other electronic means. GS Group has discussed and worked with clients, vendors, service providers, counterparties and other third parties to develop secure transmission capabilities and protect against cyber attacks, but it does not have, and may be unable to put in place, secure capabilities with all of its clients, vendors, service providers, counterparties and other third parties and GS Group may not be able to ensure that these third parties have appropriate controls in place to protect the confidentiality of the information. An interception, misuse or mishandling of personal, confidential or proprietary information being sent to or received from a client, vendor, service provider, counterparty or other third party could result in legal liability, regulatory action and reputational harm.

The application of regulatory strategies and requirements to facilitate the orderly resolution of large financial institutions could negatively affect us and create risk of loss for our security holders.

As described further in “Business — Regulation — Insolvency of an Insured Depository Institution” above, if the FDIC is appointed as receiver under the FDIA, the rights of our creditors would be determined under the FDIA, and the claims of our creditors (other than our depositors) generally will be subordinated in right of payment to the claims of deposit holders.

In addition, rules adopted by the FRB and the FDIC under the Dodd-Frank Act require us, as well as Group Inc., to submit periodic resolution plans. If the FDIC finds our resolution plan not credible, the FDIC will notify us in writing, and we then have 90 days to submit a revised resolution plan that corrects the deficiencies identified by the FDIC.

If the FRB and the FDIC find that Group Inc.’s resolution plan is not credible or would not facilitate an orderly resolution under the U.S. Bankruptcy Code, they may jointly require Group Inc. to hold more capital, change its business structure or dispose of businesses, any of which could have a negative impact on our financial condition, results of operations or competitive position.

The financial services industry is both highly competitive and interrelated.

The financial services industry and our activities are intensely competitive, and we expect them to remain so. We compete on the basis of a number of factors, including our products and services, innovation, reputation, creditworthiness and price. To the extent we expand our activities, we will face competitors with more experience and more established relationships with clients, regulators and industry participants in the relevant market, which could adversely affect our ability to expand.

Governments and regulators have recently adopted regulations, imposed taxes, adopted compensation restrictions or otherwise put forward various proposals that have or may impact our ability to conduct certain of our activities in a cost-effective manner or at all in certain or all jurisdictions, including proposals relating to restrictions on the type of activities in which financial institutions are permitted to engage. These or other similar rules, many of which do not apply to all of our U.S. or non-U.S. competitors, could impact our ability to compete effectively.

Pricing and other competitive pressures in our business have continued to increase, particularly in situations where some of our competitors may seek to increase market share by reducing prices.

The financial services industry is highly interrelated in that a significant volume of transactions occur among a limited number of members of that industry. Many of our and GS Group’s transactions are syndicated to other financial institutions and financial institutions are often counterparties in transactions. This has led to claims by other market participants and regulators that such institutions have colluded in order to manipulate markets or market prices, including allegations that antitrust laws have been violated.

While GS Group has extensive procedures and controls that are designed to identify and prevent such activities, allegations of such activities, particularly by regulators, can have a negative reputational impact and can subject us to large fines and settlements, and potentially significant penalties, including treble damages.

We face enhanced risks as new business initiatives lead us to transact with a broader array of clients and counterparties and expose us to new assets, activities and markets.

A number of our recent and planned business initiatives and expansions of existing businesses have and may continue to bring us into contact, directly or indirectly, with consumers and entities that are not within our traditional client and counterparty base and expose us to new asset classes, activities and markets. We also continue to lend and transact business in new regions, including a wide range of emerging and growth markets.

We have increased and intend to further increase our consumer-oriented deposit-taking and lending activities. As a result of increased consumer-oriented activities, we could face additional compliance, legal and regulatory risk, increased reputational risk and increased operational risk due to, among other things, higher transaction volumes, greater reliance on third-party vendors, increased volume of customer complaints, collections practices in relation to consumer-oriented lending activities, significantly increased retention requirements and transmission of customer and client information and increased regulatory compliance obligations (including under the CRA as noted below). Identity fraud may increase and industry practices may change in a manner that makes it more difficult for financial institutions, such as us, to evaluate the creditworthiness of consumers.

In addition, our expansion into consumer-oriented activities could result in a change to our CRA examination obligations. Any failure to comply with different or expanded CRA requirements could negatively impact our CRA ratings, cause reputational harm and result in limits on GS Group's ability to make future acquisitions or further expand its activities. See "Business — Regulation — Community Reinvestment Act (CRA)" in Part I of this Annual Report for further information about our CRA requirements.

New business initiatives expose us to new and enhanced risks, including risks associated with dealing with governmental entities, reputational concerns arising from dealing with less sophisticated counterparties, clients and customers, greater regulatory scrutiny of these activities, increased credit-related, compliance, fraud, market, sovereign and operational risks, risks arising from accidents or acts of terrorism, and reputational concerns with the manner in which we engage in these activities, interact with these counterparties or address the product or service requirements of these new types of clients. Legal, regulatory and reputational risks may also exist in connection with activities and transactions involving new products or markets where there is regulatory uncertainty or where there are different or conflicting regulations depending on the regulator or the jurisdiction involved, particularly where transactions in such products may involve multiple jurisdictions.

Derivative transactions and delayed settlements may expose us to unexpected risk and potential losses.

We are party to a large number of derivative transactions, including interest rate, currency, credit and other derivatives. Many of these derivative instruments are individually negotiated and non-standardized, which can make exiting, transferring or settling positions difficult. Many credit derivatives require that we deliver to the counterparty the underlying security, loan or other obligation in order to receive payment. In a number of cases, we do not hold the underlying security, loan or other obligation and may not be able to obtain the underlying security, loan or other obligation. This could cause us to forfeit the payments due to us under these contracts or result in settlement delays with the attendant credit and operational risk, as well as increased costs.

Derivative transactions may also involve the risk that documentation has not been properly executed, that executed agreements may not be enforceable against the counterparty, or that obligations under such agreements may not be able to be "netted" against other obligations with such counterparty. In addition, counterparties may claim that such transactions were not appropriate or authorized.

As a signatory to the ISDA Universal Protocol and the U.S. ISDA Protocol (ISDA Protocols) and being subject to the FRB's rules on QFCs and similar rules in other jurisdictions, we may not be able to exercise remedies against counterparties and, as this new regime has not yet been tested, we may suffer risks or losses that we would not have expected to suffer if we could immediately close out transactions upon a termination event. Various non-U.S. regulators have also proposed regulations contemplated by the ISDA Universal Protocol, and those implementing regulations may result in additional limitations on our ability to exercise remedies against counterparties. The impact of the ISDA Protocols and these rules and regulations will depend on the development of market practices and structures, and they extend to repurchase agreements and other instruments that are not derivative contracts.

Derivative contracts and other transactions, including secondary bank loan purchases and sales, entered into with third parties are not always confirmed by the counterparties or settled on a timely basis. While the transaction remains unconfirmed or during any delay in settlement, we are subject to heightened credit and operational risk and in the event of a default may find it more difficult to enforce our rights.

In addition, as new complex derivative products are created, covering a wider array of underlying credit and other instruments, disputes about the terms of the underlying contracts could arise, which could impair our ability to effectively manage our risk exposures from these products and subject us to increased costs. The provisions of the Dodd-Frank Act requiring central clearing of credit derivatives and other OTC derivatives, or a market shift toward standardized derivatives, could reduce the risk associated with such transactions, but under certain circumstances could also limit our ability to develop derivatives that best suit the needs of our clients and to hedge our own risks, and could adversely affect our profitability and increase our credit exposure to central clearing platforms.

Certain of our businesses, our funding and our financial products may be adversely affected by changes in or the discontinuance of Interbank Offered Rates (IBORs), in particular LIBOR.

The Financial Conduct Authority, which regulates LIBOR, has announced that it will not compel panel banks to contribute to LIBOR after 2021. It is likely that banks will not continue to provide submissions for the calculation of LIBOR after 2021 and possibly prior to then. Similarly, it is not possible to know whether LIBOR will continue to be viewed as an acceptable market benchmark, what rate or rates may become accepted alternatives to LIBOR, or what the effect of any such changes in views or alternatives may have on the financial markets for LIBOR-linked financial instruments. Similar statements have been made with respect to other IBORs.

Uncertainty regarding IBORs and the taking of discretionary actions or negotiation of fallback provisions could result in pricing volatility, loss of market share in certain products, adverse tax or accounting impacts, compliance, legal and operational costs and risks associated with client disclosures, as well as systems disruption, model disruption and other business continuity issues. In addition, uncertainty relating to IBORs could result in increased capital requirements for GS Group, and us, given potential low transaction volumes, a lack of liquidity or limited observability for exposures linked to IBORs or any emerging successor rates and operational incidents associated with changes in and the discontinuance of IBORs.

The language in our and our affiliates' contracts and financial instruments that define IBORs, in particular LIBOR, have developed over time and may have various events that trigger when a successor rate to the designated rate would be selected. If a trigger is satisfied, contracts and financial instruments may give the calculation agent (which may be one of our affiliates) discretion over the successor rate or benchmark to be selected. As a result, there is considerable uncertainty as to how the financial services industry will address the discontinuance of designated rates in contracts and financial instruments or such designated rates ceasing to be acceptable reference rates. This uncertainty could ultimately result in client disputes and litigation surrounding the proper interpretation of our IBOR-based contracts and financial instruments.

Further, the discontinuation of an IBOR, changes in an IBOR or changes in market acceptance of any IBOR as a reference rate may also adversely affect the yield on loans or securities held by us, amounts paid on securities and other instruments we have issued, amounts received and paid on derivative instruments we have entered into, the value of such loans, securities or derivative instruments, the trading market for securities, the terms of new loans being made using different or modified reference rates, our ability to effectively use derivative instruments to manage risk, or the availability or cost of our floating-rate funding and our exposure to fluctuations in interest rates.

Certain of our activities and funding may be adversely affected by changes in other reference rates, currencies, indexes or baskets to which products we offer or funding that we raise are linked.

Certain of our funding, including funding raised from affiliates and third parties, is floating rate and pays interest by reference to a rate, such as LIBOR or Federal Funds. In addition, certain of the products that we own or that we offer, such as swaps or security-based swaps, pay interest or determine the principal amount to be paid at maturity or in the event of default by reference to rates or by reference to an index, currency, basket or other financial metric (the underlier). In the event that the composition of the underlier is significantly changed, by reference to rules governing such underlier or otherwise, the underlier ceases to exist (for example, in the event that a country withdraws from the Euro or links its currency to or delinks its currency from another currency or benchmark, or an index) or the underlier ceases to be recognized as an acceptable market benchmark, we may experience adverse effects consistent with those described above for IBORs.

Our business may be adversely affected if we are unable to hire and retain qualified employees.

Our performance is largely dependent on the talents and efforts of highly skilled people; therefore, our continued ability to compete effectively in our business, to manage our business effectively and to expand into new lines of business depends on our ability, and GS Group's ability, to attract new talented and diverse employees and to retain and motivate existing employees.

Factors that affect our and GS Group's ability to attract and retain such employees include the level and composition of GS Group's compensation and benefits, and GS Group's reputation as a successful business with a culture of fairly hiring, training and promoting qualified employees. As a significant portion of the compensation that GS Group pays to its employees is in the form of year-end discretionary compensation, a significant portion of which is in the form of deferred equity-related awards, declines in GS Group's profitability, or in the outlook for its future profitability, as well as regulatory limitations on compensation levels and terms, can negatively impact our and GS Group's ability to hire and retain highly qualified employees. Although we have our own employees, employees of affiliates also provide services to us under the Master Services Agreement.

Accordingly, negative impacts on GS Group's general ability to hire and retain qualified employees can adversely impact us both directly and indirectly.

Competition from within the financial services industry and from businesses outside the financial services industry, including the technology industry, for qualified employees has often been intense. Recently, GS Group (including us) has experienced increased competition in hiring and retaining employees to address the demands of new regulatory requirements, expanding consumer-oriented businesses and technology initiatives.

Changes in law or regulation in jurisdictions in which our operations are located that affect taxes on our employees' income, or the amount or composition of compensation, may also adversely affect our ability to hire and retain qualified employees in those jurisdictions.

As described further in "Business — Regulation — Compensation Practices" above, GS Group's compensation practices are subject to review by, and the standards of, the FRB. As a large global financial and banking institution, GS Group is subject to limitations on compensation practices (which may or may not affect GS Group's competitors) by the FRB, the Prudential Regulation Authority, the Financial Conduct Authority, the FDIC and other regulators worldwide. These limitations, including any imposed by or as a result of future legislation or regulation, may require GS Group to alter its compensation practices in ways that could adversely affect its ability to attract and retain talented employees, which in turn could adversely affect us.

The ability-to-repay requirement for residential mortgage loans may limit our ability to sell certain of our mortgage loans and give borrowers potential claims against us.

The Dodd-Frank Act amended the Truth in Lending Act to require that mortgage lenders show that they have verified the borrower's ability to repay a residential mortgage loan.

Borrowers could possibly claim statutory damages against us for violations of this requirement. Lenders of mortgages that meet a "qualified mortgage" standard have a safe harbor or a presumption of compliance with the requirement. Under final rules issued by the CFPB in January 2013 that became effective in January 2014, qualified mortgages cannot have negative amortization, interest-only payments, or balloon payments, terms over 30 years, or points and fees over certain thresholds. If institutional mortgage investors limit their mortgage purchases, demand for our non-qualifying mortgages in the secondary market may be significantly limited in the future.

We do not currently intend to discontinue originating non-qualifying mortgages, and we may be liable to borrowers under non-qualifying mortgages for violations of the ability-to-repay requirement. Moreover, we do not yet know how the qualifying mortgage requirements will impact the secondary market for sales of such mortgage loans.

Demand for our non-qualifying mortgages in the secondary market may therefore decline significantly in the future, which would limit the amount of loans we can originate and in turn limit our ability to create new relationships and opportunities to offer other products, manage our growth and earn revenue from loan sales and servicing, all of which could adversely affect our financial condition and net earnings.

Increases in FDIC insurance premiums may adversely affect our earnings.

Our deposits are insured by the FDIC to the extent provided by law and, accordingly, we are subject to FDIC deposit insurance assessments. We generally cannot control the amount of premiums we will be required to pay for FDIC insurance. If there are financial institution failures or future losses that the DIF may suffer, we may be required to pay higher FDIC premiums, or the FDIC may charge special assessments or require future prepayments. Further, the FDIC increased the DIF's long-term target reserve ratio to 2.0% of insured deposits following the Dodd-Frank Act's elimination of the 1.5% cap on the DIF's reserve ratio, and redefined the assessment base used to calculate deposit insurance premiums as the depository institution's average consolidated assets minus tangible equity, instead of the previous deposit-based assessment base.

The FDIC has previously applied an annual surcharge on all banks with at least $10 billion in assets as a method of increasing its DIF reserve ratio.

Increases in our assessment rate may be required in the future to achieve the targeted reserve ratio. These increases in deposit assessments and any future increases, required prepayments or special assessments of FDIC insurance premiums may adversely affect our business, financial condition or results of operations. See "Business — Regulation — FDIC Insurance" in Part I of this Annual Report for further information about FDIC insurance.

We may be adversely affected by increased governmental and regulatory scrutiny or negative publicity.

Governmental scrutiny from regulators, legislative bodies and law enforcement agencies with respect to matters relating to our or GS Group's business practices, past actions, compensation and other matters has increased dramatically in the past several years. The financial crisis and the current political and public sentiment regarding financial institutions has resulted in a significant amount of adverse press coverage, as well as adverse statements or charges by regulators or other government officials.

Press coverage and other public statements that assert some form of wrongdoing (including, in some cases, press coverage and public statements that do not directly involve us, Group Inc. or GS Group's other subsidiaries) often result in some type of investigation by regulators, legislators and law enforcement officials or in lawsuits.

Responding to these investigations and lawsuits, regardless of the ultimate outcome of the proceeding, is time-consuming and expensive and can divert the time and effort of our senior management from our business. Penalties and fines sought by regulatory authorities have increased substantially over the last several years, and certain regulators have been more likely in recent years to commence enforcement actions or to advance or support legislation targeted at the financial services industry.

Adverse publicity, governmental scrutiny and legal and enforcement proceedings can also have a negative impact on our reputation and on the morale and performance of our employees, which could adversely affect our business and results of operations.

Substantial civil or criminal liability or significant regulatory action against us or our affiliates could have material adverse financial effects or cause us significant reputational harm, which in turn could seriously harm our business prospects.

We are involved in a number of judicial, regulatory and other proceedings concerning matters arising in connection with the conduct of our business. See Notes 17 and 23 to the consolidated financial statements in Part III of this Annual Report for information about certain legal and regulatory proceedings and investigations that impact us. In addition, GS Group is involved in a number of judicial, regulatory and other proceedings, as well as investigations and reviews by various governmental and regulatory bodies and self-regulatory organizations, including the matters referred to in Note 23. Proceedings by regulatory or other governmental authorities could result in the imposition of significant fines, penalties and other sanctions against GS Group, including restrictions on GS Group's activities. As a subsidiary of Group Inc., any such fines, penalties or other sanctions, including any that could be imposed on us directly, could adversely affect us, possibly materially.

We face the risk of investigations and proceedings by governmental and self-regulatory organizations in all jurisdictions in which we conduct our business. Interventions by authorities may result in adverse judgments, settlements, fines, penalties, injunctions or other relief. In addition to the monetary consequences, these measures could, for example, impact our ability to engage in, or impose limitations on, certain aspects of our business. Litigation or regulatory action at the level of other GS Group entities may also have an impact on us, including limitations on activities and reputational harm. The number of these investigations and proceedings, as well as the amount of penalties and fines sought, has increased substantially in recent years with regard to many firms in the financial services industry, including GS Group.

The trend of large settlements with governmental entities may adversely affect the outcomes for other financial institutions in similar actions, especially where governmental officials have announced that the large settlements will be used as the basis or a template for other settlements. The uncertain regulatory enforcement environment makes it difficult to estimate probable liabilities, and settlements of matters therefore frequently exceed the amount of any reserve established.

Recently, claims of collusion or anti-competitive conduct have become more common. Civil cases have been brought against financial institutions (including us) alleging bid rigging, group boycotts or other anti-competitive practices. Antitrust laws generally provide for joint and several liability and treble damages. These claims have in the past, and may in the future, result in significant settlements.

We are subject to laws and regulations relating to corrupt and illegal payments, hiring practices and money laundering, as well as laws relating to doing business with certain individuals, groups and countries, such as the FCPA, the PATRIOT Act and U.K. Bribery Act. While we and GS Group have invested and continue to invest significant resources in training and in compliance monitoring, the geographical diversity of GS Group's operations, employees, clients and customers, as well as the vendors and other third parties that we deal with, greatly increases the risk that we may be found in violation of such rules or regulations and any such violation could subject us to significant penalties or adversely affect our reputation.

In addition, there have been a number of highly publicized cases around the world, involving actual or alleged fraud or other misconduct by employees in the financial services industry in recent years, and we are exposed to the risk that employee misconduct could occur. This misconduct may include intentional efforts to ignore or circumvent applicable policies, rules or procedures. This misconduct has included and may also include in the future the theft of proprietary information, including proprietary software. It is not always possible to deter or prevent employee misconduct and the precautions we and GS Group take to prevent and detect this activity have not been and may not be effective in all cases.

Certain law enforcement authorities have recently required admissions of wrongdoing, and, in some cases, criminal pleas, as part of the resolutions of matters brought by them against financial institutions or their employees. Any such resolution of a criminal matter involving us or our employees, or GS Group or its employees could lead to increased exposure to civil litigation, could adversely affect our reputation, could result in penalties or limitations on our ability to conduct our activities generally or in certain circumstances and could have other negative effects.

In addition, the U.S. Department of Justice (DOJ) has announced a policy of requiring companies to provide investigators with all relevant facts relating to the individuals substantially involved in or responsible for the alleged misconduct in order to qualify for any cooperation credit in criminal investigations of corporate wrongdoing, or maximum cooperation credit in civil investigations of corporate wrongdoing. This policy may result in us incurring increased fines and penalties if the DOJ determines that we have not provided sufficient information about applicable individuals in connection with an investigation, as well as increased costs in responding to DOJ investigations. Further, bank regulators have increasingly sought to hold individuals responsible for alleged misconduct, and it is possible that other governmental authorities will adopt similar policies.

We may incur losses as a result of unforeseen or catastrophic events, including the emergence of a pandemic, terrorist attacks, extreme weather events or other natural disasters.

The occurrence of unforeseen or catastrophic events, including the emergence of a pandemic, such as the Ebola or Zika viruses, or other widespread health emergency (or concerns over the possibility of such an emergency), terrorist attacks, extreme terrestrial or solar weather events or other natural disasters, could create economic and financial disruptions, and could lead to operational difficulties (including travel limitations) that could impair our ability to manage our business.

PART II. Management's Discussion and Analysis of Financial Condition and Results of Operations

Introduction

Goldman Sachs Bank USA, together with its consolidated subsidiaries (collectively, the Bank), is a New York State-chartered bank and a member of the Federal Reserve System. The Bank is supervised and regulated by the Board of Governors of the Federal Reserve System (FRB), the New York State Department of Financial Services (NYDFS) and the U.S. Bureau of Consumer Financial Protection (CFPB), and is a member of the Federal Deposit Insurance Corporation (FDIC). The Bank's deposits are insured by the FDIC up to the maximum amount provided by law. The Bank is registered as a swap dealer with the U.S. Commodity Futures Trading Commission (CFTC). The Bank is also a government securities dealer subject to the rules and regulations of the U.S. Department of the Treasury.

When we use the terms "the Bank," "we," "us" and "our," we mean Goldman Sachs Bank USA and its consolidated subsidiaries. When we use the term "GS Group," or "firmwide" we are referring to The Goldman Sachs Group, Inc. (Group Inc.) and its consolidated subsidiaries, including us. References to revenue-producing units and control and support functions include activities performed by our employees, by dual employees (who are employees who perform services for both us and another GS Group subsidiary) and by affiliate employees under Bank supervision pursuant to Master Services Agreements supplemented by Service Level Agreements (collectively, the Master Services Agreement) between us and our affiliates.

References to "this Annual Report," of which this Management's Discussion and Analysis forms a part, refers to the report dated March 7, 2019 and includes information relating to our business, the supervision and regulation to which we are subject, risk factors affecting our business, our results of operations and financial condition, as well as our consolidated financial statements.

References to "the consolidated financial statements" or "Supplemental Financial Information" are to Part III of this Annual Report. All references to 2018 and 2017 refer to our years ended, or the dates, as the context requires, December 31, 2018 and December 31, 2017, respectively. Any reference to a future year refers to a year ending on December 31 of that year. Certain reclassifications have been made to previously reported amounts to conform to the current presentation.

Our principal office is located in New York, New York. We operate two domestic branches, which are located in Salt Lake City, Utah and Draper, Utah. Both branches are regulated by the Utah Department of Financial Institutions. We also have a foreign branch in London, United Kingdom, which is regulated by the Financial Conduct Authority and the Prudential Regulation Authority.

We are a wholly-owned subsidiary of Group Inc. Group Inc. is a bank holding company (BHC) under the U.S. Bank Holding Company Act of 1956 (BHC Act), a financial holding company under amendments to the BHC Act effected by the U.S. Gramm-Leach-Bliley Act of 1999, and is subject to supervision and examination by the FRB.

We are a financial services provider that engages in banking activities. We are GS Group's primary lending entity, serving corporate borrowers, private bank clients and U.S. consumers. We are also GS Group's primary deposit-taking entity. Our depositors include institutions, corporations, our affiliates, clients of third-party broker-dealers, private bank clients and U.S. consumers. Substantially all of our consumer lending and consumer deposit-taking activities are conducted through our digital platform, *Marcus: by Goldman Sachs*. In addition, we enter into interest rate, currency, credit and other derivatives, and transact in certain related products, for the purpose of market making and risk management.

In this discussion and analysis of our financial condition and results of operations, we have included information that may constitute "forward-looking statements." Forward-looking statements are not historical facts, but instead represent only our beliefs regarding future events, many of which, by their nature, are inherently uncertain and outside our control. These statements include statements other than historical information or statements of current conditions and may relate to our future plans and objectives and results, among other things, and may also include statements about the effect of changes to the capital, leverage, liquidity, and various legal proceedings, governmental investigations or mortgage-related contingencies as set forth in both Notes 17 and 23 to the consolidated financial statements in Part III of this Annual Report. These statements may also include statements about the results of our stress tests, statements about the objectives and effectiveness of our risk management and liquidity policies, statements about our resolution plan and resolution strategy, statements about our future status, activities or reporting under U.S. or non-U.S. banking and financial regulation, statements about GS Group's preparations following the U.K.'s notification to the European Council of its decision to leave the E.U. (Brexit), including its plan to manage a hard Brexit scenario, and statements about the replacement of LIBOR and other Interbank Offered Rates (IBORs) and the objectives of our program related to the transition from IBORs to alternative risk-free reference rates, and statements about the adequacy of our allowance for credit losses.

By identifying these statements for you in this manner, we are alerting you to the possibility that our actual results and financial condition may differ, possibly materially, from the anticipated results and financial condition indicated in these forward-looking statements. Important factors that could cause our actual results and financial condition to differ from those indicated in these forward-looking statements include, among others, those described in "Risk Factors" and "Cautionary Statement Regarding Forward-Looking Statements" in Part I of this Annual Report.

Executive Overview

We generated net earnings of $2.13 billion for 2018, an increase of 51% compared with $1.41 billion for 2017.

Net revenues were $5.20 billion for 2018, an increase of 28% compared with $4.06 billion for 2017, primarily reflecting higher net interest income.

Net interest income was $2.75 billion for 2018, an increase of 43% compared with $1.92 billion for 2017, which resulted in an increase in net interest margin of 33 basis points to 162 basis points for 2018, compared with 129 basis points for 2017. This increase was primarily driven by a higher interest rate environment leading to a significant increase in interest income on loans receivable and cash deposits held at the Federal Reserve Bank of New York (FRBNY), as well as higher average balances on loans receivable, partially offset by a significant increase in interest expense on interest-bearing deposits.

Non-interest revenues were $2.45 billion for 2018, an increase of 14% compared with $2.14 billion for 2017, primarily reflecting higher net gains from financial instruments.

Provision for credit losses was $470 million for 2018, an increase of 40% compared with $335 million for 2017. The higher provision primarily related to consumer loan growth in 2018 and was partially offset by an impairment of approximately $130 million on a secured loan in 2017.

Operating expenses were $2.01 billion for 2018, an increase of 46% compared with $1.38 billion for 2017, primarily reflecting higher service charges and the impact of the recently adopted revenue recognition standard. See Note 3 to the consolidated financial statements for further information about ASU No. 2014-09, "Revenue from Contracts with Customers (Topic 606)." In addition, the increase reflected higher expenses related to our digital lending and deposit platform and higher compensation and benefits expenses.

As of December 2018, our Common Equity Tier 1 (CET1) ratio as calculated in accordance with the Standardized approach was 11.1% and the Basel III Advanced approach was 18.4%. See Note 18 to the consolidated financial statements for further information about our capital ratios.

Business Environment

United States

In the U.S., real gross domestic product (GDP) increased by 2.9% in 2018, compared with 2.2% in 2017, as growth in total fixed investment and government spending increased. Measures of consumer confidence were stronger on average compared with the prior year, and the unemployment rate declined to 3.9% as of December 2018. Housing starts, sales and prices increased compared with 2017. Measures of headline inflation were stable compared with 2017, while measures of core inflation (excluding food and energy) increased. The U.S. Federal Reserve increased the target federal funds rate by 25 basis points in each quarter of 2018 to a range of 2.25% to 2.50% as of December 2018. The yield on the 10-year U.S. Treasury note ended the year at 2.69%, 29 basis points higher compared with the end of 2017. The price of crude oil (WTI) ended the year at approximately $45 per barrel, a decrease of 25% compared with the end of 2017. In equity markets, the Dow Jones Industrial Average decreased by 6%, the S&P 500 Index decreased by 6% and the NASDAQ Composite Index decreased by 4% compared with the end of 2017.

Global

During 2018, real GDP growth increased in the U.S. but generally decreased in other major economies. In advanced economies, growth in the Euro area, U.K., and Japan each was lower and, in emerging markets, growth in China decreased slightly. Economic activity in several major emerging market economies was impacted by concerns about the vulnerability of these economies to a stronger U.S. dollar and higher U.S. Treasury rates. Global asset markets experienced significant periods of volatility in the first and fourth quarters of 2018 driven by concerns about the prospect of slowing global growth and tighter monetary policy. The U.S. presidential administration implemented and proposed new tariffs on imports from China, which prompted retaliatory measures, and rising global trade tensions remained a meaningful source of uncertainty affecting asset prices throughout 2018. Political uncertainty in Europe increased as a new coalition government formed in Italy in May 2018 and the future of the relationship between the U.K. and E.U. remained uncertain. During 2018, the U.S. Federal Reserve increased the target federal funds rate four times and the Bank of England increased its official target interest rate in August 2018.

Critical Accounting Policies

Loans Receivable

Loans receivable in the consolidated statements of financial condition consists of:

- Loans held for investment which are accounted for at amortized cost net of allowance for loan losses.
- Loans held for sale which are accounted for at the lower of cost or fair value.

We assess our loans for impairment on an ongoing basis through our credit review process. A credit review is an independent analysis of the capacity and willingness of a borrower to meet its financial obligations, resulting in an internal credit rating. We also assign a regulatory risk rating to such loans based on the definitions provided by the U.S. federal bank regulatory agencies. We may also, where applicable, review certain key metrics, such as delinquency status, collateral values, Fair Isaac Corporation (FICO) credit scores and other risk factors. Such loans are determined to be impaired when it is probable that we will not be able to collect all principal and interest due under the contractual terms of the loan. At that time, loans are generally placed on nonaccrual status, all accrued but uncollected interest is reversed against interest income, and interest subsequently collected is recognized on a cash basis to the extent the loan balance is deemed collectible. Otherwise, all cash received is used to reduce the outstanding loan balance.

Interest on loans receivable is recognized over the life of the loan and is recorded on an accrual basis.

Our allowance for loan losses consists of specific loan-level reserves and portfolio level reserves. Specific loan-level reserves are determined on loans that exhibit credit quality weakness and are therefore individually evaluated for impairment. Portfolio level reserves are determined on loans not evaluated for specific loan-level reserves by aggregating groups of loans with similar risk characteristics and estimating the probable loss inherent in the portfolio.

See Note 9 to the consolidated financial statements for further information about loans receivable.

Fair Value

Fair Value Hierarchy. Financial instruments owned and financial instruments sold, but not yet purchased (i.e., inventory), and certain other financial assets and financial liabilities, are included in our consolidated statements of financial condition at fair value (i.e., marked-to-market), with related gains or losses generally recognized in our consolidated statements of earnings.

The fair value of a financial instrument is the amount 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. We measure certain financial assets and financial liabilities as a portfolio (i.e., based on its net exposure to market and/or credit risks). In determining fair value, the hierarchy under U.S. generally accepted accounting principles (U.S. GAAP) gives (i) the highest priority to unadjusted quoted prices in active markets for identical, unrestricted assets or liabilities (level 1 inputs), (ii) the next priority to inputs other than level 1 inputs that are observable, either directly or indirectly (level 2 inputs), and (iii) the lowest priority to inputs that cannot be observed in market activity (level 3 inputs). In evaluating the significance of a valuation input, we consider, among other factors, a portfolio's net risk exposure to that input. Assets and liabilities are classified in their entirety based on the lowest level of input that is significant to their fair value measurement.

The fair values for substantially all of our financial assets and for the majority of our financial liabilities are based on observable prices and inputs and are classified in levels 1 and 2 of the fair value hierarchy. Certain level 2 and level 3 financial assets and financial liabilities may require appropriate valuation adjustments that a market participant would require to arrive at fair value for factors such as counterparty and our or our affiliates' credit quality, funding risk, transfer restrictions, liquidity and bid/offer spreads.

Instruments classified in level 3 of the fair value hierarchy are those which require one or more significant inputs that are not observable. Level 3 financial assets represented 1.2% as of both December 2018 and December 2017, of our total assets. See Notes 5 through 8 to the consolidated financial statements for further information about level 3 financial assets, including changes in level 3 financial assets and related fair value measurements. Absent evidence to the contrary, instruments classified in level 3 of the fair value hierarchy are initially valued at transaction price, which is considered to be the best initial estimate of fair value. Subsequent to the transaction date, we use other methodologies to determine fair value, which vary based on the type of instrument. Estimating the fair value of level 3 financial instruments requires judgments to be made. These judgments include:

- Determining the appropriate valuation methodology and/or model for each type of level 3 financial instrument;
- Determining model inputs based on an evaluation of all relevant empirical market data, including prices evidenced by market transactions, interest rates, credit spreads, volatilities and correlations; and
- Determining appropriate valuation adjustments, including those related to illiquidity or counterparty credit quality.

Regardless of the methodology, valuation inputs and assumptions are only changed when corroborated by substantive evidence.

Controls Over Valuation of Financial Instruments

We leverage GS Group's control infrastructure over valuation of financial instruments, which is described below. Market makers and investment professionals in revenue-producing units are responsible for pricing our financial instruments. GS Group's control infrastructure is independent of the revenue-producing units and is fundamental to ensuring that all of our financial instruments are appropriately valued at market-clearing levels. In the event that there is a difference of opinion in situations where estimating the fair value of financial instruments requires judgment (e.g., calibration to market comparables or trade comparison, as described below), the final valuation decision is made by senior managers in independent risk oversight and control functions. This independent price verification is critical to ensuring that our financial instruments are properly valued.

Price Verification. All financial instruments at fair value classified in levels 1, 2 and 3 of the fair value hierarchy are subject to an independent price verification process. The objective of price verification is to have an informed and independent opinion with regard to the valuation of financial instruments under review. Instruments that have one or more significant inputs which cannot be corroborated by external market data are classified in level 3 of the fair value hierarchy. Price verification strategies utilized by our independent risk oversight and control functions include:

- **Trade Comparison.** Analysis of trade data (both internal and external, where available) is used to determine the most relevant pricing inputs and valuations.
- **External Price Comparison.** Valuations and prices are compared to pricing data obtained from third parties (e.g., brokers or dealers, Markit, Bloomberg, IDC, TRACE). Data obtained from various sources is compared to ensure consistency and validity. When broker or dealer quotations or third-party pricing vendors are used for valuation or price verification, greater priority is generally given to executable quotations.
- **Calibration to Market Comparables.** Market-based transactions are used to corroborate the valuation of positions with similar characteristics, risks and components.

- **Relative Value Analyses.** Market-based transactions are analyzed to determine the similarity, measured in terms of risk, liquidity and return, of one instrument relative to another or, for a given instrument, of one maturity relative to another.
- **Collateral Analyses.** Margin calls on derivatives are analyzed to determine implied values, which are used to corroborate our valuations.
- **Execution of Trades.** Where appropriate, trading desks are instructed to execute trades in order to provide evidence of market-clearing levels.
- **Backtesting.** Valuations are corroborated by comparison to values realized upon sales.

See Notes 5 through 8 to the consolidated financial statements for further information about fair value measurements.

Review of Net Revenues. Independent risk oversight and control functions ensure adherence to GS Group's pricing policy through a combination of daily procedures, including the explanation and attribution of net revenues based on the underlying factors. Through this process, we independently validate net revenues, identify and resolve potential fair value or trade booking issues on a timely basis and seek to ensure that risks are being properly categorized and quantified.

Review of Valuation Models. A model risk management group (Model Risk Management), consisting of quantitative professionals who are separate from model developers, performs an independent model review and validation process of valuation models. New or changed models are reviewed and approved prior to being put into use. Models are evaluated and re-approved annually to assess the impact of any changes in the product or market and any market developments in pricing theories. See "Risk Management — Model Risk Management" for further information about the review and validation of valuation models.

Recent Accounting Developments

See Note 3 to the consolidated financial statements for information about Recent Accounting Developments.

Use of Estimates

U.S. GAAP requires management to make certain estimates and assumptions. In addition to the estimates we make in connection with the allowance for credit losses on loans and lending commitments held for investment and fair value measurements, the use of estimates and assumptions is also important in determining provisions for losses that may arise from litigation and regulatory proceedings (including governmental investigations), and provisions for losses that may arise from tax audits.

Any estimated liability in respect of litigation and regulatory proceedings is determined on a case-by-case basis and represents an estimate of probable losses after considering, among other factors, the progress of each case, proceeding or investigation, our experience and the experience of others in similar cases, proceedings or investigations, and the opinions and views of legal counsel. Significant judgment is required in making these estimates and our final liabilities may ultimately be materially different. See Note 23 to the consolidated financial statements for further information about certain judicial, litigation and regulatory proceedings.

In accounting for income taxes, we recognize tax positions in the financial statements only when it is more likely than not that the position will be sustained on examination by the relevant taxing authority based on the technical merits of the position. See Note 21 to the consolidated financial statements for further information about income taxes.

Results of Operations

The composition of our net revenues has varied over time as financial markets and the scope of our operations have changed. The composition of net revenues can also vary over the shorter term due to fluctuations in economic and market conditions. In addition to transactions entered into with third parties, we also enter into transactions with affiliates in the normal course of business, primarily as part of our market-making activities. See "Risk Factors" in Part I of this Annual Report for further information about the impact of economic and market conditions on our results of operations.

Financial Overview

The table below presents an overview of financial results and selected financial ratios.

$ in millions	Year Ended December 2018	2017
Net revenues	$ 5,196	$ 4,062
Pre-tax earnings	$ 2,721	$ 2,352
Net earnings	$ 2,133	$ 1,414
Net earnings to average total assets	1.2%	0.9%
Return on average shareholder's equity	8.1%	5.6%
Average shareholder's equity to average total assets	14.7%	15.6%

In the table above, return on average shareholder's equity is calculated by dividing net earnings by average monthly shareholder's equity.

Net Revenues

The table below presents net revenues by line item, as well as net interest margin.

$ in millions	Year Ended December 2018	2017
Interest income	$ 5,812	$ 3,694
Interest expense	3,065	1,772
Net interest income	2,747	1,922
Non-interest revenues	2,449	2,140
Net revenues	$ 5,196	$ 4,062
Net interest margin	1.62%	1.29%

In the table above:

- Interest income includes interest earned from our lending portfolio, consisting of corporate lending, private wealth management (PWM) lending, commercial real estate lending, residential real estate lending, consumer lending and other lending. Interest income is also earned from cash deposits held primarily at the FRBNY. In addition, interest is earned from certain financial instruments owned, collateralized agreements and collateral balances posted to counterparties.
- Interest expense includes interest related to deposit-taking activities. Interest expense also includes interest related to certain financial instruments sold, but not yet purchased, collateralized financings, unsecured borrowings and collateral balances received from counterparties. We apply hedge accounting to certain interest rate swaps used to manage the interest rate exposure of certain fixed-rate unsecured borrowings and certain fixed-rate term certificates of deposit. For qualifying fair value hedges, gains and losses on derivatives are included in interest expense. See Note 7 to the consolidated financial statements for further information about hedge accounting.
- Non-interest revenues includes net gains and losses from financial instruments related to market-making and risk management activities in interest rate, currency, credit and other derivatives and certain related products which are primarily accounted for at fair value. Non-interest revenues also includes net gains and losses from loans and lending commitments primarily accounted for at fair value. In addition, non-interest revenues includes fees earned from relationships with affiliates, loan syndication fees and other fees.
- Provision for credit losses, previously reported in non-interest revenues, is now reported as a separate line item in the consolidated statements of earnings. Previously reported amounts have been conformed to the current presentation.

2018 versus 2017

Net revenues in the consolidated statements of earnings were $5.20 billion for 2018, an increase of 28% compared with $4.06 billion for 2017, primarily reflecting higher net interest income.

Net Interest Income. Net interest income in the consolidated statements of earnings was $2.75 billion for 2018, 43% higher than 2017, primarily driven by a higher interest rate environment leading to a significant increase in interest income on loans receivable and cash deposits held at the FRBNY, as well as higher average balances on loans receivable, partially offset by a significant increase in interest expense on interest-bearing deposits. Net interest income was 53% of net revenues in 2018, compared with 47% in 2017.

Net Interest Margin. Net interest margin increased by 33 basis points to 162 basis points for 2018, compared with 129 basis points for 2017, primarily driven by a higher interest rate environment leading to a significant increase in interest income on loans receivable and cash deposits held at the FRBNY, partially offset by a significant increase in interest expense on interest-bearing deposits.

Non-Interest Revenues. Non-interest revenues were $2.45 billion for 2018, 14% higher than 2017, primarily reflecting higher net gains from financial instruments.

Interest Income

The table below presents sources of interest income.

$ in millions	Year Ended December 2018	2017
Loans receivable (excluding loans held for sale)	$ 2,828	$ 1,607
Deposits with banks	1,125	702
Financial instruments owned	887	857
Collateralized agreements	397	151
Other	575	377
Total interest income	$ 5,812	$ 3,694

2018 versus 2017

Interest income in the consolidated statements of earnings was $5.81 billion for 2018, 57% higher than 2017. See below and "Supplemental Financial Information — Distribution of Assets, Liabilities and Shareholder's Equity" for further information about our sources of interest income, including average balances and rates.

Interest income from loans receivable (excluding loans held for sale) was $2.83 billion for 2018, 76% higher than 2017, due to higher average balances and higher interest rates. See Note 9 to the consolidated financial statements for further information about loans receivable.

Interest income from deposits with banks was $1.13 billion for 2018, 60% higher than 2017, due to higher interest rates on deposits held at the FRBNY. See Note 3 to the consolidated financial statements for further information about our cash.

Interest income from financial instruments owned was $887 million for 2018, up slightly compared with 2017. Interest income from financial instruments owned includes interest income from U.S. government and agency obligations accounted for at fair value. See Note 4 to the consolidated financial statements for further information about financial instruments owned. Interest income from financial instruments owned also includes interest income from our loans and securities accounted for at fair value. See Notes 6 and 8 to the consolidated financial statements for further information about loans and securities accounted for at fair value.

Interest income from collateralized agreements was $397 million for 2018, 163% higher than 2017, due to higher average securities purchased under agreements to resell (resale agreements).

Other interest income was $575 million for 2018, 53% higher than 2017, due to higher interest rates and higher average balances. Other interest income primarily includes interest income from loans accounted for as held for sale and collateral balances posted to counterparties.

Interest Expense

The table below presents sources of interest expense.

	Year Ended December	
$ in millions	**2018**	2017
Deposits	**$ 2,437**	$ 1,243
Borrowings	**220**	90
Collateralized financings	**78**	48
Financial instruments sold, but not yet purchased	**57**	64
Other	**273**	327
Total interest expense	**$ 3,065**	$ 1,772

2018 versus 2017

Interest expense in the consolidated statements of earnings was $3.07 billion for 2018, 73% higher than 2017. See below and "Supplemental Financial Information — Distribution of Assets, Liabilities and Shareholder's Equity" for further information about our sources of interest expense, including average balances and rates.

Interest expense from deposits was $2.44 billion for 2018, 96% higher than 2017, due to higher interest rates and higher average balances.

Interest expense from borrowings was $220 million for 2018, 144% higher than 2017, primarily due to higher average balances on borrowings from Goldman Sachs Funding LLC (Funding IHC), a wholly-owned subsidiary of Group Inc., in addition to higher interest rates. In 2017, Group Inc. assigned the $2.00 billion outstanding subordinated loan agreement to Funding IHC.

Interest expense from collateralized financings was $78 million for 2018, 63% higher than 2017, due to higher interest rates, partially offset by lower average balances.

Interest expense from financial instruments sold, but not yet purchased was $57 million for 2018, 11% lower than 2017, due to lower average balances, partially offset by higher yields.

Other interest expense was $273 million for 2018, 17% lower than 2017, primarily due to lower interest expense on net borrowings from a senior unsecured facility with Group Inc., partially offset by higher interest expense on collateral received from counterparties. Other interest expense primarily includes interest expense on collateral balances received from counterparties and interest expense on funding facilities.

Provision for Credit Losses

Provision for credit losses consists of provision for credit losses on loans receivable and lending commitments held for investment. See Note 9 to the consolidated financial statements for further information about the provision for credit losses.

The table below presents the provision for credit losses.

	Year Ended December	
$ in millions	**2018**	2017
Provision for credit losses	**$ 470**	$ 335

2018 versus 2017

Provision for credit losses in the consolidated statements of earnings was $470 million for 2018, 40% higher than 2017. The higher provision primarily related to consumer loan growth in 2018 and was partially offset by an impairment of approximately $130 million on a secured loan in 2017.

Operating Expenses

Our operating expenses are primarily influenced by compensation, headcount and levels of business activity. Compensation and benefits includes salaries, discretionary compensation, amortization of equity awards and other items such as benefits. Compensation and benefits relate to direct Bank employees. Discretionary compensation is significantly impacted by, among other factors, GS Group's overall financial performance, prevailing labor markets, business mix, the structure of GS Group's share-based compensation programs and the external environment. Another component of our operating expenses is service charges, which includes employment related costs of dual employees and employees of affiliates pursuant to the Master Services Agreement.

The table below presents operating expenses by line item and headcount.

	Year Ended December	
$ in millions	**2018**	2017
Compensation and benefits	**$ 408**	$ 307
Service charges	**506**	322
Market development	**238**	132
Professional fees	**181**	137
Brokerage, clearing, exchange and distribution fees	**100**	106
Other expenses	**572**	371
Total operating expenses	**$ 2,005**	$ 1,375
Headcount at period-end	**1,805**	1,193

In the table above:

- Compensation and benefits and service charges include employee-related expenses. As described above, compensation and benefits are expenses of direct Bank employees. Service charges include expenses related to dual employees and employees of affiliates who provide services to us pursuant to the Master Services Agreement.
- Other expenses primarily includes regulatory and agency fees, communication and technology and non-compensation expenses charged by affiliates who provide services to us pursuant to the Master Services Agreement. For 2018, other expenses include the impact of the recently adopted revenue recognition standard ASU No. 2014-09, "Revenue from Contracts with Customers (Topic 606)."
- Headcount consists of our employees, and excludes consultants and temporary staff previously reported as part of total staff. As a result, expenses related to these consultants and temporary staff are now reported in professional fees. Previously such amounts were reported in compensation and benefits expenses. Previously reported amounts have been conformed to the current presentation.

2018 versus 2017

Operating expenses in the consolidated statements of earnings were $2.01 billion for 2018, 46% higher than 2017.

Compensation and benefits expenses in the consolidated statements of earnings were $408 million for 2018, 33% higher than 2017, reflecting an increase in net revenues, as well as an increase in headcount, primarily related to new business initiatives.

Service charges in the consolidated statements of earnings were $506 million for 2018, 57% higher than 2017, reflecting an increase in services received under the Master Services Agreement.

Market development expenses in the consolidated statements of earnings were $238 million for 2018, 80% higher than 2017, reflecting additional expenses primarily related to our digital lending and deposit platform.

Professional fees in the consolidated statements of earnings were $181 million for 2018, 32% higher than 2017, primarily reflecting higher consultant fees.

Brokerage, clearing, exchange and distribution fees in the consolidated statements of earnings were $100 million for 2018, 6% lower compared with 2017, primarily reflecting lower distribution fees.

Other expenses in the consolidated statements of earnings were $572 million for 2018, 54% higher than 2017. This increase included $116 million related to the recently adopted revenue recognition standard. See Note 3 to the consolidated financial statements for further information about ASU No. 2014-09, "Revenue from Contracts with Customers (Topic 606)."

We expect operating expenses will continue to increase as we launch new business initiatives and grow our existing businesses.

Provision for Taxes

The effective income tax rate for 2018 was 21.6%, down from 39.9% for 2017. The decrease compared with 2017 reflected the impact of the lower U.S. corporate income tax rate in 2018. Additionally, 2017 included the estimated impact of the Tax Cuts and Jobs Act (Tax Legislation), which increased our effective income tax rate by 485 basis points. The estimated impact of Tax Legislation was an increase in income tax expense of $114 million for 2017. During 2018, the estimated impact of Tax Legislation was finalized to reflect the impact of updated information, including subsequent guidance issued by the U.S. Internal Revenue Service (IRS), resulting in a $22 million income tax benefit.

Effective January 1, 2018, Tax Legislation reduced the U.S. corporate tax rate to 21%, eliminated tax deductions for certain expenses and enacted two new taxes, Base Erosion and Anti-Abuse Tax (BEAT) and Global Intangible Low Taxed Income (GILTI). BEAT is an alternative minimum tax that applies to banks that pay more than 2% of total deductible expenses to certain foreign subsidiaries. GILTI is effectively a 10.5% tax, before allowable credits for foreign taxes paid, on the annual taxable income of certain foreign subsidiaries. Income tax expense associated with GILTI is recognized as incurred. During 2018, the IRS issued proposed regulations relating to BEAT and GILTI. For 2018, we are not subject to BEAT and GILTI based on our current interpretation of these rules.

Balance Sheet and Funding Sources

Balance Sheet Management

One of the risk management disciplines for a financial institution is its ability to manage the size and composition of its balance sheet. We leverage GS Group's balance sheet management process. While our asset base changes due to client activity, market fluctuations and business opportunities, the size and composition of the balance sheet also reflects factors including (i) overall risk tolerance, (ii) the amount of equity capital held and (iii) the funding profile, among other factors. See "Equity Capital Management and Regulatory Capital — Equity Capital Management" for information about our equity capital management process.

In order to ensure appropriate risk management, we seek to maintain a sufficiently liquid balance sheet and, together with GS Group, have processes in place to dynamically manage our assets and liabilities, which include (i) balance sheet planning, (ii) balance sheet and funding limits for the businesses of GS Group, which include our activities, (iii) monitoring of key metrics and (iv) scenario analyses.

Balance Sheet Planning. GS Group prepares a balance sheet plan that combines projected total assets and composition of assets with its expected funding sources over a three-year time horizon. This plan is reviewed quarterly and may be adjusted in response to changing business needs or market conditions. Within this process and with the involvement of Bank Finance and Treasury, GS Group also considers which businesses operate within the Bank and the availability of Bank-specific funding sources. The objectives of this planning process are:

- To develop asset and liability projections, taking into account the general state of the financial markets and expected business activity levels, as well as regulatory requirements;
- To allow Bank Finance and Treasury, GS Group Treasury, and independent risk oversight and control functions to objectively evaluate balance sheet and funding limit requests from revenue-producing units in the context of GS Group's overall balance sheet constraints, including our and GS Group's liability profile and equity capital levels, and key metrics; and
- To inform the target amount, tenor and type of funding to raise, based on projected assets and contractual maturities.

Bank Finance and Treasury, GS Group Treasury and independent risk oversight and control functions, along with revenue-producing units, review current and prior period information and expectations for the year to prepare our balance sheet plan. The specific information reviewed includes asset and liability size and composition, limit utilization, risk and performance measures, and capital usage. Within this process, GS Group also considers which businesses operate within the Bank and the availability of Bank-specific funding sources and capital constraints.

As part of GS Group's process, the consolidated balance sheet plan is reviewed quarterly and approved by the Firmwide Asset Liability Committee and the GS Group Risk Governance Committee, which includes Bank representatives. The review includes balance sheet plans by businesses of GS Group, including planned activities in the Bank; funding projections and projected key metrics. See "Risk Management — Overview and Structure of Risk Management" for an overview of our risk management structure.

Balance Sheet Limits. The Firmwide Asset Liability Committee and the GS Group Risk Governance Committee have the responsibility of reviewing and approving balance sheet limits, which include our limits. These limits are set at levels which are close to actual operating levels, rather than at levels which reflect GS Group's or our maximum risk appetite, in order to ensure prompt escalation and discussion among revenue-producing units, GS Group Treasury and independent risk oversight and control functions on a routine basis. The Firmwide Asset Liability Committee and the GS Group Risk Governance Committee, as well as the Bank Management Risk Committee where applicable to us, review and approve limits. In addition, the GS Group Risk Governance Committee sets aged inventory limits for certain financial instruments, including our financial instruments, as a disincentive to hold inventory over longer periods of time. Requests for changes in limits are evaluated after giving consideration to their impact on key metrics. Compliance with limits is monitored by revenue-producing units and GS Group Treasury, as well as independent risk oversight and control functions.

Monitoring of Key Metrics. Key balance sheet metrics are monitored as part of the GS Group process, both by businesses of GS Group, which include our activities, and on a consolidated basis, including limit utilization and risk measures. This includes allocating assets to businesses and reviewing movements resulting from new business activity, as well as market fluctuations.

Scenario Analyses. We conduct scenario analyses as part of stress testing and resolution planning, as well as for other regulatory and business planning purposes. See "Equity Capital Management and Regulatory Capital — Equity Capital Management" for further information about these scenario analyses. These scenarios cover short-term and long-term time horizons using various macroeconomic and Bank-specific assumptions, based on a range of economic scenarios. We use these analyses to assist us in developing our longer-term balance sheet management strategy, including the level and composition of assets, funding and equity capital. Additionally, these analyses help us develop approaches for maintaining appropriate funding, liquidity and capital across a variety of situations, including a severely stressed environment.

Balance Sheet Analysis and Metrics

As of December 2018, total assets in our consolidated statements of financial condition were $191.49 billion, an increase of $26.73 billion from December 2017, primarily reflecting increases in resale agreements of $18.21 billion, loans receivable of $14.51 billion, and financial instruments owned of $9.93 billion, partially offset by a decrease in cash of $20.91 billion.

As of December 2018, total liabilities in our consolidated statements of financial condition were $163.77 billion, an increase of $24.55 billion from December 2017, primarily reflecting an increase in deposits of $21.86 billion.

Funding Sources

Our primary sources of funding are deposits, collateralized financings, unsecured borrowings and shareholder's equity. We seek to maintain broad and diversified funding sources across products, programs, tenors and creditors to avoid funding concentrations.

The table below presents information about our funding sources.

	As of December			
$ in millions	**2018**		2017	
Deposits	**$ 137,752**	**77.87%**	$ 115,894	77.67%
Collateralized financings:				
Repurchase agreements	**3,815**	**2.16%**	56	0.04%
Other secured financings	**660**	**0.37%**	3,502	2.34%
Total collateralized financings	**4,475**	**2.53%**	3,558	2.38%
Unsecured borrowings	**6,947**	**3.93%**	4,219	2.83%
Total shareholder's equity	**27,718**	**15.67%**	25,546	17.12%
Total funding sources	**$ 176,892**	**100.00%**	$ 149,217	100.00%

Substantially all of our funding is raised in U.S. dollars. We generally distribute our funding products through third-party distributors and private wealth advisors, to a depositor base in a variety of markets and directly to U.S. consumers, through our digital deposit platform. We believe that our relationships with our creditors are critical to our liquidity. Our creditors include individuals, financial institutions, nonfinancial institutions, corporations and asset managers. We have imposed various internal guidelines to monitor creditor concentration across our funding programs.

Deposits. Our deposits provide us with a diversified source of funding and reduce our reliance on wholesale funding. A growing portion of our deposit base consists of consumer deposits. Deposits are primarily used to finance lending activity, other inventory and a portion of our global core liquid assets (GCLA). We accept deposits, including savings, demand and time deposits. Our depositors include institutions, corporations, affiliates, clients of third-party broker-dealers, private bank clients and U.S. consumers. We also accept deposits from Funding IHC and Group Inc. to address our funding needs.

The average interest rate on our interest-bearing deposits was 1.93% for 2018 and 1.12% for 2017.

The table below presents the average interest rate on each type of deposit.

	Year Ended December	
	2018	2017
Savings and demand	**1.88%**	0.89%
Time	**1.99%**	1.61%

See "Supplemental Financial Information — Distributions of Assets, Liabilities, and Shareholder's Equity" and Note 14 to our consolidated financial statements for further information about deposits.

Collateralized Financings. We fund certain of our inventory on a secured basis by entering into collateralized financing agreements, such as securities sold under agreements to repurchase (repurchase agreements). We are also a member of the Federal Home Loan Bank of New York (FHLB). Outstanding borrowings from the FHLB were $528 million as of December 2018 and $3.40 billion as of December 2017. See Note 10 to the consolidated financial statements for further information about collateralized financings.

We also have access to funding through the Federal Reserve Bank discount window. While we do not rely on this funding in our liquidity planning and stress testing, we maintain policies and procedures necessary to access this funding and test discount window borrowing procedures.

Unsecured Borrowings. We may raise funding through unsecured borrowings, primarily from Funding IHC and Group Inc. Group Inc. raises non-deposit unsecured funding and lends to Funding IHC and other affiliates, including consolidated subsidiaries, such as us, to meet those entities' funding needs. This approach enhances the flexibility with which Funding IHC and Group Inc. can meet our and other Group Inc. subsidiaries' funding requirements. We may also raise funding through issuing senior unsecured debt. See Note 15 to the consolidated financial statements for further information about our unsecured borrowings.

Shareholder's Equity. Shareholder's equity is a stable and perpetual source of funding. See Note 19 to the consolidated financial statements for further information about our equity transactions.

Equity Capital Management and Regulatory Capital

Capital adequacy is of critical importance to us. We have in place a comprehensive capital management policy that provides a framework, defines objectives and establishes guidelines to assist us in maintaining the appropriate level and composition of capital in both business-as-usual and stressed conditions.

Equity Capital Management

We have established a comprehensive governance structure for capital management, where capital management activity is overseen by our Board of Directors (Board) and the Bank Management Risk Committee reviews capital levels monthly. Levels of capital usage are controlled principally by setting limits on our unsecured funding utilization and/or limits on risk at both the Bank and business levels.

We determine the appropriate amount and composition of our equity capital by considering multiple factors including our current and future regulatory capital requirements, the results of our capital planning and stress testing processes, capital requirements for resolution planning and other factors, such as rating agency guidelines, the business environment and conditions in the financial markets.

As part of our capital management policy, we maintain a contingency capital plan. Our contingency capital plan provides a framework for evaluating and remediating capital deficiencies, specifying potential drivers, mitigants and actions that can be taken to address such deficiencies. Our contingency capital plan also outlines the communication and escalation procedures for internal and external stakeholders in the event of a capital shortfall.

Restrictions on Payments

Our payment of dividends to Group Inc. is subject to certain restrictions. In addition to limitations on the payment of dividends imposed by federal and state laws, the FRB and the FDIC have the authority to prohibit or limit the payment of dividends by the banking organizations they supervise if, in their opinion, payment of a dividend would constitute an unsafe or unsound practice in light of the financial condition of the banking organization, pursuant to applicable FRB regulations (the amount of dividends paid should be limited to the lesser of the amounts calculated under a recent earnings test and an undivided profits test). During 2018, we did not pay a dividend to Group Inc. During 2017, we paid a dividend of $500 million. Under the FRB regulations referenced above, we could have declared dividends up to $5.00 billion as of December 2018, and $4.55 billion as of December 2017, to Group Inc.

Capital Planning and Stress Testing Process

As part of capital planning, we project sources and uses of capital given a range of business environments, including stressed conditions. Our stress testing process is designed to identify and measure material risks associated with our business activities, including market risk, credit risk and operational risk, as well as our ability to generate revenues.

The following is a description of our capital planning and stress testing process:

- **Capital Planning.** Our capital planning process incorporates an internal capital adequacy assessment with the objective of ensuring that we are appropriately capitalized relative to the risks in our businesses. We incorporate stress scenarios into our capital planning process with a goal of holding sufficient capital to ensure we remain adequately capitalized in baseline and stressed conditions.

- **Stress Testing.** Our stress tests incorporate our internally designed stress scenarios, including our internally developed severely adverse scenario, and are designed to capture our specific vulnerabilities and risks.

  We submitted our 2018 annual Dodd-Frank Act Stress Test (DFAST) results to the FRB in April 2018 and published a summary of our annual DFAST results in June 2018. Under recent amendments to the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act), effective November 2019, depository institutions with total consolidated assets between $100 billion and $250 billion, such as us, will not be required to conduct annual company-run stress tests. We will not be required to conduct the annual company-run stress test in 2019.

Rating Agency Guidelines

The credit rating agencies assign us long- and short-term issuer ratings, as well as ratings on our long- and short-term bank deposits. They also assign credit ratings to the obligations of Group Inc., which guarantees substantially all of our senior unsecured obligations and deposits, excluding most certificates of deposit (CDs), outstanding as of December 2018.

The level and composition of our equity capital are among the many factors considered in determining our credit ratings. Each agency has its own definition of eligible capital and methodology for evaluating capital adequacy, and assessments are generally based on a combination of factors rather than a single calculation. See "Risk Management — Liquidity Risk Management — Credit Ratings" for further information about our credit ratings.

Consolidated Regulatory Capital

We are subject to consolidated regulatory capital requirements and calculate our capital ratios in accordance with the regulatory capital requirements applicable to state member banks, which are based on the FRB's regulations (Capital Framework). Under the Capital Framework, we are an "Advanced approach" banking organization.

The Capital Framework includes risk-based capital buffers that phased in ratably and became fully effective on January 1, 2019. The minimum risk-based capital ratios applicable to us as of January 2019 reflected the fully phased-in capital conservation buffer of 2.5% and the countercyclical capital buffer, if any, determined by the FRB. The countercyclical capital buffer in the future may differ due to additional guidance from our regulators and/or positional changes.

See Note 18 to the consolidated financial statements for further information about our risk-based capital ratios and leverage ratios, and the Capital Framework.

Regulatory Matters and Other Developments

Regulatory Matters

Our activities are subject to significant and evolving regulation. The Dodd-Frank Act, enacted in July 2010, significantly altered the financial regulatory regime within which we operate. In addition, other reforms have been adopted or are being considered by regulators and policy makers. Given that many of the new and proposed rules are highly complex, the full impact of regulatory reform will not be known until the rules are implemented and market practices develop under the final regulations.

See "Business — Regulation" in Part I of this Annual Report for further information about the laws, rules and regulations and proposed laws, rules and regulations that apply to us and our operations. In addition, see Note 18 to the consolidated financial statements for information about our risk-based capital ratios and leverage ratios.

Resolution Plan. We are required by the FDIC to submit periodic plans that describe our strategy for a rapid and orderly resolution in the event of material financial distress or failure (resolution plan). We submitted our resolution plan on June 28, 2018. In August 2018, the FDIC extended the next resolution plan filing deadline to no sooner than July 1, 2020. In November 2018, the FDIC indicated that it plans to address proposed resolution plan requirements applicable to covered insured depository institutions through an advanced notice of proposed rulemaking in 2019, and noted that the next resolution plan filing will not be due until after such new rulemaking is finalized. See "Business — Regulation" in Part I of this Annual Report for further information about our resolution plan.

Group Inc. is required by the FRB and the FDIC to submit a periodic resolution plan and we are considered a material operating entity in Group Inc.'s plan, which was submitted in June 2017. Group Inc.'s next resolution plan is due on July 1, 2019.

Community Reinvestment Act (CRA). We are subject to the provisions of the CRA. Under the terms of the CRA, we have a continuing and affirmative obligation, consistent with safe and sound operation, to help meet the credit needs of our communities. The regulatory agencies' assessment of our CRA record is made available to the public. We received "Outstanding" CRA ratings from the FRBNY and the NYDFS in their last completed examinations of us in 2015 and 2014, respectively. See "Business — Regulation" in Part I of this Annual Report for further information about the CRA.

Other Developments

Brexit. In March 2017, the U.K. government commenced the formal proceedings to end the U.K.'s membership in the E.U. There is a two year window during which the terms of the U.K.'s exit from the E.U. may be negotiated. This period expires on March 29, 2019.

The E.U. and the U.K. had negotiated a withdrawal agreement which both the U.K. and the E.U. Parliaments must ratify (the Withdrawal Agreement). The U.K. Parliament has not yet approved the Withdrawal Agreement. As a result, there is a possibility that the U.K. will leave the E.U. on March 29, 2019 without any transitional arrangements in place and firms based in the U.K. will lose their existing access arrangements to the E.U. markets; such a scenario is referred to as a "hard" Brexit.

GS Group has been preparing for anticipated outcomes, including a hard Brexit, with the goal of ensuring that GS Group maintains access to E.U. markets and is able to continue to provide products and services to its E.U. clients. In order for GS Group to continue to serve its E.U. clients, clients may need to face an entity within one of the remaining E.U. member states, unless national laws in the applicable member state permit cross-border services from non-E.U. entities (for example, based on specific licenses or exemptions).

GS Group's plan, which includes our activities, to manage a hard Brexit scenario involves transition of certain activities to new and/or different legal entities; working with clients and counterparties to redocument transactions so they face one of GS Group's E.U. legal entities; changes to GS Group's infrastructure; obtaining and developing new real estate; and, in some cases, moving GS Group's people to offices in the E.U.

Replacement of IBORs, including LIBOR. Central banks and regulators in a number of major jurisdictions (for example, U.S., U.K., E.U., Switzerland and Japan) have convened working groups to find, and implement the transition to, suitable replacements for IBORs. The U.K. Financial Conduct Authority, which regulates LIBOR, has announced that it will not compel panel banks to contribute to LIBOR after 2021. The E.U. Benchmarks Regulation imposed conditions under which only compliant benchmarks may be used in new contracts after 2021.

Market-led working groups in major jurisdictions, noted above, have already selected their preferred alternative risk-free reference rates and have published and will continue to publish consultations on issues, including methodologies for fallback provisions in contracts and financial instruments linked to IBORs and the development of term structures for alternative risk-free reference rates, which will be critical for financial markets to transition to the use of alternative risk-free reference rates in place of IBORs.

We have exposure to IBORs, including in financial instruments and contracts that mature after 2021. Our exposures arise from securities and loans we hold for investment or in connection with derivatives we enter into to make markets for our clients and hedge our risks. We also have exposure to IBORs in the floating-rate securities and other funding products we issue.

The markets for alternative risk-free reference rates are developing and as they develop we expect to transition to these alternative risk-free reference rates.

GS Group is seeking to facilitate an orderly transition from IBORs to alternative risk-free reference rates for GS Group's clients. Accordingly, GS Group has created a program that focuses on:

- Evaluating and monitoring the impacts across its businesses, including transactions and products;
- Identifying and evaluating the scope of existing financial instruments and contracts that may be affected, and the extent to which those financial instruments and contracts already contain appropriate fallback language or would require amendment, either through bilateral negotiation or using industry-wide tools, such as protocols;
- Enhancements to infrastructure (for example, models and systems) to prepare for a smooth transition to alternative risk-free reference rates;
- Active participation in central bank and sector working groups, including responding to industry consultations; and
- Client education and communication.

As part of this program, GS Group has sought to systematically identify the risks inherent in this transition, including financial risks (for example, earnings volatility under stress due to widening swap spreads and the loss of funding sources as a result of counterparties' reluctance to participate in transitioning their positions) and nonfinancial risks (for example, the inability to negotiate fallbacks with clients and/or counterparties and operational impediments to the transition). GS Group is engaged with a range of industry and regulatory working groups (for example, ISDA, the Bank of England's Working Group on Sterling Risk Free Reference Rates and the Federal Reserve's Alternative Reference Rates Committee) and will continue to engage with its clients and counterparties to facilitate an orderly transition to alternative risk-free reference rates.

Off-Balance-Sheet Arrangements and Contractual Obligations

Off-Balance-Sheet Arrangements

In the ordinary course of business, we enter into various types of off-balance-sheet arrangements. Our involvement in these arrangements can take many different forms, including:

- Holding interests in special purpose entities such as mortgage-backed and other asset-backed securitization vehicles;
- Providing guarantees, indemnifications, commitments, and representations and warranties; and
- Entering into interest rate, currency, credit and other derivatives, including total return swaps.

We enter into these arrangements primarily in connection with our lending and market-making activities, and securitizations.

The table below presents where information about various off-balance-sheet arrangements may be found in this Annual Report. In addition, see Note 3 to the consolidated financial statements for information about our consolidation policies.

Type of Off-Balance-Sheet Arrangement	Disclosure in this Annual Report
Variable interests and other obligations, including contingent obligations, arising from variable interests in nonconsolidated variable interest entities (VIEs)	See Note 12 to the consolidated financial statements.
Guarantees and lending and other commitments	See Note 17 to the consolidated financial statements.
Derivatives	See "Risk Management — Credit Risk Management — Credit Exposures — OTC Derivatives" and Notes 4, 5, 7 and 17 to the consolidated financial statements.

Contractual Obligations

We have certain contractual obligations which require us to make future cash payments. These contractual obligations include our time deposits, secured long-term financings, unsecured long-term borrowings and contractual interest payments.

Our obligations to make future cash payments also include our commitments and guarantees related to off-balance-sheet arrangements, which are excluded from the table below. See Note 17 to the consolidated financial statements for further information about such commitments and guarantees.

Due to the uncertainty of the timing and amounts that will ultimately be paid, our liability for unrecognized tax benefits has been excluded from the table below. See Note 21 to the consolidated financial statements for further information about our unrecognized tax benefits.

The table below presents contractual obligations by type.

	As of December	
$ in millions	**2018**	2017
Time deposits	**$ 26,522**	$ 26,360
Secured long-term financings	**$ 632**	$ 607
Unsecured long-term borrowings	**$ 6,755**	$ 2,134
Contractual interest payments	**$ 2,292**	$ 2,089

The table below presents contractual obligations by expiration.

	As of December 2018			
$ in millions	**2019**	**2020 - 2021**	**2022 - 2023**	**2024 - Thereafter**
Time deposits	**$ –**	**$ 12,881**	**$ 9,730**	**$ 3,911**
Secured long-term financings	**$ –**	**$ 632**	**$ –**	**$ –**
Unsecured long-term borrowings	**$ –**	**$ 996**	**$ 1,509**	**$ 4,250**
Contractual interest payments	**$ 650**	**$ 1,007**	**$ 500**	**$ 135**

In the table above:

- Obligations maturing within one year of our financial statement date or redeemable within one year of our financial statement date at the option of the holders are excluded as they are treated as short-term obligations. See Notes 10 and 15 to the consolidated financial statements for further information about our short-term borrowings.
- Obligations that are repayable prior to maturity at our option are reflected at their contractual maturity dates and obligations that are redeemable prior to maturity at the option of the holders are reflected at the earliest dates such options become exercisable.
- Contractual interest payments represents estimated future interest payments related to unsecured long-term borrowings, secured long-term financings and time deposits based on applicable interest rates as of December 2018.

Risk Management

Risks are inherent in our businesses and include liquidity, market, credit, operational, model, legal, compliance, conduct, regulatory and reputational risks. For further information about our risk management processes, see "Overview and Structure of Risk Management." Our risks include the risks across our risk categories, regions or businesses, as well as those which have uncertain outcomes and have the potential to materially impact our financial results, our liquidity and our reputation. For further information about our areas of risk, see "Liquidity Risk Management," "Market Risk Management," "Credit Risk Management," "Operational Risk Management" and "Model Risk Management" and "Risk Factors" in Part I of this Annual Report.

Certain risk management processes as described in the "Liquidity Risk Management," "Market Risk Management," "Credit Risk Management," "Operational Risk Management" and "Model Risk Management" sections below are performed by GS Group at the level of its businesses, products, and revenue producing units which encompass all our activities. These processes are subject to Bank oversight, either pursuant to a Service Level Agreement between us and certain affiliates, or inclusive of Bank activities. All references in the sections below to businesses, products, and revenue-producing units refer to those of GS Group.

Overview and Structure of Risk Management

Overview

We believe that effective risk management is critical to our success. Accordingly, we have established an enterprise risk management framework that employs a comprehensive, integrated approach to risk management, and is designed to enable comprehensive risk management processes through which we identify, assess, monitor and manage the risks we assume in conducting our activities. These risks include liquidity, market, credit, operational, model, legal, compliance, conduct, regulatory and reputational risk exposures. Our risk management structure, consistent with GS Group, is built around three core components: governance, processes and people.

Governance. Risk management governance starts with the Board, which both directly and through its committees, including its Risk Committee, oversees our risk management policies and practices implemented through the enterprise risk management framework. The Board Risk Committee is also responsible for the annual review and approval of our risk appetite statement. The risk appetite statement describes the levels and types of risk we are willing to accept or to avoid, in order to achieve our strategic business objectives, while remaining in compliance with regulatory requirements.

The Board, either directly or through its committees, receives regular briefings on our risks, including liquidity risk, market risk, credit risk, operational risk and model risk from our independent risk oversight and control functions, including our chief risk officer and chief financial officer, on compliance risk and conduct risk from our chief compliance officer, on legal and regulatory matters from our general counsel, and on other matters impacting our reputation from our general counsel. Our chief risk officer reports to our chief executive officer and to the Board Risk Committee. As part of the review of our risk portfolio, our chief risk officer regularly advises the Board Risk Committee of relevant risk metrics and material exposures, including risk limits and thresholds established in our risk appetite statement.

Enterprise Risk Management is used to oversee the implementation of risk governance structure and core risk management processes. We utilize the enterprise risk management framework which provides the Board, our risk committees and senior management with a consistent and integrated approach to managing our various risks in a manner consistent with our risk appetite.

Revenue-producing units, as well as Bank Finance and Treasury working in conjunction with GS Group Treasury, Operations and Technology, are our first line of defense and are accountable for the outcomes of our risk-generating activities, as well as for assessing and managing those risks within our risk appetite.

Independent risk oversight and control functions are considered our second line of defense and provide independent assessment, oversight and challenge of the risks taken by our first line of defense, as well as lead and participate in risk-oriented committees. Independent risk oversight and control functions include Compliance, Conflicts Resolution, Controllers, Credit Risk Management, Enterprise Risk Management, Human Capital Management, Legal, Liquidity Risk Management, Market Risk Management, Model Risk Management, Operational Risk Management and Tax.

Internal Audit is considered our third line of defense and is accountable to the Audit Committee of the Board. Internal Audit includes professionals with a broad range of audit and industry experience, including risk management expertise. Internal Audit is responsible for independently assessing and validating the effectiveness of key controls, including those within the risk management framework, and providing timely reporting to the Audit Committee of the Board, senior management and regulators.

The three lines of defense structure promotes the accountability of first line risk takers, provides a framework for effective challenge by the second line and empowers independent review from the third line.

Our governance structure provides the protocol and responsibility for decision-making on risk management issues and ensures implementation of those decisions. We make extensive use of our risk-related committees that meet regularly and serve as an important means to facilitate and foster ongoing discussions to manage and mitigate risks.

We maintain strong communication about risk and we have a culture of collaboration in decision-making among our first and second lines of defense, committees and senior management. While our first line of defense is responsible for management of their risk, we dedicate extensive resources to our second line of defense in order to ensure a strong oversight structure and an appropriate segregation of duties. GS Group regularly reinforces its strong culture of escalation and accountability across GS Group subsidiaries and functions, including us.

Processes. We maintain various processes that are critical components of our risk management. We apply a rigorous framework of limits and thresholds to control and monitor risk across transactions, products, businesses and markets. Bank-wide limits are set by the Board and its committees, with certain levels set by the Bank Management Risk Committee and monitored on a regular basis. Certain limits, other than regulatory and our Board-level limits, may be set at levels that will require periodic adjustment, rather than at levels that reflect our maximum risk appetite. This fosters an ongoing dialogue about risk among our first and second lines of defense, committees, senior management, and the Board, as well as rapid escalation of risk-related matters. See "Liquidity Risk Management," "Market Risk Management," "Credit Risk Management" and "Operational Risk Management" for further information about our risk limits and thresholds.

Active management of our positions is another important process. Proactive mitigation of our market and credit exposures minimizes the risk that we will be required to take outsized actions during periods of stress.

Effective risk reporting and risk decision-making depends on our ability to get the right information to the right people at the right time. As such, we focus on the rigor and effectiveness of our risk systems, with the objective of ensuring that our risk management technology systems are comprehensive, reliable and timely. We devote significant time and resources to our risk management technology to ensure that it consistently provides us with complete, accurate and timely information.

People. Even the best technology serves only as a tool for helping to make informed decisions in real time about the risks we are taking. Ultimately, effective risk management requires our people to interpret our risk data on an ongoing and timely basis and adjust risk positions accordingly. The experience of the professionals, and their understanding of the nuances and limitations of each risk measure, guides us in assessing exposures and maintaining them within prudent levels.

We reinforce a culture of effective risk management, consistent with our risk appetite, through GS Group's training and development programs, inclusive of us, as well as in the way we evaluate performance, and recognize and reward our people. The training and development programs, including certain sessions led by GS Group's most senior leaders, are focused on the importance of risk management, client relationships and reputational excellence. As part of GS Group's annual performance review process, we assess reputational excellence, including how an employee exercises good risk management and reputational judgment, and adheres to the code of conduct and compliance policies. We are included in GS Group's review and reward processes which are designed to communicate and reinforce to our professionals the link between behavior and how people are recognized, the need to focus on our clients and our reputation, and the need to always act in accordance with the highest standards.

Structure

Ultimate oversight of risk is the responsibility of the Board. The Board oversees risk both directly and through its Audit Committee and its Risk Committee. Our management has established committees for risk oversight and committee membership generally consists of senior managers from both our first and second lines of defense. We have established procedures for these committees to ensure that appropriate information barriers are in place. Our primary risk committees are described below. All chairs of our management-level committees are our employees or dual employees.

We leverage GS Group's firmwide and divisional committees, where appropriate, for advice on certain of our activities. Bank officers, who are members of such committees, understand their responsibility to review any proposed products, transactions or activities and to act in our interest. In addition, both our committees and GS Group's committees have responsibility for considering the impact of transactions and activities on our reputation.

Membership of our risk committees is reviewed regularly and updated to reflect changes in the responsibilities of the committee members. Accordingly, the length of time that members serve on the respective committees varies as determined by the committee chairs and based on the responsibilities of the members.

Our risk management governance structure includes the Board Risk Committee, which has ultimate risk management oversight for us, our key risk-related committees, which are described in further detail below, and the independence of our three lines of defense. We operate as a subsidiary of Group Inc. and, when applicable, we utilize the structure and expertise of GS Group's committees, including its firmwide, divisional and regional committees for risk management, such as the Firmwide Client and Business Standards Committee, Firmwide Risk Committee, Firmwide Enterprise Risk Committee, GS Group's Risk Governance Committee (through delegated authority from the Firmwide Risk Committee), the Consumer Lending Credit Policy Committee (CLCPC), the Private Wealth Management Capital Committee (PWMCC), and the Firmwide Capital Committee, and related sub-committees.

The CLCPC supervises consumer credit risk exposures for all unsecured consumer loans that are originated by the Bank, and is responsible for establishing the credit risk management underwriting policies and framework for all unsecured consumer lending. The CLCPC has three control side co-chairs, including two of our deputy chief credit risk officers for consumer lending.

Committee Structure

Our committee structure is described as follows:

Bank Management Committee. The Bank Management Committee oversees our activities, including our risk control functions. It provides this oversight directly and through authority delegated to committees it has established. This committee consists of our most senior leaders, and is chaired by our chief executive officer. The Bank Management Committee is accountable for business standards and practices, including reputational risk management and client services.

The following are the committees that are principally involved in our risk management:

Bank New Activity Committee. The Bank New Activity Committee (BNAC) is responsible for the review and approval of proposed new activities to be conducted in the Bank. In addition, BNAC may review, at its discretion, previously approved activities that are significant and that have changed in complexity and/or structure or present different reputational and suitability concerns over time to consider whether these activities remain appropriate. The review process may utilize the expertise of the Firmwide New Activity Committee and the Regional New Activity Committees.

Bank Management Risk Committee. The Bank Management Risk Committee is responsible for the ongoing monitoring and management of our risks, including but not limited to, market risk, credit risk, liquidity and funding risk, model risk, legal risk, operational risk, and compliance with minimum regulatory capital ratios; internal capital adequacy assessment processes; and Dodd-Frank Act stress testing procedures. The risk management methodologies of the Bank Management Risk Committee and its sub-committees are consistent with those of GS Group's Risk Governance Committee, as appropriate.

Bank Asset Liability Committee. The Bank Asset Liability Committee is responsible for the ongoing monitoring and review of our liquidity and funding risk management, balance sheet planning and asset liability management, compliance with the minimum regulatory capital ratios, interest rate risk monitoring and management and resolution planning.

Liquidity Risk Management

Overview

Liquidity risk is the risk that we will be unable to fund ourselves or meet our liquidity needs in the event of Bank-specific, GS Group, broader industry or market liquidity stress events. We have in place a comprehensive and conservative set of liquidity and funding policies. Our principal objective is to be able to fund ourselves and to enable our core businesses to continue to serve clients and generate revenues, even under adverse circumstances.

Bank Finance and Treasury works in conjunction with GS Group Treasury and has primary responsibility for developing, managing and executing our liquidity and funding strategy within our risk appetite.

Liquidity Risk Management, which is independent of the revenue-producing units and Bank Finance and Treasury, and reports to our chief risk officer, has primary responsibility for assessing, monitoring and managing our liquidity risk through oversight across our businesses and the establishment of stress testing and limits frameworks. Liquidity Risk Management fulfills these responsibilities both directly and through use of a Service Level Agreement with GS Group's Liquidity Risk Management function, which reports to GS Group's chief risk officer. Services provided by GS Group's Liquidity Risk Management function are subject to our risk management policies for any work it performs for us under a Service Level Agreement.

Liquidity Risk Management Principles

We manage liquidity risk according to three principles: (i) hold sufficient excess liquidity in the form of GCLA to cover outflows during a stressed period, (ii) maintain appropriate Asset-Liability Management and (iii) maintain a viable Contingency Funding Plan.

GCLA. GCLA is liquidity that we maintain to meet a broad range of potential cash outflows and collateral needs in a stressed environment. A primary liquidity principle is to pre-fund our estimated potential cash and collateral needs during a liquidity crisis and hold this liquidity in the form of unencumbered, highly liquid securities and cash. We believe that the securities held in our GCLA would be readily convertible to cash in a matter of days, through liquidation, by entering into repurchase agreements or from maturities of resale agreements, and that this cash would allow us to meet immediate obligations without needing to sell other assets or depend on additional funding from credit-sensitive markets.

Our GCLA reflects the following principles:

- The first days or weeks of a liquidity crisis are the most critical to a company's survival;
- Focus must be maintained on all potential cash and collateral outflows, not just disruptions to financing flows. Liquidity needs are determined by many factors, including market movements, collateral requirements and client commitments, all of which can change dramatically in a difficult funding environment;
- During a liquidity crisis, credit-sensitive funding, including unsecured borrowings, certain deposits and some types of secured financing agreements, may be unavailable, and the terms (e.g., interest rates, collateral provisions and tenor) or availability of other types of secured financing may change and certain deposits may be withdrawn; and
- As a result of our policy to pre-fund liquidity that we estimate may be needed in a crisis, we hold more cash and unencumbered securities and have larger deposit and borrowings balances than we would otherwise require. We believe that our liquidity is stronger with greater balances of cash and highly liquid unencumbered securities, even though it increases our total assets and our funding costs.

We believe that our GCLA provides us with a resilient source of funds that would be available in advance of potential cash and collateral outflows and gives us significant flexibility in managing through a difficult funding environment.

Asset-Liability Management. Our liquidity risk management policies are designed to ensure we have a sufficient amount of financing, even when funding markets experience persistent stress. We seek to maintain a diversified funding profile with an appropriate tenor, taking into consideration the characteristics and liquidity profile of our assets and modeled tenor of deposits with no stated maturity.

Our approach to asset-liability management includes:

- Conservatively managing the overall characteristics of our funding book, with a focus on maintaining long-term, diversified sources of funding in excess of our current requirements. See "Balance Sheet and Funding Sources — Funding Sources" for further information;
- Actively managing and monitoring our asset base, with particular focus on the liquidity, holding period and our ability to fund assets on a secured basis. We assess our funding requirements and our ability to liquidate assets in a stressed environment while appropriately managing risk. This enables us to determine the most appropriate funding products and tenors. See "Balance Sheet and Funding Sources — Balance Sheet Management" for further information about our balance sheet management process; and
- Raising deposits and obtaining other secured and unsecured funding sources that have a long contractual or modeled tenor relative to the liquidity profile of our assets. This reduces the risk that our liabilities will come due in advance of our ability to generate liquidity from the sale of our assets.

Our goal is to ensure that we maintain sufficient liquidity to fund our assets and meet our contractual and contingent obligations in normal times, as well as during periods of market stress. Funding plans are reviewed and approved by the Bank Asset Liability Committee and Firmwide Asset Liability Committee. In a liquidity crisis, we would first use our GCLA in order to avoid reliance on asset sales (other than our GCLA). However, we recognize that orderly asset sales may be prudent or necessary in a severe or persistent liquidity crisis.

Contingency Funding Plan. We maintain a contingency funding plan to provide a framework for analyzing and responding to a liquidity crisis situation or periods of market stress. The contingency funding plan outlines a list of potential risk factors, key reports and metrics that are reviewed on an ongoing basis to assist in assessing the severity of, and managing through, a liquidity crisis and/or market dislocation. The contingency funding plan also describes in detail the potential responses if our assessments indicate that we have entered a liquidity crisis, which include pre-funding for what we estimate will be the potential cash and collateral needs, as well as utilizing secondary sources of liquidity. Mitigants and action items to address specific risks which may arise are also described and assigned to individuals responsible for execution.

The contingency funding plan identifies key groups of individuals to foster effective coordination, control and distribution of information, all of which are critical in the management of a crisis or period of market stress. The contingency funding plan also provides information about the responsibilities of these groups and individuals, which include making and disseminating key decisions, coordinating all contingency activities throughout the duration of the crisis or period of market stress, implementing liquidity maintenance activities and managing internal and external communication.

Stress Tests

In order to determine the appropriate size of our GCLA, we use GS Group's internal liquidity model, referred to as the Modeled Liquidity Outflow, which captures and quantifies our liquidity risks. We also consider other factors, including, but not limited to, an assessment of our potential intraday liquidity needs through an additional internal liquidity model, referred to as the Intraday Liquidity Model, the results of GS Group's long-term stress testing models, our resolution liquidity models and other applicable regulatory requirements and a qualitative assessment of GS Group's, inclusive of our condition, as well as the financial markets. The results of the Modeled Liquidity Outflow, the Intraday Liquidity Model, the long-term stress testing models and the resolution liquidity models are reported to senior management on a regular basis. We also perform stress tests that are designed to ensure a comprehensive analysis of our vulnerabilities and idiosyncratic risks combining financial and nonfinancial risks, including, but not limited to, credit, market, liquidity and funding, operational and compliance, strategic, systemic and emerging risks into a single combined scenario.

Modeled Liquidity Outflow. Our Modeled Liquidity Outflow is based on conducting multiple scenarios that include combinations of market-wide and GS Group specific stress, including those scenarios applicable to us. These scenarios are characterized by the following qualitative elements:

- Severely challenged market environments, including low consumer and corporate confidence, financial and political instability, adverse changes in market values, including potential declines in equity markets and widening of credit spreads; and
- A GS Group-specific crisis potentially triggered by material losses, reputational damage, litigation, executive departure, and/or a ratings downgrade.

The following are key modeling elements of the Modeled Liquidity Outflow:

- Liquidity needs over a 30-day scenario;
- A two-notch downgrade of our and/or Group Inc.'s long-term senior unsecured credit ratings;
- A combination of contractual outflows, such as upcoming maturities of unsecured borrowings, and contingent outflows (e.g., actions, though not contractually required, we may deem necessary in a crisis). We assume that most contingent outflows will occur within the initial days and weeks of a crisis;
- No issuance of equity or unsecured borrowings;
- No support from additional government funding facilities. Although we have access to funding through the Federal Reserve Bank discount window, we do not assume reliance on additional sources of funding in a liquidity crisis; and
- No asset liquidation, other than the GCLA.

The potential contractual and contingent cash and collateral outflows covered in our Modeled Liquidity Outflow include:

Unsecured Funding

- Contractual: All upcoming maturities of unsecured borrowings and other unsecured funding products. We assume that we will be unable to issue new unsecured borrowings or roll over any maturing borrowings.

Deposits

- Contractual: All upcoming maturities of term deposits. We assume that we will be unable to raise new term deposits or roll over any maturing term deposits.
- Contingent: Partial withdrawals of deposits that have no contractual maturity. The withdrawal assumptions reflect, among other factors, the type of deposit, whether the deposit is insured or uninsured, and our relationship with the depositor.

Secured Funding

- Contractual: A portion of upcoming contractual maturities of secured funding due to either the inability to refinance or the ability to refinance only at wider haircuts (i.e., on terms which require us to post additional collateral). Our assumptions reflect, among other factors, the quality of the underlying collateral, counterparty roll probabilities (our assessment of the counterparty's likelihood of continuing to provide funding on a secured basis at the maturity of the trade) and counterparty concentration.
- Contingent: Adverse changes in the value of financial assets pledged as collateral for financing transactions, which would necessitate additional collateral postings under those transactions.

OTC Derivatives

- Contingent: Collateral postings to counterparties due to adverse changes in the value of our over-the-counter (OTC) derivatives, excluding those that are cleared and settled through central counterparties (OTC-cleared).
- Contingent: Other outflows of cash or collateral related to OTC derivatives, excluding OTC-cleared, including the impact of trade terminations, collateral substitutions, collateral disputes, loss of rehypothecation rights, collateral calls or termination payments required by a two-notch downgrade in our or Group Inc.'s credit ratings, and collateral that has not been called by counterparties, but is available to them.

Exchange-Traded and OTC-cleared Derivatives

- Contingent: Variation margin postings required due to adverse changes in the value of our outstanding exchange-traded and OTC-cleared derivatives.
- Contingent: An increase in initial margin and guaranty fund requirements by derivative clearing houses.

Unfunded Commitments

- Contingent: Draws on our unfunded commitments. Draw assumptions reflect, among other things, the type of commitment and counterparty.

Other

- Other upcoming large cash outflows, such as tax payments.

Intraday Liquidity Model. Our Intraday Liquidity Model measures our intraday liquidity needs using a scenario analysis characterized by the same qualitative elements as our Modeled Liquidity Outflow. The model assesses the risk of increased intraday liquidity requirements during a scenario where access to sources of intraday liquidity may become constrained.

The following are key modeling elements of the Intraday Liquidity Model:

- Liquidity needs over a one-day settlement period;
- Delays in receipt of counterparty cash payments;
- A reduction in the availability of intraday credit lines at our third-party clearing agents; and
- Higher settlement volumes due to an increase in activity.

Long-Term Stress Testing. We utilize longer-term stress tests to take a forward view on our liquidity position through prolonged stress periods in which we experience a severe liquidity stress and recover in an environment that continues to be challenging. We are focused on ensuring conservative asset-liability management to prepare for a prolonged period of potential stress, seeking to maintain a diversified funding profile with an appropriate tenor, taking into consideration the characteristics and liquidity profile of our assets.

We also perform stress tests on a regular basis as part of our routine risk management processes and conduct tailored stress tests on an ad hoc or product-specific basis in response to market developments.

Model Review and Validation

Bank Finance and Treasury, working in conjunction with GS Group Treasury, regularly refine the Modeled Liquidity Outflow, Intraday Liquidity Model and other stress testing models to reflect changes in market or economic conditions or business mix. Any changes, including model assumptions, are approved by Liquidity Risk Management. Significant changes to these models are also approved by the GS Group Risk Governance Committee.

These models are independently reviewed, validated and approved by Model Risk Management. See "Model Risk Management" for further information.

Limits

We use liquidity limits at various levels and across liquidity risk types to manage the size of our liquidity exposures. Limits are measured relative to acceptable levels of risk given our liquidity risk tolerance. The purpose of the limits is to assist senior management in monitoring and controlling our overall liquidity profile.

Our Board and Bank Risk Management Committee approve our liquidity risk limits, consistent with our risk appetite statement. Limits are reviewed frequently and amended, with required approvals, on a permanent and temporary basis, as appropriate, to reflect changing market or business conditions.

Our liquidity risk limits are monitored by Bank Finance and Treasury, GS Group Treasury and Liquidity Risk Management. Bank Finance and Treasury and Liquidity Risk Management are responsible for identifying and escalating to senior management and/or the appropriate risk committee, on a timely basis, instances where limits have been exceeded.

GCLA Metrics

Based on the results of our internal liquidity risk models, as well as our consideration of other factors including, but not limited to, an assessment of our potential intraday liquidity needs and a qualitative assessment of GS Group's, inclusive of our, condition, as well as the financial markets, we believe our liquidity position as of both December 2018 and December 2017 was appropriate. We strictly limit our GCLA to a narrowly defined list of securities and cash because they are highly liquid, even in a difficult funding environment. We do not include other potential sources of excess liquidity in our GCLA, such as less liquid unencumbered securities or committed credit facilities.

The table below presents information about our average GCLA by asset class.

	Average for the Year Ended December	
$ in millions	**2018**	2017
Overnight cash deposits	**$ 59,903**	$ 64,581
U.S. government obligations	**13,241**	2,584
U.S. agency obligations	**7,766**	11,120
Non-U.S. government obligations	**163**	199
Total	**$ 81,073**	$ 78,484

GCLA consists of (i) certain overnight U.S. dollar cash deposits, (ii) unencumbered U.S. government and agency obligations (including highly liquid U.S. agency mortgage-backed obligations), all of which are eligible as collateral in Federal Reserve open market operations and (iii) certain non-U.S. dollar-denominated government obligations.

We maintain our GCLA to enable us to meet current and potential liquidity requirements. Our Modeled Liquidity Outflow and Intraday Liquidity Model incorporate our consolidated requirements. Funding IHC is required to provide the necessary liquidity to Group Inc. during the ordinary course of business, and is also obligated to provide capital and liquidity support to certain major subsidiaries, including us, in the event of GS Group's material financial distress or failure. Liquidity held directly by us is intended for use only by us to meet our liquidity requirements and is assumed not to be available to our affiliates, including Group Inc. or Funding IHC, unless (i) legally provided for and (ii) there are no additional regulatory, tax or other restrictions.

Liquidity Regulatory Framework

We are subject to a minimum Liquidity Coverage Ratio (LCR) under the LCR rule approved by the U.S. federal bank regulatory agencies. The LCR rule requires organizations to maintain an adequate ratio of eligible high-quality liquid assets to expected net cash outflows under an acute short-term liquidity stress scenario. We are required to maintain a minimum LCR of 100%. As of December 2018, our LCR exceeded the minimum requirement.

In addition, the U.S. federal bank regulatory agencies have issued a proposed rule that calls for a net stable funding ratio (NSFR) for large U.S. banking organizations. The proposal would require banking organizations to ensure they have access to stable funding over a one-year time horizon. The U.S. federal bank regulatory agencies have not released the final rule. We expect that we will be compliant with the NSFR requirement when it is effective.

The implementation of these rules and any amendments adopted by the regulatory authorities, could impact our liquidity and funding requirements and practices in the future.

Credit Ratings

Credit ratings are important when we are competing in certain markets, such as OTC derivatives, and when we seek to engage in longer-term transactions. See "Risk Factors" in Part I of this Annual Report for information about the risks associated with a reduction in our credit ratings.

The table below presents our unsecured credit ratings and outlook by Fitch, Inc. (Fitch), Moody's Investors Service (Moody's), and Standard & Poor's Ratings Services (S&P).

	As of December 2018		
	Fitch	**Moody's**	**S&P**
Short-term debt	**F1**	**P-1**	**A-1**
Long-term debt	**A+**	**A1**	**A+**
Short-term bank deposits	**F1+**	**P-1**	**N/A**
Long-term bank deposits	**AA-**	**A1**	**N/A**
Ratings outlook	**Stable**	**Negative**	**Stable**

We believe our credit ratings are primarily based on the credit rating agencies' assessment of:

- Our status within GS Group and likelihood of GS Group support;
- Our liquidity, market, credit and operational risk management practices;
- The level and variability of our earnings;
- Our capital base;
- Our primary businesses, reputation and management;

- Our corporate governance; and
- The external operating and economic environment, including, in some cases, the assumed level of government support or other systemic considerations, such as potential resolution.

Certain of our derivatives have been transacted under bilateral agreements with counterparties who may require us to post collateral or terminate the transactions based on changes in our and/or Group Inc.'s credit ratings. We manage our GCLA to ensure we would, among other potential requirements, be able to make the additional collateral or termination payments that may be required in the event of a two-notch reduction in our and/or Group Inc.'s long-term credit ratings, as well as collateral that has not been called by counterparties, but is available to them.

See Note 7 to the consolidated financial statements for further information about derivatives with credit-related contingent features and the additional collateral or termination payments related to our net derivative liabilities under bilateral agreements that could have been called by counterparties in the event of a one-notch and two-notch downgrade in our and/or Group Inc.'s credit ratings.

Cash Flows

Our cash flows are complex and bear little relation to our net earnings and net assets. Consequently, we believe that traditional cash flow analysis is less meaningful in evaluating our liquidity position than the liquidity and asset-liability management policies described above. Cash flow analysis may, however, be helpful in highlighting certain macro trends and strategic initiatives in our businesses.

Year Ended December 2018. Our cash decreased by $20.91 billion to $30.62 billion at the end of 2018. We used $42.97 billion in net cash from investing and operating activities, primarily reflecting an increase in resale agreements (reflecting a change in the composition of our GCLA), an increase in loans receivable, and an increase in financial instruments owned. We generated $22.06 billion in net cash from financing activities, primarily reflecting an increase in deposits.

Year Ended December 2017. Our cash decreased by $23.14 billion to $51.53 billion at the end of 2017. We used $26.44 billion in net cash from investing and operating activities, primarily reflecting an increase in resale agreements (reflecting a change in the composition of our GCLA), net of repurchase agreements, in addition to an increase in loans receivable. We generated $3.30 billion in net cash from financing activities, primarily reflecting an increase in unsecured borrowings from Funding IHC and an increase in other secured financings from the FHLB.

Market Risk Management

Overview

Market risk is the risk of loss in the value of our positions, as well as certain other financial assets and financial liabilities, due to changes in market conditions. We employ a variety of risk measures, each described in the sections below, to monitor market risk. We hold positions primarily for market making for our clients and for our lending activities. Our positions, therefore, change based on client demands and our lending opportunities.

Categories of market risk include the following:

- Interest rate risk: results from exposures to changes in the level, slope and curvature of yield curves, the volatilities of interest rates, prepayment speeds and credit spreads; and
- Currency rate risk: results from exposures to changes in spot prices, forward prices and volatilities of currency rates.

Market Risk Management, which is independent of the revenue-producing units and reports to our chief risk officer, has primary responsibility for assessing, monitoring and managing our market risk through oversight across our businesses. Market Risk Management fulfills these responsibilities both directly and through use of a Service Level Agreement with GS Group's Market Risk Management function, which reports to GS Group's chief risk officer. Services provided by GS Group's Market Risk Management function are subject to our risk management policies for any work it performs for us under a Service Level Agreement.

Managers in revenue-producing units and Market Risk Management discuss market information, positions and estimated loss scenarios on an ongoing basis. Managers in revenue-producing units are accountable for managing risk within prescribed limits. These managers have in-depth knowledge of their positions, markets and the instruments available to hedge their exposures.

Market Risk Management Process

Our process for managing market risk includes:

- Collecting complete, accurate and timely information;
- A dynamic limit-setting framework;
- Monitoring compliance with established market risk limits and reporting our exposures;
- Diversifying exposures;
- Controlling position sizes;
- Evaluating mitigants, such as economic hedges in related securities or derivatives; and
- Proactive communication between revenue-producing units and independent risk oversight and control functions.

Our market risk management systems enable us to perform an independent calculation of Value-at-Risk (VaR) and stress measures, capture risk measures at individual position levels, attribute risk measures to individual risk factors of each position, report many different views of the risk measures (e.g., by desk, business or product type), and produce ad hoc analyses in a timely manner.

Risk Measures

Market Risk Management produces risk measures and monitors them against established market risk limits. These measures reflect an extensive range of scenarios and the results are aggregated at product, business and Bank levels.

We use a variety of risk measures to estimate the size of potential losses for both moderate and more extreme market moves over both short-term and long-term time horizons. Our primary risk measures are VaR, which is used for shorter-term periods, and stress tests. Risk reports detail key risks, drivers and changes for each desk and business, and are distributed daily to senior management of both the revenue-producing units and the independent risk oversight and control functions.

Value-at-Risk. VaR is the potential loss in value due to adverse market movements over a defined time horizon with a specified confidence level. We typically employ a one-day time horizon with a 95% confidence level. We use a single VaR model, which captures risks including interest rates, currency rates and equity prices. As such, VaR facilitates comparison across portfolios of different risk characteristics. VaR also captures the diversification of aggregated risk at the Bank level.

We are aware of the inherent limitations to VaR and therefore use a variety of risk measures in our market risk management process. Inherent limitations to VaR include:

- VaR does not estimate potential losses over longer time horizons where moves may be extreme;
- VaR does not take account of the relative liquidity of different risk positions; and
- Previous moves in market risk factors may not produce accurate predictions of all future market moves.

To comprehensively capture our exposures and relevant risks in our VaR calculation, we use historical simulations with full valuation of market factors at the position level by simultaneously shocking the relevant market factors for that position. These market factors include spot prices, credit spreads, funding spreads, yield curves, volatility and correlation, and are updated periodically based on changes in the composition of positions, as well as variations in market conditions. We sample from five years of historical data to generate the scenarios for our VaR calculation. The historical data is weighted so that the relative importance of the data reduces over time. This gives greater importance to more recent observations and reflects current asset volatilities, which improves the accuracy of our estimates of potential loss. As a result, even if our positions included in VaR were unchanged, our VaR would increase with increasing market volatility and vice versa.

Given its reliance on historical data, VaR is most effective in estimating risk exposures in markets in which there are no sudden fundamental changes or shifts in market conditions.

Our VaR measure does not include:

- Positions that are best measured and monitored using sensitivity measures; and
- The impact of changes in counterparty and our own credit spreads on derivatives, as well as changes in our own credit spreads on financial liabilities for which the fair value option was elected.

We perform daily backtesting of the VaR model (i.e., comparing daily net revenues for positions included in VaR to the VaR measure calculated as of the prior business day) at the Bank and business level.

Stress Testing. Stress testing is a method of determining the effect of various hypothetical stress scenarios. We use stress testing to examine risks of specific portfolios, as well as the potential impact of our significant risk exposures. We use a variety of stress testing techniques to calculate the potential loss from a wide range of market moves on our portfolios, including sensitivity analysis, scenario analysis and stress tests. The results of our various stress tests are analyzed together for risk management purposes.

Sensitivity analysis is used to quantify the impact of a market move in a single risk factor across all positions (e.g., equity prices or credit spreads) using a variety of defined market shocks, ranging from those that could be expected over a one-day time horizon up to those that could take many months to occur. We also use sensitivity analysis to quantify the impact of the default of any single entity, which captures the risk of large or concentrated exposures.

Scenario analysis is used to quantify the impact of a specified event, including how the event impacts multiple risk factors simultaneously. When conducting scenario analysis, we typically consider a number of possible outcomes for each scenario, ranging from moderate to severely adverse market impacts. In addition, these stress tests are constructed using both historical events and forward-looking hypothetical scenarios.

Stress testing is designed to ensure a comprehensive analysis of our vulnerabilities and idiosyncratic risks combining financial and nonfinancial risks, including, but not limited to, market, credit, liquidity and funding, operational and compliance, strategic, systemic and emerging risks into a single combined scenario. Stress tests are primarily used to assess capital adequacy as part of our capital planning and stress testing process; however, stress testing is also integrated into our risk governance framework. This includes selecting appropriate scenarios to use for our capital planning and stress testing process. See "Equity Capital Management and Regulatory Capital — Equity Capital Management" for further information.

Unlike VaR measures, which have an implied probability because they are calculated at a specified confidence level, there is generally no implied probability that our stress test scenarios will occur. Instead, stress tests are used to model both moderate and more extreme moves in underlying market factors. When estimating potential loss, we generally assume that our positions cannot be reduced or hedged (although experience demonstrates that we are generally able to do so).

Stress test scenarios are conducted on a regular basis as part of our routine risk management process and on an ad hoc basis in response to market events or concerns. Stress testing is an important part of our risk management process because it allows us to quantify our exposure to tail risks, highlight potential loss concentrations, undertake risk/reward analysis, and assess and mitigate our risk positions.

Limits

We use risk limits at various levels (including Bank, business and product) to govern our risk appetite by controlling the size of our exposures to market risk. Limits are set based on VaR and on a range of stress tests relevant to our exposures. Limits are reviewed frequently and amended on a permanent or temporary basis to reflect changing market conditions, business conditions or tolerance for risk.

The Board Risk Committee and Bank Management Risk Committee approve market risk limits and sub-limits at the Bank level, consistent with our risk appetite statement. In addition, Market Risk Management (through delegated authority from Bank Management Risk Committee) sets market risk limits and sub-limits at certain product and business levels.

The purpose of the firmwide and Bank level limits are to assist senior management in controlling our overall risk profile. Sub-limits are set below the approved level of risk limits. Sub-limits set the desired maximum amount of exposure that may be managed by any particular business on a day-to-day basis without additional levels of senior management approval, effectively leaving day-to-day decisions to individual desk managers and traders. Accordingly, sub-limits are a management tool designed to ensure appropriate escalation rather than to establish maximum risk tolerance. Sub-limits also distribute risk among various businesses in a manner that is consistent with their level of activity and client demand, taking into account the relative performance of each area.

Our market risk limits are monitored by Market Risk Management, which is responsible for identifying and escalating, to senior management and/or the appropriate risk committee, on a timely basis, instances where limits have been exceeded. When a risk limit has been exceeded (e.g., due to positional changes or changes in market conditions, such as increased volatilities or changes in correlations), it is escalated to senior management and/or the appropriate risk committee. Such instances are remediated by an exposure reduction and/or a temporary or permanent increase to the risk limit.

Model Review and Validation

Our VaR and stress testing models are regularly reviewed by Market Risk Management and enhanced in order to incorporate changes in the composition of positions included in our market risk measures, as well as variations in market conditions. Prior to implementing significant changes to our assumptions and/or models, Model Risk Management performs model validations. Significant changes to our VaR and stress testing models are reviewed with GS Group's chief risk officer and GS Group's chief financial officer, and approved by GS Group's Risk Governance Committee.

These models are independently reviewed, validated and approved by Model Risk Management. See "Model Risk Management" for further information.

Metrics

We analyze VaR at the Bank level and a variety of more detailed levels, including by risk category, business and region. The tables below present average daily VaR and period-end VaR, as well as the high and low VaR for the period. Diversification effect in the tables below represents the difference between total VaR and the sum of the VaRs for the two risk categories. This effect arises because the two market risk categories are not perfectly correlated.

The table below presents average daily VaR by risk category.

	Year Ended December	
$ in millions	**2018**	2017
Interest rates	**$ 19**	$ 20
Currency rates	**4**	4
Diversification effect	**(4)**	(4)
Total	**$ 19**	$ 20

Our average daily VaR decreased to $19 million in 2018 from $20 million in 2017, due to decreases in the interest rates category. The overall decrease was primarily due to reduced exposures.

The table below presents period-end VaR by risk category.

	As of December	
$ in millions	**2018**	2017
Interest rates	**$ 20**	$ 20
Currency rates	**4**	5
Diversification effect	**(5)**	(7)
Total	**$ 19**	$ 18

Our daily VaR increased to $19 million as of December 2018 from $18 million as of December 2017, primarily due to a reduction in the diversification effect.

During 2018 and 2017, our total VaR risk limit was not exceeded, raised or reduced.

The table below presents high and low VaR by risk category.

	Year Ended December 2018		Year Ended December 2017	
$ in millions	**High**	**Low**	High	Low
Interest rates	**$ 28**	**$ 15**	$ 32	$ 14
Currency rates	**$ 8**	**$ 2**	$ 9	$ 2

The high total VaR was $27 million for 2018 and $32 million for 2017, and the low total VaR was $14 million for both 2018 and 2017.

Sensitivity Measures

Certain portfolios and individual positions are not included in VaR because VaR is not the most appropriate risk measure. Other sensitivity measures we use to analyze market risk are described below.

10% Sensitivity Measures. The table below presents market risk by asset category for positions, accounted for at fair value, that are not included in VaR.

	As of December	
$ in millions	**2018**	2017
Debt	**$ 763**	$ 740
Equity	**35**	38
Total	**$ 798**	$ 778

In the table above:

- The market risk of these positions is determined by estimating the potential reduction in net revenues of a 10% decline in the value of these positions.
- Equity positions relate to investments in qualified affordable housing projects.
- Debt positions include loans backed by commercial and residential real estate, corporate bank loans and other corporate debt.
- Funded equity and debt positions are included in our consolidated statements of financial condition in financial instruments owned. See Note 6 to the consolidated financial statements for further information about cash instruments.
- These measures do not reflect the diversification effect across asset categories or across other market risk measures.

Interest Rate Sensitivity. The carrying value of loans receivable that are held for investment, net of allowance for loan losses was $61.73 billion as of December 2018 and $47.76 billion as of December 2017, substantially all of which had floating interest rates. The estimated sensitivity to a 100 basis point increase in interest rates on such loans was $481 million as of December 2018 and $441 million as of December 2017, of additional interest income over a twelve-month period, which does not take into account the potential impact of an increase in costs to fund such loans. See Note 9 to the consolidated financial statements for further information about loans receivable that are held for investment.

Other Market Risk Considerations

As of both December 2018 and December 2017, we had commitments and held loans for which we, and our affiliates, have obtained credit loss protection from Sumitomo Mitsui Financial Group, Inc. See Note 17 to the consolidated financial statements for further information about such lending commitments.

In addition, we make investments in securities that are accounted for as available-for-sale and included in financial instruments owned in the consolidated statements of financial condition. See Note 6 to the consolidated financial statements for further information.

Credit Risk Management

Overview

Credit risk represents the potential for loss due to the default or deterioration in credit quality of a counterparty (e.g., an OTC derivatives counterparty or a borrower) or an issuer of securities or other instruments we hold. Our exposure to credit risk comes mostly from client transactions in loans and lending commitments and OTC derivatives. Credit risk also comes from cash placed with banks, securities financing transactions (i.e., resale and repurchase agreements) and customer and other receivables.

Credit Risk Management, which is independent of the revenue-producing units and reports to our chief risk officer, has primary responsibility for assessing, monitoring and managing our credit risk through oversight across our businesses. Credit Risk Management fulfills these responsibilities both directly and through use of a Service Level Agreement with GS Group's Credit Risk Management function, which reports to GS Group's chief risk officer. Services provided by GS Group's Credit Risk Management function are subject to our risk management policies for any work it performs for us under a Service Level Agreement.

In addition to Credit Risk Management approval, all committed loans that are in excess of defined thresholds must also be approved by a Bank risk officer. The Bank Management Risk Committee approves our credit policies. In addition, we hold other positions that give rise to credit risk (e.g., bonds held in our inventory and secondary bank loans). These credit risks are captured as a component of market risk measures, which are monitored and managed by Market Risk Management, consistent with other positions. We also enter into derivatives to manage market risk exposures. Such derivatives also give rise to credit risk, which is monitored and managed by Credit Risk Management.

Credit Risk Management Process

Our process for managing credit risk includes:

- Collecting complete, accurate and timely information;
- Approving transactions and setting and communicating credit exposure limits;
- Monitoring compliance with established credit risk limits and reporting our exposure;
- Establishing or approving underwriting standards;
- Assessing the likelihood that a counterparty will default on its payment obligations;
- Measuring our current and potential credit exposure and losses resulting from counterparty default;
- Using credit risk mitigants, including collateral and hedging;
- Maximizing recovery through active workout and restructuring of claims; and
- Proactive communication between revenue-producing units and independent risk oversight and control functions.

As part of the risk assessment process, Credit Risk Management performs credit reviews, which include initial and ongoing analyses of our counterparties. We employ well-defined underwriting standards and policies, which seek to mitigate credit risk through analysis of a borrower's credit history, financial information, cash flow, sustainability of liquidity and collateral quality adequacy, if applicable. For substantially all of our credit exposures, the core of our process is an annual counterparty credit review. A credit review is an independent analysis of the capacity and willingness of a counterparty to meet its financial obligations, resulting in an internal credit rating. The determination of internal credit ratings also incorporates assumptions with respect to the nature of and outlook for the counterparty's industry, and the economic environment.

Senior personnel within Credit Risk Management, with expertise in specific industries, inspect and approve credit reviews and internal credit ratings.

Our risk assessment process may also include, where applicable, reviewing certain key metrics, including but not limited to delinquency status, collateral values, FICO credit scores and other risk factors.

GS Group's global credit risk management systems capture credit exposure to individual counterparties and on an aggregate basis to counterparties and their subsidiaries (economic groups). These systems also provide management with comprehensive information about our aggregate credit risk by product, internal credit rating, industry, country and region.

Risk Measures and Limits

We measure our credit risk based on the potential loss in the event of non-payment by a counterparty using current and potential exposure. For loans and lending commitments, the primary measure is a function of the notional amount of the position. For derivatives and securities financing transactions, current exposure represents the amount presently owed to us after taking into account applicable netting and collateral arrangements, while potential exposure represents our estimate of the future exposure that could arise over the life of a transaction based on market movements within a specified confidence level. Potential exposure also takes into account netting and collateral arrangements.

The Board Risk Committee and Bank Management Risk Committee approve credit risk limits at the Bank, business and product levels, consistent with our risk appetite statement. Credit Risk Management (through delegated authority from the GS Group Risk Governance Committee, and through its Service Level Agreement with us) sets credit limits for individual counterparties (including affiliates), economic groups, industries and countries. Policies authorized by the Firmwide Enterprise Risk Committee and the GS Group Risk Governance Committee prescribe the level of formal approval required for us to assume credit exposure to a counterparty across all product areas, taking into account any applicable netting provisions, collateral or other credit risk mitigants.

We use credit limits at various levels (e.g., counterparties including affiliates, economic group, industry and country), as well as underwriting standards to control the size and nature of our credit exposures. Limits for counterparties and economic groups are reviewed regularly and revised to reflect changing risk appetites for a given counterparty or group of counterparties. Limits for industries and countries are based on our risk appetite and are designed to allow for regular monitoring, review, escalation and management of credit risk concentrations.

Our credit risk limits are monitored by Credit Risk Management, which is responsible for identifying and escalating, on a timely basis, instances where limits have been exceeded. When a risk limit has been exceeded, it is escalated to senior management and/or the appropriate risk committee.

Stress Tests

We use regular stress tests to calculate the credit exposures, including potential concentrations that would result from applying shocks to counterparty credit ratings or credit risk factors (e.g., currency rates, credit spreads, interest rates, equity prices). These shocks include a wide range of moderate and more extreme market movements. Some of our stress tests include shocks to multiple risk factors, consistent with the occurrence of a severe market or economic event. Unlike potential exposure, which is calculated within a specified confidence level, with a stress test there is generally no assumed probability of these events occurring.

We perform stress tests on a regular basis as part of our routine risk management processes and conduct tailored stress tests on an ad hoc basis in response to market developments. We also perform stress tests that are designed to ensure a comprehensive analysis of our vulnerabilities and idiosyncratic risks combining financial and nonfinancial risks, including, but not limited to, credit, market, liquidity and funding, operational and compliance, strategic, systemic and emerging risks into a single combined scenario.

Model Review and Validation

Our potential credit exposure and stress testing models, and any changes to such models or assumptions, are independently reviewed, validated and approved by Model Risk Management. See "Model Risk Management" for further information.

Risk Mitigants

To reduce our credit exposures on loans and lending commitments, depending on the credit quality of the borrower and other characteristics of the transaction, we employ a variety of potential risk mitigants. Risk mitigants include collateral provisions, guarantees, covenants, structural seniority of the bank loan claims and, for certain lending commitments, provisions in the legal documentation that allow us to adjust loan amounts, pricing, structure and other terms as market conditions change. The type and structure of risk mitigants employed can significantly influence the degree of credit risk involved in a loan or lending commitment.

For derivatives and securities financing transactions, we may enter into netting agreements with counterparties that permit us to offset receivables and payables with such counterparties. We may also reduce credit risk with counterparties by entering into agreements that enable us to obtain collateral from them on an upfront or contingent basis and/or to terminate transactions if the counterparty's credit rating falls below a specified level. We monitor the fair value of the collateral to ensure that our credit exposures are appropriately collateralized. We seek to minimize exposures where there is a significant positive correlation between the creditworthiness of our counterparties and the market value of collateral we receive.

When we do not have sufficient visibility into a counterparty's financial strength or when we believe a counterparty requires support from its parent, we may obtain third-party guarantees of the counterparty's obligations. We may also mitigate our credit risk using credit derivatives or participation agreements.

Credit Exposures

As of December 2018, our aggregate credit exposure increased as compared with December 2017, primarily reflecting an increase in loans and lending commitments, partially offset by a decrease in cash deposits with the FRBNY. The percentage of our credit exposures arising from non-investment-grade counterparties (based on our internally determined public rating agency equivalents) increased as compared with December 2017, reflecting an increase in non-investment-grade loans and lending commitments. Our credit exposure to counterparties that defaulted during 2018 was lower as compared with our credit exposure to counterparties that defaulted during the prior year, and all of such exposure was related to loans and lending commitments. Our credit exposure to counterparties that defaulted during 2018 remained low, representing less than 0.5% of our total credit exposure, and estimated losses compared with the prior year were lower and not material. Our credit exposures are described further below.

Cash. Our credit exposure on cash arises from our unrestricted cash, and includes both interest-bearing and non-interest-bearing deposits. To mitigate the risk of credit loss, we deposit substantially all of our cash at the FRBNY.

OTC Derivatives. Our credit exposure on OTC derivatives arises primarily from our market-making activities. As a market maker, we enter into derivative transactions to provide liquidity to clients and to facilitate the transfer and hedging of their risks. We also enter into derivatives to manage market risk exposures. We manage our credit exposure on OTC derivatives using the credit risk process, measures, limits and risk mitigants described above.

We generally enter into OTC derivatives transactions under bilateral collateral arrangements that require the daily exchange of collateral. As credit risk is an essential component of fair value, we include a credit valuation adjustment (CVA) in the fair value of derivatives to reflect counterparty credit risk, as described in Note 7 to the consolidated financial statements. CVA is a function of the present value of expected exposure, the probability of counterparty default and the assumed recovery upon default.

The table below presents net credit exposure from OTC derivatives and the concentration by industry and region.

	As of December	
$ in millions	**2018**	2017
OTC derivative assets	**$ 7,265**	$ 8,543
Collateral (not netted under U.S. GAAP)	**(1,420)**	(1,090)
Net credit exposure	**$ 5,845**	$ 7,453
Industry		
Consumer, Retail & Healthcare	**2%**	3%
Diversified Industrials	**6%**	8%
Financial Institutions	**17%**	22%
Funds	**14%**	11%
Municipalities & Nonprofit	**26%**	28%
Natural Resources & Utilities	**7%**	7%
Sovereign	**10%**	4%
Technology, Media & Telecommunications	**11%**	10%
Other (including Special Purpose Vehicles)	**7%**	7%
Total	**100%**	100%
Region		
Americas	**71%**	72%
Europe, Middle East and Africa	**27%**	27%
Asia	**2%**	1%
Total	**100%**	100%

In the table above:

- OTC derivative assets, included in the consolidated statements of financial condition, are reported on a net-by-counterparty basis (i.e., the net receivable for a given counterparty) when a legal right of setoff exists under an enforceable netting agreement (counterparty netting) and are accounted for at fair value, net of cash collateral received under enforceable credit support agreements (cash collateral netting).
- Collateral represents cash collateral and the fair value of securities collateral, primarily U.S. and non-U.S. government and agency obligations, received under credit support agreements, which management considers when determining credit risk, but such collateral is not eligible for netting under U.S. GAAP.

The table below presents the distribution of net credit exposure from OTC derivatives by tenor.

$ in millions	Investment-Grade	Non-Investment-Grade / Unrated	Total
As of December 2018			
Less than 1 year	**$ 3,732**	**$ 416**	**$ 4,148**
1 - 5 years	**8,286**	**357**	**8,643**
Greater than 5 years	**22,210**	**900**	**23,110**
Total	**34,228**	**1,673**	**35,901**
Netting	**(29,809)**	**(247)**	**(30,056)**
Net credit exposure	**$ 4,419**	**$ 1,426**	**$ 5,845**
As of December 2017			
Less than 1 year	$ 5,092	$ 207	$ 5,299
1 - 5 years	10,145	596	10,741
Greater than 5 years	26,961	798	27,759
Total	42,198	1,601	43,799
Netting	(36,199)	(147)	(36,346)
Net credit exposure	$ 5,999	$ 1,454	$ 7,453

In the table above:

- Tenor is based on remaining contractual maturity.
- Netting includes counterparty netting across tenor categories and cash and securities collateral that management considers when determining credit risk (including collateral that is not eligible for netting under U.S. GAAP). Counterparty netting within the same tenor category is included within such tenor category.

The tables below present the distribution of net credit exposure from OTC derivatives by tenor and internally determined public rating agency equivalents.

	Investment-Grade				
$ in millions	AAA	AA	A	BBB	Total
As of December 2018					
Less than 1 year	**$ 560**	**$ 717**	**$ 1,924**	**$ 531**	**$ 3,732**
1 - 5 years	**97**	**713**	**4,953**	**2,523**	**8,286**
Greater than 5 years	**444**	**1,788**	**14,674**	**5,304**	**22,210**
Total	**1,101**	**3,218**	**21,551**	**8,358**	**34,228**
Netting	**(304)**	**(2,077)**	**(19,545)**	**(7,883)**	**(29,809)**
Net credit exposure	**$ 797**	**$ 1,141**	**$ 2,006**	**$ 475**	**$ 4,419**
As of December 2017					
Less than 1 year	$ 133	$ 1,113	$ 3,257	$ 589	$ 5,092
1 - 5 years	339	461	7,228	2,117	10,145
Greater than 5 years	746	3,759	16,561	5,895	26,961
Total	1,218	5,333	27,046	8,601	42,198
Netting	(264)	(3,282)	(24,601)	(8,052)	(36,199)
Net credit exposure	$ 954	$ 2,051	$ 2,445	$ 549	$ 5,999

	Non-Investment-Grade / Unrated		
$ in millions	BB or lower	Unrated	Total
As of December 2018			
Less than 1 year	**$ 391**	**$ 25**	**$ 416**
1 - 5 years	**354**	**3**	**357**
Greater than 5 years	**891**	**9**	**900**
Total	**1,636**	**37**	**1,673**
Netting	**(246)**	**(1)**	**(247)**
Net credit exposure	**$ 1,390**	**$ 36**	**$ 1,426**
As of December 2017			
Less than 1 year	$ 164	$ 43	$ 207
1 - 5 years	596	–	596
Greater than 5 years	798	–	798
Total	1,558	43	1,601
Netting	(147)	–	(147)
Net credit exposure	$ 1,411	$ 43	$ 1,454

Lending Activities. We manage our lending activities using the credit risk process, measures, limits and risk mitigants described above. Other lending positions, including secondary trading positions, are risk-managed as a component of market risk.

- **Commercial Lending.** Our commercial lending activities include lending to investment-grade and non-investment-grade corporate borrowers. Loans and lending commitments associated with these activities are principally used for operating liquidity and general corporate purposes or in connection with contingent acquisitions. Corporate loans may be secured or unsecured, depending on the loan purpose, the risk profile of the borrower and other factors. Our commercial lending activities also include extending loans to borrowers that are secured by commercial and other real estate.

  The table below presents credit exposure from commercial loans and lending commitments, and the concentration by industry, region and credit quality.

$ in millions	As of December 2018	2017
Loans and Lending Commitments	**$ 157,297**	$ 141,000
Industry		
Consumer, Retail & Healthcare	**17%**	22%
Diversified Industrials	**15%**	12%
Financial Institutions	**9%**	8%
Funds	**4%**	4%
Natural Resources & Utilities	**15%**	15%
Real Estate	**9%**	10%
Technology, Media & Telecommunications	**18%**	18%
Other (including Special Purpose Vehicles)	**13%**	11%
Total	**100%**	100%
Region		
Americas	**84%**	81%
Europe, Middle East and Africa	**14%**	17%
Asia	**2%**	2%
Total	**100%**	100%
Credit Quality (Credit Rating Equivalent)		
AAA	**1%**	2%
AA	**6%**	6%
A	**16%**	19%
BBB	**34%**	32%
BB or lower	**43%**	41%
Total	**100%**	100%

- **PWM, Residential Real Estate and Other Lending.** PWM loans and lending commitments are extended to our private bank clients and substantially all are secured by securities, commercial and residential real estate or other assets. The fair value of the collateral received against such loans and lending commitments generally exceeds their carrying value.

  We also have residential real estate and other lending exposures, which include purchased residential real estate and unsecured consumer loans and commitments to purchase such loans and securities.

  The table below presents credit exposure from PWM, residential real estate and other lending, and the concentration by region. Loans extended to private bank clients, including loans originated through *Goldman Sachs Private Bank Select*, are included in PWM loans.

$ in millions	PWM	Residential Real Estate and Other
As of December 2018		
Credit Exposure	**$ 24,662**	**$ 4,282**
Americas	**99%**	**100%**
Europe, Middle East and Africa	**1%**	**–**
Total	**100%**	**100%**
As of December 2017		
Credit Exposure	$ 22,759	$ 1,388
Americas	98%	100%
Europe, Middle East and Africa	1%	–
Asia	1%	–
Total	100%	100%

- **Consumer Lending.** We originate unsecured consumer loans. The table below presents credit exposure from originated unsecured consumer loans and the concentration for the five most concentrated U.S. states.

$ in millions	Consumer
As of December 2018	
Credit Exposure	**$ 4,536**
California	**12%**
Texas	**9%**
New York	**7%**
Florida	**7%**
Illinois	**4%**
Other	**61%**
Total	**100%**
As of December 2017	
Credit Exposure	$ 1,912
California	11%
Texas	10%
New York	7%
Florida	7%
Illinois	4%
Other	61%
Total	100%

See Note 9 to the consolidated financial statements for further information about the credit quality indicators of consumer loans.

Securities Financing Transactions. We enter into securities financing transactions in order to, among other things, facilitate client activities, invest excess cash, acquire securities to cover short positions and finance certain activities. We bear credit risk related to resale agreements only to the extent that cash advanced or the value of securities pledged or delivered to the counterparty exceeds the value of the collateral received. We also have credit exposure on repurchase agreements to the extent that the value of securities pledged or delivered to the counterparty for these transactions exceeds the amount of cash or collateral received. Securities collateral obtained for securities financing transactions primarily includes U.S. government and agency obligations. We had credit exposure related to securities financing transactions of $1.07 billion as of December 2018 and $36 million as of December 2017, reflecting both netting agreements and collateral that management considers when determining credit risk.

Other Credit Exposures. We are exposed to credit risk from our customer and other receivables. These receivables primarily consist of initial cash margin placed with clearing organizations and receivables related to sales of loans which have traded, but not yet settled. These receivables generally have minimal credit risk due to the low probability of clearing organization default and the short-term nature of receivables related to loan settlements.

The table below presents other credit exposures and the concentration by industry, region and credit quality.

	As of December	
$ in millions	**2018**	2017
Other Credit Exposures	**$ 4,929**	$ 2,888
Industry		
Financial Institutions	**96%**	94%
Funds	**2%**	4%
Other (including Special Purpose Vehicles)	**2%**	2%
Total	**100%**	100%
Region		
Americas	**5%**	18%
Europe, Middle East and Africa	**94%**	82%
Asia	**1%**	-%
Total	**100%**	100%
Credit Quality (Credit Rating Equivalent)		
AAA	**1%**	1%
AA	**94%**	85%
A	**3%**	13%
BBB	**1%**	1%
BB or lower	**1%**	-%
Total	**100%**	100%

The table above reflects collateral that management considers when determining credit risk.

Operational Risk Management

Overview

Operational risk is the risk of an adverse outcome resulting from inadequate or failed internal processes, people, systems or from external events. Our exposure to operational risk arises from routine processing errors, as well as extraordinary incidents, such as major systems failures or legal and regulatory matters.

Potential types of loss events related to internal and external operational risk include:

- Clients, products and business practices;
- Execution, delivery and process management;
- Business disruption and system failures;
- Employment practices and workplace safety;
- Damage to physical assets;
- Internal fraud; and
- External fraud.

Operational Risk Management, which is independent of the revenue-producing units and reports to our chief risk officer, has primary responsibility for development and implementation of our framework for assessing, monitoring and managing operational risk through oversight across our businesses. Operational Risk Management fulfills these responsibilities both directly and through use of a Service Level Agreement with GS Group's Operational Risk Management function, which reports to GS Group's chief risk officer. Services provided by GS Group's Operational Risk Management function are subject to our risk management policies for any work it performs for us under a Service Level Agreement.

Operational Risk Management Process

Our process for managing operational risk includes:

- Collecting complete, accurate and timely information;
- Training, supervision and development of our people;
- Active participation of senior management in identifying and mitigating key operational risks across the Bank;
- Independent risk oversight and control functions that monitor operational risk, and implementation of policies and procedures, and controls designed to prevent the occurrence of operational risk events; and
- Proactive communication between revenue-producing units and independent risk oversight and control functions.

We combine top-down and bottom-up approaches to manage and measure operational risk. From a top-down perspective, senior management assesses Bank and business-level operational risk profiles. From a bottom-up perspective, our first and second lines of defense are responsible for risk identification and risk management on a day-to-day basis, including escalating operational risks to senior management.

Our operational risk management framework is in part designed to comply with the operational risk measurement rules under the Capital Framework and has evolved based on the changing needs of our businesses and regulatory guidance.

Our operational risk management framework consists of the following practices:

- Risk identification and assessment;
- Risk measurement; and
- Risk monitoring and reporting.

We expanded our existing risk management platform and controls to incorporate the additional employees, vendors, technology, call center and compliance controls, including the expansion of fraud prevention, anti-money laundering and consumer compliance considerations, related to the growing number of consumers as a result of new business initiatives.

Risk Identification and Assessment

The core of our operational risk management framework is risk identification and assessment. We have a comprehensive data collection process, which is in line with GS Group's policies and procedures, for operational risk events.

We adhere to GS Group's policies that require all employees to report and escalate operational risk events. When operational risk events are identified, the policies require that the events be documented and analyzed to determine whether changes are required in our systems and/or processes to further mitigate the risk of future events.

We use operational risk management applications to capture and organize operational risk event data and key metrics. One of GS Group's key risk identification and assessment tools is an operational risk and control self-assessment process, which is performed by GS Group's managers. This process consists of the identification and rating of operational risks, on a forward-looking basis, and the related controls. The results from this process are analyzed to evaluate operational risk exposures and identify businesses, activities or products with heightened levels of operational risk.

Risk Measurement

We measure our operational risk exposure using both statistical modeling and scenario analyses, which involve qualitative and quantitative assessments of internal and external operational risk event data and internal control factors for each of our businesses. Operational risk measurement also incorporates an assessment of business environment factors, including, but not limited to:

- Evaluations of the complexity of business activities;
- The degree of automation in processes;
- New activity information;
- The legal and regulatory environment; and
- Changes in the markets for our products and services, including the diversity and sophistication of our customers and counterparties.

The results from these scenario analyses are used to monitor changes in operational risk and to determine business lines that may have heightened exposure to operational risk. These analyses are used in the determination of the appropriate level of operational risk capital to hold.

Stress Tests

We perform stress tests on a regular basis as part of our routine risk management processes. We also perform stress tests that are designed to ensure a comprehensive analysis of our vulnerabilities and idiosyncratic risks combining financial and nonfinancial risks, including, but not limited to, credit, market, liquidity and funding, operational and compliance, strategic, systemic and emerging risks into a single combined scenario.

Risk Monitoring and Reporting

We evaluate changes in our operational risk profile and our businesses, including changes in business mix or jurisdictions in which we operate, by monitoring the factors noted above at a Bank level. We have both preventive and detective internal controls, which are designed to reduce the frequency and severity of operational risk losses and the probability of operational risk events. We monitor the results of assessments and independent internal audits of these internal controls.

We also provide periodic operational risk reports to senior management, the Bank Management Risk Committee and the Board Risk Committee. In addition, we have established thresholds to monitor the impact of an operational risk event, including single loss events and cumulative losses over a twelve-month period, as well as escalation protocols. Our operational risk thresholds are monitored by Operational Risk Management. Operational Risk Management is responsible for identifying and escalating to senior management and/or the appropriate risk committee, on a timely basis, instances where thresholds have been exceeded.

Model Review and Validation

The statistical models utilized by Operational Risk Management are independently reviewed, validated and approved by Model Risk Management. See "Model Risk Management" for further information.

Model Risk Management

Overview

Model risk is the potential for adverse consequences from decisions made based on model outputs that may be incorrect or used inappropriately. We rely on quantitative models across our business activities primarily to value certain financial assets and financial liabilities, to monitor and manage our risk, and to measure and monitor our regulatory capital.

Our model risk management framework for managing model risk is consistent with and part of GS Group's framework. GS Group's model risk management framework is managed through a governance structure and risk management controls, which encompass standards designed to ensure we maintain a comprehensive model inventory, including risk assessment and classification, sound model development practices, independent review and model-specific usage controls. The GS Group Firmwide Model Risk Control Committee oversees our model risk management framework.

Model Risk Management, which is independent of the revenue-producing units, model developers, model owners and model users, and reports to our chief risk officer, has primary responsibility for assessing, monitoring and managing our model risk through oversight across our businesses. Model Risk Management fulfills these responsibilities both directly and through use of a Service Level Agreement with GS Group's Model Risk Management function, which reports to GS Group's chief risk officer. Services provided by GS Group's Model Risk Management function are subject to our risk management policies for any work it performs for us under a Service Level Agreement.

Model Review and Validation Process

Model Risk Management consists of quantitative professionals who perform an independent review, validation and approval of our models. This review includes an analysis of the model documentation, independent testing, an assessment of the appropriateness of the methodology used, and verification of compliance with model development and implementation standards. Model Risk Management reviews all existing models on an annual basis, and approves new models or significant changes to models prior to implementation.

The model validation process incorporates a review of models and trade and risk parameters across a broad range of scenarios (including extreme conditions) in order to critically evaluate and verify:

- The model's conceptual soundness, including the reasonableness of model assumptions, and suitability for intended use;
- The testing strategy utilized by the model developers to ensure that the models function as intended;
- The suitability of the calculation techniques incorporated in the model;
- The model's accuracy in reflecting the characteristics of the related product and its significant risks;
- The model's consistency with models for similar products; and
- The model's sensitivity to input parameters and assumptions.

See "Critical Accounting Policies — Fair Value — Review of Valuation Models," "Liquidity Risk Management," "Market Risk Management," "Credit Risk Management" and "Operational Risk Management" for further information about our use of models within these areas.

200 West Street | New York, NY 10282-2198

Goldman Sachs

March 7, 2019

To the Federal Deposit Insurance Corporation, Federal Reserve Bank of New York, New York State Department of Financial Services and the Audit Committee of the Board of Directors of Goldman Sachs Bank USA (the "Bank"):

Management's Assessment of Internal Control over Financial Reporting

The management of the Bank is responsible for (i) preparing the Bank's annual financial statements in accordance with generally accepted accounting principles, and (ii) establishing and maintaining an adequate internal control structure and procedures for financial reporting, including controls over the preparation of regulatory financial statements in accordance with the instructions for the Call Report.

The Bank's internal control over financial reporting is a process designed under the supervision of the Bank's principal executive and principal financial officers to provide reasonable assurance regarding the reliability of financial reporting and the preparation of reliable financial statements in accordance with U.S. generally accepted accounting principles and the instructions for the Call Report.

The Bank's internal control over financial reporting includes policies and procedures that: (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect transactions and dispositions of assets of the Bank; (ii) provide reasonable assurances that transactions are recorded as necessary to permit preparation of financial statements in accordance with U.S. generally accepted accounting principles and financial statements for regulatory reporting purposes, and that receipts and expenditures of the Bank are being made only in accordance with authorizations of management and directors of the Bank; and (iii) provide reasonable assurance regarding prevention, or timely detection and correction, of unauthorized acquisition, use, or disposition of the Bank'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 and correct, 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 and procedures may deteriorate.

Management assessed the effectiveness of the Bank's internal control over financial reporting, including controls over the preparation of regulatory financial statements in accordance with U.S. generally accepted accounting principles and the instructions for the Call Report, as of December 31, 2018, based on the framework established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

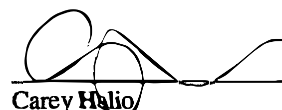
Based upon its assessment, management has concluded that, as of December 31, 2018, the Bank's internal control over financial reporting, including controls over the preparation of regulatory financial statements in accordance with U.S. generally accepted accounting principles and the instructions for the Call Report, is effective based on the criteria established in Internal Control – Integrated Framework.

The effectiveness of internal control over financial reporting, including controls over the preparation of regulatory financial statements in accordance with the instructions for the Call Report, as of December 31, 2018, has been audited by PricewaterhouseCoopers LLP, an independent public accounting firm, as stated in their report dated March 7, 2019.

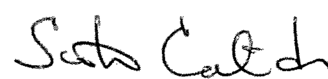
Management's Assessment of Compliance with Designated Laws and Regulations

The management of the Bank is responsible for complying with Federal laws and regulations pertaining to insider loans and Federal and State laws and regulations pertaining to dividend restrictions.

The management of the Bank has assessed the Bank's compliance with the Federal laws and regulations pertaining to insider loans and the Federal and State laws and regulations pertaining to dividend restrictions during the fiscal year that ended on December 31, 2018. Based upon such assessment, management has concluded that the Bank has complied, in all material respects, with the Federal laws and regulations pertaining to insider loans and the Federal and State laws and regulations pertaining to dividend restrictions during the fiscal year that ended on December 31, 2018.



Carey Halio
Chief Executive Officer
Goldman Sachs Bank USA



Scott Calidas
Chief Financial Officer
Goldman Sachs Bank USA

Report of Independent Auditors

To the Board of Directors and Shareholder of Goldman Sachs Bank USA:

We have audited the accompanying consolidated financial statements of Goldman Sachs Bank USA and its subsidiaries (the "Bank"), which comprise the consolidated statements of financial condition as of December 31, 2018 and 2017, and the related consolidated statements of earnings, comprehensive income, changes in shareholder's equity and cash flows for the years then ended. We also have audited the Bank'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 (COSO).

Management's Responsibility for the Consolidated Financial Statements and Internal Control over Financial Reporting

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of effective internal control over financial reporting relevant to the preparation and fair presentation of the consolidated financial statements that are free from material misstatement, whether due to fraud or error. Management is also responsible for its assessment about the effectiveness of internal control over financial reporting, included in the accompanying Management Report under the heading "Management's Assessment of Internal Control over Financial Reporting".

Auditors' Responsibility

Our responsibility is to express an opinion on the consolidated financial statements and an opinion on the Bank's internal control over financial reporting based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement and whether effective internal control over financial reporting was maintained in all material respects.

An audit of financial statements involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgment, including assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the bank's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances. An audit of financial statements also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

PricewaterhouseCoopers LLP, PricewaterhouseCoopers Center, 300 Madison Avenue, New York, NY 10017
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An audit of internal control over financial reporting involves performing procedures to obtain evidence about whether a material weakness exists. The procedures selected depend on our judgment, including assessment of the risk that a material weakness exists. An audit of internal control over financial reporting also involves obtaining an understanding of internal control over financial reporting and testing and evaluating the design and operating effectiveness of internal control over financial reporting based on the assessed risk.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Definition and Inherent Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process effected by those charged with governance, management, and other personnel, designed to provide reasonable assurance regarding the preparation of reliable financial statements in accordance with accounting principles generally accepted in the United States of America. Because management's assessment and our audit were conducted to meet the reporting requirements of Section 112 of the Federal Deposit Insurance Corporation Improvement Act (FDICIA), our audit of the Bank's internal control over financial reporting included controls over the preparation of financial statements in accordance with accounting principles generally accepted in the United States of America and with the Federal Financial Institutions Examination Council Instructions for Consolidated Reports of Condition and Income. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with accounting principles generally accepted in the United States of America, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and those charged with governance; and (iii) provide reasonable assurance regarding prevention, or timely detection and correction, 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 and correct, misstatements. Also, projections of any assessment 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.

Opinions

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Bank as of December 31, 2018 and 2017, and the results of its operations and its cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Bank 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 COSO.

Other Matter

We did not perform auditing procedures on "Management's Assessment of Compliance with Designated Laws and Regulations" in the accompanying Management Report, and accordingly, we do not express an opinion or provide any assurance on it.

PricewaterhouseCoopers LLP

New York, New York
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PART III. Financial Statements and Supplementary Data

Consolidated Statements of Earnings

	Year Ended December	
$ in millions	**2018**	2017
Revenues		
Interest income	**$ 5,812**	$ 3,694
Interest expense	**3,065**	1,772
Net interest income	**2,747**	1,922
Gains and losses from financial instruments, net	**2,281**	2,001
Other revenues	**168**	139
Total non-interest revenues	**2,449**	2,140
Total net revenues	**5,196**	4,062
Provision for credit losses	**470**	335
Operating expenses		
Compensation and benefits	**408**	307
Service charges	**506**	322
Market development	**238**	132
Professional fees	**181**	137
Brokerage, clearing, exchange and distribution fees	**100**	106
Other expenses	**572**	371
Total operating expenses	**2,005**	1,375
Pre-tax earnings	**2,721**	2,352
Provision for taxes	**588**	938
Net earnings	**$ 2,133**	$ 1,414

Consolidated Statements of Comprehensive Income

	Year Ended December	
$ in millions	**2018**	2017
Net earnings	**$ 2,133**	$ 1,414
Other comprehensive income/(loss) adjustments, net of tax:		
Debt valuation adjustment	**54**	5
Available-for-sale securities	**(15)**	(21)
Other comprehensive income/(loss)	**39**	(16)
Comprehensive income	**$ 2,172**	$ 1,398

The accompanying notes are an integral part of these consolidated financial statements.

GOLDMAN SACHS BANK USA AND SUBSIDIARIES

Consolidated Statements of Financial Condition

	As of December	
$ in millions, except par value	**2018**	2017
Assets		
Cash	**$ 30,617**	$ 51,528
Collateralized agreements:		
Securities purchased under agreements to resell (includes **$36,486** and $17,918 at fair value)	**36,525**	18,320
Receivables:		
Loans receivable	**65,363**	50,849
Customer and other receivables	**12,828**	8,318
Financial instruments owned (at fair value and includes **$2,814** and $814 pledged as collateral)	**44,262**	34,334
Other assets	**1,892**	1,411
Total assets	**$ 191,487**	$ 164,760
Liabilities and shareholder's equity		
Deposits (includes **$4,868** and $4,428 at fair value)	**$ 137,752**	$ 115,894
Collateralized financings:		
Securities sold under agreements to repurchase (at fair value)	**3,815**	56
Other secured financings (includes **$528** and $3,395 at fair value)	**660**	3,502
Customer and other payables	**4,503**	3,593
Financial instruments sold, but not yet purchased (at fair value)	**8,701**	10,297
Unsecured borrowings (includes **$175** and $186 at fair value)	**6,947**	4,219
Other liabilities	**1,391**	1,653
Total liabilities	**163,769**	139,214
Commitments, contingencies and guarantees		
Shareholder's equity		
Shareholder's equity (includes common stock, $100 par value; 80,000,000 shares authorized, issued and outstanding)	**27,718**	25,546
Total liabilities and shareholder's equity	**$ 191,487**	$ 164,760

The accompanying notes are an integral part of these consolidated financial statements.

GOLDMAN SACHS BANK USA AND SUBSIDIARIES

Consolidated Statements of Changes in Shareholder's Equity

	Year Ended December	
$ in millions	**2018**	2017
Shareholder's equity		
Beginning balance	**$ 25,546**	$ 24,611
Net earnings	**2,133**	1,414
Capital contribution from The Goldman Sachs Group, Inc.	**–**	37
Dividend paid to The Goldman Sachs Group, Inc.	**–**	(500)
Other comprehensive income/(loss)	**39**	(16)
Ending balance	**$ 27,718**	$ 25,546

The accompanying notes are an integral part of these consolidated financial statements.

GOLDMAN SACHS BANK USA AND SUBSIDIARIES

Consolidated Statements of Cash Flows

$ in millions	Year Ended December 2018	2017
Cash flows from operating activities		
Net earnings	**$ 2,133**	$ 1,414
Adjustments to reconcile net earnings to net cash used for operating activities:		
Depreciation and amortization	**32**	22
Deferred income taxes	**(48)**	48
Share-based compensation	**36**	33
Provision for credit losses	**470**	335
Changes in operating assets and liabilities:		
Loans held for sale	**(873)**	(1,408)
Customer and other receivables and payables, net	**(3,600)**	(2,625)
Collateralized transactions (excluding other secured financings), net	**(14,446)**	(14,901)
Financial instruments owned (excluding available-for-sale securities)	**(10,620)**	3,639
Financial instruments sold, but not yet purchased	**(1,596)**	1,492
Other, net	**(576)**	(179)
Net cash used for operating activities	**(29,088)**	(12,130)
Cash flows from investing activities		
Net cash used for business acquisitions	**(78)**	–
Loans receivable, net (excluding loans held for sale)	**(13,539)**	(11,643)
Purchase of investments	**(495)**	(2,690)
Proceeds from sales and paydowns of investments	**233**	20
Net cash used for investing activities	**(13,879)**	(14,313)
Cash flows from financing activities		
Deposits, net	**22,221**	799
Unsecured short-term borrowings, net	**(2,059)**	2,036
Other secured financings (short-term), net	**(1,440)**	1,465
Repayment of other secured financings (long-term), including the current portion	**(1,425)**	(500)
Proceeds from issuance of unsecured borrowings (long-term)	**4,755**	–
Derivative contracts with a financing element, net	**4**	3
Dividends paid to The Goldman Sachs Group, Inc.	**–**	(500)
Net cash provided by financing activities	**22,056**	3,303
Net decrease in cash	**(20,911)**	(23,140)
Cash, beginning balance	**51,528**	74,668
Cash, ending balance	**$ 30,617**	$ 51,528

SUPPLEMENTAL DISCLOSURES:

Cash payments for interest were $2.92 billion for 2018 and $1.65 billion for 2017. Cash payments for income taxes, net of refunds, were $1.13 billion for 2018 and $741 million for 2017.

Non-cash activities during 2018:

- The Bank received $739 million of loans held for investment in connection with the securitization of financial instruments owned and held for sale loans.

Non-cash activities during 2017:

- Capital contribution of $37 million from The Goldman Sachs Group, Inc.
- The Bank received $194 million of loans held for investment in connection with the securitization of financial instruments owned and held for sale loans.

The accompanying notes are an integral part of these consolidated financial statements.

Note 1.

Description of Business

Goldman Sachs Bank USA, together with its consolidated subsidiaries (collectively, the Bank), is a New York State-chartered bank and a member of the Federal Reserve System. The Bank is supervised and regulated by the Board of Governors of the Federal Reserve System (FRB), the New York State Department of Financial Services (NYDFS) and the U.S. Bureau of Consumer Financial Protection (CFPB), and is a member of the Federal Deposit Insurance Corporation (FDIC). The Bank's deposits are insured by the FDIC up to the maximum amount provided by law. The Bank is registered as a swap dealer with the U.S. Commodity Futures Trading Commission (CFTC). The Bank is also a government securities dealer subject to the rules and regulations of the U.S. Department of the Treasury.

The Bank's principal office is located in New York, New York. The Bank operates two domestic branches, which are located in Salt Lake City, Utah and Draper, Utah. Both branches are regulated by the Utah Department of Financial Institutions. The Bank also has a foreign branch in London, United Kingdom, which is regulated by the Financial Conduct Authority and the Prudential Regulation Authority.

The Bank is a wholly-owned subsidiary of The Goldman Sachs Group, Inc. (Group Inc. and, collectively with its consolidated subsidiaries, GS Group). Group Inc. is a bank holding company under the U.S. Bank Holding Company Act of 1956 (BHC Act), a financial holding company under amendments to the BHC Act effected by the U.S. Gramm-Leach-Bliley Act of 1999, and is subject to supervision and examination by the FRB.

The Bank is a financial services provider that engages in banking activities. The Bank is GS Group's primary lending entity, serving corporate borrowers, private bank clients and U.S. consumers. The Bank is also GS Group's primary deposit-taking entity. The Bank's depositors include institutions, corporations, its affiliates, clients of third-party broker-dealers, private bank clients and U.S. consumers. Substantially all of the Bank's consumer lending and consumer deposit-taking activities are conducted through the Bank's digital platform, *Marcus: by Goldman Sachs*. In addition, the Bank enters into interest rate, currency, credit and other derivatives, and transacts in certain related products, for the purpose of market making and risk management.

The following describes the activities that are conducted in the Bank's primary operating subsidiaries:

Goldman Sachs Mitsui Marine Derivative Products, L.P. (MMDP), a Delaware limited partnership, is owned 50% by an external party, Mitsui Sumitomo Insurance Co., Ltd. (Mitsui Sumitomo). MMDP acts as an intermediary in transactions involving derivative contracts. MMDP is able to provide credit rating enhancement to derivative products due to its partnership with Mitsui Sumitomo.

Goldman Sachs Mortgage Company (GSMC), a New York limited partnership, is a wholly-owned subsidiary of the Bank. GSMC originates commercial mortgage and corporate loans and purchases commercial and residential mortgage loans and other consumer loan assets for securitization and market making.

Note 2.

Basis of Presentation

These consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States (U.S. GAAP) and include the accounts of the Bank and all other entities in which the Bank has a controlling financial interest. Intercompany transactions and balances have been eliminated.

All references to 2018 and 2017 refer to the Bank's years ended, or the dates, as the context requires, December 31, 2018 and December 31, 2017, respectively. Any reference to a future year refers to a year ending on December 31 of that year. Certain reclassifications have been made to previously reported amounts to conform to the current presentation.

Note 3.

Significant Accounting Policies

The Bank's significant accounting policies include accounting for loans receivable and lending commitments held for investment net of allowance for credit losses, when and how to measure the fair value of assets and liabilities, accounting for deposits, and when to consolidate an entity. See Note 9 for policies on accounting for loans receivable and lending commitments, Notes 5 through 8 for policies on fair value measurements, Note 14 for policies on accounting for deposits, and below and Note 12 for policies on consolidation accounting. All other significant accounting policies are either described below or included in the following footnotes:

Financial Instruments Owned and Financial Instruments Sold, But Not Yet Purchased	Note 4
Fair Value Measurements	Note 5
Cash Instruments	Note 6
Derivatives and Hedging Activities	Note 7
Fair Value Option	Note 8
Loans Receivable	Note 9
Collateralized Agreements and Financings	Note 10
Securitization Activities	Note 11
Variable Interest Entities	Note 12
Other Assets	Note 13
Deposits	Note 14
Unsecured Borrowings	Note 15
Other Liabilities	Note 16
Commitments, Contingencies and Guarantees	Note 17
Regulation and Capital Adequacy	Note 18
Transactions with Related Parties	Note 19
Interest Income and Interest Expense	Note 20
Income Taxes	Note 21
Credit Concentrations	Note 22
Legal Proceedings	Note 23
Employee Incentive Plans and Employee Benefit Plans	Note 24

Consolidation

The Bank consolidates entities in which the Bank has a controlling financial interest. The Bank determines whether it has a controlling financial interest in an entity by first evaluating whether the entity is a voting interest entity or a variable interest entity (VIE).

Voting Interest Entities. Voting interest entities are entities in which (i) the total equity investment at risk is sufficient to enable the entity to finance its activities independently and (ii) the equity holders have the power to direct the activities of the entity that most significantly impact its economic performance, the obligation to absorb the losses of the entity and the right to receive the residual returns of the entity. The usual condition for a controlling financial interest in a voting interest entity is ownership of a majority voting interest. If the Bank has a controlling majority voting interest in a voting interest entity, the entity is consolidated.

Variable Interest Entities. A VIE is an entity that lacks one or more of the characteristics of a voting interest entity. The Bank has a controlling financial interest in a VIE when the Bank has a variable interest or interests that provide it with (i) the power to direct the activities of the VIE that most significantly impact the VIE's economic performance and (ii) the obligation to absorb losses of the VIE or the right to receive benefits from the VIE that could potentially be significant to the VIE. See Note 12 for further information about VIEs.

Use of Estimates

Preparation of these consolidated financial statements requires management to make certain estimates and assumptions, the most important of which relate to the allowance for credit losses, fair value measurements, provisions for losses that may arise from litigation and regulatory proceedings (including governmental investigations), and provisions for losses that may arise from tax audits. These estimates and assumptions are based on the best available information but actual results could be materially different.

Revenue Recognition

Financial Assets and Financial Liabilities at Fair Value. Financial instruments owned and financial instruments sold, but not yet purchased are recorded at fair value either under the fair value option or in accordance with other U.S. GAAP. In addition, the Bank has elected to account for certain of its other financial assets and financial liabilities at fair value by electing the fair value option. The fair value of a financial instrument is the amount 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. Financial assets are marked to bid prices and financial liabilities are marked to offer prices. Fair value measurements do not include transaction costs. Fair value gains or losses are included in gains and losses from financial instruments, net. See Notes 5 through 8 for further information about fair value measurements. In addition, the Bank recognizes income related to the syndication of loans and lending commitments and other fees from affiliates in gains and losses from financial instruments, net.

Transfers of Financial Assets

Transfers of financial assets are accounted for as sales when the Bank has relinquished control over the assets transferred. For transfers of financial assets accounted for as sales, any gains or losses are recognized in gains and losses from financial instruments, net. Assets or liabilities that arise from the Bank's continuing involvement with transferred financial assets are initially recognized at fair value. For transfers of financial assets that are not accounted for as sales, the assets are generally included in financial instruments owned or loans receivable and the transfer is accounted for as a collateralized financing, with the related interest expense recognized over the life of the transaction. See Note 10 for further information about transfers of financial assets accounted for as collateralized financings and Note 11 for further information about transfers of financial assets accounted for as sales.

Cash

Cash included cash and due from banks of $382 million as of December 2018 and $260 million as of December 2017. Cash also included interest-bearing deposits of $30.23 billion as of December 2018 and $51.27 billion as of December 2017.

The Bank segregates cash for regulatory and other purposes related to client activity. Cash segregated for regulatory and other purposes was $493 million as of December 2018 and $291 million as of December 2017.

Customer and Other Receivables

Customer and other receivables included receivables from customers and counterparties of $8.06 billion as of December 2018 and $6.83 billion as of December 2017, and receivables from brokers, dealers and clearing organizations of $4.77 billion as of December 2018 and $1.49 billion as of December 2017. Such receivables primarily consist of receivables resulting from unsettled transactions and collateral posted in connection with certain derivative transactions.

Customer and other receivables are accounted for at amortized cost net of estimated uncollectible amounts, which generally approximates fair value. As these receivables are not accounted for at fair value, they are not included in the Bank's fair value hierarchy in Notes 5 through 8. Had these receivables been included in the Bank's fair value hierarchy, substantially all would have been classified in level 2 as of both December 2018 and December 2017. Interest on customer and other receivables is recognized over the life of the transaction and included in interest income.

Customer and Other Payables

Customer and other payables included payables to customers and counterparties of $4.37 billion as of December 2018 and $3.51 billion as of December 2017, and payables to brokers, dealers and clearing organizations of $135 million as of December 2018 and $85 million as of December 2017. Such payables primarily consist of payables resulting from unsettled transactions and collateral received in connection with certain derivative transactions. Customer and other payables are accounted for at cost plus accrued interest, which generally approximates fair value. As these payables are not accounted for at fair value, they are not included in the Bank's fair value hierarchy in Notes 5 through 8. Had these payables been included in the Bank's fair value hierarchy, substantially all would have been classified in level 2 as of both December 2018 and December 2017. Interest on customer and other payables is recognized over the life of the transaction and included in interest expense.

Offsetting Assets and Liabilities

To reduce credit exposures on derivatives and securities financing transactions, the Bank may enter into master netting agreements or similar arrangements (collectively, netting agreements) with counterparties that permit it to offset receivables and payables with such counterparties. A netting agreement is a contract with a counterparty that permits net settlement of multiple transactions with that counterparty, including upon the exercise of termination rights by a non-defaulting party. Upon exercise of such termination rights, all transactions governed by the netting agreement are terminated and a net settlement amount is calculated. In addition, the Bank receives and posts cash and securities collateral with respect to its derivatives and securities financing transactions, subject to the terms of the related credit support agreements or similar arrangements (collectively, credit support agreements). An enforceable credit support agreement grants the non-defaulting party exercising termination rights the right to liquidate the collateral and apply the proceeds to any amounts owed. In order to assess enforceability of the Bank's right of setoff under netting and credit support agreements, the Bank evaluates various factors, including applicable bankruptcy laws, local statutes and regulatory provisions in the jurisdiction of the parties to the agreement.

Derivatives are reported on a net-by-counterparty basis (i.e., the net payable or receivable for derivative assets and liabilities for a given counterparty) in the consolidated statements of financial condition when a legal right of setoff exists under an enforceable netting agreement. Securities purchased under agreements to resell (resale agreements) and securities sold under agreements to repurchase (repurchase agreements) with the same term and currency are presented on a net-by-counterparty basis in the consolidated statements of financial condition when such transactions meet certain settlement criteria and are subject to netting agreements.

In the consolidated statements of financial condition, derivatives are reported net of cash collateral received and posted under enforceable credit support agreements, when transacted under an enforceable netting agreement. In the consolidated statements of financial condition, resale and repurchase agreements are not reported net of the related cash and securities received or posted as collateral. Certain other receivables and payables with affiliates that meet the criteria of offsetting are reported on a net basis in the consolidated statements of financial condition. See Note 10 for further information about collateral received and pledged, including rights to deliver or repledge collateral. See Notes 7 and 10 for further information about offsetting.

Foreign Currency Translation

Assets and liabilities denominated in non-U.S. currencies are translated at rates of exchange prevailing on the date of the consolidated statements of financial condition and revenues and expenses are translated at average rates of exchange for the period. Foreign currency remeasurement gains or losses on transactions in nonfunctional currencies are recognized in earnings.

Recent Accounting Developments

Revenue from Contracts with Customers (ASC 606). In May 2014, the FASB issued ASU No. 2014-09, "Revenue from Contracts with Customers (Topic 606)." This ASU, as amended, provides comprehensive guidance on the recognition of revenue earned from contracts with customers arising from the transfer of goods and services, guidance on accounting for certain contract costs and new disclosures.

The Bank adopted this ASU in January 2018 under a modified retrospective approach. The ASU had no impact on the Bank's results of operations upon adoption.

As a result of adopting this ASU, the Bank prospectively changed the presentation of certain costs from a net presentation within revenues to a gross basis. Beginning in 2018, this included certain expenses related to loan securitizations which were previously presented in gains and losses from financial instruments, net.

Net revenues and operating expenses were both higher by $116 million for 2018, due to the changes in the presentation of certain costs from a net presentation within revenues to a gross basis.

Recognition and Measurement of Financial Assets and Financial Liabilities (ASC 825). In January 2016, the FASB issued ASU No. 2016-01, "Financial Instruments (Topic 825) — Recognition and Measurement of Financial Assets and Financial Liabilities." This ASU amends certain aspects of recognition, measurement, presentation and disclosure of financial instruments. It includes a requirement to present separately in other comprehensive income changes in fair value attributable to a Bank's own credit spreads (debt valuation adjustment or DVA), net of tax, on financial liabilities for which the fair value option was elected.

In January 2016, the Bank early adopted this ASU for the requirements related to DVA and reclassified the cumulative DVA from retained earnings to accumulated other comprehensive income. The adoption of the remaining provisions of the ASU in January 2018 did not have a material impact on the Bank's financial condition, results of operations or cash flows.

Leases (ASC 842). In February 2016, the FASB issued ASU No. 2016-02, "Leases (Topic 842)." This ASU requires that, for leases longer than one year, a lessee recognize in the statements of financial condition a right-of-use asset, representing the right to use the underlying asset for the lease term, and a lease liability, representing the liability to make lease payments. It also requires that for finance leases, a lessee recognize interest expense on the lease liability, separately from the amortization of the right-of-use asset in the statements of earnings, while for operating leases, such amounts should be recognized as a combined expense. In addition, this ASU requires expanded disclosures about the nature and terms of lease agreements.

The Bank adopted this ASU in January 2019 under a modified retrospective approach. Adoption of this ASU had no impact on the Bank's financial condition.

Measurement of Credit Losses on Financial Instruments (ASC 326). In June 2016, the FASB issued ASU No. 2016-13, "Financial Instruments — Credit Losses (Topic 326) — Measurement of Credit Losses on Financial Instruments." This ASU amends several aspects of the measurement of credit losses on financial instruments, including replacing the existing incurred credit loss model and other models with the Current Expected Credit Losses (CECL) model and amending certain aspects of accounting for purchased financial assets with deterioration in credit quality since origination. Under CECL, the allowance for losses for financial assets that are measured at amortized cost reflects management's estimate of credit losses over the remaining expected life of the financial assets. Expected credit losses for newly recognized financial assets, as well as changes to expected credit losses during the period, would be recognized in earnings. For certain purchased financial assets with deterioration in credit quality since origination, an initial allowance would be recorded for expected credit losses and recognized as an increase to the purchase price rather than as an expense. The ASU is effective for the Bank in January 2020 under a modified retrospective approach with early adoption permitted beginning in January 2019. The Bank plans to adopt this ASU on January 1, 2020.

Expected credit losses, including losses on off-balance-sheet exposures such as lending commitments, will be measured based on historical experience, current conditions and forecasts that affect the collectability of the reported amount.

The Bank has substantially completed development of credit loss models for its significant loan portfolios and is in the process of validating data inputs to these models, while continuing to develop the policies, systems and controls that will be required to implement CECL. The Bank currently expects to begin testing of these models in the first half of 2019. The Bank currently expects that its allowance for credit losses will likely increase when CECL is adopted as the allowance will cover expected credit losses over the full expected life of the loan portfolios and will also take into account expected changes in future economic conditions. In addition, an allowance will be recorded for certain purchased loans with deterioration in credit quality since origination with a corresponding increase to their gross carrying value. The extent of the impact of adoption of this ASU on the Bank's financial condition, results of operations and cash flows will depend on, among other things, the economic environment, and the size and type of loan portfolios held by the Bank on the date of adoption.

Classification of Certain Cash Receipts and Cash Payments (ASC 230). In August 2016, the FASB issued ASU No. 2016-15, "Statement of Cash Flows (Topic 230) — Classification of Certain Cash Receipts and Cash Payments." This ASU provides guidance on the disclosure and classification of certain items within the statements of cash flows.

The Bank adopted this ASU in January 2018 under a retrospective approach. The impact for 2017 was an increase of $194 million to net cash used for operating activities and a decrease of $194 million to net cash used for investing activities.

Clarifying the Definition of a Business (ASC 805). In January 2017, the FASB issued ASU No. 2017-01, "Business Combinations (Topic 805) — Clarifying the Definition of a Business." The ASU amends the definition of a business and provides a threshold which must be considered to determine whether a transaction is an acquisition (or disposal) of an asset or a business.

The Bank adopted this ASU in January 2018 under a prospective approach. Adoption of the ASU did not have a material impact on the Bank's financial condition, results of operations or cash flows. The Bank expects that fewer transactions will be treated as acquisitions (or disposals) of businesses as a result of adopting this ASU.

Targeted Improvements to Accounting for Hedging Activities (ASC 815). In August 2017, the FASB issued ASU No. 2017-12, "Derivatives and Hedging (Topic 815) — Targeted Improvements to Accounting for Hedging Activities." The ASU amends certain rules for hedging relationships, expands the types of strategies that are eligible for hedge accounting treatment to more closely align the results of hedge accounting with risk management activities and amends disclosure requirements related to fair value and net investment hedges.

The Bank early adopted this ASU in January 2018 under a modified retrospective approach for hedge accounting treatment, and under a prospective approach for the amended disclosure requirements. Adoption of this ASU did not have a material impact on the Bank's financial condition, results of operations or cash flows. See Note 7 for further information.

Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income (ASC 220). In February 2018, the FASB issued ASU No. 2018-02, "Income Statement — Reporting Comprehensive Income (Topic 220) — Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income." This ASU permits a reporting entity to reclassify the income tax effects of the Tax Cuts and Jobs Act (Tax Legislation) on items within accumulated other comprehensive income to retained earnings.

The Bank adopted this ASU in January 2019 and did not elect to reclassify the income tax effects of Tax Legislation from accumulated other comprehensive income to retained earnings. Therefore, the adoption of the ASU did not have an impact on the Bank's financial condition, results of operations or cash flows.

Changes to the Disclosure Requirements for Fair Value Measurement (ASC 820). In August 2018, the FASB issued ASU No. 2018-13, "Fair Value Measurement (Topic 820) — Changes to the Disclosure Requirements for Fair Value Measurement." This ASU, among other amendments, eliminates the requirement to disclose the amounts and reasons for transfers between level 1 and level 2 of the fair value hierarchy and modifies the disclosure requirement relating to investments in funds at NAV. The Bank early adopted this ASU in the third quarter of 2018 and disclosures were modified in accordance with the ASU. See Notes 5 through 8 for further information.

Note 4.

Financial Instruments Owned and Financial Instruments Sold, But Not Yet Purchased

Financial instruments owned and financial instruments sold, but not yet purchased are accounted for at fair value either under the fair value option or in accordance with other U.S. GAAP. See Note 8 for information about other financial assets and financial liabilities at fair value.

The table below presents financial instruments owned and financial instruments sold, but not yet purchased.

$ in millions	Financial Instruments Owned	Financial Instruments Sold, But Not Yet Purchased
As of December 2018		
Government and agency obligations:		
U.S.	**$ 23,961**	**$ 1,249**
Non-U.S.	**–**	**6**
Loans and securities backed by:		
Commercial real estate	**943**	**–**
Residential real estate	**9,371**	**–**
Corporate debt instruments	**1,503**	**573**
Other debt obligations	**204**	**–**
Equity securities	**290**	**–**
Investments in funds at NAV	**34**	**–**
Subtotal	**36,306**	**1,828**
Derivatives	**7,956**	**6,873**
Total	**$ 44,262**	**$ 8,701**
As of December 2017		
Government and agency obligations:		
U.S.	$ 15,261	$ 4,004
Non-U.S.	–	6
Loans and securities backed by:		
Commercial real estate	952	–
Residential real estate	6,855	–
Corporate debt instruments	1,628	220
State and municipal obligations	33	–
Other debt obligations	205	–
Equity securities	293	–
Investments in funds at NAV	31	–
Subtotal	25,258	4,230
Derivatives	9,076	6,067
Total	$ 34,334	$ 10,297

In the table above:

- Corporate debt instruments includes corporate loans and debt securities.
- Equity investments made as part of the Bank's Community Reinvestment Act (CRA) activities are included in equity securities.

Gains and Losses from Financial Instruments, Net

The table below presents gains and losses from financial instruments, net.

	Year Ended December	
$ in millions	**2018**	2017
Interest rates	**$ (1,995)**	$ 3,679
Currencies	**3,243**	(3,065)
Credit	**1,089**	1,238
Equities	**(55)**	151
Commodities	**(1)**	(2)
Total	**$ 2,281**	$ 2,001

In the table above:

- Gains/(losses) include both realized and unrealized gains and losses, and are primarily related to the Bank's financial instruments owned and financial instruments sold, but not yet purchased, including both derivative and non-derivative financial instruments, and the syndication of loans and lending commitments.
- Gains/(losses) exclude related interest income and interest expense. See Note 20 for further information about interest income and interest expense.
- Gains/(losses) are not representative of the manner in which the Bank manages its business activities because many of the Bank's market-making, lending and other activities utilize financial instruments across various product types. Accordingly, gains or losses in one product type frequently offset gains or losses in other product types. For example, certain of the Bank's interest rate derivatives are sensitive to changes in foreign currency exchange rates and may be economically hedged with foreign currency contracts.

Note 5.

Fair Value Measurements

The fair value of a financial instrument is the amount 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. Financial assets are marked to bid prices and financial liabilities are marked to offer prices. Fair value measurements do not include transaction costs. The Bank measures certain financial assets and financial liabilities as a portfolio (i.e., based on its net exposure to market and/or credit risks).

The best evidence of fair value is a quoted price in an active market. If quoted prices in active markets are not available, fair value is determined by reference to prices for similar instruments, quoted prices or recent transactions in less active markets, or internally developed models that primarily use market-based or independently sourced inputs, including, but not limited to, interest rates, volatilities, equity or debt prices, foreign exchange rates, commodity prices, credit spreads and funding spreads (i.e., the spread or difference between the interest rate at which a borrower could finance a given financial instrument relative to a benchmark interest rate).

U.S. GAAP has a three-level hierarchy for disclosure of fair value measurements. This hierarchy prioritizes inputs to the valuation techniques used to measure fair value, giving the highest priority to level 1 inputs and the lowest priority to level 3 inputs. A financial instrument's level in this hierarchy is based on the lowest level of input that is significant to its fair value measurement. In evaluating the significance of a valuation input, the Bank considers, among other factors, a portfolio's net risk exposure to that input. The fair value hierarchy is as follows:

Level 1. Inputs are unadjusted quoted prices in active markets to which the Bank had access at the measurement date for identical, unrestricted assets or liabilities.

Level 2. Inputs to valuation techniques are observable, either directly or indirectly.

Level 3. One or more inputs to valuation techniques are significant and unobservable.

The fair values for substantially all of the Bank's financial assets and the majority of the Bank's financial liabilities are based on observable prices and inputs and are classified in levels 1 and 2 of the fair value hierarchy. Certain level 2 and level 3 financial assets and financial liabilities may require appropriate valuation adjustments that a market participant would require to arrive at fair value for factors such as counterparty and the Bank or its affiliates' credit quality, funding risk, transfer restrictions, liquidity and bid/offer spreads. Valuation adjustments are generally based on market evidence.

See Notes 6 through 8 for further information about fair value measurements of cash instruments, derivatives and other financial assets and financial liabilities at fair value.

The table below presents financial assets and financial liabilities accounted for at fair value under the fair value option or in accordance with other U.S. GAAP.

	As of December	
$ in millions	**2018**	2017
Total level 1 financial assets	**$ 16,447**	$ 6,964
Total level 2 financial assets	**84,276**	68,474
Total level 3 financial assets	**2,317**	1,966
Investments in funds at NAV	**34**	31
Counterparty and cash collateral netting	**(22,326)**	(25,183)
Total financial assets at fair value	**$ 80,748**	$ 52,252
Total assets	**$ 191,487**	$ 164,760
Total level 3 financial assets divided by:		
Total assets	**1.2%**	1.2%
Total financial assets at fair value	**2.9%**	3.8%
Total level 1 financial liabilities	**$ 1,249**	$ 4,004
Total level 2 financial liabilities	**29,195**	24,993
Total level 3 financial liabilities	**4,147**	3,902
Counterparty and cash collateral netting	**(16,504)**	(14,537)
Total financial liabilities at fair value	**$ 18,087**	$ 18,362
Total level 3 financial liabilities divided by total financial liabilities at fair value	**22.9%**	21.3%

In the table above:

- Counterparty netting among positions classified in the same level is included in that level.
- Counterparty and cash collateral netting represents the impact on derivatives of netting across levels of the fair value hierarchy.

The table below presents a summary of level 3 financial assets.

	As of December	
$ in millions	**2018**	2017
Cash instruments	**$ 502**	$ 557
Derivatives	**1,815**	1,409
Total	**$ 2,317**	$ 1,966

Level 3 financial assets as of December 2018 increased compared with December 2017, primarily reflecting an increase in level 3 derivatives. See Notes 6 through 8 for further information about level 3 financial assets (including information about unrealized gains and losses related to level 3 financial assets and financial liabilities, and transfers in and out of level 3).

Note 6.

Cash Instruments

Cash instruments include U.S. government and agency obligations, non-U.S. government and agency obligations, mortgage-backed loans and securities, corporate debt instruments, equity securities, investments in funds at net asset value (NAV), and other non-derivative financial instruments owned and financial instruments sold, but not yet purchased. See below for the types of cash instruments included in each level of the fair value hierarchy and the valuation techniques and significant inputs used to determine their fair values. See Note 5 for an overview of the Bank's fair value measurement policies.

Level 1 Cash Instruments

Level 1 cash instruments include U.S. government obligations. These instruments are valued using quoted prices for identical unrestricted instruments in active markets.

The Bank defines active markets for debt instruments based on both the average daily trading volume and the number of days with trading activity.

Level 2 Cash Instruments

Level 2 cash instruments include U.S. government agency obligations, non-U.S. government and agency obligations, most mortgage-backed loans and securities, most corporate debt instruments, other debt obligations and certain equity securities.

Valuations of level 2 cash instruments can be verified to quoted prices, recent trading activity for identical or similar instruments, broker or dealer quotations or alternative pricing sources with reasonable levels of price transparency. Consideration is given to the nature of the quotations (e.g., indicative or firm) and the relationship of recent market activity to the prices provided from alternative pricing sources.

Valuation adjustments are typically made to level 2 cash instruments (i) if the cash instrument is subject to transfer restrictions and/or (ii) for other premiums and liquidity discounts that a market participant would require to arrive at fair value. Valuation adjustments are generally based on market evidence.

Level 3 Cash Instruments

Level 3 cash instruments have one or more significant valuation inputs that are not observable. Absent evidence to the contrary, level 3 cash instruments are initially valued at transaction price, which is considered to be the best initial estimate of fair value. Subsequently, the Bank uses other methodologies to determine fair value, which vary based on the type of instrument. Valuation inputs and assumptions are changed when corroborated by substantive observable evidence, including values realized on sales.

Valuation Techniques and Significant Inputs of Level 3 Cash Instruments

Valuation techniques of level 3 cash instruments vary by instrument, but are generally based on discounted cash flow techniques. The valuation techniques and the nature of significant inputs used to determine the fair values of each type of level 3 cash instrument are described below:

Loans and Securities Backed by Commercial Real Estate. Loans and securities backed by commercial real estate are directly or indirectly collateralized by a single commercial real estate property or a portfolio of properties, and may include tranches of varying levels of subordination. Significant inputs are generally determined based on relative value analyses and include:

- Market yields implied by transactions of similar or related assets and/or current levels and changes in market indices such as the CMBX (an index that tracks the performance of commercial mortgage bonds); and
- Transaction prices in both the underlying collateral and instruments with the same or similar underlying collateral.

Corporate Debt Instruments. Corporate debt instruments includes corporate loans and debt securities. Significant inputs for corporate debt instruments are generally determined based on relative value analyses, which incorporate comparisons both to prices of credit default swaps that reference the same or similar underlying instrument or entity and to other debt instruments for the same issuer for which observable prices or broker quotations are available. Significant inputs include:

- Market yields implied by transactions of similar or related assets and/or current levels and trends of market indices, such as the CDX (an index that tracks the performance of corporate credit);
- Current performance and recovery assumptions and, where the Bank uses credit default swaps to value the related cash instrument, the cost of borrowing the underlying reference obligation; and
- Duration.

Equity Securities. Equity investments made as part of the Bank's CRA activities are included in equity securities. Recent third-party completed or pending transactions (e.g., merger proposals, tender offers, debt restructurings) are considered to be the best evidence for any change in fair value. When these are not available, the following valuation methodologies are used, as appropriate:

- Industry multiples and public comparables;
- Transactions in similar instruments; and
- Discounted cash flow techniques.

The Bank also considers changes in the outlook for the relevant industry and financial performance of the issuer as compared to projected performance. Significant inputs include discount rates and capitalization rates.

Other Cash Instruments. Other cash instruments includes loans and securities backed by residential real estate and state and municipal obligations. Significant inputs are generally determined based on relative value analyses, which incorporate comparisons both to prices of credit default swaps that reference the same or similar underlying instrument or entity and to other debt instruments for the same issuer for which observable prices or broker quotations are available. Significant inputs include market yields implied by transactions of similar or related assets and/or current levels and trends of market indices.

Fair Value of Cash Instruments by Level

The table below presents cash instrument assets and liabilities at fair value by level within the fair value hierarchy.

$ in millions	Level 1	Level 2	Level 3	Total
As of December 2018				
Assets				
U.S. government and agency obligations	**$ 16,447**	**$ 7,514**	**$ –**	**$ 23,961**
Loans and securities backed by:				
Commercial real estate	**–**	**873**	**70**	**943**
Residential real estate	**–**	**9,367**	**4**	**9,371**
Corporate debt instruments	**–**	**1,348**	**155**	**1,503**
Other debt obligations	**–**	**204**	**–**	**204**
Equity securities	**–**	**17**	**273**	**290**
Subtotal	**$ 16,447**	**$ 19,323**	**$ 502**	**$ 36,272**
Investments in funds at NAV				**34**
Total cash instrument assets				**$ 36,306**
Liabilities				
Government and agency obligations:				
U.S.	**$ (1,249)**	**$ –**	**$ –**	**$ (1,249)**
Non-U.S.	**–**	**(6)**	**–**	**(6)**
Corporate debt instruments	**–**	**(565)**	**(8)**	**(573)**
Total cash instrument liabilities	**$ (1,249)**	**$ (571)**	**$ (8)**	**$ (1,828)**
As of December 2017				
Assets				
U.S. government and agency obligations	$ 6,935	$ 8,326	$ –	$ 15,261
Loans and securities backed by:				
Commercial real estate	–	833	119	952
Residential real estate	–	6,855	–	6,855
Corporate debt instruments	–	1,490	138	1,628
State and municipal obligations	–	–	33	33
Other debt obligations	–	205	–	205
Equity securities	–	26	267	293
Subtotal	$ 6,935	$ 17,735	$ 557	$ 25,227
Investments in funds at NAV				31
Total cash instrument assets				$ 25,258
Liabilities				
Government and agency obligations:				
U.S.	$ (4,004)	$ –	$ –	$ (4,004)
Non-U.S.		(6)	–	(6)
Corporate debt instruments	–	(211)	(9)	(220)
Total cash instrument liabilities	$ (4,004)	$ (217)	$ (9)	$ (4,230)

In the table above:

- Cash instrument assets are included in financial instruments owned and cash instrument liabilities are included in financial instruments sold, but not yet purchased.
- Cash instrument assets are shown as positive amounts and cash instrument liabilities are shown as negative amounts.
- Corporate debt instruments includes corporate loans and debt securities.

Significant Unobservable Inputs

The table below presents the amount of level 3 assets, and ranges and weighted averages of significant unobservable inputs used to value substantially all level 3 cash instruments.

	Level 3 Assets and Range of Significant Unobservable Inputs (Weighted Average) as of December	
$ in millions	**2018**	2017
Loans and securities backed by commercial real estate		
Level 3 assets	**$70**	$119
Yield	**9.1% to 10.6% (9.7%)**	4.6% to 10.2% (8.7%)
Corporate debt instruments		
Level 3 assets	**$155**	$138
Yield	**4.7% to 15.3% (7.8%)**	4.2% to 17.7% (5.7%)
Recovery rate	**33.1% to 75.0% (65.4%)**	N.M.
Duration (years)	**1.9 to 4.9 (3.2)**	0.7 to 1.5 (1.1)
Equity securities		
Level 3 assets	**$273**	$267
Discount rate/yield	**8.0% to 15.0% (13.9%)**	6.7% to 17.7% (15.3%)
Capitalization rate	**4.8% to 6.5% (4.9%)**	4.8% to 6.5% (5.0%)

In the table above:

- Ranges represent the significant unobservable inputs that were used in the valuation of each type of cash instrument.
- Weighted averages are calculated by weighting each input by the relative fair value of the cash instruments.
- The ranges and weighted averages of these inputs are not representative of the appropriate inputs to use when calculating the fair value of any one cash instrument. For example, the highest recovery rate for corporate debt instruments is appropriate for valuing a specific corporate debt instrument but may not be appropriate for valuing any other corporate debt instrument. Accordingly, the ranges of inputs do not represent uncertainty in, or possible ranges of, fair value measurements of level 3 cash instruments.
- Increases in yield, discount rate, capitalization rate, or duration used in the valuation of level 3 cash instruments would have resulted in a lower fair value measurement, while increases in recovery rate would have resulted in a higher fair value measurement as of both December 2018 and December 2017. Due to the distinctive nature of each level 3 cash instrument, the interrelationship of inputs is not necessarily uniform within each product type.
- Loans and securities backed by commercial real estate and corporate debt instruments are valued using discounted cash flows, and equity securities are valued using market comparables and discounted cash flows.

- The fair value of any one instrument may be determined using multiple valuation techniques. For example, market comparables and discounted cash flows may be used together to determine fair value. Therefore, the level 3 balance encompasses both of these techniques.
- Significant unobservable input types which are only relevant to a single instrument, or where there is no range, are not meaningful and therefore have been excluded.

Level 3 Rollforward

The table below presents a summary of the changes in fair value for level 3 cash instrument assets and liabilities.

	Year Ended December	
$ in millions	**2018**	2017
Total cash instrument assets		
Beginning balance	**$ 557**	$ 782
Net realized gains/(losses)	**11**	13
Net unrealized gains/(losses)	**56**	30
Purchases	**80**	129
Sales	**(25)**	(12)
Settlements	**(124)**	(132)
Transfers into level 3	**30**	10
Transfers out of level 3	**(83)**	(263)
Ending balance	**$ 502**	$ 557
Total cash instrument liabilities		
Beginning balance	**$ (9)**	$ (24)
Net unrealized gains/(losses)	**1**	5
Purchases	**7**	22
Sales	**(6)**	(5)
Settlements	**2**	(7)
Transfers into level 3	**(3)**	–
Transfers out of level 3	**–**	–
Ending balance	**$ (8)**	$ (9)

In the table above:

- Changes in fair value are presented for all cash instrument assets and liabilities that are classified in level 3 as of the end of the period.
- Net unrealized gains/(losses) relates to instruments that were still held at period-end.
- Purchases includes originations and secondary purchases.
- Transfers between levels of the fair value hierarchy are reported at the beginning of the reporting period in which they occur. If a cash instrument asset or liability was transferred to level 3 during a reporting period, its entire gain or loss for the period is classified in level 3.
- For level 3 cash instrument assets, increases are shown as positive amounts, while decreases are shown as negative amounts. For level 3 cash instrument liabilities, increases are shown as negative amounts, while decreases are shown as positive amounts.
- Level 3 cash instruments are frequently economically hedged with level 1 and level 2 cash instruments and/or level 1, level 2 or level 3 derivatives. Accordingly, gains or losses that are classified in level 3 can be partially offset by gains or losses attributable to level 1 or level 2 cash instruments and/or level 1, level 2 or level 3 derivatives. As a result, gains or losses included in the level 3 rollforward below do not necessarily represent the overall impact on the Bank's results of operations, liquidity or capital resources.

The table below disaggregates, by product type, the information for cash instrument assets included in the summary table above.

	Year Ended December	
$ in millions	**2018**	2017
Loans and securities backed by commercial real estate		
Beginning balance	**$ 119**	$ 171
Net realized gains/(losses)	**4**	3
Net unrealized gains/(losses)	**21**	–
Purchases	**3**	50
Sales	**–**	(8)
Settlements	**(10)**	(5)
Transfers out of level 3	**(67)**	(92)
Ending balance	**$ 70**	$ 119
Corporate debt instruments		
Beginning balance	**$ 138**	$ 305
Net realized gains/(losses)	**6**	8
Net unrealized gains/(losses)	**(8)**	(1)
Purchases	**49**	37
Sales	**(25)**	(4)
Settlements	**(24)**	(115)
Transfers into level 3	**30**	6
Transfers out of level 3	**(11)**	(98)
Ending balance	**$ 155**	$ 138
Equity securities		
Beginning balance	**$ 267**	$ 192
Net realized gains/(losses)	**1**	–
Net unrealized gains/(losses)	**42**	30
Purchases	**25**	41
Settlements	**(57)**	–
Transfers into level 3	**–**	4
Transfers out of level 3	**(5)**	–
Ending balance	**$ 273**	$ 267
Other cash instruments		
Beginning balance	**$ 33**	$ 114
Net realized gains/(losses)	**–**	2
Net unrealized gains/(losses)	**1**	1
Purchases	**3**	1
Settlements	**(33)**	(12)
Transfers out of level 3	**–**	(73)
Ending balance	**$ 4**	$ 33

Level 3 Rollforward Commentary

Year Ended December 2018. The net realized and unrealized gains on level 3 cash instrument assets of $67 million (reflecting $11 million of net realized gains and $56 million of net unrealized gains) for 2018 were reported in gains and losses from financial instruments, net.

The net unrealized gains on level 3 cash instrument assets for 2018 primarily reflected gains on private equity securities, principally driven by strong corporate performance and company-specific events.

Transfers into level 3 during 2018 were not material.

Transfers out of level 3 during 2018 primarily reflected transfers of certain loans and securities backed by commercial real estate to level 2, principally due to certain unobservable yield and duration inputs no longer being significant to the valuation of these instruments.

Year Ended December 2017. The net realized and unrealized gains on level 3 cash instrument assets of $43 million (reflecting $13 million of net realized gains and $30 million of net unrealized gains) for 2017 were reported in gains and losses from financial instruments, net.

The net unrealized gains on level 3 cash instrument assets for 2017 were not material.

Transfers into level 3 during 2017 were not material.

Transfers out of level 3 during 2017 primarily reflected transfers of certain corporate debt instruments and loans and securities backed by commercial real estate to level 2, principally due to certain unobservable yield and duration inputs no longer being significant to the valuation of these instruments, and transfers of certain other cash instruments to level 2, principally due to increased price transparency as a result of market evidence, including market transactions in these instruments.

Available-for-Sale Securities

The table below presents information about cash instruments that are accounted for as available-for-sale.

$ in millions	Amortized Cost	Fair Value	Weighted Average Yield
As of December 2018			
Less than 5 years	**$ 2,492**	**$ 2,440**	**1.85%**
Total U.S. government obligations	**2,492**	**2,440**	**1.85%**
Total available-for-sale securities	**$ 2,492**	**$ 2,440**	**1.85%**
As of December 2017			
Less than 5 years	$ 2,511	$ 2,477	1.85%
Total U.S. government obligations	2,511	2,477	1.85%
Greater than 5 years	233	235	4.72%
Total other available-for-sale securities	233	235	4.72%
Total available-for-sale securities	$ 2,744	$ 2,712	2.10%

In the table above:

- U.S. government obligations were classified in level 1 of the fair value hierarchy as of both December 2018 and December 2017.
- Other available-for-sale securities included corporate debt securities, other debt obligations and securities backed by commercial real estate that were classified in level 2 of the fair value hierarchy as of December 2017.
- The gross unrealized losses included in accumulated other comprehensive income were $52 million as of December 2018 and were related to U.S. government obligations in a continuous unrealized loss position for greater than a year. Such losses were not material as of December 2017.
- Available-for-sale securities in an unrealized loss position are periodically reviewed for other-than-temporary impairment. The Bank considers various factors, including market conditions, changes in issuer credit ratings, severity and duration of the unrealized losses, and the intent and ability to hold the security until recovery to determine if the securities are other-than-temporarily impaired. There were no such impairments during either 2018 or 2017.

Note 7.

Derivatives and Hedging Activities

Derivative Activities

Derivatives are instruments that derive their value from underlying asset prices, indices, reference rates and other inputs, or a combination of these factors. Derivatives may be traded on an exchange (exchange-traded) or they may be privately negotiated contracts, which are usually referred to as over-the-counter (OTC) derivatives. Certain of the Bank's OTC derivatives are cleared and settled through central clearing counterparties (OTC-cleared), while others are bilateral contracts between two counterparties (bilateral OTC).

Market Making. As a market maker, the Bank enters into derivative transactions to provide liquidity to clients and to facilitate the transfer and hedging of their risks. In this role, the Bank typically acts as principal and is required to commit capital to provide execution, and maintains inventory in response to, or in anticipation of, client demand.

Risk Management. The Bank also enters into derivatives to actively manage risk exposures that arise from its market-making and lending activities in derivative and cash instruments. The Bank's holdings and exposures are hedged, in many cases, on either a portfolio or risk-specific basis, as opposed to an instrument-by-instrument basis. In addition, the Bank may enter into derivatives designated as hedges under U.S. GAAP. These derivatives are used to manage interest rate exposure in certain deposits and borrowings.

The Bank enters into various types of derivatives, including:

- **Futures and Forwards.** Contracts that commit counterparties to purchase or sell financial instruments or currencies in the future.
- **Swaps.** Contracts that require counterparties to exchange cash flows such as currency or interest payment streams. The amounts exchanged are based on the specific terms of the contract with reference to specified rates, financial instruments, currencies or indices.
- **Options.** Contracts in which the option purchaser has the right, but not the obligation, to purchase from or sell to the option writer financial instruments or currencies within a defined time period for a specified price.

Derivatives are reported on a net-by-counterparty basis (i.e., the net payable or receivable for derivative assets and liabilities for a given counterparty) when a legal right of setoff exists under an enforceable netting agreement (counterparty netting). Derivatives are accounted for at fair value, net of cash collateral received or posted under enforceable credit support agreements (cash collateral netting). Derivative assets are included in financial instruments owned and derivative liabilities are included in financial instruments sold, but not yet purchased. Realized and unrealized gains and losses on derivatives not designated as hedges are included in gains and losses from financial instruments, net in Note 4.

The tables below present the gross fair value and the notional amounts of derivative contracts by major product type, the amounts of counterparty and cash collateral netting in the consolidated statements of financial condition, as well as cash and securities collateral posted and received under enforceable credit support agreements that do not meet the criteria for netting under U.S. GAAP.

	As of December 2018		As of December 2017	
$ in millions	Derivative Assets	Derivative Liabilities	Derivative Assets	Derivative Liabilities
Not accounted for as hedges				
Exchange-traded	$ 691	$ 1,278	$ 533	$ 588
OTC-cleared	159	31	337	11
Bilateral OTC	394,933	388,905	458,593	447,320
Total interest rates	395,783	390,214	459,463	447,919
Currencies – bilateral OTC	63,701	62,733	46,971	45,539
Credit – bilateral OTC	3,163	3,182	3,155	3,147
Equities – bilateral OTC	1,367	987	1,654	1,002
Commodities – bilateral OTC	180	178	190	188
Subtotal	464,194	457,294	511,433	497,795
Accounted for as hedges				
Bilateral OTC	6	1	18	1
Total interest rates	6	1	18	1
Total gross fair value	$ 464,200	$ 457,295	$ 511,451	$ 497,796
Offset in consolidated statements of financial condition				
Counterparty netting	$(434,901)	$(434,901)	$(477,847)	$(477,847)
Cash collateral netting	(21,343)	(15,521)	(24,528)	(13,882)
Total amounts offset	$(456,244)	$(450,422)	$(502,375)	$(491,729)
Included in consolidated statements of financial condition				
Exchange-traded	$ 691	$ 1,278	$ 533	$ 588
OTC-cleared	159	31	337	11
Bilateral OTC	7,106	5,564	8,206	5,468
Total	$ 7,956	$ 6,873	$ 9,076	$ 6,067
Not offset in consolidated statements of financial condition				
Cash collateral	$ (148)	$ (366)	$ (99)	$ (196)
Securities collateral	(1,231)	(489)	(944)	(609)
Total	$ 6,577	$ 6,018	$ 8,033	$ 5,262

	Notional Amounts as of December	
$ in millions	**2018**	2017
Not accounted for as hedges		
Exchange-traded	**$ 4,080,689**	$ 9,130,538
OTC-cleared	**7,194,235**	7,324,681
Bilateral OTC	**24,485,244**	22,290,511
Total interest rates	**35,760,168**	38,745,730
Currencies – bilateral OTC	**4,451,076**	2,401,770
Credit – bilateral OTC	**183,632**	148,354
Equities – bilateral OTC	**32,494**	38,865
Commodities – bilateral OTC	**5,000**	7,660
Subtotal	**40,432,370**	41,342,379
Accounted for as hedges		
OTC-cleared	**11,956**	9,633
Bilateral OTC	**731**	731
Total interest rates	**12,687**	10,364
Total notional amounts	**$ 40,445,057**	$ 41,352,743

In the tables above:

- Gross fair values exclude the effects of both counterparty netting and collateral, and therefore are not representative of the Bank's exposure.
- Where the Bank has received or posted collateral under credit support agreements, but has not yet determined such agreements are enforceable, the related collateral has not been netted.
- Notional amounts, which represent the sum of gross long and short derivative contracts, provide an indication of the volume of the Bank's derivative activity and do not represent anticipated losses.
- Counterparty and cash collateral netting relate to bilateral OTC derivatives.
- Total gross fair value of derivatives included derivative assets of $2.31 billion as of December 2018 and $2.73 billion as of December 2017, and derivative liabilities of $1.44 billion as of December 2018 and $1.47 billion as of December 2017, which are not subject to an enforceable netting agreement or are subject to a netting agreement that the Bank has not yet determined to be enforceable.
- On November 19, 2018, a clearing organization revised its rules to calculate notional amounts for certain exchange-traded derivative contracts. The impact of this rule change, as of the effective date, was a decrease in the notional amounts of derivative contracts of approximately $6 trillion, substantially all of which related to interest rate derivatives, with no change to their fair value.

Valuation Techniques for Derivatives

The Bank's level 2 and level 3 derivatives are valued using derivative pricing models (e.g., discounted cash flow models, correlation models, and models that incorporate option pricing methodologies, such as Monte Carlo simulations). Price transparency of derivatives can generally be characterized by product type, as described below.

- **Interest Rate.** In general, the key inputs used to value interest rate derivatives are transparent, even for most long-dated contracts. Interest rate swaps and options denominated in the currencies of leading industrialized nations are characterized by high trading volumes and tight bid/offer spreads. Interest rate derivatives that reference indices, such as an inflation index, or the shape of the yield curve (e.g., 10-year swap rate vs. 2-year swap rate) are more complex, but the key inputs are generally observable.
- **Currency.** Prices for currency derivatives based on the exchange rates of leading industrialized nations, including those with longer tenors, are generally transparent. The primary difference between the price transparency of developed and emerging market currency derivatives is that emerging markets tend to be observable for contracts with shorter tenors.
- **Credit.** Price transparency for credit default swaps, including both single names and baskets of credits, varies by market and underlying reference entity or obligation. Credit default swaps that reference indices, large corporates and major sovereigns generally exhibit the most price transparency. For credit default swaps with other underliers, price transparency varies based on credit rating, the cost of borrowing the underlying reference obligations, and the availability of the underlying reference obligations for delivery upon the default of the issuer. Credit default swaps that reference loans, asset-backed securities and emerging market debt instruments tend to have less price transparency than those that reference corporate bonds. In addition, more complex credit derivatives, such as those sensitive to the correlation between two or more underlying reference obligations, generally have less price transparency.
- **Equity.** Price transparency for equity derivatives varies by market and underlier. Options on indices and the common stock of corporates included in major equity indices exhibit the most price transparency. Equity derivatives generally have observable market prices, except for contracts with long tenors or reference prices that differ significantly from current market prices. More complex equity derivatives, such as those sensitive to the correlation between two or more individual stocks, generally have less price transparency.

Liquidity is essential to observability of all product types. If transaction volumes decline, previously transparent prices and other inputs may become unobservable. Conversely, even highly structured products may at times have trading volumes large enough to provide observability of prices and other inputs. See Note 5 for an overview of the Bank's fair value measurement policies.

Level 1 Derivatives

Level 1 derivatives include short-term contracts for future delivery of securities when the underlying security is a level 1 instrument, and exchange-traded derivatives if they are actively traded and are valued at their quoted market price.

Level 2 Derivatives

Level 2 derivatives include OTC derivatives for which all significant valuation inputs are corroborated by market evidence and exchange-traded derivatives that are not actively traded and/or that are valued using models that calibrate to market-clearing levels of OTC derivatives.

The selection of a particular model to value a derivative depends on the contractual terms of and specific risks inherent in the instrument, as well as the availability of pricing information in the market. For derivatives that trade in liquid markets, model selection does not involve significant management judgment because outputs of models can be calibrated to market-clearing levels.

Valuation models require a variety of inputs, such as contractual terms, market prices, yield curves, discount rates (including those derived from interest rates on collateral received and posted as specified in credit support agreements for collateralized derivatives), credit curves, measures of volatility, prepayment rates, loss severity rates and correlations of such inputs. Significant inputs to the valuations of level 2 derivatives can be verified to market transactions, broker or dealer quotations or other alternative pricing sources with reasonable levels of price transparency. Consideration is given to the nature of the quotations (e.g., indicative or firm) and the relationship of recent market activity to the prices provided from alternative pricing sources.

Level 3 Derivatives

Level 3 derivatives are valued using models which utilize observable level 1 and/or level 2 inputs, as well as unobservable level 3 inputs. The significant unobservable inputs used to value the Bank's level 3 derivatives are described below.

- For level 3 interest rate and currency derivatives, significant unobservable inputs include correlations of certain currencies and interest rates (e.g., the correlation between Euro inflation and Euro interest rates). In addition, for level 3 interest rate derivatives, significant unobservable inputs include specific interest rate volatilities.
- For level 3 credit derivatives, significant unobservable inputs include illiquid credit spreads, which are unique to specific reference obligations and reference entities.
- For level 3 equity derivatives, significant unobservable inputs generally include correlation inputs, such as the correlation of the price performance of two or more individual stocks or the correlation of the price performance for a basket of stocks to another asset class.

Subsequent to the initial valuation of a level 3 derivative, the Bank updates the level 1 and level 2 inputs to reflect observable market changes and any resulting gains and losses are classified in level 3. Level 3 inputs are changed when corroborated by evidence such as similar market transactions, third-party pricing services and/or broker or dealer quotations or other empirical market data. In circumstances where the Bank cannot verify the model value by reference to market transactions, it is possible that a different valuation model could produce a materially different estimate of fair value. See below for further information about significant unobservable inputs used in the valuation of level 3 derivatives.

Valuation Adjustments

Valuation adjustments are integral to determining the fair value of derivative portfolios and are used to adjust the mid-market valuations produced by derivative pricing models to the appropriate exit price valuation. These adjustments incorporate bid/offer spreads, the cost of liquidity, credit valuation adjustments and funding valuation adjustments, which account for the credit and funding risk inherent in the uncollateralized portion of derivative portfolios. The Bank also makes funding valuation adjustments to collateralized derivatives where the terms of the agreement do not permit the Bank to deliver or repledge collateral received. Market-based inputs are generally used when calibrating valuation adjustments to market-clearing levels.

In addition, for derivatives that include significant unobservable inputs, the Bank makes model or exit price adjustments to account for the valuation uncertainty present in the transaction.

Fair Value of Derivatives by Level

The table below presents the fair value of derivatives on a gross basis by level and major product type, as well as the impact of netting.

$ in millions	Level 1	Level 2	Level 3	Total
As of December 2018				
Assets				
Interest rates	**$ –**	**$ 395,462**	**$ 327**	**$ 395,789**
Currencies	**–**	**62,949**	**752**	**63,701**
Credit	**–**	**2,123**	**1,040**	**3,163**
Equities	**–**	**1,058**	**309**	**1,367**
Commodities	**–**	**177**	**3**	**180**
Gross fair value	**–**	**461,769**	**2,431**	**464,200**
Counterparty netting in levels	**–**	**(433,302)**	**(616)**	**(433,918)**
Subtotal	**$ –**	**$ 28,467**	**$ 1,815**	**$ 30,282**
Cross-level counterparty netting				**(983)**
Cash collateral netting				**(21,343)**
Net fair value				**$ 7,956**
Liabilities				
Interest rates	**$ –**	**$(389,667)**	**$ (548)**	**$ (390,215)**
Currencies	**–**	**(62,602)**	**(131)**	**(62,733)**
Credit	**–**	**(2,305)**	**(877)**	**(3,182)**
Equities	**–**	**(957)**	**(30)**	**(987)**
Commodities	**–**	**(177)**	**(1)**	**(178)**
Gross fair value	**–**	**(455,708)**	**(1,587)**	**(457,295)**
Counterparty netting in levels	**–**	**433,302**	**616**	**433,918**
Subtotal	**$ –**	**$ (22,406)**	**$ (971)**	**$ (23,377)**
Cross-level counterparty netting				**983**
Cash collateral netting				**15,521**
Net fair value				**$ (6,873)**
As of December 2017				
Assets				
Interest rates	$ 29	$ 459,178	$ 274	$ 459,481
Currencies	–	46,679	292	46,971
Credit	–	2,258	897	3,155
Equities	–	1,088	566	1,654
Commodities	–	183	7	190
Gross fair value	29	509,386	2,036	511,451
Counterparty netting in levels	–	(476,565)	(627)	(477,192)
Subtotal	$ 29	$ 32,821	$ 1,409	$ 34,259
Cross-level counterparty netting				(655)
Cash collateral netting				(24,528)
Net fair value				$ 9,076
Liabilities				
Interest rates	$ –	$(447,166)	$ (754)	$ (447,920)
Currencies	–	(45,414)	(125)	(45,539)
Credit	–	(2,486)	(661)	(3,147)
Equities	–	(995)	(7)	(1,002)
Commodities	–	(183)	(5)	(188)
Gross fair value	–	(496,244)	(1,552)	(497,796)
Counterparty netting in levels	–	476,565	627	477,192
Subtotal	$ –	$ (19,679)	$ (925)	$ (20,604)
Cross-level counterparty netting				655
Cash collateral netting				13,882
Net fair value				$ (6,067)

In the table above:

- The gross fair values exclude the effects of both counterparty netting and collateral netting, and therefore are not representative of the Bank's exposure.
- Counterparty netting is reflected in each level to the extent that receivable and payable balances are netted within the same level and is included in counterparty netting in levels. Where the counterparty netting is across levels, the netting is included in cross-level counterparty netting.
- Derivative assets are shown as positive amounts and derivative liabilities are shown as negative amounts.

Significant Unobservable Inputs

The table below presents the amount of level 3 assets (liabilities), and ranges, averages and medians of significant unobservable inputs used to value substantially all level 3 derivatives.

	Level 3 Assets (Liabilities) and Range of Significant Unobservable Inputs (Average/Median) as of December	
$ in millions	**2018**	2017
Interest rates, net	**$(221)**	$(480)
Correlation	**(10)% to 86% (67%/62%)**	(10)% to 86% (63%/78%)
Volatility (bps)	**31 to 150 (80/55)**	31 to 150 (84/57)
Currencies, net	**$621**	$167
Correlation	**28% to 70% (46%/46%)**	43% to 72% (55%/59%)
Credit, net	**$163**	$236
Credit spreads (bps)	**1 to 810 (164/111)**	1 to 633 (136/106)
Equities, net	**$279**	$559
Correlation	**9% to 96% (45%/40%)**	20% to 77% (37%/36%)

In the table above:

- Derivative assets are shown as positive amounts and derivative liabilities are shown as negative amounts.
- Ranges represent the significant unobservable inputs that were used in the valuation of each type of derivative.
- Averages represent the arithmetic average of the inputs and are not weighted by the relative fair value or notional of the respective financial instruments. An average greater than the median indicates that the majority of inputs are below the average. For example, the difference between the average and the median for credit spreads indicates that the majority of the inputs fall in the lower end of the range.

- The ranges, averages and medians of these inputs are not representative of the appropriate inputs to use when calculating the fair value of any one derivative. For example, the highest correlation for interest rate derivatives is appropriate for valuing a specific interest rate derivative but may not be appropriate for valuing any other interest rate derivative. Accordingly, the ranges of inputs do not represent uncertainty in, or possible ranges of, fair value measurements of level 3 derivatives.
- Interest rates, currencies and equities derivatives are valued using option pricing models, and credit derivatives are valued using option pricing and discounted cash flow models.
- The fair value of any one instrument may be determined using multiple valuation techniques. For example, option pricing models and discounted cash flows models are typically used together to determine fair value. Therefore, the level 3 balance encompasses both of these techniques.
- Correlation within currencies and equities includes cross-product type correlation.

Range of Significant Unobservable Inputs

The following is information about the ranges of significant unobservable inputs used to value the Bank's level 3 derivative instruments:

- **Correlation.** Ranges for correlation cover a variety of underliers both within one product type (e.g., foreign exchange rates) and across product types (e.g., correlation of an interest rate and a currency), as well as across regions. Generally, cross-product type correlation inputs are used to value more complex instruments and are lower than correlation inputs on assets within the same derivative product type.
- **Volatility.** Ranges for volatility cover numerous underliers across a variety of markets, maturities and strike prices.
- **Credit spreads.** The ranges for credit spreads cover a variety of underliers (index and single names), regions, sectors, maturities and credit qualities (high-yield and investment-grade). The broad range of this population gives rise to the width of the ranges of significant unobservable inputs.

Sensitivity of Fair Value Measurement to Changes in Significant Unobservable Inputs

The following is a description of the directional sensitivity of the Bank's level 3 fair value measurements, as of both December 2018 and December 2017, to changes in significant unobservable inputs, in isolation:

- **Correlation.** In general, for contracts where the holder benefits from the convergence of the underlying asset or index prices (e.g., interest rates, foreign exchange rates and equity prices), an increase in correlation results in a higher fair value measurement.
- **Volatility.** In general, for purchased options an increase in volatility results in a higher fair value measurement.
- **Credit spreads.** In general, the fair value of purchased credit protection increases as credit spreads increase. Credit spreads are strongly related to distinctive risk factors of the underlying reference obligations, which include reference entity-specific factors such as leverage, volatility and industry, market-based risk factors, such as borrowing costs or liquidity of the underlying reference obligation, and macroeconomic conditions.

Due to the distinctive nature of each of the Bank's level 3 derivatives, the interrelationship of inputs is not necessarily uniform within each product type.

Level 3 Rollforward

The table below presents a summary of the changes in fair value for level 3 derivatives.

	Year Ended December	
$ in millions	**2018**	2017
Total level 3 derivatives		
Beginning balance	**$ 484**	$ 1,011
Net realized gains/(losses)	**(200)**	(137)
Net unrealized gains/(losses)	**(57)**	(244)
Purchases	**148**	123
Sales	**(21)**	(33)
Settlements	**218**	10
Transfers into level 3	**248**	(15)
Transfers out of level 3	**24**	(231)
Ending balance	**$ 844**	$ 484

In the table above:

- Changes in fair value are presented for all derivative assets and liabilities that are classified in level 3 as of the end of the period.
- Net unrealized gains/(losses) relates to instruments that were still held at period-end.
- Transfers between levels of the fair value hierarchy are reported at the beginning of the reporting period in which they occur. If a derivative was transferred into level 3 during a reporting period, its entire gain or loss for the period is classified in level 3.
- Positive amounts for transfers into level 3 and negative amounts for transfers out of level 3 represent net transfers of derivative assets. Negative amounts for transfers into level 3 and positive amounts for transfers out of level 3 represent net transfers of derivative liabilities.
- A derivative with level 1 and/or level 2 inputs is classified in level 3 in its entirety if it has at least one significant level 3 input.
- If there is one significant level 3 input, the entire gain or loss from adjusting only observable inputs (i.e., level 1 and level 2 inputs) is classified in level 3.
- Gains or losses that have been classified in level 3 resulting from changes in level 1 or level 2 inputs are frequently offset by gains or losses attributable to level 1 or level 2 derivatives and/or level 1, level 2 and level 3 cash instruments. As a result, gains/(losses) included in the level 3 rollforward below do not necessarily represent the overall impact on the Bank's results of operations, liquidity or capital resources.

The table below disaggregates, by major product type, the information for level 3 derivatives included in the summary table above.

	Year Ended December	
$ in millions	**2018**	2017
Interest rates, net		
Beginning balance	**$ (480)**	$ (453)
Net realized gains/(losses)	**(69)**	(68)
Net unrealized gains/(losses)	**93**	32
Purchases	**10**	5
Sales	**(4)**	(15)
Settlements	**196**	64
Transfers into level 3	**(28)**	(10)
Transfers out of level 3	**61**	(35)
Ending balance	**$ (221)**	$ (480)
Currencies, net		
Beginning balance	**$ 167**	$ 466
Net realized gains/(losses)	**(78)**	(62)
Net unrealized gains/(losses)	**176**	(113)
Purchases	**46**	16
Sales	**(1)**	(3)
Settlements	**47**	24
Transfers into level 3	**267**	2
Transfers out of level 3	**(3)**	(163)
Ending balance	**$ 621**	$ 167
Credit, net		
Beginning balance	**$ 236**	$ 578
Net realized gains/(losses)	**(32)**	(40)
Net unrealized gains/(losses)	**(85)**	(269)
Purchases	**16**	27
Sales	**(12)**	(13)
Settlements	**39**	(40)
Transfers into level 3	**1**	(7)
Ending balance	**$ 163**	$ 236
Equities, net		
Beginning balance	**$ 559**	$ 418
Net realized gains/(losses)	**(21)**	33
Net unrealized gains/(losses)	**(241)**	106
Purchases	**76**	75
Sales	**(4)**	(2)
Settlements	**(64)**	(38)
Transfers into level 3	**8**	–
Transfers out of level 3	**(34)**	(33)
Ending balance	**$ 279**	$ 559
Commodities, net		
Beginning balance	**$ 2**	$ 2
Settlements	**–**	–
Ending balance	**$ 2**	$ 2

Level 3 Rollforward Commentary

Year Ended December 2018. The net realized and unrealized losses on level 3 derivatives of $257 million (reflecting $200 million of net realized losses and $57 million of net unrealized losses) for 2018 were reported in gains and losses from financial instruments, net.

The net unrealized losses on level 3 derivatives for 2018 were primarily attributable to losses on certain equity derivatives, reflecting the impact of changes in equity prices, partially offset by gains on certain currency derivatives, primarily reflecting the impact of changes in foreign exchange rates.

Transfers into level 3 derivatives during 2018 primarily reflected transfers of certain currency derivative assets from level 2 principally due to reduced transparency of certain correlation inputs used to value these derivatives.

Transfers out of level 3 derivatives during 2018 were not material.

Year Ended December 2017. The net realized and unrealized losses on level 3 derivatives of $381 million (reflecting $137 million of net realized losses and $244 million of net unrealized losses) for 2017 were reported in gains and losses from financial instruments, net.

The net unrealized losses on level 3 derivatives for 2017 were primarily attributable to losses on certain credit derivatives, reflecting the impact of tighter credit spreads, and losses on certain currency derivatives, reflecting the impact of changes in interest rates and foreign exchange rates, partially offset by gains on certain equity derivatives, reflecting the impact of changes in equity prices.

Transfers into level 3 derivatives during 2017 were not material.

Transfers out of level 3 derivatives during 2017 primarily reflected transfers of certain currency derivatives to level 2, principally due to increased transparency of unobservable inputs used to value these derivatives.

Credit Derivatives

The Bank enters into a broad array of credit derivatives in locations around the world to facilitate client transactions and to manage the credit risk associated with market-making and lending activities. Credit derivatives are actively managed based on the Bank's net risk position.

Credit derivatives are generally individually negotiated contracts and can have various settlement and payment conventions. Credit events include failure to pay, bankruptcy, acceleration of indebtedness, restructuring, repudiation and dissolution of the reference entity.

The Bank enters into the following types of credit derivatives:

- **Credit Default Swaps.** Single-name credit default swaps protect the buyer against the loss of principal on one or more bonds, loans or mortgages (reference obligations) in the event the issuer of the reference obligations suffers a credit event. The buyer of protection pays an initial or periodic premium to the seller and receives protection for the period of the contract. If there is no credit event, as defined in the contract, the seller of protection makes no payments to the buyer. If a credit event occurs, the seller of protection is required to make a payment to the buyer, calculated according to the terms of the contract.
- **Credit Options.** In a credit option, the option writer assumes the obligation to purchase or sell a reference obligation at a specified price or credit spread. The option purchaser buys the right, but does not assume the obligation, to sell the reference obligation to, or purchase it from, the option writer. The payments on credit options depend either on a particular credit spread or the price of the reference obligation.
- **Credit Indices, Baskets and Tranches.** Credit derivatives may reference a basket of single-name credit default swaps or a broad-based index. If a credit event occurs in one of the underlying reference obligations, the protection seller pays the protection buyer. The payment is typically a pro-rata portion of the transaction's total notional amount based on the underlying defaulted reference obligation. In certain transactions, the credit risk of a basket or index is separated into various portions (tranches), each having different levels of subordination. The most junior tranches cover initial defaults and once losses exceed the notional amount of these junior tranches, any excess loss is covered by the next most senior tranche.
- **Total Return Swaps.** A total return swap transfers the risks relating to economic performance of a reference obligation from the protection buyer to the protection seller. Typically, the protection buyer receives a floating rate of interest and protection against any reduction in fair value of the reference obligation, and the protection seller receives the cash flows associated with the reference obligation, plus any increase in the fair value of the reference obligation.

The Bank economically hedges its exposure to written credit derivatives primarily by entering into offsetting purchased credit derivatives with identical underliers. Substantially all of the Bank's purchased credit derivative transactions are with financial institutions and are subject to stringent collateral thresholds. In addition, upon the occurrence of a specified trigger event, the Bank may take possession of the reference obligations underlying a particular written credit derivative, and consequently may, upon liquidation of the reference obligations, recover amounts on the underlying reference obligations in the event of default.

As of December 2018, written credit derivatives had a total gross notional amount of $80.20 billion and purchased credit derivatives had a total gross notional amount of $103.44 billion, for total net notional purchased protection of $23.24 billion. As of December 2017, written credit derivatives had a total gross notional amount of $67.20 billion and purchased credit derivatives had a total gross notional amount of $81.15 billion, for total net notional purchased protection of $13.95 billion. The Bank's written and purchased credit derivatives are primarily credit default swaps.

The table below presents information about credit derivatives.

	Credit Spread on Underlier (basis points)				
$ in millions	0 - 250	251 - 500	501 - 1,000	Greater than 1,000	Total
As of December 2018					
Maximum Payout/Notional Amount of Written Credit Derivatives by Tenor					
Less than 1 year	**$ 19,279**	**$ 552**	**$ 225**	**$ 222**	**$ 20,278**
1 – 5 years	**39,835**	**4,538**	**2,899**	**1,520**	**48,792**
Greater than 5 years	**7,237**	**3,567**	**268**	**53**	**11,125**
Total	**$ 66,351**	**$ 8,657**	**$ 3,392**	**$ 1,795**	**$ 80,195**
Maximum Payout/Notional Amount of Purchased Credit Derivatives					
Offsetting	**$ 54,376**	**$ 3,908**	**$ 2,609**	**$ 163**	**$ 61,056**
Other	**34,925**	**3,656**	**2,018**	**1,782**	**42,381**
Fair Value of Written Credit Derivatives					
Asset	**$ 996**	**$ 263**	**$ 58**	**$ 57**	**$ 1,374**
Liability	**748**	**440**	**78**	**53**	**1,319**
Net asset/(liability)	**$ 248**	**$ (177)**	**$ (20)**	**$ 4**	**$ 55**
As of December 2017					
Maximum Payout/Notional Amount of Written Credit Derivatives by Tenor					
Less than 1 year	$ 17,331	$ 424	$ 131	$ 394	$ 18,280
1 – 5 years	33,988	1,744	1,458	1,079	38,269
Greater than 5 years	9,940	421	170	123	10,654
Total	$ 61,259	$ 2,589	$ 1,759	$ 1,596	$ 67,203
Maximum Payout/Notional Amount of Purchased Credit Derivatives					
Offsetting	$ 47,440	$ 1,935	$ 1,460	$ 1,284	$ 52,119
Other	26,833	1,358	363	478	29,032
Fair Value of Written Credit Derivatives					
Asset	$ 1,826	$ 120	$ 88	$ 59	$ 2,093
Liability	253	41	67	249	610
Net asset/(liability)	$ 1,573	$ 79	$ 21	$ (190)	$ 1,483

In the table above:

- Fair values exclude the effects of both netting of receivable balances with payable balances under enforceable netting agreements, and netting of cash received or posted under enforceable credit support agreements, and therefore are not representative of the Bank's credit exposure.
- Tenor is based on remaining contractual maturity.
- The credit spread on the underlier, together with the tenor of the contract, are indicators of payment/performance risk. The Bank is less likely to pay or otherwise be required to perform where the credit spread and the tenor are lower.
- Offsetting purchased credit derivatives represent the notional amount of purchased credit derivatives that economically hedge written credit derivatives with identical underliers.
- Other purchased credit derivatives represent the notional amount of all other purchased credit derivatives not included in offsetting.

Impact of Credit Spreads on Derivatives

On an ongoing basis, the Bank realizes gains or losses relating to changes in credit risk through the unwind of derivative contracts and changes in credit mitigants.

The net gains, including hedges, attributable to the impact of changes in credit exposure and credit spreads (counterparty and GS Group's) on derivatives was $214 million for 2018 and $11 million for 2017.

Derivatives with Credit-Related Contingent Features

Certain of the Bank's derivatives have been transacted under bilateral agreements with counterparties who may require the Bank to post collateral or terminate the transactions based on changes in the credit ratings of the Bank and/or Group Inc. Typically, such requirements are based on the credit ratings of Group Inc. The Bank assesses the impact of these bilateral agreements by determining the collateral or termination payments that would occur assuming a downgrade by all rating agencies. A downgrade by any one rating agency, depending on the agency's relative ratings of the Bank and/or Group Inc. at the time of the downgrade, may have an impact which is comparable to the impact of a downgrade by all rating agencies.

The table below presents information about net derivative liabilities under such bilateral agreements (excluding application of collateral posted), the related fair value of collateral posted and the additional collateral or termination payments that could have been called by counterparties in the event of a one-notch and two-notch downgrade in the credit ratings of the Bank and/or Group Inc.

	As of December	
$ in millions	**2018**	2017
Net derivative liabilities under bilateral agreements	**$ 5,511**	$ 5,140
Collateral posted	**$ 4,499**	$ 4,013
Additional collateral or termination payments:		
One-notch downgrade	**$ 112**	$ 174
Two-notch downgrade	**$ 411**	$ 304

Hedge Accounting

The Bank applies hedge accounting for certain interest rate swaps used to manage the interest rate exposure of certain fixed-rate certificates of deposit and certain fixed-rate unsecured long-term borrowings.

To qualify for hedge accounting, the hedging instrument must be highly effective at reducing the risk from the exposure being hedged. Additionally, the Bank must formally document the hedging relationship at inception and assess the hedging relationship at least on a quarterly basis to ensure the hedging instrument continues to be highly effective over the life of the hedging relationship.

Fair Value Hedges

The Bank designates certain interest rate swaps as fair value hedges of certain fixed-rate certificates of deposit and certain fixed-rate unsecured long-term borrowings. These interest rate swaps hedge changes in fair value attributable to the designated benchmark interest rate (e.g., London Interbank Offered Rate (LIBOR)), effectively converting a substantial portion of fixed-rate obligations into floating-rate obligations.

The Bank applies a statistical method that utilizes regression analysis when assessing the effectiveness of its fair value hedging relationships in achieving offsetting changes in the fair values of the hedging instrument and the risk being hedged (i.e., interest rate risk). An interest rate swap is considered highly effective in offsetting changes in fair value attributable to changes in the hedged risk when the regression analysis results in a coefficient of determination of 80% or greater and a slope between 80% and 125%.

For qualifying fair value hedges, gains or losses on derivatives are included in interest expense. The change in fair value of the hedged item attributable to the risk being hedged is reported as an adjustment to its carrying value (hedging adjustment) and is also included in interest expense. When a derivative is no longer designated as a hedge, any remaining difference between the carrying value and par value of the hedged item is amortized to interest expense over the remaining life of the hedged item using the effective interest method. See Note 20 for further information about interest income and interest expense.

The table below presents the gains/(losses) from interest rate derivatives accounted for as hedges and the related hedged deposits and borrowings, and total interest expense.

	Year Ended December	
$ in millions	**2018**	2017
Interest rate hedges	**$ (79)**	$ (122)
Hedged deposits and borrowings	**$ 64**	$ 102
Interest expense	**$ 3,065**	$ 1,772

In the table above, hedge ineffectiveness was $(20) million for 2017.

The table below presents the carrying value of the hedged items that are currently designated in a hedging relationship and the related cumulative hedging adjustment (increase/(decrease)) from current and prior hedging relationships included in such carrying values.

	As of December 2018	
$ in millions	**Carrying Value**	**Cumulative Hedging Adjustment**
Deposits	**$ 11,248**	**$ (165)**
Unsecured long-term borrowings	**$ 1,000**	**$ –**

In the table above, there were no hedging adjustments from prior hedging relationships that were de-designated.

In addition, as of December 2018, cumulative hedging adjustments for items no longer designated in a hedging relationship were not material.

Note 8.

Fair Value Option

Other Financial Assets and Financial Liabilities at Fair Value

In addition to cash and derivative instruments included in financial instruments owned and financial instruments sold, but not yet purchased, the Bank accounts for certain of its other financial assets and financial liabilities at fair value, substantially all under the fair value option. The primary reasons for electing the fair value option are to:

- Reflect economic events in earnings on a timely basis;
- Mitigate volatility in earnings from using different measurement attributes (e.g., transfers of financial instruments owned accounted for as financings are recorded at fair value, whereas the related secured financing would be recorded on an accrual basis absent electing the fair value option); and
- Address simplification and cost-benefit considerations (e.g., accounting for hybrid financial instruments at fair value in their entirety versus bifurcation of embedded derivatives and hedge accounting for debt hosts).

Hybrid financial instruments are instruments that contain bifurcatable embedded derivatives and do not require settlement by physical delivery of nonfinancial assets. The Bank has not elected to bifurcate hybrid financial instruments and accounts for the entire hybrid financial instrument at fair value under the fair value option.

Other financial assets and financial liabilities accounted for at fair value under the fair value option include:

- Repurchase agreements and substantially all resale agreements;
- Certain other secured financings, including advances from the Federal Home Loan Bank of New York (FHLB);
- Certain unsecured borrowings; and
- Certain time deposits (deposits with no stated maturity are not eligible for a fair value option election), including structured certificates of deposit, which are hybrid financial instruments.

Fair Value of Other Financial Assets and Financial Liabilities by Level

The table below presents, by level within the fair value hierarchy, other financial assets and financial liabilities at fair value, substantially all of which are accounted for at fair value under the fair value option.

$ in millions	Level 1	Level 2	Level 3	Total
As of December 2018				
Assets				
Resale agreements	**$ –**	**$ 36,486**	**$ –**	**$ 36,486**
Total	**$ –**	**$ 36,486**	**$ –**	**$ 36,486**
Liabilities				
Deposits	**$ –**	**$ (1,700)**	**$ (3,168)**	**$ (4,868)**
Repurchase agreements	**–**	**(3,815)**	**–**	**(3,815)**
Other secured financings	**–**	**(528)**	**–**	**(528)**
Unsecured borrowings	**–**	**(175)**	**–**	**(175)**
Total	**$ –**	**$ (6,218)**	**$ (3,168)**	**$ (9,386)**
As of December 2017				
Assets				
Resale agreements	$ –	$ 17,918	$ –	$ 17,918
Total	$ –	$ 17,918	$ –	$ 17,918
Liabilities				
Deposits	$ –	$ (1,460)	$ (2,968)	$ (4,428)
Repurchase agreements	–	(56)	–	(56)
Other secured financings	–	(3,395)	–	(3,395)
Unsecured borrowings	–	(186)	–	(186)
Total	$ –	$ (5,097)	$ (2,968)	$ (8,065)

In the table above, other financial assets are shown as positive amounts and other financial liabilities are shown as negative amounts.

Valuation Techniques and Significant Inputs

Other financial assets and financial liabilities at fair value are generally valued based on discounted cash flow techniques, which incorporate inputs with reasonable levels of price transparency, and are generally classified in level 2 because the inputs are observable. Valuation adjustments may be made for liquidity and for counterparty and the Bank's credit quality.

See below for information about the significant inputs used to value other financial assets and financial liabilities at fair value.

Resale and Repurchase Agreements. The significant inputs to the valuation of resale and repurchase agreements are funding spreads, the amount and timing of expected future cash flows and interest rates. As of both December 2018 and December 2017, the Bank had no level 3 resale or repurchase agreements. See Note 10 for further information about collateralized agreements and financings.

Deposits. The significant inputs to the valuation of time deposits are interest rates and the amount and timing of future cash flows. The inputs used to value the embedded derivative component of hybrid financial instruments are consistent with the inputs used to value the Bank's other derivative instruments. See Note 7 for further information about derivatives and Note 14 for further information about deposits.

The Bank's deposits that are classified in level 3 are hybrid financial instruments. As the significant unobservable inputs used to value hybrid financial instruments primarily relate to the embedded derivative component of these deposits, these inputs are incorporated in the Bank's derivative disclosures related to unobservable inputs in Note 7.

Other Secured Financings. The significant inputs to the valuation of other secured financings at fair value are the amount and timing of expected future cash flows, interest rates, funding spreads, the fair value of the collateral delivered by the Bank (which is determined using the amount and timing of expected future cash flows, market prices, market yields and recovery assumptions) and the frequency of additional collateral calls. As of both December 2018 and December 2017, the Bank had no level 3 other secured financings.

Unsecured Borrowings. The significant inputs to the valuation of unsecured borrowings at fair value are the amount and timing of expected future cash flows and interest rates. The inputs used to value the embedded derivative component of hybrid financial instruments are consistent with the inputs used to value the Bank's other derivative instruments. As of both December 2018 and December 2017, the Bank had no level 3 unsecured borrowings. See Note 7 for further information about derivatives and Note 15 for further information about unsecured borrowings.

Level 3 Rollforward

The table below presents a summary of the changes in fair value for level 3 other financial liabilities accounted for at fair value.

	Year Ended December	
$ in millions	**2018**	2017
Deposits		
Beginning balance	**$ (2,968)**	$ (3,173)
Net realized gains/(losses)	**(25)**	(6)
Net unrealized gains/(losses)	**272**	(239)
Issuances	**(796)**	(661)
Settlements	**298**	232
Transfers into level 3	**(8)**	–
Transfers out of level 3	**59**	879
Ending balance	**$ (3,168)**	$ (2,968)

In the table above:

- Changes in fair value are presented for all other financial liabilities that are classified in level 3 as of the end of the period.
- Net unrealized gains/(losses) relates to instruments that were still held at period-end.
- Transfers between levels of the fair value hierarchy are reported at the beginning of the reporting period in which they occur. If a financial liability was transferred to level 3 during a reporting period, its entire gain or loss for the period is classified in level 3.
- For level 3 other financial liabilities, increases are shown as negative amounts, while decreases are shown as positive amounts.
- Level 3 other financial liabilities are frequently economically hedged with cash instruments and derivatives. Accordingly, gains or losses that are classified in level 3 can be partially offset by gains or losses attributable to level 1, 2 or 3 cash instruments or derivatives. As a result, gains or losses included in the level 3 rollforward above do not necessarily represent the overall impact on the Bank's results of operations, liquidity or capital resources.

Level 3 Rollforward Commentary

Year Ended December 2018. The net realized and unrealized gains on level 3 other financial liabilities of $247 million (reflecting $25 million of net realized losses and $272 million of net unrealized gains) for 2018 included gains of $189 million reported in gains and losses from financial instruments, net in the consolidated statements of earnings, and gains of $58 million reported in debt valuation adjustment in the consolidated statements of comprehensive income.

The net unrealized gains on level 3 other financial liabilities of for 2018 primarily reflected gains on certain hybrid financial instruments included in deposits, principally due to the impact of a decrease in the market value of the underlying assets.

Transfers into level 3 other financial liabilities during 2018 were not material.

Transfers out of level 3 other financial liabilities during 2018 primarily reflected transfers of certain hybrid financial instruments included in deposits to level 2, principally due to increased transparency of correlation and volatility inputs used to value these instruments.

Year Ended December 2017. The net realized and unrealized losses on level 3 other financial liabilities of $245 million (reflecting $6 million of net realized losses and $239 million of net unrealized losses) for 2017 included losses of $250 million reported in gains and losses from financial instruments, net in the consolidated statements of earnings, and gains of $5 million reported in debt valuation adjustment in the consolidated statements of comprehensive income.

The net unrealized losses on level 3 other financial liabilities for 2017 primarily reflected losses on certain hybrid financial instruments included in deposits, principally due to the impact of an increase in the market value of the underlying assets.

There were no transfers into level 3 of other financial liabilities during 2017.

Transfers out of level 3 of other financial liabilities during 2017 primarily reflected transfers of certain deposits to level 2, principally due to increased transparency of correlation and volatility inputs used to value these instruments.

Gains and Losses on Financial Assets and Financial Liabilities Accounted for at Fair Value Under the Fair Value Option

The table below presents the gains and losses recognized in earnings as a result of the Bank electing to apply the fair value option to certain financial assets and financial liabilities.

	Year Ended December	
$ in millions	**2018**	2017
Deposits	**$ 189**	$ (278)
Other	**2**	(10)
Total	**$ 191**	$ (288)

In the table above:

- Gains/(losses) are included in gains and losses from financial instruments, net.
- Gains/(losses) exclude contractual interest, which is included in interest income and interest expense, for all instruments other than hybrid financial instruments. See Note 20 for further information about interest income and interest expense.
- Gains/(losses) included in deposits were related to the embedded derivative component of hybrid financial instruments for both 2018 and 2017. These gains and losses would have been recognized under other U.S. GAAP even if the Bank had not elected to account for the entire hybrid financial instrument at fair value.
- Other primarily consists of losses on certain unsecured borrowings and FHLB advances.

Excluding the gains and losses on the instruments accounted for at fair value under the fair value option described above, gains and losses from financial instruments, net primarily represents gains and losses on financial instruments owned, financial instruments sold, but not yet purchased, and the syndication of loans and lending commitments.

Loans at Fair Value Under the Fair Value Option

The Bank originates loans to provide financing to clients. These loans are typically longer-term in nature. The Bank's lending activities include lending to investment-grade and non-investment-grade corporations and to private bank clients, which are primarily secured by securities, commercial and residential real estate, or other assets. The Bank's lending activities also include extending loans to borrowers that are secured by commercial and residential real estate.

The Bank accounts for certain loans at fair value under the fair value option which are included in financial instruments owned. See Note 6 for a discussion of the techniques and significant inputs used in the valuation of loans. See Note 9 for information about loans receivable not accounted for at fair value.

The table below presents information about loans at fair value under the fair value option.

	As of December	
$ in millions	**2018**	2017
Corporate loans	**$ 1,304**	$ 1,287
PWM loans	**7,225**	7,081
Commercial real estate loans	**894**	872
Residential real estate loans	**2,312**	–
Other loans	**204**	106
Total	**$ 11,939**	$ 9,346

In the table above:

- Private wealth management (PWM) loans includes loans extended to private bank clients. PWM loans included $7.06 billion of loans secured by residential real estate, $117 million of loans secured by investments in both financial and nonfinancial assets and $49 million of loans secured by commercial real estate as of December 2018 and $6.85 billion of loans secured by residential real estate, $161 million of loans secured by investments in both financial and nonfinancial assets and $65 million of loans secured by commercial real estate as of December 2017.
- The aggregate contractual principal amount of loans for which the fair value option was elected exceeded the related fair value by $428 million as of December 2018 and $149 million as of December 2017.
- Included in these amounts are loans in nonaccrual status (including loans more than 90 days past due) with a contractual principal balance of $61 million and a fair value of $31 million as of December 2018, and a contractual principal balance of $60 million and a fair value of $36 million as of December 2017.
- See Note 9 for further information about the captions in the table above.

Lending Commitments at Fair Value Under the Fair Value Option

The table below presents information about the contractual amount of lending commitments that are at fair value under the fair value option.

	As of December	
$ in millions	**2018**	2017
Corporate	**$ 5,927**	$ 4,201
Other	**329**	149
Total	**$ 6,256**	$ 4,350

In the table above:

- Corporate lending commitments primarily relates to bank and bridge lending activities.
- Other lending commitments primarily relates to lending commitments extended by the private bank.
- The fair value of lending commitments were liabilities of $3 million as of December 2018 and $5 million as of December 2017.

Long-Term Deposits

The difference between the aggregate contractual principal amount and the related fair value of long-term deposits for which the fair value option was elected was not material as of December 2018 and $183 million as of December 2017.

Impact of Credit Spreads on Loans and Lending Commitments

The estimated net gain/(loss) attributable to changes in instrument-specific credit spreads on loans and lending commitments for which the fair value option was elected was $(24) million for 2018 and $40 million for 2017. The Bank generally calculates the fair value of loans and lending commitments for which the fair value option is elected by discounting future cash flows at a rate which incorporates the instrument-specific credit spreads. For floating-rate loans and lending commitments, substantially all changes in fair value are attributable to changes in instrument-specific credit spreads, whereas for fixed-rate loans and lending commitments, changes in fair value are also attributable to changes in interest rates.

Debt Valuation Adjustment

The Bank calculates the fair value of financial liabilities for which the fair value option is elected by discounting future cash flows at a rate which incorporates the Bank's credit spreads.

The table below presents information about the net DVA gains on financial liabilities for which the fair value option was elected.

	Year Ended December	
$ in millions	**2018**	2017
DVA (pre-tax)	**$ 72**	$ 7
DVA (net of tax)	**$ 54**	$ 5

In the table above:

- DVA (net of tax) is included in debt valuation adjustment in the consolidated statements of comprehensive income.
- The gains/(losses) reclassified to earnings from accumulated other comprehensive income upon extinguishment of such financial liabilities were not material for both 2018 and 2017.

Note 9.

Loans Receivable

Loans receivable consists of loans held for investment that are accounted for at amortized cost net of allowance for loan losses and loans held for sale that are accounted for at the lower of cost or fair value. Interest on loans receivable is recognized over the life of the loan and is recorded on an accrual basis.

The table below presents information about loans receivable.

	As of December	
$ in millions	**2018**	2017
Corporate loans	**$ 28,858**	$ 21,657
PWM loans	**15,398**	14,492
Commercial real estate loans	**9,830**	6,854
Residential real estate loans	**3,821**	2,769
Consumer loans	**4,536**	1,912
Other loans	**3,537**	3,519
Total loans receivable, gross	**65,980**	51,203
Allowance for loan losses	**(617)**	(354)
Total loans receivable	**$ 65,363**	$ 50,849

In the table above, as of December 2018 PWM loans included $13.18 billion of loans, substantially all of which are secured by investments in both financial and nonfinancial assets, $2.16 billion of loans secured by commercial real estate and $54 million of loans secured by residential real estate. As of December 2017 PWM loans included $12.13 billion of loans, substantially all of which are secured by investments in both financial and nonfinancial assets, $2.23 billion of loans secured by commercial real estate and $130 million of loans secured by residential real estate.

The following is a description of the captions in the table above:

- **Corporate Loans.** Corporate loans includes term loans, revolving lines of credit, letter of credit facilities and bridge loans, and are principally used for operating liquidity and general corporate purposes, or in connection with acquisitions. Corporate loans also includes loans originated as part of the Bank's CRA activities. Corporate loans may be secured or unsecured, depending on the loan purpose, the risk profile of the borrower and other factors. Loans receivable related to the Bank's relationship lending activities are reported within corporate loans.
- **PWM Loans.** PWM loans includes loans extended to private bank clients, including loans originated through *Goldman Sachs Private Bank Select*. These loans are used to finance investments in both financial and nonfinancial assets, bridge cash flow timing gaps or provide liquidity for other needs. Substantially all PWM loans are secured by securities, commercial and residential real estate, or other assets.
- **Commercial Real Estate Loans.** Commercial real estate loans includes loans extended by the Bank, other than those extended by the private bank, that are directly or indirectly secured by hotels, retail stores, multifamily housing complexes and commercial and industrial properties. Commercial real estate loans also includes loans purchased by the Bank and loans originated as part of the Bank's CRA activities.
- **Residential Real Estate Loans.** Residential real estate loans includes loans extended by the Bank, other than those extended by the private bank, to clients who warehouse assets that are directly or indirectly secured by residential real estate. Residential real estate loans also includes loans purchased and originated by the Bank.
- **Consumer Loans.** Consumer loans represents unsecured consumer loans originated by the Bank.
- **Other Loans.** Other loans primarily includes loans extended to clients who warehouse assets that are directly or indirectly secured by consumer loans, including auto loans and private student loans. Other loans also includes unsecured consumer loans purchased by the Bank.

Loans Held for Investment

Included in loans receivable are loans held for investment which are accounted for at amortized cost net of allowance for loan losses. The carrying value of such loans, net of allowance for loan losses was $61.73 billion as of December 2018 and $47.76 billion as of December 2017. The fair value of loans held for investment was $61.66 billion as of December 2018 and $47.83 billion as of December 2017. Had these loans been carried at fair value and included in the fair value hierarchy, $29.71 billion as of December 2018 and $26.92 billion as of December 2017 would have been classified in level 2, and $31.95 billion as of December 2018 and $20.91 billion as of December 2017 would have been classified in level 3.

Loans Held for Sale

Included in loans receivable are loans held for sale which are accounted for at the lower of cost or fair value. The carrying value of such loans was $3.63 billion as of December 2018 and $3.09 billion as of December 2017. As of both December 2018 and December 2017, the carrying value of loans held for sale generally approximated fair value. Had these loans been included in the fair value hierarchy, they would have been primarily classified in level 2 as of both December 2018 and December 2017.

Lending Commitments Held for Investment

The table below presents information about lending commitments that are held for investment and accounted for on an accrual basis.

	As of December	
$ in millions	**2018**	2017
Corporate	**$ 98,109**	$ 92,217
Other	**5,668**	5,017
Total	**$ 103,777**	$ 97,234

In the table above:

- Corporate lending commitments primarily relates to the Bank's relationship lending activities.
- Other lending commitments primarily relates to lending commitments extended to clients who warehouse assets backed by real estate and other assets and commitments extended by the private bank.
- The carrying value of lending commitments were liabilities of $321 million (including allowance for losses of $202 million) as of December 2018 and $298 million (including allowance for losses of $193 million) as of December 2017.
- The estimated fair value of such lending commitments were liabilities of $3.13 billion as of December 2018 and $1.82 billion as of December 2017. Had these lending commitments been carried at fair value and included in the fair value hierarchy, $956 million as of December 2018 and $641 million as of December 2017 would have been classified in level 2, and $2.17 billion as of December 2018 and $1.18 billion as of December 2017 would have been classified in level 3.

Lending Commitments Held for Sale

The table below presents information about lending commitments that are held for sale and accounted for at the lower of cost or fair value.

	As of December	
$ in millions	**2018**	2017
Corporate	**$ 5,084**	$ 6,354
Other	**1,313**	614
Total	**$ 6,397**	$ 6,968

In the table above:

- Corporate lending commitments primarily relates to bank and bridge lending activities.
- Other lending commitments primarily relates to lending commitments extended to clients for the purchase of commercial real estate.
- The carrying value of lending commitments held for sale were liabilities of $106 million as of December 2018 and $50 million as of December 2017. Had these lending commitments been included in the fair value hierarchy, they would have been primarily classified in level 3 as of both December 2018 and December 2017.

Credit Quality

Risk Assessment. The Bank's risk assessment process includes evaluating the credit quality of its loans receivable. For loans receivable (excluding consumer loans) and lending commitments, the Bank performs credit reviews which include initial and ongoing analyses of its borrowers. A credit review is an independent analysis of the capacity and willingness of a borrower to meet its financial obligations, resulting in an internal credit rating. The determination of internal credit ratings also incorporates assumptions with respect to the nature of and outlook for the borrower's industry and the economic environment. The Bank also assigns a regulatory risk rating to such loans based on the definitions provided by the U.S. federal bank regulatory agencies.

The Bank enters into economic hedges to mitigate credit risk on certain loans receivable and corporate lending commitments (both of which are held for investment) related to the Bank's relationship lending activities. Such hedges are accounted for at fair value. See Note 17 for further information about these lending commitments and associated hedges.

The table below presents gross loans receivable (excluding consumer loans of $4.54 billion as of December 2018 and $1.91 billion as of December 2017) and lending commitments by an internally determined public rating agency equivalent and by regulatory risk rating.

$ in millions	Loans	Lending Commitments	Total
Credit Rating Equivalent			
As of December 2018			
Investment-grade	**$ 26,723**	**$ 75,648**	**$ 102,371**
Non-investment-grade	**34,721**	**34,526**	**69,247**
Total	**$ 61,444**	**$ 110,174**	**$ 171,618**
As of December 2017			
Investment-grade	$ 22,461	$ 73,224	$ 95,685
Non-investment-grade	26,830	30,978	57,808
Total	$ 49,291	$ 104,202	$ 153,493
Regulatory Risk Rating			
As of December 2018			
Non-criticized/pass	**$ 59,847**	**$ 108,058**	**$ 167,905**
Criticized	**1,597**	**2,116**	**3,713**
Total	**$ 61,444**	**$ 110,174**	**$ 171,618**
As of December 2017			
Non-criticized/pass	$ 48,246	$ 100,226	$ 148,472
Criticized	1,045	3,976	5,021
Total	$ 49,291	$ 104,202	$ 153,493

In the table above:

- Loans and lending commitments includes loans and lending commitments held for investment and held for sale.
- Non-criticized/pass loans and lending commitments represent loans and lending commitments that are performing and/or do not demonstrate adverse characteristics that are likely to result in a credit loss.

For consumer loans, an important credit-quality indicator is the Fair Isaac Corporation (FICO) credit score, which measures a borrower's creditworthiness by considering factors such as payment and credit history. FICO credit scores are refreshed periodically by the Bank to assess the updated creditworthiness of the borrower.

The table below presents gross consumer loans receivable and the concentration by refreshed FICO credit score.

	As of December	
$ in millions	**2018**	2017
Consumer loans, gross	**$ 4,536**	$ 1,912
Refreshed FICO credit score		
Greater than or equal to 660	**88%**	89%
Less than 660	**12%**	11%
Total	**100%**	100%

Impaired Loans. Loans receivable are determined to be impaired when it is probable that the Bank will not collect all principal and interest due under the contractual terms. At that time, loans are generally placed on nonaccrual status and all accrued but uncollected interest is reversed against interest income and interest subsequently collected is recognized on a cash basis to the extent the loan balance is deemed collectible. Otherwise, all cash received is used to reduce the outstanding loan balance. A loan is considered past due when a principal or interest payment has not been made according to its contractual terms.

In certain circumstances, the Bank may also modify the original terms of a loan agreement by granting a concession to a borrower experiencing financial difficulty. Such modifications are considered troubled debt restructurings and typically include interest rate reductions, payment extensions, and modification of loan covenants. Loans modified in a troubled debt restructuring are considered impaired and are subject to specific loan-level reserves.

The gross carrying value of impaired loans receivable on nonaccrual status was $336 million as of December 2018 and $284 million as of December 2017. As of December 2018, the value of loans modified in a troubled debt restructuring was not material. The Bank did not have any lending commitments related to these loans as of December 2018. As of December 2017, the Bank did not have any loans or lending commitments that were modified in a troubled debt restructuring. The amount of loans 30 days or more past due was $160 million as of December 2018 and $247 million as of December 2017.

Allowance for Credit Losses

The Bank's allowance for credit losses consists of the allowance for losses on loans and lending commitments.

The Bank's allowance for loan losses consists of specific loan-level reserves and portfolio level reserves, as described below:

- Specific loan-level reserves are determined on loans that exhibit credit quality weakness and are therefore individually evaluated for impairment.
- Portfolio level reserves are determined on loans not evaluated for specific loan-level reserves by aggregating groups of loans with similar risk characteristics and estimating the probable loss inherent in the portfolio.

The allowance for loan losses is determined using various risk factors, including industry default and loss data, current macroeconomic indicators, borrower's capacity to meet its financial obligations, borrower's country of risk, loan seniority and collateral type. In addition, for loans backed by real estate, risk factors include loan to value ratio, debt service ratio and home price index. Risk factors for consumer loans include FICO credit scores and delinquency status.

Management's estimate of loan losses entails judgment about loan collectability at the reporting dates, and there are uncertainties inherent in those judgments. While management uses the best information available to determine this estimate, future adjustments to the allowance may be necessary based on, among other things, changes in the economic environment or variances between actual results and the original assumptions used. Loans are charged off against the allowance for loan losses when deemed to be uncollectible.

The Bank also records an allowance for losses on lending commitments that are held for investment and accounted for on an accrual basis. Such allowance is determined using the same methodology as the allowance for loan losses, while also taking into consideration the probability of drawdowns or funding, and is included in other liabilities.

The table below presents gross loans held for investment and lending commitments held for investment by impairment methodology.

$ in millions	Specific	Portfolio	Total
As of December 2018			
Loans Held for Investment			
Corporate loans	**$ 91**	**$ 26,655**	**$ 26,746**
PWM loans	**46**	**15,352**	**15,398**
Commercial real estate loans	**9**	**8,803**	**8,812**
Residential real estate loans	**190**	**3,588**	**3,778**
Consumer loans	**–**	**4,536**	**4,536**
Other loans	**–**	**3,079**	**3,079**
Total	**$ 336**	**$ 62,013**	**$ 62,349**
Lending Commitments Held for Investment			
Corporate	**$ 4**	**$ 98,105**	**$ 98,109**
Other	**1**	**5,667**	**5,668**
Total	**$ 5**	**$ 103,772**	**$ 103,777**
As of December 2017			
Loans Held for Investment			
Corporate loans	$ 121	$ 21,047	$ 21,168
PWM loans	163	14,329	14,492
Commercial real estate loans	–	5,517	5,517
Residential real estate loans	–	2,149	2,149
Consumer loans	–	1,912	1,912
Other loans	–	2,878	2,878
Total	$ 284	$ 47,832	$ 48,116
Lending Commitments Held for Investment			
Corporate	$ 28	$ 92,189	$ 92,217
Other	–	5,017	5,017
Total	$ 28	$ 97,206	$ 97,234

In the table above:

- Gross loans held for investment and lending commitments held for investment, subject to specific loan-level reserves, included $218 million as of December 2018 and $124 million as of December 2017 of impaired loans and lending commitments, which did not require a reserve as the loan was deemed to be recoverable.
- Gross loans held for investment deemed impaired and subject to specific loan-level reserves as a percentage of total gross loans held for investment was 0.5% as of December 2018 and 0.6% as of December 2017.

The table below presents information about the allowance for credit losses.

	Year Ended December 2018		Year Ended December 2017	
$ in millions	**Loans Receivable**	**Lending Commitments**	Loans Receivable	Lending Commitments
Changes in the allowance for credit losses				
Beginning balance	**$ 354**	**$ 193**	$ 219	$ 163
Net charge-offs	**(156)**	**–**	(158)	–
Provision	**455**	**15**	297	38
Other	**(36)**	**(6)**	(4)	(8)
Ending balance	**$ 617**	**$ 202**	$ 354	$ 193
Allowance for losses by impairment methodology				
Specific	**$ 38**	**$ 1**	$ 47	$ 10
Portfolio	**579**	**201**	307	183
Total	**$ 617**	**$ 202**	$ 354	$ 193

In the table above:

- Substantially all net charge-offs were related to consumer loans for 2018 and primarily related to corporate loans for 2017.
- The provision for credit losses was primarily related to consumer loans for 2018 and primarily related to corporate loans and lending commitments, and consumer loans for 2017.
- Other represents the reduction to the allowance related to loans and lending commitments transferred to held for sale.
- Portfolio level reserves were primarily related to corporate loans and lending commitments and consumer loans and specific loan-level reserves were primarily related to corporate loans.
- Substantially all of the allowance for losses on lending commitments was related to corporate lending commitments.
- Allowance for loan losses as a percentage of total gross loans held for investment was 1.0% as of December 2018 and 0.7% as of December 2017.
- Net charge-offs as a percentage of average total gross loans held for investment were 0.3% for 2018 and 0.4% for 2017.

Note 10.

Collateralized Agreements and Financings

Collateralized agreements are resale agreements. Collateralized financings are repurchase agreements and other secured financings. The Bank enters into these transactions in order to, among other things, facilitate client activities, invest excess cash, acquire securities to cover short positions and finance certain Bank activities.

Collateralized agreements and financings are presented on a net-by-counterparty basis when a legal right of setoff exists. Interest on collateralized agreements, which is included in interest income, and collateralized financings, which is included in interest expense, is recognized over the life of the transaction. See Note 20 for further information about interest income and interest expense.

The table below presents the carrying value of resale and repurchase agreements.

	As of December	
$ in millions	**2018**	2017
Resale agreements	**$ 36,525**	$ 18,320
Repurchase agreements	**$ 3,815**	$ 56

In the table above:

- All repurchase agreements are carried at fair value under the fair value option.
- Substantially all resale agreements were carried at fair value under the fair value option.

See Note 8 for further information about the valuation techniques and significant inputs used to determine fair value.

Resale and Repurchase Agreements

A resale agreement is a transaction in which the Bank purchases financial instruments from a seller, typically in exchange for cash, and simultaneously enters into an agreement to resell the same or substantially the same financial instruments to the seller at a stated price plus accrued interest at a future date.

A repurchase agreement is a transaction in which the Bank sells financial instruments to a buyer, typically in exchange for cash, and simultaneously enters into an agreement to repurchase the same or substantially the same financial instruments from the buyer at a stated price plus accrued interest at a future date.

Even though repurchase and resale agreements involve the legal transfer of ownership of financial instruments, they are accounted for as financing arrangements because they require the financial instruments to be repurchased or resold before or at the maturity of the agreement. The financial instruments purchased or sold in resale and repurchase agreements typically include U.S. government and agency obligations.

The Bank receives financial instruments purchased under resale agreements and makes delivery of financial instruments sold under repurchase agreements. To mitigate credit exposure, the Bank monitors the market value of these financial instruments on a daily basis, and delivers or obtains additional collateral due to changes in the market value of the financial instruments, as appropriate. For resale agreements, the Bank typically requires collateral with a fair value approximately equal to the carrying value of the relevant assets in the consolidated statements of financial condition.

Offsetting Arrangements

The table below presents the gross and net resale and repurchase agreements, and the related amount of counterparty netting included in the consolidated statements of financial condition, as well as the amounts of counterparty netting and cash and securities collateral not offset in the consolidated statements of financial condition.

	Assets	Liabilities
$ in millions	Resale agreements	Repurchase agreements
As of December 2018		
Included in consolidated statements of financial condition		
Gross carrying value	**$ 39,963**	**$ 7,253**
Counterparty netting	**(3,438)**	**(3,438)**
Total	**36,525**	**3,815**
Amounts not offset		
Counterparty netting	**(72)**	**(72)**
Collateral	**(36,071)**	**(3,742)**
Total	**$ 382**	**$ 1**
As of December 2017		
Included in consolidated statements of financial condition		
Gross carrying value	$ 19,700	$ 1,436
Counterparty netting	(1,380)	(1,380)
Total	18,320	56
Amounts not offset		
Counterparty netting	(55)	(55)
Collateral	(18,242)	–
Total	$ 23	$ 1

In the table above:

- Substantially all of the gross carrying values of these arrangements are subject to enforceable netting agreements.
- Where the Bank has received or posted collateral under credit support agreements, but has not yet determined such agreements are enforceable, the related collateral has not been netted.
- Amounts not offset includes counterparty netting that does not meet the criteria for netting under U.S. GAAP and the fair value of collateral received or posted subject to enforceable credit support agreements.

Gross Carrying Value of Repurchase Agreements

The table below presents the gross carrying value of repurchase agreements by class of collateral pledged.

	As of December	
$ in millions	**2018**	2017
Money market instruments	**$ –**	$ 46
U.S. government and agency obligations	**7,229**	1,302
Corporate debt securities	**24**	88
Total	**$ 7,253**	$ 1,436

As of both December 2018 and December 2017, all of the Bank's repurchase agreements were either overnight or had no stated maturity.

Other Secured Financings

In addition to repurchase agreements, the Bank funds certain assets through the use of other secured financings and pledges financial instruments and other assets as collateral in these transactions. These other secured financings consist of:

- FHLB advances; and
- Transfers of assets accounted for as financings rather than sales (e.g., collateralized by bank loans and mortgage whole loans).

Other secured financings includes nonrecourse arrangements. Nonrecourse other secured financings were $132 million as of December 2018 and $107 million as of December 2017.

The Bank has elected to apply the fair value option to certain other secured financings because the use of fair value eliminates non-economic volatility in earnings that would arise from using different measurement attributes. See Note 8 for further information about other secured financings that are accounted for at fair value.

Other secured financings that are not recorded at fair value are recorded based on the amount of cash received plus accrued interest, which generally approximates fair value. As these financings are not accounted for at fair value, they are not included in the Bank's fair value hierarchy in Notes 5 through 8. Had these financings been included in the Bank's fair value hierarchy, they would have been classified in level 3 as of both December 2018 and December 2017.

FHLB Advances. As a member of the FHLB, the Bank can draw under a funding arrangement secured by eligible collateral. Outstanding borrowings from the FHLB were $528 million as of December 2018 and $3.40 billion as of December 2017. As of December 2018, interest rates ranged from 2.68% to 2.82% with a weighted average rate 2.69%. As of December 2017, interest rates ranged from 1.57% to 1.85% with a weighted average rate of 1.70%. These borrowings are carried at fair value under the fair value option in the Bank's fair value hierarchy. See Note 8 for further information about borrowings accounted for at fair value. Outstanding FHLB advances included short-term borrowings of $28 million as of December 2018 and $2.90 billion as of December 2017 and long-term borrowings of $500 million as of both December 2018 and December 2017.

Other. Other secured financings, excluding FHLB advances, were $132 million as of December 2018 and $107 million as of December 2017. As of both December 2018 and December 2017, all of the amounts outstanding had a contractual maturity of greater than one year.

Collateral Received and Pledged

The Bank receives cash and securities (e.g., U.S. government and agency obligations, other sovereign and corporate obligations) as collateral, primarily in connection with resale agreements, derivative transactions and customer margin loans. The Bank obtains cash and securities as collateral on an upfront or contingent basis for derivative instruments and collateralized agreements to reduce its credit exposure to individual counterparties.

In many cases, the Bank is permitted to deliver or repledge financial instruments received as collateral when entering into repurchase agreements or collateralized derivative transactions.

The Bank also pledges certain financial instruments owned and loans receivable in connection with repurchase agreements and other secured financings. These assets are pledged to counterparties who may or may not have the right to deliver or repledge them.

The table below presents financial instruments at fair value received as collateral that were available to be delivered or repledged and were delivered or repledged.

	As of December	
$ in millions	**2018**	2017
Collateral available to be delivered or repledged	**$ 42,206**	$ 22,217
Collateral that was delivered or repledged	**$ 29,335**	$ 16,106

The table below presents information about assets pledged.

	As of December	
$ in millions	**2018**	2017
Financial instruments owned pledged to counterparties that:		
Had the right to deliver or repledge	**$ 2,814**	$ 814
Did not have the right to deliver or repledge	**$ 6,789**	$ 6,577
Other assets pledged to counterparties that did not have the right to deliver or repledge	**$ 132**	$ 107

Note 11.

Securitization Activities

The Bank securitizes residential and commercial mortgages and other financial assets by selling these assets to securitization vehicles (e.g., trusts, corporate entities and limited liability companies) or through a resecuritization. An affiliate acts as underwriter of the beneficial interests that are sold to investors.

Beneficial interests issued by securitization entities are debt or equity instruments that give the investors rights to receive all or portions of specified cash inflows to a securitization vehicle and include senior and subordinated interests in principal, interest and/or other cash inflows. The proceeds from the sale of beneficial interests are used to pay the transferor for the financial assets sold to the securitization vehicle or to purchase securities which serve as collateral.

The Bank accounts for a securitization as a sale when it has relinquished control over the transferred financial assets. Prior to securitization, the Bank generally accounts for assets pending transfer at fair value and therefore does not typically recognize significant gains or losses upon the transfer of assets.

For transfers of financial assets that are not accounted for as sales, the assets remain in financial instruments owned and the transfer is accounted for as a collateralized financing, with the related interest expense recognized over the life of the transaction. See Note 10 for further information about collateralized financings and Note 20 for further information about interest expense.

The Bank generally receives cash in exchange for the transferred assets but may also have continuing involvement with the transferred financial assets, including ownership of beneficial interests in securitized financial assets, primarily in the form of loans receivable.

The primary risks from the Bank's continuing involvement with securitization vehicles are the performance of the underlying collateral and the position of the Bank's investment in the capital structure of the securitization vehicle. Substantially all of these retained interests are accounted for at amortized cost net of allowance for loan losses. Had these interests been included in the Bank's fair value hierarchy, they would have been primarily classified in level 2 as of December 2018 and substantially all would have been classified in level 3 as of December 2017. See Note 9 for further information about loans receivable.

The table below presents the amount of financial assets securitized and the cash flows received on retained interests in securitization entities in which the Bank had continuing involvement as of the end of the period.

	Year Ended December	
$ in millions	**2018**	2017
Residential mortgages	**$ 8,027**	$ –
Commercial mortgages	**7,237**	6,842
Other financial assets	**1,914**	–
Total financial assets securitized	**$ 17,178**	$ 6,842
Retained interests cash flows	**$ 27**	$ 3

The table below presents information about nonconsolidated securitization entities to which the Bank sold assets and has continuing involvement.

$ in millions	Outstanding Principal Amount	Retained Interests
As of December 2018		
Residential mortgage-backed	**$ 7,541**	**$ 353**
Commercial mortgage-backed	**14,973**	**442**
Other asset-backed	**1,968**	**99**
Total	**$ 24,482**	**$ 894**
As of December 2017		
Commercial mortgage-backed	$ 6,839	$ 199
Total	$ 6,839	$ 199

In the table above:

- The outstanding principal amount is presented for the purpose of providing information about the size of the securitization entities and is not representative of the Bank's risk of loss.
- The Bank's risk of loss from retained interests is limited to the carrying value of these interests.
- All of the total outstanding principal amount and total retained interests relate to securitizations during 2017 and thereafter.
- The fair value of retained interests was $892 million as of December 2018 and $186 million as of December 2017.

In addition to the interests in the table above, the Bank had other continuing involvement as of December 2018, in the form of commitments with certain nonconsolidated VIEs. The carrying value and notional amount of these commitments were not material. There were no such commitments as of December 2017. The notional amounts of these commitments are included in maximum exposure to loss in the nonconsolidated VIE table in Note 12.

The table below presents information about the weighted average key economic assumptions used in measuring the fair value of mortgage-backed retained interests.

	As of December	
$ in millions	**2018**	2017
Fair value of retained interests	**$ 793**	$ 186
Weighted average life (years)	**5.6**	5.3
Constant prepayment rate	**8.0%**	–
Impact of 10% adverse change	**$ (2)**	$ –
Impact of 20% adverse change	**$ (4)**	$ –
Discount rate	**6.4%**	6.4%
Impact of 10% adverse change	**$ (20)**	$ (4)
Impact of 20% adverse change	**$ (38)**	$ (8)

In the table above:

- Amounts do not reflect the benefit of other financial instruments that are held to mitigate risks inherent in these retained interests.
- Changes in fair value based on an adverse variation in assumptions generally cannot be extrapolated because the relationship of the change in assumptions to the change in fair value is not usually linear.
- The impact of a change in a particular assumption is calculated independently of changes in any other assumption. In practice, simultaneous changes in assumptions might magnify or counteract the sensitivities disclosed above.

- The constant prepayment rate is included only for positions for which it is a key assumption in the determination of fair value.
- Expected credit loss assumptions are reflected in the discount rate for the retained interests.

As of December 2018, the Bank has other retained interests not reflected in the table above with a fair value of $99 million and a weighted average life of 4.1 years. Due to the nature and fair value of certain of these retained interests, the weighted average assumptions for constant prepayment and discount rates and the related sensitivity to adverse changes are not meaningful as of December 2018. The Bank's maximum exposure to adverse changes in the value of these interests is the carrying value of $99 million as of December 2018. As of December 2017, the Bank had no other retained interests.

Note 12.

Variable Interest Entities

A variable interest in a VIE is an investment (e.g., debt or equity) or other interest (e.g., derivatives or loans and lending commitments) that will absorb portions of the VIE's expected losses and/or receive portions of the VIE's expected residual returns.

The Bank's variable interests in VIEs include senior and subordinated debt; loans and lending commitments; limited and general partnership interests; preferred and common equity; derivatives that may include foreign currency, equity and/or credit risk; and guarantees. Certain interest rate, foreign currency and credit derivatives the Bank enters into with VIEs are not variable interests because they create, rather than absorb, risk.

VIEs generally finance the purchase of assets by issuing debt and equity securities that are either collateralized by or indexed to the assets held by the VIE. The debt and equity securities issued by a VIE may include tranches of varying levels of subordination. The Bank's involvement with VIEs includes securitization of financial assets, as described in Note 11, and investments in and loans to other types of VIEs, as described below. See Note 11 for further information about securitization activities, including the definition of beneficial interests. See Note 3 for the Bank's consolidation policies, including the definition of a VIE.

VIE Consolidation Analysis

The enterprise with a controlling financial interest in a VIE is known as the primary beneficiary and consolidates the VIE. The Bank determines whether it is the primary beneficiary of a VIE by performing an analysis that principally considers:

- Which variable interest holder has the power to direct the activities of the VIE that most significantly impact the VIE's economic performance;
- Which variable interest holder has the obligation to absorb losses or the right to receive benefits from the VIE that could potentially be significant to the VIE;
- The VIE's purpose and design, including the risks the VIE was designed to create and pass through to its variable interest holders;
- The VIE's capital structure;
- The terms between the VIE and its variable interest holders and other parties involved with the VIE; and
- Related-party relationships.

The Bank reassesses its evaluation of whether an entity is a VIE when certain reconsideration events occur. The Bank reassesses its determination of whether it is the primary beneficiary of a VIE on an ongoing basis based on current facts and circumstances.

VIE Activities

The Bank is principally involved with VIEs through the following business activities:

Mortgage-Backed VIEs. The Bank sells residential and commercial mortgage loans and securities to mortgage-backed VIEs and may retain beneficial interests in the assets sold to these VIEs. In addition, the Bank may enter into derivatives with certain of these VIEs, primarily interest rate swaps, which are typically not variable interests. The Bank generally enters into derivatives with other counterparties to mitigate its risk.

Corporate Debt and Other Asset-Backed VIEs. The Bank structures VIEs that issue notes to clients and makes loans to VIEs that warehouse corporate debt. Certain of these VIEs synthetically create the exposure for the beneficial interests they issue by entering into credit derivatives with the Bank, rather than purchasing the underlying assets. In addition, the Bank may enter into derivatives, such as total return swaps, with certain corporate debt and other asset-backed VIEs, under which the Bank pays the VIE a return due to the beneficial interest holders and receives the return on the collateral owned by the VIE. The collateral owned by these VIEs is primarily other asset-backed loans and securities. The Bank generally can be removed as the total return swap counterparty and enters into derivatives with other counterparties to mitigate its risk related to these swaps. The Bank may sell assets to the corporate debt and other asset-backed VIEs it structures.

Real Estate, Credit-Related and Other Investing VIEs. The Bank primarily purchases debt securities issued by and makes loans to VIEs that hold real estate and distressed loans. The Bank generally does not sell assets to, or enter into derivatives with, these VIEs.

Nonconsolidated VIEs

The table below presents a summary of the nonconsolidated VIEs in which the Bank holds variable interests.

	As of December	
$ in millions	**2018**	2017
Total nonconsolidated VIEs		
Assets in VIEs	**$ 32,478**	$ 16,848
Carrying value of variable interests – assets	**2,096**	1,751
Carrying value of variable interests – liabilities	**445**	168
Maximum exposure to loss:		
Retained interests	**894**	199
Commitments and guarantees	**963**	1,803
Derivatives	**5,245**	4,607
Loans and investments	**1,018**	1,237
Total maximum exposure to loss	**$ 8,120**	$ 7,846

In the table above:

- The nature of the Bank's variable interests can take different forms, as described in the rows under maximum exposure to loss.
- The Bank's exposure to the obligations of VIEs is generally limited to its interests in these entities. In certain instances, the Bank provides guarantees, including derivative guarantees, to VIEs or holders of variable interests in VIEs.
- The maximum exposure to loss excludes the benefit of offsetting financial instruments that are held to mitigate the risks associated with these variable interests.
- The maximum exposure to loss from retained interests, and loans and investments is the carrying value of these interests.
- The maximum exposure to loss from commitments and guarantees, and derivatives is the notional amount, which does not represent anticipated losses and has not been reduced by unrealized losses. As a result, the maximum exposure to loss exceeds liabilities recorded for commitments and guarantees, and derivatives.

The table below disaggregates, by principal business activity, the information for nonconsolidated VIEs included in the summary table above.

	As of December	
$ in millions	**2018**	2017
Mortgage-backed		
Assets in VIEs	**$ 22,673**	$ 6,939
Carrying value of variable interests – assets	**809**	209
Maximum exposure to loss:		
Retained interests	**795**	199
Commitments and guarantees	**35**	–
Derivatives	**77**	99
Total maximum exposure to loss	**$ 907**	$ 298
Corporate debt and other asset-backed		
Assets in VIEs	**$ 8,649**	$ 7,066
Carrying value of variable interests – assets	**1,023**	1,023
Carrying value of variable interests – liabilities	**445**	168
Maximum exposure to loss:		
Retained interests	**99**	–
Commitments and guarantees	**838**	1,504
Derivatives	**5,168**	4,508
Loans and investments	**754**	718
Total maximum exposure to loss	**$ 6,859**	$ 6,730
Real estate, credit-related and other investing		
Assets in VIEs	**$ 1,156**	$ 2,843
Carrying value of variable interests – assets	**264**	519
Maximum exposure to loss:		
Commitments and guarantees	**90**	299
Loans and investments	**264**	519
Total maximum exposure to loss	**$ 354**	$ 818

As of both December 2018 and December 2017, the carrying values of the Bank's variable interests in nonconsolidated VIEs are included in the consolidated statements of financial condition as follows:

- Mortgage-backed: Substantially all assets were included in loans receivable.
- Corporate debt and other asset-backed: Assets were primarily included in loans receivables and liabilities were included in financial instruments sold, but not yet purchased.
- Real estate, credit-related and other investing: Assets were included in financial instruments owned and other assets.

Consolidated VIEs

As of both December 2018 and December 2017, the Bank had no consolidated VIEs.

Note 13.

Other Assets

The table below presents other assets by type.

$ in millions	As of December 2018	2017
FRB shares	**$ 414**	$ 413
Investments in qualified affordable housing projects	**310**	302
Income tax-related assets	**221**	193
Receivables from affiliates	**193**	211
FHLB shares	**49**	179
Miscellaneous receivables and other	**705**	113
Total	**$ 1,892**	$ 1,411

In the table above, miscellaneous receivables and other included U.S. government obligations accounted for as held-to-maturity of $498 million as of December 2018. As of December 2018, these U.S. government obligations had maturities of less than five years. Held-to-maturity securities are carried at amortized cost and the carrying value of these securities approximated fair value as of December 2018. As these securities are not accounted for at fair value, they are not included in the Bank's fair value hierarchy in Notes 5 through 8. Had these securities been included in the Bank's fair value hierarchy, they would have been classified in level 1 as of December 2018. As of December 2017, the Bank had no held-to-maturity securities.

Note 14.

Deposits

The table below presents the types and sources of deposits.

$ in millions	Savings and Demand	Time	Total
As of December 2018			
Private bank deposits	**$ 44,188**	**$ 568**	**$ 44,756**
Consumer deposits	**21,164**	**7,641**	**28,805**
Brokered certificates of deposit	**–**	**35,974**	**35,974**
Deposit sweep programs	**15,903**	**–**	**15,903**
Institutional deposits	**1,672**	**10,642**	**12,314**
Total	**$ 82,927**	**$ 54,825**	**$ 137,752**
As of December 2017			
Private bank deposits	$ 41,902	$ 281	$ 42,183
Consumer deposits	13,787	3,330	17,117
Brokered certificates of deposit	–	35,859	35,859
Deposit sweep programs	16,019	–	16,019
Institutional deposits	1,713	3,003	4,716
Total	$ 73,421	$ 42,473	$ 115,894

In the table above:

- Substantially all deposits are interest-bearing and are held in the U.S.
- Savings and demand accounts consist of money market deposit accounts, negotiable order of withdrawal accounts, and demand deposit accounts that have no stated maturity or expiration date. Savings account holders may be required by the Bank to give written notice of intended withdrawals not less than seven days before such withdrawals are made and may be limited on the number of withdrawals made within a month. Demand account holders are not subject to restrictions with respect to the timing and number of transactions that deposit holders may execute.
- Time deposits consist primarily of brokered certificates of deposit which have stipulated maturity dates and rates of interest. Early withdrawals of brokered time deposits are generally prohibited.
- Time deposits included $4.87 billion as of December 2018 and $4.43 billion as of December 2017 of deposits accounted for at fair value under the fair value option. See below and Note 8 for further information about deposits accounted for at fair value.
- Time deposits had a weighted average maturity of approximately 1.8 years as of December 2018 and 2.4 years as of December 2017.
- Deposit sweep programs represent long-term contractual agreements with several U.S. broker-dealers who sweep client cash to FDIC-insured deposits. Pursuant to the external deposit sweep program agreements, each third party broker-dealer agrees, for a prescribed term, to place a certain minimum amount of deposits from their clients with the Bank. Each client's deposit may be withdrawn at any time. As of both December 2018 and December 2017, the Bank had eight deposit sweep program contractual arrangements.
- As of both December 2018 and December 2017, substantially all institutional deposits were from Goldman Sachs Funding LLC (Funding IHC), a wholly-owned subsidiary of Group Inc.
- Deposits insured by the FDIC were $86.27 billion as of December 2018 and $75.02 billion as of December 2017.

The table below presents time deposits by contractual maturity.

$ in millions		As of December 2018
2019	$	**28,303**
2020		**7,343**
2021		**5,538**
2022		**5,174**
2023		**4,556**
2024 - thereafter		**3,911**
Total	**$**	**54,825**

As of December 2018, deposits included $13.36 billion of time deposits that met or exceeded the applicable insurance limits.

The Bank's savings and demand deposits are recorded based on the amount of cash received plus accrued interest, which approximates fair value. In addition, the Bank designates certain derivatives as fair value hedges to convert a portion of its time deposits not accounted for at fair value from fixed-rate obligations into floating-rate obligations. The carrying value of time deposits not accounted for at fair value approximated fair value as of both December 2018 and December 2017. As these savings and demand deposits and substantially all time deposits are not accounted for at fair value, they are not included in the Bank's fair value hierarchy in Notes 5 through 8. Had these deposits been included in the Bank's fair value hierarchy, they would have been classified in level 2 as of both December 2018 and December 2017.

Note 15.

Unsecured Borrowings

The table below presents information about unsecured borrowings.

	As of December			
$ in millions		2018		2017
Unsecured short-term borrowings	**$**	**192**	$	2,085
Unsecured long-term borrowings		**6,755**		2,134
Total	**$**	**6,947**	$	4,219

The Bank accounts for hybrid financial instruments at fair value under the fair value option. See Note 8 for further information about hybrid financial instruments that are accounted for at fair value.

The table below presents information about unsecured short-term borrowings.

	As of December			
$ in millions		**2018**		**2017**
Hybrid financial instruments	**$**	**175**	$	52
Borrowings from affiliates		**13**		2,033
Other unsecured short-term borrowings		**4**		–
Total	**$**	**192**	$	2,085

In the table above:

- Borrowings from affiliates includes a senior debt facility consisting of an uncommitted term unsecured line of credit with Funding IHC which matures in 2019. As of December 2018, there were no outstanding borrowings under this facility. As of December 2017, outstanding short-term borrowings were $2.00 billion under this facility.
- In addition, the Bank has a senior unsecured facility, committed on an intraday basis up to $4.00 billion with Group Inc. This facility automatically renews each business day for a period of six months with a final maturity date in 2020. As of December 2018, there were no outstanding short-term borrowings under this facility. As of December 2017, borrowings from affiliates included outstanding principal of $15 million.

The table below presents information about unsecured long-term borrowings.

	As of December			
$ in millions		2018		2017
Subordinated borrowings	**$**	**4,250**	$	2,000
Senior unsecured borrowings		**2,505**		–
Hybrid financial instruments		**–**		134
Total	**$**	**6,755**	$	2,134

Subordinated Borrowings

As of December 2018 and December 2017, the Bank had a revolving subordinated loan agreement with Funding IHC, which expires in 2039. As of December 2017, this subordinated loan agreement had a $5.00 billion borrowing limit. In April 2018, this subordinated loan agreement was amended to remove the $5.00 billion borrowing limit. As of December 2018, outstanding subordinated borrowings under this agreement included $2.25 billion maturing in 2028 and $2.00 billion maturing in 2024. As of December 2017, outstanding subordinated borrowings under this agreement included $2.00 billion maturing in 2024. The carrying value of the subordinated borrowings generally approximates fair value. As of December 2018 and December 2017, outstanding borrowings bear interest at the overnight bank funding rate plus 1.85% per annum. Any amounts payable under the agreement would be subordinate to the claims of certain other creditors of the Bank, including depositors and regulatory agencies.

Senior Unsecured Borrowings

As of December 2018, the Bank had issued and outstanding $2.50 billion of senior unsecured borrowings with a weighted average interest rate of 3.01%, primarily related to floating rate obligations which are generally based on LIBOR. Outstanding borrowings included $1.00 billion maturing in 2020 and $1.50 billion maturing in 2023. As of December 2018, the carrying value of the Bank's senior unsecured borrowings was $2.51 billion, which approximated its fair value.

Note 16.

Other Liabilities

The table below presents other liabilities by type.

	As of December	
$ in millions	**2018**	2017
Payables to affiliates	**$ 396**	$ 146
Income tax-related liabilities	**295**	860
Compensation and benefits	**153**	117
Accrued expenses and other	**547**	530
Total	**$ 1,391**	$ 1,653

See Note 21 for further information about income taxes.

Note 17.

Commitments, Contingencies and Guarantees

Commitments

The table below presents commitments by type.

	As of December	
$ in millions	**2018**	2017
Commercial lending:		
Investment-grade	**$ 74,461**	$ 70,913
Non-investment-grade	**37,982**	32,313
Warehouse financing	**3,987**	5,326
Total lending commitments	**116,430**	108,552
Contingent and forward starting collateralized agreements	**622**	532
Forward starting collateralized financings	**146**	915
Investment commitments	**683**	1,898
Other	**1,025**	493
Total commitments	**$ 118,906**	$ 112,390

The table below presents commitments by expiration.

	As of December 2018			
$ in millions	**2019**	**2020 - 2021**	**2022 - 2023**	**2024 - Thereafter**
Commercial lending:				
Investment-grade	**$ 12,856**	**$ 24,524**	**$ 35,980**	**$ 1,101**
Non-investment-grade	**4,082**	**7,960**	**20,884**	**5,056**
Warehouse financing	**699**	**2,143**	**516**	**629**
Total lending commitments	**17,637**	**34,627**	**57,380**	**6,786**
Contingent and forward starting collateralized agreements	**622**	**–**	**–**	**–**
Forward starting collateralized financings	**146**	**–**	**–**	**–**
Investment commitments	**–**	**–**	**–**	**683**
Other	**1,025**	**–**	**–**	**–**
Total commitments	**$ 19,430**	**$ 34,627**	**$ 57,380**	**$ 7,469**

Lending Commitments

The Bank's lending commitments are agreements to lend with fixed termination dates and depend on the satisfaction of all contractual conditions to borrowing. These commitments are presented net of amounts syndicated to third parties. The total commitment amount does not necessarily reflect actual future cash flows because the Bank may syndicate all or substantial additional portions of these commitments. In addition, commitments can expire unused or be reduced or cancelled at the counterparty's request.

The table below presents information about lending commitments.

$ in millions	As of December 2018	2017
Held for investment	$ 103,777	$ 97,234
Held for sale	6,397	6,968
At fair value	6,256	4,350
Total	**$ 116,430**	$ 108,552

In the table above:

- Held for investment lending commitments are accounted for on an accrual basis. See Note 9 for further information about such commitments.
- Held for sale lending commitments are accounted for at the lower of cost or fair value. See Note 9 for further information about such commitments.
- Gains or losses related to lending commitments at fair value, if any, are generally recorded, net of any fees in gains and losses from financial instruments, net.

Commercial Lending. The Bank's commercial lending commitments were primarily extended to investment-grade corporate borrowers. Such commitments included relationship lending activities (principally used for operating liquidity and general corporate purposes) and other activities (generally extended for contingent acquisition financing and are often intended to be short-term in nature, as borrowers often seek to replace them with other funding sources). The Bank also extends lending commitments in connection with other types of corporate lending, as well as commercial real estate financing. See Note 9 for further information about funded loans.

Sumitomo Mitsui Financial Group, Inc. (SMFG) provides the Bank and its affiliates with credit loss protection on certain approved loan commitments (primarily investment-grade commercial lending commitments). The notional amount of such loan commitments was $15.52 billion as of December 2018 and $25.70 billion as of December 2017, substantially all of which was in the Bank. The credit loss protection on loan commitments provided by SMFG is generally limited to 95% of the first loss the Bank and its affiliates realize on such commitments, up to a maximum of approximately $950 million. In addition, subject to the satisfaction of certain conditions, upon the Bank's request, SMFG will provide protection for 70% of additional losses on such commitments, up to a maximum of $1.0 billion, of which $550 million of protection had been provided as of both December 2018 and December 2017. The Bank also uses other financial instruments to mitigate credit risks related to certain commitments not covered by SMFG. These instruments primarily include credit default swaps that reference the same or similar underlying instrument or entity, or credit default swaps that reference a market index.

Warehouse Financing. The Bank provides financing to clients who warehouse financial assets. These arrangements are secured by the warehoused assets, substantially all of which consist of consumer and corporate loans.

Contingent and Forward Starting Collateralized Agreements / Forward Starting Collateralized Financings

Forward starting collateralized agreements includes resale agreements, and forward starting collateralized financings includes repurchase and secured lending agreements that settle at a future date, generally within three business days. The Bank also enters into commitments to provide contingent financing to its clients and counterparties through resale agreements. The Bank's funding of these commitments depends on the satisfaction of all contractual conditions to the resale agreement and these commitments can expire unused.

Investment Commitments

Investment commitments includes commitments to invest in securities, real estate and other assets.

Contingencies

Legal Proceedings. See Note 23 for information about legal proceedings.

Certain Mortgage-Related Contingencies. During the period 2005 through 2008 in connection with both sales and securitizations of loans, the Bank provided loan-level representations and/or assigned the loan-level representations from the party from whom the Bank purchased the loans.

The Bank's exposure to claims for repurchase of residential mortgage loans based on alleged breaches of representations will depend on a number of factors such as the extent to which these claims are made within the statute of limitations, taking into consideration the agreements to toll the statute of limitations the Bank entered into with trustees representing certain trusts. Based upon the large number of defaults in residential mortgages, including those sold or securitized by the Bank, there is a potential for repurchase claims. However, the Bank is not in a position to make a meaningful estimate of that exposure at this time.

Guarantees

The table below presents derivatives that meet the definition of a guarantee, securities lending indemnifications and certain other financial guarantees.

$ in millions	Derivatives	Securities lending indemnifications	Other financial guarantees
As of December 2018			
Carrying Value of Net Liability	**$ 1,214**	**$ –**	**$ 8**
Maximum Payout/Notional Amount by Period of Expiration			
2019	**$ 28,857**	**$ 32,170**	**$ 416**
2020 - 2021	**39,858**	**–**	**1,368**
2022 - 2023	**3,807**	**–**	**1,315**
2024 - thereafter	**9,538**	**–**	**–**
Total	**$ 82,060**	**$ 32,170**	**$ 3,099**
As of December 2017			
Carrying Value of Net Liability	$ 870	$ –	$ 7
Maximum Payout/Notional Amount by Period of Expiration			
2018	$ 30,257	$ 42,927	$ 413
2019 - 2020	32,301	–	853
2021 - 2022	10,679	–	1,037
2023 - thereafter	5,418	–	–
Total	$ 78,655	$ 42,927	$ 2,303

In the table above:

- The maximum payout is based on the notional amount of the contract and does not represent anticipated losses.
- Amounts exclude certain commitments to issue standby letters of credit that are included in lending commitments. See the tables in "Commitments" above for a summary of the Bank's commitments.
- The carrying value for derivatives included derivative assets of $43 million as of December 2018 and $33 million as of December 2017, and derivative liabilities of $1.26 billion as of December 2018 and $903 million as of December 2017.

Derivative Guarantees. The Bank enters into various derivatives that meet the definition of a guarantee under U.S. GAAP, including written currency contracts and interest rate caps, floors and swaptions. These derivatives are risk managed together with derivatives that do not meet the definition of a guarantee, and therefore the amounts in the table above do not reflect the Bank's overall risk related to derivative activities. Disclosures about derivatives are not required if they may be cash settled and the Bank has no basis to conclude it is probable that the counterparties held the underlying instruments at inception of the contract. The Bank has concluded that these conditions have been met for certain large, internationally active commercial and investment bank counterparties, central clearing counterparties and certain other counterparties. Accordingly, the Bank has not included such contracts in the table above. In addition, during 2018, the Bank concluded that these conditions have also been met for hedge fund counterparties and, therefore, has not included contracts with these counterparties in the table above. Prior periods have been conformed to the current presentation. See Note 7 for information about credit derivatives that meet the definition of a guarantee, which are not included in the table above.

Derivatives are accounted for at fair value and therefore the carrying value is considered the best indication of payment/performance risk for individual contracts. However, the carrying values in the table above exclude the effect of counterparty and cash collateral netting.

Securities Lending Indemnifications. The Bank, in its capacity as an agency lender, indemnifies most of its securities lending customers against losses incurred in the event that borrowers do not return securities and the collateral held is insufficient to cover the market value of the securities borrowed. Collateral held by the lenders in connection with securities lending indemnifications was $33.07 billion as of December 2018 and $44.01 billion as of December 2017. Because the contractual nature of these arrangements requires the Bank to obtain collateral with a market value that exceeds the value of the securities lent to the borrower, there is minimal performance risk associated with these guarantees.

Other Financial Guarantees. In the ordinary course of business, the Bank provides other financial guarantees of the obligations of third parties (e.g., standby letters of credit and other guarantees to enable clients to complete transactions). These guarantees represent obligations to make payments to beneficiaries if the guaranteed party fails to fulfill its obligation under a contractual arrangement with that beneficiary.

Indemnities and Guarantees of Service Providers. In the ordinary course of business, the Bank indemnifies and guarantees certain service providers, such as clearing and custody agents, trustees and administrators, against specified potential losses in connection with their acting as an agent of, or providing services to, the Bank.

The Bank may also be liable to some clients or other parties for losses arising from its custodial role or caused by acts or omissions of third-party service providers, including sub-custodians and third-party brokers. In certain cases, the Bank has the right to seek indemnification from these third-party service providers for certain relevant losses incurred by the Bank. In addition, the Bank is a member of a clearing and settlement network, as well as exchanges around the world that may require the Bank to meet the obligations of such networks and exchanges in the event of member defaults and other loss scenarios.

The Bank is unable to develop an estimate of the maximum payout under these guarantees and indemnifications. However, management believes that it is unlikely the Bank will have to make any material payments under these arrangements, and no material liabilities related to these guarantees and indemnifications have been recognized in the consolidated statements of financial condition as of both December 2018 and December 2017.

Other Representations, Warranties and Indemnifications. The Bank provides representations and warranties to counterparties in connection with a variety of commercial transactions and occasionally indemnifies them against potential losses caused by the breach of those representations and warranties. The Bank may also provide indemnifications protecting against changes in or adverse application of certain U.S. tax laws in connection with ordinary-course transactions such as borrowings or derivatives.

In addition, the Bank may provide indemnifications to some counterparties to protect them in the event additional taxes are owed or payments are withheld, due either to a change in or an adverse application of certain non-U.S. tax laws.

These indemnifications generally are standard contractual terms and are entered into in the ordinary course of business. Generally, there are no stated or notional amounts included in these indemnifications, and the contingencies triggering the obligation to indemnify are not expected to occur. The Bank is unable to develop an estimate of the maximum payout under these guarantees and indemnifications. However, management believes that it is unlikely the Bank will have to make any material payments under these arrangements, and no material liabilities related to these arrangements have been recognized in the consolidated statements of financial condition as of both December 2018 and December 2017.

Note 18.

Regulation and Capital Adequacy

The Bank is regulated as described in Note 1, and is subject to consolidated regulatory capital requirements as described below. For purposes of assessing the adequacy of its capital, the Bank calculates its capital requirements in accordance with the regulatory capital requirements applicable to state member banks based on the FRB's regulations (Capital Framework).

The capital requirements are expressed as risk-based capital and leverage ratios that compare measures of regulatory capital to risk-weighted assets (RWAs), average assets and off-balance-sheet exposures. Failure to comply with these capital requirements could result in restrictions being imposed by the Bank's regulators and could limit the Bank's ability to distribute capital, including dividend payments, and to make certain discretionary compensation payments. The Bank's capital levels are also subject to qualitative judgments by the regulators about components of capital, risk weightings and other factors.

Capital Framework

The regulations under the Capital Framework are largely based on the Basel Committee on Banking Supervision's (Basel Committee) capital framework for strengthening international capital standards (Basel III) and also implement certain provisions of the U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act). Under the Capital Framework, the Bank is an "Advanced approach" banking organization.

The Capital Framework includes risk-based capital buffers which began to phase in ratably on January 1, 2016, and became fully effective on January 1, 2019. The risk-based capital buffers include the capital conservation buffer and countercyclical capital buffer, if any, both of which must consist entirely of capital that qualifies as Common Equity Tier 1 (CET1). The countercyclical capital buffer, an extension of the capital conservation buffer, is intended to counteract systemic vulnerabilities. The Capital Framework also required deductions from regulatory capital that phased in ratably per year from 2014 to 2018.

The Bank calculates its CET1, Tier 1 capital and Total capital ratios in accordance with (i) the Standardized approach and market risk rules set out in the Capital Framework (together, the Standardized Capital Rules) and (ii) the Advanced approach and market risk rules set out in the Capital Framework (together, the Basel III Advanced Rules). The lower of each risk-based capital ratio calculated in (i) and (ii) is the ratio against which the Bank's compliance with its minimum risk-based ratio requirements is assessed. Under the Capital Framework, the Bank is also subject to Tier 1 leverage requirements established by the FRB. The Capital Framework also introduced a supplementary leverage ratio (SLR) which became effective on January 1, 2018.

Consolidated Regulatory Risk-Based Capital and Leverage Ratios. The U.S. Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA), among other things, requires the federal bank regulatory agencies to take "prompt corrective action" in respect of depository institutions that do not meet specified capital requirements. FDICIA establishes five capital categories for FDIC-insured banks: well-capitalized, adequately capitalized, undercapitalized, significantly undercapitalized and critically undercapitalized.

Under the regulatory framework for prompt corrective action applicable to the Bank, in order to meet the quantitative requirements for being a "well-capitalized" depository institution, the Bank must meet higher minimum requirements than the minimum ratios in the table below. In order to be considered a "well-capitalized" depository institution, the Bank must meet the SLR requirement of 6.0% or greater, which became effective on January 1, 2018.

The Bank's capital levels and prompt corrective action classification are also subject to qualitative judgments by the regulators about components of capital, risk weightings and other factors. Failure to comply with these capital requirements, including a breach of the buffers described above, could result in restrictions being imposed by the Bank's regulators.

The table below presents the minimum risk-based capital and leverage ratios and "well-capitalized" minimum ratios.

	Minimum Ratio as of December		"Well-capitalized"
	2018	2017	**Minimum Ratio**
Risk-based capital ratios			
CET1 ratio	**6.4%**	5.8%	**6.5%**
Tier 1 capital ratio	**7.9%**	7.3%	**8.0%**
Total capital ratio	**9.9%**	9.3%	**10.0%**
Leverage ratios			
Tier 1 leverage ratio	**4.0%**	4.0%	**5.0%**
SLR	**3.0%**	N/A	**6.0%**

The table below presents information about the risk-based capital ratios.

$ in millions	Standardized	Basel III Advanced
As of December 2018		
CET1	**$ 27,467**	**$ 27,467**
Tier 1 capital	**$ 27,467**	**$ 27,467**
Tier 2 capital	**$ 5,069**	**$ 4,446**
Total capital	**$ 32,536**	**$ 31,913**
RWAs	**$ 248,356**	**$ 149,019**
CET1 ratio	**11.1%**	**18.4%**
Tier 1 capital ratio	**11.1%**	**18.4%**
Total capital ratio	**13.1%**	**21.4%**
As of December 2017		
CET1	$ 25,343	$ 25,343
Tier 1 capital	$ 25,343	$ 25,343
Tier 2 capital	$ 2,547	$ 2,000
Total capital	$ 27,890	$ 27,343
RWAs	$ 229,775	$ 164,602
CET1 ratio	11.0%	15.4%
Tier 1 capital ratio	11.0%	15.4%
Total capital ratio	12.1%	16.6%

The table below presents information about the leverage ratios.

$ in millions	For the Three Months Ended or as of December 2018	2017
Tier 1 capital	**$ 27,467**	$ 25,343
Average total assets	**$ 188,668**	$ 168,854
Deductions from Tier 1 capital	**(62)**	(12)
Average adjusted total assets	**188,606**	168,842
Off-balance-sheet exposures	**179,456**	176,892
Total supplementary leverage exposure	**$ 368,062**	$ 345,734
Tier 1 leverage ratio	**14.6%**	15.0%
SLR	**7.5%**	7.3%

In the tables above:

- Each of the risk-based capital ratios calculated in accordance with the Standardized Capital Rules was lower than that calculated in accordance with the Basel III Advanced Rules and therefore the Standardized Capital ratios were the ratios that applied to the Bank as of both December 2018 and December 2017.
- Beginning in the fourth quarter of 2018, GS Group's default experience was incorporated into the determination of probability of default for the calculation of Basel III Advanced RWAs. The impact of this change was an increase in the Bank's Basel III Advanced CET1 ratio of approximately 1.6 percentage points.
- The minimum risk-based capital ratios as of December 2018 reflect (i) the 75% phase-in of the capital conservation buffer of 2.5% and (ii) the countercyclical capital buffer of zero percent.
- The minimum risk-based capital ratios as of December 2017 reflect (i) the 50% phase-in of the capital conservation buffer of 2.5% and (ii) the countercyclical capital buffer of zero percent.
- Tier 1 capital and deductions from Tier 1 capital are calculated on a transitional basis as of December 2017.
- Average total assets represents the daily average assets for the quarter.
- Off-balance-sheet exposures represents the monthly average and consists of derivatives, securities financing transactions, commitments and guarantees.
- Tier 1 leverage ratio is calculated as Tier 1 capital divided by average adjusted total assets.
- SLR is calculated as Tier 1 capital divided by total leverage exposure.

Risk-based Capital. The table below presents information about risk-based capital.

$ in millions	As of December 2018	2017
CET1	**$ 27,467**	$ 25,343
Tier 1 capital	**$ 27,467**	$ 25,343
Standardized Tier 2 and Total capital		
Tier 1 capital	**$ 27,467**	$ 25,343
Qualifying subordinated debt	**4,250**	2,000
Allowance for credit losses	**819**	547
Standardized Tier 2 capital	**5,069**	2,547
Standardized Total capital	**$ 32,536**	$ 27,890
Basel III Advanced Tier 2 and Total capital		
Tier 1 capital	**$ 27,467**	$ 25,343
Standardized Tier 2 capital	**5,069**	2,547
Allowance for credit losses	**(819)**	(547)
Other adjustments	**196**	–
Basel III Advanced Tier 2 capital	**4,446**	2,000
Basel III Advanced Total capital	**$ 31,913**	$ 27,343

In the table above:

- Other adjustments within Basel III Advanced Tier 2 capital include eligible credit reserves.
- Qualifying subordinated debt is subordinated debt issued by the Bank with an original maturity of five years or greater. The outstanding amount of subordinated debt qualifying for Tier 2 capital is reduced upon reaching a remaining maturity of five years. See Note 15 for further information about the Bank's subordinated debt.

Risk-Weighted Assets. RWAs are calculated in accordance with both the Standardized Capital Rules and the Basel III Advanced Rules.

Credit Risk

Credit RWAs are calculated based upon measures of exposure, which are then risk weighted. under the Standardized Capital Rules and the Basel III Advanced Rules:

- The Standardized Capital Rules apply prescribed risk-weights, which depend largely on the type of counterparty. The exposure measure for derivatives and securities financing transactions are based on specific formulas which take certain factors into consideration.
- Under the Basel III Advanced Rules, the Bank computes risk-weights for wholesale and retail credit exposures in accordance with the Advanced Internal Ratings-Based approach. The exposure measures for derivatives and securities financing transactions are computed utilizing internal models.

Market Risk

RWAs for market risk in accordance with the Standardized Capital Rules and the Basel III Advanced Rules are generally consistent. Market RWAs are calculated based on measures of exposure which include Value-at-Risk (VaR), stressed VaR, incremental risk and comprehensive risk based on internal models, and a standardized measurement method for specific risk.

- VaR is the potential loss in value of inventory positions, as well as certain other financial assets and financial liabilities, due to adverse market movements over a defined time horizon with a specified confidence level.
- For both risk management purposes and regulatory capital calculations, the Bank uses a single VaR model which captures risks including those related to interest rates, equity prices and currency rates. However, VaR used for regulatory capital requirements (regulatory VaR) differs from risk management VaR due to different time horizons and confidence levels (10-day and 99% for regulatory VaR vs. one-day and 95% for risk management VaR), as well as differences in the scope of positions on which VaR is calculated. The Bank's positional losses observed on a single day exceeded its 99% one-day regulatory VaR on four occasions during 2018 and did not exceed its 99% one-day regulatory VaR during 2017. There was no change in the VaR multiplier used to calculate Market RWAs;
- Stressed VaR is the potential loss in value of inventory positions, as well as certain other financial assets and financial liabilities, during a period of significant market stress;
- Incremental risk is the potential loss in value of non-securitized inventory positions due to the default or credit migration of issuers of financial instruments over a one-year time horizon;
- Comprehensive risk is the potential loss in value, due to price risk and defaults, within the Bank's credit correlation positions; and
- Specific risk is the risk of loss on a position that could result from factors other than broad market movements, including event risk, default risk and idiosyncratic risk. The standardized measurement method is used to determine specific risk RWAs, by applying supervisory defined risk-weighting factors after applicable netting is performed.

Operational Risk

Operational RWAs are only required to be included under the Basel III Advanced Rules. The Bank utilizes an internal risk-based model to quantify Operational RWAs.

The tables below present information about RWAs.

	Standardized Capital Rules as of December	
$ in millions	**2018**	2017
Credit RWAs		
Derivatives	**$ 86,727**	$ 87,552
Commitments, guarantees and loans	**120,656**	99,613
Securities financing transactions	**6,233**	7,198
Equity investments	**776**	835
Other	**8,203**	6,331
Total Credit RWAs	**222,595**	201,529
Market RWAs		
Regulatory VaR	**3,443**	2,696
Stressed VaR	**18,850**	19,486
Incremental risk	**1,177**	1,143
Comprehensive risk	**1,212**	799
Specific risk	**1,079**	4,122
Total Market RWAs	**25,761**	28,246
Total RWAs	**$ 248,356**	$ 229,775

	Basel III Advanced Rules as of December	
$ in millions	**2018**	2017
Credit RWAs		
Derivatives	**$ 17,774**	$ 26,239
Commitments, guarantees and loans	**85,991**	89,206
Securities financing transactions	**2,294**	1,731
Equity investments	**823**	1,056
Other	**2,601**	4,074
Total Credit RWAs	**109,483**	122,306
Market RWAs		
Regulatory VaR	**3,443**	2,696
Stressed VaR	**18,850**	19,486
Incremental risk	**1,177**	1,143
Comprehensive risk	**1,212**	799
Specific risk	**1,079**	4,122
Total Market RWAs	**25,761**	28,246
Total Operational RWAs	**13,775**	14,050
Total RWAs	**$ 149,019**	$ 164,602

In the tables above:

- Securities financing transactions represents resale and repurchase agreements.
- Other includes receivables, certain debt securities, cash and other assets.

The tables below present changes in RWAs.

	Year Ended December 2018	
$ in millions	**Standardized**	**Basel III Advanced**
Risk-Weighted Assets		
Beginning balance	**$ 229,775**	**$ 164,602**
Credit RWAs		
Change in:		
Derivatives	**(825)**	**(8,465)**
Commitments, guarantees and loans	**21,043**	**(3,215)**
Securities financing transactions	**(965)**	**563**
Equity investments	**(59)**	**(233)**
Other	**1,872**	**(1,473)**
Change in Credit RWAs	**21,066**	**(12,823)**
Market RWAs		
Change in:		
Regulatory VaR	**747**	**747**
Stressed VaR	**(636)**	**(636)**
Incremental risk	**34**	**34**
Comprehensive risk	**413**	**413**
Specific risk	**(3,043)**	**(3,043)**
Change in Market RWAs	**(2,485)**	**(2,485)**
Operational RWAs		
Change in operational risk	**–**	**(275)**
Change in Operational RWAs	**–**	**(275)**
Ending balance	**$ 248,356**	**$ 149,019**

	Year Ended December 2017	
$ in millions	Standardized	Basel III Advanced
Risk-Weighted Assets		
Beginning balance	$ 204,232	$ 131,051
Credit RWAs		
Change in:		
Derivatives	(3,682)	335
Commitments, guarantees and loans	17,483	22,173
Securities financing transactions	216	(656)
Equity investments	130	135
Other	789	1,408
Change in Credit RWAs	14,936	23,395
Market RWAs		
Change in:		
Regulatory VaR	(829)	(829)
Stressed VaR	10,048	10,048
Incremental risk	(170)	(170)
Comprehensive risk	149	136
Specific risk	1,409	1,409
Change in Market RWAs	10,607	10,594
Operational RWAs		
Change in operational risk	–	(438)
Change in Operational RWAs	–	(438)
Ending balance	$ 229,775	$ 164,602

RWAs Rollforward Commentary

Year Ended December 2018. Standardized Credit RWAs as of December 2018 increased by $21.07 billion compared with December 2017, primarily reflecting an increase in commitments, guarantees and loans, principally due to increased lending activity. Standardized Market RWAs as of December 2018 decreased by $2.49 billion compared with December 2017, primarily reflecting a decrease in specific risk on positions for which the Bank obtained increased transparency into the underliers and as a result utilized a modeled approach to calculate RWAs.

Basel III Advanced Credit RWAs as of December 2018 decreased by $12.82 billion compared with December 2017. Beginning in the fourth quarter of 2018 GS Group's default experience was incorporated into the determination of probability of default, which resulted in a decrease in Credit RWA's, primarily in commitments, guarantees and loans and derivatives. Basel III Advanced Market RWAs as of December 2018 decreased by $2.49 billion compared with December 2017, primarily reflecting a decrease in specific risk on positions for which the Bank obtained increased transparency into the underliers and as a result utilized a modeled approach to calculate RWAs.

Year Ended December 2017. Standardized Credit RWAs as of December 2017 increased by $14.94 billion compared with December 2016, primarily reflecting an increase in commitments, guarantees and loans, principally due to increased lending activity. Standardized Market RWAs as of December 2017 increased by $10.61 billion compared with December 2016, primarily reflecting an increase in stressed VaR, as a result of increased risk exposures.

Basel III Advanced Credit RWAs as of December 2017 increased by $23.40 billion compared with December 2016, primarily reflecting an increase in commitments, guarantees and loans, principally due to increased lending activity. Basel III Advanced Market RWAs as of December 2017 increased by $10.59 billion compared with December 2016, primarily reflecting an increase in stressed VaR, as a result of increased risk exposures.

Required Reserves

The deposits of the Bank are insured by the FDIC to the extent provided by law. The FRB requires that the Bank maintain cash reserves with the Federal Reserve Bank of New York. The amount deposited by the Bank at the Federal Reserve Bank of New York was $29.20 billion as of December 2018 and $50.86 billion as of December 2017, which exceeded regulatory reserve requirements by $29.03 billion as of December 2018 and $50.74 billion as of December 2017.

Note 19.

Transactions with Related Parties

Transactions between the Bank and its affiliates are regulated by the FRB. These regulations generally limit the types and amounts of transactions (including credit extensions from the Bank) that may take place and generally require those transactions to be on terms that are at least as favorable to the Bank as prevailing terms for comparable transactions with non-affiliates. These regulations generally do not apply to transactions within the Bank.

The table below presents assets and liabilities with affiliates.

	As of December	
$ in millions	**2018**	2017
Assets		
Cash	**$ 95**	$ 186
Resale agreements	**23,626**	15,859
Customer and other receivables	**2,002**	2,121
Financial instruments owned	**515**	302
Other assets	**193**	211
Total	**$ 26,431**	$ 18,679
Liabilities		
Deposits	**$ 11,307**	$ 4,894
Repurchase agreements	**3,815**	9
Customer and other payables	**121**	102
Financial instruments sold, but not yet purchased	**1,427**	1,734
Unsecured borrowings	**4,439**	4,206
Other liabilities	**396**	146
Total	**$ 21,505**	$ 11,091

In the table above, financial instruments owned and financial instruments sold, but not yet purchased, consist of net outstanding derivative contracts with Group Inc. and affiliates. The Bank enters into derivative contracts with Group Inc. and its affiliates in the normal course of business.

Group Inc. General Guarantee

Group Inc. has guaranteed the payment obligations of Goldman Sachs Bank USA, subject to certain limitations.

Interest Income and Interest Expense

The Bank recognizes interest income and interest expense in connection with various affiliated transactions. These transactions include resale agreements, repurchase agreements, deposits, collateral posted and received, other liabilities, and unsecured borrowings. For 2018, the Bank recorded net interest income from affiliates of $213 million. For 2017, the Bank recorded net interest income from affiliates of $48 million.

Other Transactions

The Bank enters into various activities with affiliated entities and transfers revenues to, and receives revenues from, such affiliates for their participation. The Bank transferred net revenues to affiliates of $355 million for 2018 and transferred net revenues to affiliates of $371 million for 2017. These amounts are included in gains and losses from financial instruments, net.

The Bank is subject to service charges from affiliates. The net charge to the Bank by affiliates was $506 million for 2018 and $322 million for 2017. This service charge from affiliates is for employment related costs of dual employees and employees of affiliates pursuant to a Master Services Agreement supplemented by Service Level Agreements (collectively, the Master Services Agreement). These amounts are included in service charges.

The Bank receives operational and administrative support and management services from affiliates and is charged for these services. In addition, the Bank provides similar support and services to affiliates and charges these affiliates for the services provided. These amounts are reflected net in the applicable expense captions in the consolidated statements of earnings.

In connection with its partnership interest in MMDP, the Bank has provided to Mitsui Sumitomo additional protection in the form of assets held in a VIE which could be liquidated for the benefit of Mitsui Sumitomo under certain circumstances.

Equity Transactions

There were no equity contributions or dividends between the Bank and Group Inc. during 2018. There was a $37 million non-cash capital contribution from Group Inc. and the Bank paid a dividend of $500 million to Group Inc. during 2017.

Note 20.

Interest Income and Interest Expense

Interest is recorded over the life of the instrument on an accrual basis based on contractual interest rates.

The table below presents sources of interest income and interest expense.

	Year Ended December	
$ in millions	**2018**	2017
Interest income		
Deposits with banks	**$ 1,125**	$ 702
Collateralized agreements	**397**	151
Financial instruments owned	**887**	857
Loans receivable (excluding loans held for sale)	**2,828**	1,607
Other interest	**575**	377
Total interest income	**5,812**	3,694
Interest expense		
Deposits	**2,437**	1,243
Collateralized financings	**78**	48
Financial instruments sold, but not yet purchased	**57**	64
Borrowings	**220**	90
Other interest	**273**	327
Total interest expense	**3,065**	1,772
Net interest income	**$ 2,747**	$ 1,922

In the table above:

- Collateralized agreements consists of resale agreements.
- Other interest income includes interest income on collateral balances posted to counterparties, loans accounted for as held for sale and other interest-earning assets.
- Collateralized financings consists of repurchase agreements.
- Borrowings includes interest expense from other secured financings and unsecured borrowings, which primarily relates to interest incurred on the Bank's affiliate borrowings from Group Inc. and Funding IHC, as well as FHLB advances.
- Other interest expense primarily includes interest expense on collateral balances received from counterparties and interest expense on funding facilities.

Note 21.

Income Taxes

Tax Legislation

The provision for taxes for 2017 reflected an estimated impact of Tax Legislation of $114 million. The $114 million income tax expense was primarily due to the effects of the remeasurement of U.S. deferred tax assets at lower enacted tax rates. During 2018, the estimated impact of Tax Legislation was finalized to reflect the impact of updated information, including subsequent guidance issued by the U.S. Internal Revenue Service (IRS), resulting in a $22 million income tax benefit.

Provision for Income Taxes

Income taxes are provided for using the asset and liability method under which deferred tax assets and liabilities are recognized for temporary differences between the financial reporting and tax bases of assets and liabilities. The Bank reports interest expense related to income tax matters in provision for taxes and income tax penalties in other expenses.

The Bank's results of operations are included in the consolidated federal and certain state tax returns of GS Group. The Bank computes its tax liability as if it was filing a tax return on a modified separate company basis and settles such liability with Group Inc. pursuant to a tax sharing agreement. To the extent the Bank generates tax benefits from losses, it will be reimbursed by Group Inc. pursuant to a tax sharing agreement at such time as GS Group would have been able to utilize such losses.

The table below presents information about the provision for taxes.

	Year Ended December	
$ in millions	**2018**	2017
Current taxes		
U.S. federal	**$ 556**	$ 802
State and local	**80**	88
Total current tax expense	**636**	890
Deferred taxes		
U.S. federal	**(43)**	61
State and local	**(5)**	(13)
Total deferred tax expense/(benefit)	**(48)**	48
Provision for taxes	**$ 588**	$ 938

In the table above, for 2017, U.S. federal deferred tax expense includes the estimated increase to income tax expense of $110 million due to the estimated impact of Tax Legislation.

For 2018, differences between the Bank's statutory tax rate and effective tax rate primarily relate to state and local taxes and tax credits. For 2017, differences between the Bank's statutory tax rate and effective tax rate primarily related to Tax Legislation, state and local taxes, and tax credits.

Deferred Income Taxes

Deferred income taxes reflect the net tax effects of temporary differences between the financial reporting and tax bases of assets and liabilities. These temporary differences result in taxable or deductible amounts in future years and are measured using the tax rates and laws that will be in effect when such differences are expected to reverse. Valuation allowances are established to reduce deferred tax assets to the amount that more likely than not will be realized. As of both December 2018 and December 2017, the Bank's valuation allowance recorded was not material. Tax assets are included in other assets and tax liabilities are included in other liabilities.

The table below presents information about deferred tax assets and liabilities.

	As of December	
$ in millions	**2018**	2017
Deferred tax assets		
Reserves	**$ 201**	$ 135
Unrealized losses	**34**	52
Compensation and benefits	**22**	15
Depreciation and amortization	**4**	16
Other comprehensive income-related	**1**	17
Other, net	**8**	10
Total deferred tax assets	**$ 270**	$ 245
Deferred tax liabilities		
Unrealized gains	**49**	52
Total deferred tax liabilities	**$ 49**	$ 52

Unrecognized Tax Benefits

The Bank recognizes tax positions in the consolidated financial statements only when it is more likely than not that the position will be sustained on examination by the relevant taxing authority based on the technical merits of the position. A position that meets this standard is measured at the largest amount of benefit that will more likely than not be realized on settlement. A liability is established for differences between positions taken in a tax return and amounts recognized in the consolidated financial statements.

As of December 2018, the Bank had a net liability for uncertain tax provisions of $5 million and no accrued liabilities for interest expense related to income tax matters and income tax penalties. As of December 2017, the Bank had no net liabilities for uncertain tax provisions or accrued liabilities for interest expense related to income tax matters and income tax penalties.

Regulatory Tax Examinations

The Bank is subject to examination by the IRS, as part of GS Group, and other taxing authorities in jurisdictions where the Bank has significant business operations such as New York State and City. The tax years under examination vary by jurisdiction.

U.S. Federal examinations of 2011 and 2012 began in 2013. GS Group has been accepted into the Compliance Assurance Process program by the IRS for each of the tax years from 2013 through 2019. This program allows GS Group to work with the IRS to identify and resolve potential U.S. Federal tax issues before the filing of tax returns. The 2013 through 2017 tax years remain subject to post-filing review.

All years including and subsequent to 2015 for New York State and City remain open to examination by the taxing authorities. All years including and subsequent to 2009 for all other significant states, excluding New York State and City, remain open to examination by the taxing authorities.

All years including and subsequent to the years detailed above remain open to examination by the taxing authorities. The Bank believes that the liability for unrecognized tax benefits it has established is adequate in relation to the potential for additional assessments.

Note 22.

Credit Concentrations

The Bank's concentrations of credit risk arise from its lending, market-making, cash management and other activities, and may be impacted by changes in economic, industry or political factors. These activities expose the Bank to many different industries and counterparties, and may also subject the Bank to a concentration of credit risk to a particular central bank, counterparty, borrower or issuer, including sovereign issuers, or to a particular clearing house or exchange. The Bank seeks to mitigate credit risk by actively monitoring exposures and obtaining collateral from counterparties as deemed appropriate.

The Bank measures and monitors its credit exposure based on amounts owed to the Bank after taking into account risk mitigants that management considers when determining credit risk. Such risk mitigants include netting and collateral arrangements and economic hedges, such as credit derivatives, futures and forward contracts. Netting and collateral agreements permit the Bank to offset receivables and payables with such counterparties and/or enable the Bank to obtain collateral on an upfront or contingent basis.

The Bank had exposure in cash instruments related to U.S. government and agency obligations of $23.96 billion or 12.5% of total assets as of December 2018, and $15.26 billion or 9.3% of total assets as of December 2017. These are included in financial instruments owned. In addition, the Bank had $29.20 billion as of December 2018 and $50.86 billion as of December 2017 of cash deposits held at the Federal Reserve Bank of New York. These cash deposits are included in cash.

As of December 2018, the Bank had credit exposure in connection with derivative activities with a global clearing house which represented 2.4% of total assets, primarily related to margin posted.

As of both December 2018 and December 2017, the Bank did not have credit exposure to any other external counterparty that exceeded 2% of total assets.

Collateral obtained by the Bank related to derivative assets is principally cash and is held by the Bank or a third-party custodian. Collateral obtained by the Bank related to resale agreements is primarily U.S. government and agency obligations. See Note 10 for further information about collateralized agreements and financings.

The Bank had $33.24 billion as of December 2018 and $17.28 billion as of December 2017 of U.S. government and agency obligations that collateralize resale agreements.

Given that the Bank's primary credit exposure on such transactions is to the counterparty to the transaction, the Bank would be exposed to the collateral issuer only in the event of counterparty default.

Note 23.

Legal Proceedings

The Bank is involved in a number of judicial, regulatory and arbitration proceedings concerning matters arising in connection with the conduct of the Bank's businesses. Many of these proceedings are in early stages, and many of these cases seek an indeterminate amount of damages.

Management is generally unable to estimate a range of reasonably possible loss for matters in which the Bank is involved due to various factors, including where (i) actual or potential plaintiffs have not claimed an amount of money damages, except in those instances where management can otherwise determine an appropriate amount, (ii) matters are in early stages, (iii) matters relate to regulatory investigations or reviews, except in those instances where management can otherwise determine an appropriate amount, (iv) there is uncertainty as to the likelihood of a class being certified or the ultimate size of the class, (v) there is uncertainty as to the outcome of pending appeals or motions, (vi) there are significant factual issues to be resolved, and/or (vii) there are novel legal issues presented.

Management does not believe, based on currently available information, that the outcomes of any such matters will have a material adverse effect on the Bank's financial condition, though the outcomes could be material to the Bank's operating results for any particular period, depending, in part, upon the operating results for such period.

Regulatory Investigations and Reviews and Related Litigation. The Bank and certain of its affiliates (including Group Inc.) are subject to a number of investigations and reviews by, and in some cases have received subpoenas and requests for documents and information from, various governmental and regulatory bodies and self-regulatory organizations and litigation relating to such matters in each case relating to the Bank's current and past businesses and operations, including, but not limited to, residential mortgage servicing, lending and compliance with related consumer laws; the sales, trading, execution and clearance of derivatives, currencies and other financial products and related communications and activities, including trading activities and communications in connection with the establishment of benchmark rates, such as currency rates, and activities in U.S. Treasury securities; and transactions involving government-related financings and other matters, including those related to 1Malaysia Development Berhad (1MDB), a sovereign wealth fund in Malaysia. The Bank is cooperating with all such regulatory investigations and reviews.

In addition, governmental and other investigations, reviews, actions and litigation involving the Bank's affiliates and such affiliates' businesses and operations, including without limitation various matters referred to above, may have an impact on the Bank's businesses and operations.

Note 24.

Employee Incentive Plans and Employee Benefit Plans

Employee Incentive Plan

The cost of employee services received in exchange for a share-based award is generally measured based on the grant-date fair value of the award. Share-based awards that do not require future service (i.e., vested awards, including awards granted to retirement-eligible employees) are expensed immediately. Share-based awards that require future service are amortized over the relevant service period. In accordance with ASU No. 2016-09, effective January 2017, forfeitures are recorded when they occur rather than estimated and recorded over the vesting period. Cash dividend equivalents are paid on outstanding restricted stock units (RSUs).

Stock Incentive Plan

Group Inc. sponsors a stock incentive plan, The Goldman Sachs Amended and Restated Stock Incentive Plan (2018) (2018 SIP), which provides for grants of RSUs, restricted stock, dividend equivalent rights, incentive stock options, nonqualified stock options, stock appreciation rights, and other share-based awards, each of which may be subject to performance conditions. On May 2, 2018, Group Inc.'s shareholders approved the 2018 SIP. The 2018 SIP replaced The Goldman Sachs Amended and Restated Stock Incentive Plan (2015) (2015 SIP) previously in effect, and applies to awards granted on or after the date of approval. The 2015 SIP had previously replaced The Goldman Sachs Amended and Restated Stock Incentive Plan (2013). The 2018 SIP is scheduled to terminate on the date of Group Inc.'s annual meeting of shareholders that occurs in 2022.

Restricted Stock Units

Group Inc. grants RSUs (including RSUs subject to performance conditions) to employees, which are generally valued based on the closing price of the underlying shares on the date of grant after taking into account a liquidity discount for any applicable post-vesting and delivery transfer restrictions. RSUs generally vest and underlying shares of common stock deliver (net of required withholding tax) as outlined in the applicable award agreements. Award agreements generally provide that vesting is accelerated in certain circumstances, such as on retirement, death, disability and conflicted employment. Delivery of the underlying shares of common stock, which generally occurs over a three-year period, is conditioned on the grantees satisfying certain vesting and other requirements outlined in the award agreements. The subsequent amortization of the cost of these RSUs is allocated to the Bank by Group Inc.

The table below presents the 2018 activity related to RSUs.

	Restricted Stock Units Outstanding		Weighted Average Grant-Date Fair Value of Restricted Stock Units Outstanding	
	Future Service Required	No Future Service Required	Future Service Required	No Future Service Required
Beginning balance	146,510	162,341	$ 189.18	$ 170.72
Granted	**125,104**	**61,528**	**$ 225.59**	**$ 213.66**
Forfeited	**(20,062)**	**(176)**	**$ 207.10**	**$ 214.54**
Delivered	**–**	**(135,508)**	**$ –**	**$ 177.81**
Vested	**(110,910)**	**110,910**	**$ 190.84**	**$ 190.84**
Transfers	**(11,299)**	**(8,860)**	**$ 194.66**	**$ 173.39**
Ending balance	**129,343**	**190,235**	**$ 221.73**	**$ 191.19**

In the table above:

- The weighted average grant-date fair value of RSUs granted was $221.66 during 2018 and $208.22 during 2017. The fair value of the RSUs granted included a liquidity discount of 11.2% during 2018 and 10.6% during 2017, to reflect post-vesting and delivery transfer restrictions, generally of up to 4 years.
- The aggregate fair value of awards that vested was $31 million during 2018 and $39 million during 2017.

In relation to 2018 year-end, during the first quarter of 2019, 219,861 RSUs were granted to employees, of which 167,574 RSUs require future service as a condition of delivery for the related shares of common stock. These awards are subject to additional conditions as outlined in the award agreements. Generally, shares underlying these awards, net of required withholding tax, deliver over a three-year period, but are subject to post-vesting and delivery transfer restrictions through January 2024. These grants are not included in the table above.

As of December 2018, there was $15 million of total unrecognized compensation cost related to non-vested share-based compensation arrangements. This cost is expected to be recognized over a weighted average period of 1.74 years.

Stock Options

Stock options generally vested as outlined in the applicable stock option agreement. In general, options expired on the tenth anniversary of the grant date, although they may have been subject to earlier termination or cancellation under certain circumstances in accordance with the terms of the applicable stock option agreement and the SIP in effect at the time of grant.

There were no options outstanding as of both December 2018 and December 2017. During 2018, there were no options exercised. During 2017, 10,130 options were exercised with a weighted average exercise price of $78.78. The total intrinsic value of options exercised was $2 million for 2017. Total employee share-based compensation expense, net of forfeitures, was $36 million for 2018 and $33 million for 2017.

Defined Benefit Pension Plan

Group Inc. maintains a defined benefit pension plan for substantially all U.S. employees hired prior to November 1, 2003. As of November 2004, this plan was closed to new participants and frozen for existing participants. Group Inc. also maintains unfunded postretirement benefit plans that provide medical and life insurance for eligible retirees and their dependents covered under these programs. The Bank's contribution to these plans did not have a material impact on the Bank's consolidated results of operations.

Defined Contribution Plan

The Bank contributes to Group Inc.'s employer-sponsored U.S. defined contribution plan. The Bank's contribution to this plan did not have a material impact on the Bank's consolidated results of operations.

Note 25.

Subsequent Events

The Bank evaluated subsequent events through March 7, 2019, the date the consolidated financial statements were issued, and determined that there were no material events or transactions that would require recognition or additional disclosure in these consolidated financial statements.

Distribution of Assets, Liabilities and Shareholder's Equity

The tables below present information about average balances, interest and average interest rates.

$ in millions	Average Balance for the Year Ended December 2018	2017
Assets		
Deposits with banks	**$ 60,338**	$ 65,042
Collateralized agreements	**14,625**	5,596
Financial instruments owned	**26,819**	28,152
Loans receivable (excluding loans held for sale)	**55,509**	39,967
Other interest-earning assets	**12,315**	10,211
Total interest-earning assets	**169,606**	148,968
Cash and due from banks	**223**	251
Other non-interest-earning assets	**10,024**	11,541
Total assets	**$ 179,853**	$ 160,760
Liabilities		
Interest-bearing deposits	**$ 125,695**	$ 111,098
Collateralized financings	**1,081**	1,392
Financial instruments sold, but not yet purchased	**2,453**	3,166
Borrowings	**7,325**	4,595
Other interest-bearing liabilities	**4,143**	4,316
Total interest-bearing liabilities	**140,697**	124,567
Non-interest bearing deposits	**4,054**	3,596
Other non-interest-bearing liabilities	**8,608**	7,540
Total liabilities	**$ 153,359**	$ 135,703
Shareholder's equity	**26,494**	25,057
Total liabilities and shareholder's equity	**$ 179,853**	$ 160,760

$ in millions	Interest for the Year Ended December 2018	2017
Assets		
Deposits with banks	**$ 1,125**	$ 702
Collateralized agreements	**397**	151
Financial instruments owned	**887**	857
Loans receivable (excluding loans held for sale)	**2,828**	1,607
Other interest-earning assets	**575**	377
Total interest-earning assets	**$ 5,812**	$ 3,694
Liabilities		
Interest-bearing deposits	**$ 2,437**	$ 1,243
Collateralized financings	**78**	48
Financial instruments sold, but not yet purchased	**57**	64
Borrowings	**220**	90
Other interest-bearing liabilities	**273**	327
Total interest-bearing liabilities	**$ 3,065**	$ 1,772
Net interest income	**$ 2,747**	$ 1,922

	Average Rate for the Year Ended December 2018	2017
Assets		
Deposits with banks	**1.86%**	1.08%
Collateralized agreements	**2.71%**	2.70%
Financial instruments owned	**3.31%**	3.04%
Loans receivable (excluding loans held for sale)	**5.09%**	4.02%
Other interest-earning assets	**4.67%**	3.69%
Total interest-earning assets	**3.43%**	2.48%
Liabilities		
Interest-bearing deposits	**1.94%**	1.12%
Collateralized financings	**N.M.**	3.45%
Financial instruments sold, but not yet purchased	**2.32%**	2.02%
Borrowings	**3.00%**	1.96%
Other interest-bearing liabilities	**6.59%**	7.58%
Total interest-bearing liabilities	**2.18%**	1.42%
Net interest margin	**1.62%**	1.29%

In the tables above:

- Deposits with banks primarily consist of deposits held at the Federal Reserve Bank of New York.
- Collateralized agreements consists of resale agreements. Collateralized financings consists of repurchase agreements. The average balances for both collateralized agreements and collateralized financings reflect the impact of counterparty netting, while the related interest income and interest expense do not reflect the impact of such counterparty netting. Accordingly, the average rate on collateralized financings for 2018 was not meaningful. See Note 10 to the consolidated financial statements and "Results of Operations" in Part II of this Annual Report for further information about collateralized agreements and collateralized financings and related interest.
- See Notes 4 through 8 to the consolidated financial statements and "Results of Operations" in Part II of this Annual Report for further information about financial instruments owned, and financial instruments sold, but not yet purchased and related interest.
- Loans receivable (excluding loans held for sale) consists of loans held for investment that are accounted for at amortized cost net of allowance for loan losses. Interest on loans receivable is recognized over the life of the loan and is recorded on an accrual basis. See Note 9 to the consolidated financial statements and "Results of Operations" in Part II of this Annual Report for further information about loans receivable and related interest.

- Other interest-earning assets consists of certain customer and other receivables, and loans held for sale that are accounted for at the lower of cost or fair value. Other interest-bearing liabilities consists of certain customer and other payables. Derivative instruments are included in other non-interest-earning assets and other non-interest-bearing liabilities. See Note 7 to the consolidated financial statements and "Results of Operations" in Part II of this Annual Report for further information about derivatives.
- Interest-bearing deposits consists of deposits from institutions, corporations, affiliates, clients of third party broker dealers, private bank clients and U.S. consumers. See Note 14 to the consolidated financial statements and "Results of Operations" in Part II of this Annual Report for further information about deposits and related interest.
- Borrowings include senior unsecured debt, subordinated borrowings and other secured financings. See Notes 10 and 15 to the consolidated financial statements and "Balance Sheet Analysis and Metrics" in Part II of this Annual Report for further information about short-term and long-term borrowings and related interest.
- See Note 20 to the consolidated financial statements for further information about interest income and interest expense.

Changes in Net Interest Income, Volume and Rate Analysis

The table below presents the effect on net interest income of volume and rate changes. In this analysis, changes due to volume/rate variance have been allocated to volume.

	Year Ended December 2018 versus December 2017		
	Increase (decrease) due to change in:		
$ in millions	**Volume**	**Rate**	**Net Change**
Interest-earning assets			
Deposits with banks	**$ (88)**	**$ 511**	**$ 423**
Collateralized agreements	**245**	**1**	**246**
Financial instruments owned	**(44)**	**74**	**30**
Loans receivable (excluding loans held for sale)	**792**	**429**	**1,221**
Other interest-earning assets	**98**	**100**	**198**
Change in interest income	**1,003**	**1,115**	**2,118**
Interest-bearing liabilities			
Interest-bearing deposits	**283**	**911**	**1,194**
Collateralized financings	**(22)**	**52**	**30**
Financial instruments sold, but not yet purchased	**(17)**	**10**	**(7)**
Borrowings	**82**	**48**	**130**
Other interest-bearing liabilities	**(11)**	**(43)**	**(54)**
Change in interest expense	**315**	**978**	**1,293**
Change in net interest income	**$ 688**	**$ 137**	**$ 825**

Selected Loan Data

The table below presents information about loans.

$ in millions	Loans Receivable	Loans at fair value	Total
As of December 2018			
Corporate loans	**$ 28,858**	**$ 1,304**	**$ 30,162**
PWM loans	**15,398**	**7,225**	**22,623**
Commercial real estate loans	**9,830**	**894**	**10,724**
Residential real estate loans	**3,821**	**2,312**	**6,133**
Consumer loans	**4,536**	**–**	**4,536**
Other loans	**3,537**	**204**	**3,741**
Total	**$ 65,980**	**$ 11,939**	**$ 77,919**
As of December 2017			
Corporate loans	$ 21,657	$ 1,287	$ 22,944
PWM loans	14,492	7,081	21,573
Commercial real estate loans	6,854	872	7,726
Residential real estate loans	2,769	–	2,769
Consumer loans	1,912	–	1,912
Other loans	3,519	106	3,625
Total	$ 51,203	$ 9,346	$ 60,549

In the table above:

- Loans receivable include loans held for investment and held for sale. See Note 8 to the consolidated financial statements for further information about loans at fair value and see Note 9 to the consolidated financial statements for further information about loans receivable.
- Loans receivable are gross of allowance for loan losses of $617 million for December 2018 and $354 million for December 2017.
- Other loans primarily relates to warehouse financing for consumer loans.