The Goldman Sachs Group, Inc.

Annual Report

2019

(from left to right)

John E. Waldron
President and
Chief Operating Officer

David M. Solomon
Chairman and
Chief Executive Officer

Stephen M. Scherr
Chief Financial Officer

Fellow Shareholders:

As this letter goes to print in mid-March 2020, the world is experiencing a global health crisis that is putting extraordinary pressure on all of society — from every family in the world to every large and small company, which represents the vast majority of the work force. This includes pressure on the nonprofit sector, which provides critical services to the most vulnerable. Government action generally has been swift and aggressive to help mitigate the effects of COVID-19. This fluid and historic situation is having a profound influence on the most basic of human needs — the desire to be near and among our friends, colleagues and families.

As a firm, we are taking actions to support our people, their families, and our clients. I am proud of how our people have reacted amidst these circumstances, demonstrating the resilience and resolve they put forth on a daily basis on behalf of our clients. Further, the work they do today is integral to bolstering and sustaining global financial markets, which are critical to the recovery ahead.

As I write this, it is too early to know the full effect COVID-19 will have on the global economy. As we pursue our growth plans we will be mindful of the impact this virus will have on broader economic growth. We hopefully will work our way past the crisis stage soon and will do our part as a global financial institution to help re-build the global economy from this devastating crisis, which has hurt so many.

As you would expect, we have enacted our business continuity plans that have been informed by past crises and robust investment. We are operating to protect our people while serving our clients. Helping clients navigate dynamic environments is core to what we do, and we will stand by and assist them always.

We have defined our path forward over the past year, and we have begun to execute our long-term strategy and evolution as a firm. We are working to strengthen the market-leading positions of our core franchises, and we are investing for growth in new businesses. We have embarked on a firmwide effort to enhance how our clients interact with us in an integrated way, and to be more open and accessible with our stakeholders.

All of this is underpinned by the exceptional talent of the people of Goldman Sachs at all levels of the organization, starting with my leadership team of John Waldron, our President and Chief Operating Officer, Stephen Scherr, our Chief Financial Officer, and our entire Management Committee.

2019 Financial Performance

In 2019, the global economy experienced broad-based growth, inflation was subdued and unemployment fell to multi-year lows in key regions, while the outlook for economic growth and geopolitical risk was closely monitored throughout the year. At Goldman Sachs, our businesses weathered pockets of market volatility and delivered strong performance into year end. Our enduring focus on our clients and our culture of excellence drove solid financial results. Net revenues were $36.55 billion for the year and return on average common shareholders' equity was 10.0 percent. We remained the industry's leading mergers and acquisitions advisor, and held the #1 position in worldwide equity and equity-related offerings and common stock offerings for the year.

Our businesses generally produced strong net revenues, and the growth we achieved in new initiatives such as our consumer banking business was encouraging. Investment Banking generated net revenues of $7.60 billion, its second highest annual net revenues. In Global Markets, our broad and diverse franchise across FICC and Equities delivered net revenues of $14.78 billion, reflecting growing financing revenues. Asset Management produced solid results, with net revenues of $8.97 billion, amid strong asset inflows; net revenues in Equity investments continue to be robust and rose versus 2018. Rapidly scaling Consumer & Wealth Management generated record net revenues of $5.20 billion. Firmwide assets under supervision increased during the year to a record $1.86 trillion.

Our Purpose and Core Values

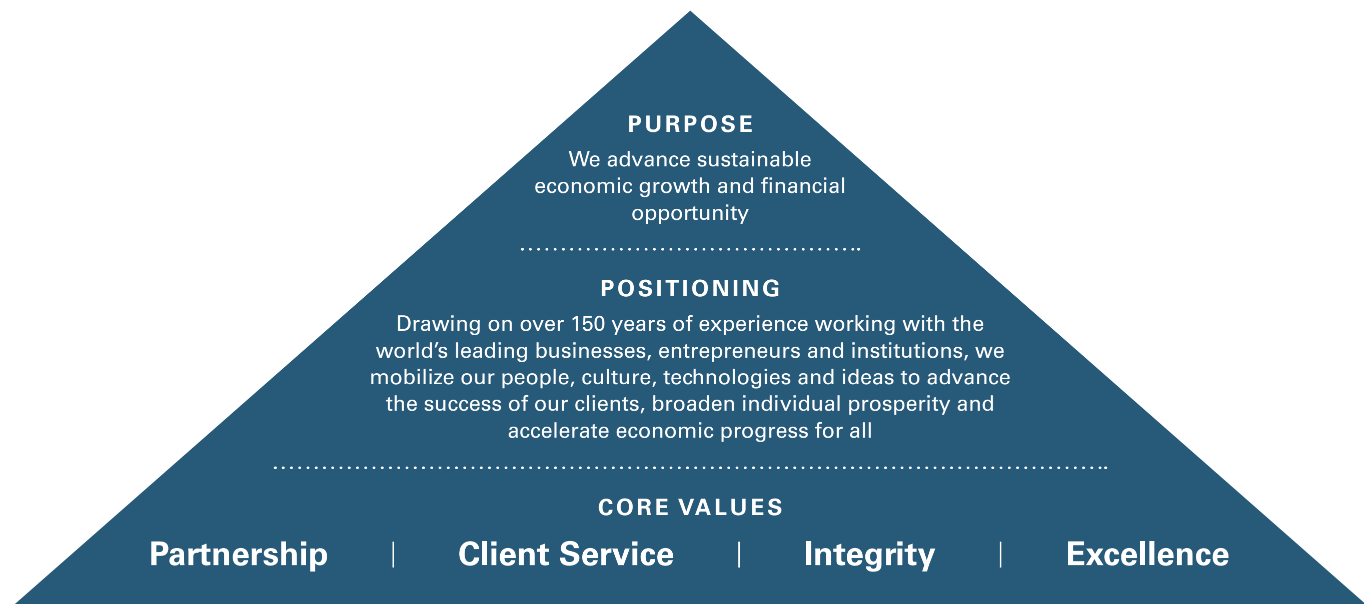
We believe that shareholders and stakeholders alike expect companies to explain their purpose and core values. Goldman Sachs' mission is to advance sustainable economic growth and financial opportunity across the globe. Drawing upon over 150 years of experience working with the world's leading businesses, entrepreneurs, and institutions, we mobilize our people and resources to advance the success of our clients, broaden individual prosperity and accelerate economic progress for all. If we successfully deliver on this purpose, we are confident that we will also succeed in delivering significant value to our shareholders.

We are taking our foundational strengths and applying them as we invest in our future. This means affirming our values while fostering change and innovation. As part of that effort, we distilled our business principles into four core values that inform everything we do. First is the partnership ethos which is central to Goldman Sachs' culture. I'm referring not just to our firm's leadership group, the partners of Goldman Sachs, but also to the philosophy behind our client relationships and the way we interact with our stakeholders. Partnership fosters a sense of ownership and stewardship that is truly unique and differentiated. It encourages collaboration, inclusivity, and teamwork, and it inspires our people to always put our clients at the center of everything we do.

Of course, putting our clients at the center requires exceptional client service, which is our second core value. Having personally spent decades building deep relationships with clients, I can attest to the results we can achieve through long-term dedication to client service. This goes beyond transactional excellence. The connectivity to our people — our ability to offer advice, knowledge, and feedback — is often the most significant driver of value.

As Chairman and Chief Executive Officer, I am intensely focused on integrity. We must have an unrelenting commitment to doing the right thing — always. Particularly in the wake of our experience in Malaysia, I am keenly aware of how the actions of a few can harm our firm. We will continue to assess ways to learn and improve from this experience, and we are committed to ensuring our culture of integrity remains a core value.

Finally, excellence. We are committed to delivering to the very best of our ability. This value permeates our organization from the bottom to the top. It informs the kind of people we attract, the advice we give, and the ways in which we strive to exceed our clients' expectations. Every day, I see examples of the people of Goldman Sachs going the extra mile, working to execute at the highest level possible.



Our Competitive Strengths

Today, Goldman Sachs possesses an enviable portfolio of market-leading businesses. Foundational to our success are a number of self-reinforcing competitive strengths within these businesses. First, we firmly believe our biggest competitive strength is the exceptional talent of our people. I frequently hear from clients that our people differentiate us from the competition, and I see it firsthand. Goldman Sachs has developed an ecosystem that attracts and develops top talent from across the globe, giving them platforms to thrive and grow.

We operate in an industry where people and the relationships they build are paramount. Our efforts to find the best people range from extensive campus recruiting all the way to hiring senior talent laterally, including at the partner level. We had 85,000 applicants for 2,600 campus positions for 2020, illustrating our ability to build a workplace where tomorrow's leaders want to be. We are especially focused on ensuring we have the best pipeline of rising talent, and the best programs to develop those leaders. It helps that our history, our people and our ideas have made Goldman Sachs an aspirational brand around the globe. Our brand has proven influential with institutions and in corporate boardrooms, and it resonates with new and different clients, such as consumers.

Closely linked with exceptional talent is the culture of innovation which our people foster. This firm is ready to capitalize on new opportunities; in fact, we are well underway on a number of efforts that I will describe below. We are deeply focused on encouraging innovation and new thinking across all of our businesses.

Additionally, our presence around the world today is truly global. We are able to serve clients everywhere that matters to them. As one sign of our focus on growing this worldwide footprint, our international net revenues have grown 22-fold since 1990, and represent approximately 40 percent of our overall firmwide net revenues. Hand-in-hand with a truly global presence is the remarkable depth of our client relationships. We are a trusted advisor known for the quality and duration of our relationships with corporations, governments, institutions, and individuals. This is because we appreciate that great relationships require investment and patience, in many cases over decades.

Lastly, I highlight our robust risk management culture, which is one of our most important strengths. We have strong processes, deep analytics, empowered risk and control functions, and a culture of honesty and communication.

The risks we face run the gamut: some are financial in nature, while others are operational, technological, or

reputational. We appreciate that risk will change as our mix of businesses evolves. Accordingly, we are adapting our processes to manage risks old and new. We also know that we can never stop questioning, critiquing and improving the processes that enable our people to deliver excellence to clients around the world.

Our New Operating Approach

Even as we stay true to our core values, change and adaption are inevitable, even healthy. Today's economic environment of innovation and disruption requires it. Over the course of the past year we have begun engaging in a number of cultural and operational shifts to support and accelerate our next major growth initiatives. And we are making efforts to be more open and accessible, both internally and externally. One example is our new segment reporting, which more closely aligns to how we are now managing our businesses, improves transparency, and enables stakeholders to better hold us accountable to the execution priorities we have set forth. Another example is our first Investor Day, held in January 2020.

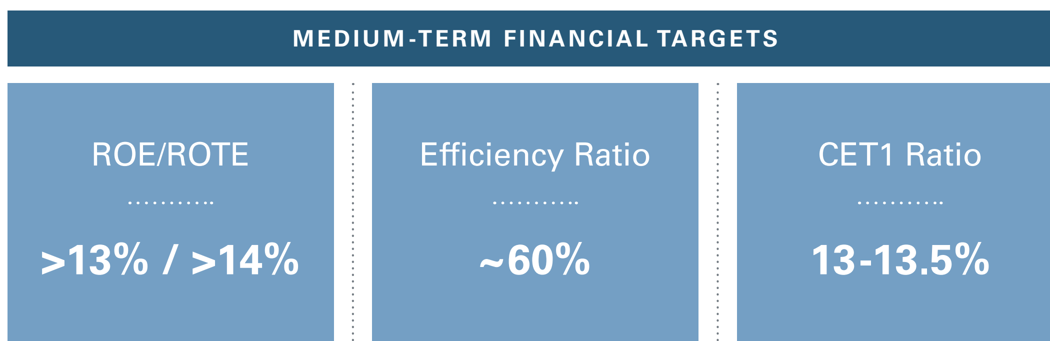
A centerpiece of our operational shifts aims at simplifying touchpoints for our clients. We launched One Goldman Sachs on my first day as CEO. This initiative has already succeeded in delivering our capabilities more holistically to approximately 30 major client relationships. Our 2020 plans include an expansion of One Goldman Sachs to cover approximately 100 clients, deepening these relationships and driving stronger returns.

We are also shifting our operating focus to promote more long-term thinking and investing. Goldman Sachs has long prided itself on being nimble in the face of opportunity. This quality remains valuable, but we have embarked on an effort to evolve our culture more in favor of incentivizing investments for the future through a multi-year planning process. These investments in the future require patience and, of course, hard work and fortitude.

Our Financial Goals

Our strategy is intended to build a firm capable of generating mid-teen or higher returns over the long term, meaning five or more years. For the medium term, we unveiled a series of three-year financial targets in January at our Investor Day (see exhibit below). We operate in a cyclical industry, so our targets must be viewed in the context of a normalized operating environment. We are confident we can achieve them in such an environment.

For our medium-term targets, much of the financial impact comes from our focus on expense and funding efficiencies, which we believe are largely in our control. Our ability to achieve mid-teen returns or higher over a horizon of five years or more will come as investments in



new businesses and technologies — such as Marcus, Apple Card and Transaction Banking — mature. Success will require diligence and a long-term mindset. But our early results have been more than encouraging.

Our Strategic Direction

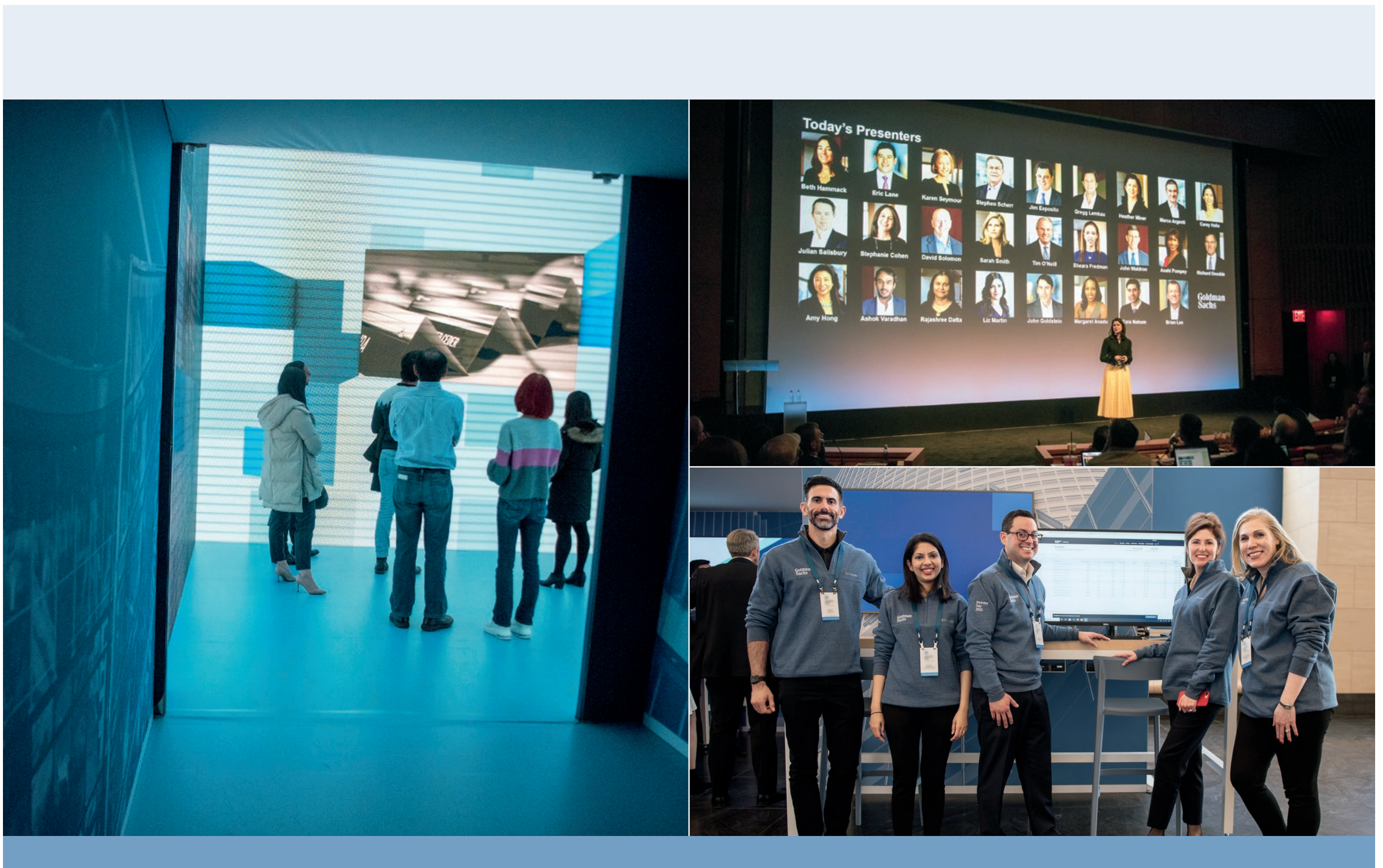
There are three pillars to achieving our medium-term financial targets, each of which will be examined in greater depth below:

- Growing and strengthening existing businesses, including expanding our footprint, to achieve higher wallet share
- Diversifying products and services and expanding our addressable market, for more durable earnings
- Operating more efficiently, leading to higher margins and returns

Grow and Strengthen Our Existing Businesses

Our review of existing Goldman Sachs businesses makes clear that we are building on an incredible foundation. Our market-leading positions include the #1 Investment Banking franchise[1], with room to expand the number of clients we serve and the offerings we provide; a leading Global Markets business that can be optimized for higher returns; a leading asset manager, with opportunities to scale our advisory-led business; and a premier ultra-high net worth wealth management business in the U.S. — one where we are accelerating growth in Europe and Asia.

Investment Banking As the #1 investment bank, we are the advisor of choice to our clients. But because we are not #1 in every industry and geography globally, we can improve our relative position by capitalizing on gaps



and opportunities. In particular, we are focused on expanding our footprint to cover more companies in the $500 million-$2 billion enterprise value range. This is a segment where, historically speaking, we only cover 44 percent of public companies in the Americas and EMEA — compared to 95 percent of firms over $10 billion and 80 percent in the $2-10 billion range.

Global Markets The marketplace is navigating a once-in-a-generation period of significant regulatory and technological change. We face this moment of disruption and opportunity with the #2 ranked institutional client franchise[2]. We are one of the few scaled firms in both FICC and Equities, offering clients differentiated risk intermediation, data analytics, and a rapidly evolving set of technology platforms. Our plan is to drive higher returns by instilling further resource discipline and executing on several client initiatives to grow our franchise.

Asset Management Over the course of more than three decades, we have built a truly global, broad and deep asset management franchise. We have grown organic, fee-based active assets faster than competitors over the last five years, a testament to the success of our diversified advisory model. Our goals over the next five years include achieving $250 billion of firmwide traditional assets under supervision net inflows.

Consumer & Wealth Management We envision substantial opportunities to broaden our wealth management offering in the years ahead. For one, our advice-led ultra-high net worth wealth management franchise is poised for significant growth in the EMEA and APAC regions, boosted in part by our target of increasing advisors globally by roughly 30 percent over the next three years.

Diversifying Our Products and Services, Expanding Our Addressable Market

In general, our new business initiatives are designed to target more durable revenues, greater capital efficiency, and an enhanced funding mix. In our framework for evaluating opportunities, we examine whether they address a client need, capitalize on one or more of our competitive advantages, and are adjacent to one of our market-leading businesses. Through this lens, we have identified four major opportunities.

Transaction Banking Corporates' cash management and payment needs often span the globe. Even a small share of the massive transaction banking market would be accretive. Our transaction banking offering is high-tech, low-touch, and client-focused — and as a user of transaction banking services ourselves, we believe it is unique and differentiated versus existing offerings in the market. Here, as we roll out offerings over the next several months, we see a 5-year-plus opportunity for $50 billion in deposit balances and $1 billion in net revenues.

Alternatives In the face of a tremendous secular growth opportunity, we have unified our investing platforms and leveraged our strong, experienced investment teams to mount a significant expansion in our alternatives business. At approximately $320 billion in alternative assets as of December 31, 2019, we are already a top 5 player in this space. Partnering with major asset allocators and institutions, we see a 5-year opportunity to achieve $100 billion in net alternative asset inflows.

High Net Worth Wealth Management We plan to complement our crown jewel ultra-high net worth wealth management franchise with a greatly expanded high net worth offering. Our holistic wealth solutions through Ayco and Goldman Sachs Personal Financial Management, the rebranding of the recently acquired United Capital, are the pillars of our expansion. We have less than a 1 percent share of this fragmented $18 trillion

market of investable assets in the U.S., and a modest increase in market share could drive a meaningful increase in revenues for our high net worth wealth management franchise.

Digital Consumer Banking We are building the digital consumer bank of the future. Today we are already addressing the spending, borrowing, and savings needs of millions of customers, helping them take control of their financial lives through an integrated platform. Our envisioned 5-year opportunity includes $125 billion in deposit balances, $20 billion in loan and card balances, and millions of new customers.

Operating More Efficiently

The third pillar of our strategic direction is to achieve greater operational efficiency. Streamlining the organization for the best possible client experience is a key focus. We have identified ways to deploy our people and resources more effectively to deliver One Goldman Sachs, with specific initiatives aimed at increasing process efficiency. The expected result of these efforts is a targeted $1.3 billion in run-rate operating expense savings in three years, which will create capacity for investment in our growth priorities. We are also improving our funding profile, for example by diversifying our funding mix through deposits, which we expect to result in $1.0 billion in run-rate interest expense savings in three years. Additionally, consistent with our history of prudent capital management, we are looking to optimize our capital footprint, through efforts such as reducing our on-balance sheet equity investments in alternatives.

All in, these initiatives to improve the efficiency of our business should supplement our growth priorities to drive higher margins and firmwide returns.

Diversity and Inclusion as Strategic Imperatives

Advancing diversity and inclusion is a personal priority of mine, particularly when it comes to leadership roles across our businesses. The reasons are simple: it makes sense for our business, and it is the right thing to do. Moreover, our clients expect it, and our people demand it. I know our shareholders feel similarly, and I am convinced we can do better.

While there is more for us to do as a firm, we are proud that in 2019 we made some important strides. We hired our most diverse incoming analyst class from campuses around the world — 49 percent women and 63 percent ethnically diverse. And we promoted our most diverse class of managing directors ever, with a record 29 percent women. We also announced a new practice globally to interview two diverse, qualified candidates for each open role at the level of vice president and higher, to advance diversity more rapidly among our mid- and senior-level ranks. Finally, we introduced what is now the industry's leading parental and family leave policy, to help ensure that employees can build a family *and* pursue their professional ambitions. I am holding my partners accountable to deliver progress in those areas of the firm where they have oversight.

At the same time that we are focusing on improving the state of our own firm's diversity and reinforcing an inclusive environment, we are also thinking critically about our role as a steward of the global capital markets, and how we can make meaningful progress on this issue through our client interactions.

I recently announced one way for us to do just that. Starting this summer, we will only underwrite initial public offerings for companies domiciled in Western Europe and the U.S. that have at least one diverse board member. And come 2021, the figure will rise to two.

We did this, first and foremost, because we believe this is the best possible advice we could provide our clients looking to go public. In addition, the benefits will be long-lasting, and accrue to all of us.

Sustainability

The private sector has traditionally seen sustainability as a peripheral issue, narrowly tailored to a company's environmental impact. That kind of thinking no longer

SUSTAINABLE FINANCE COMMITMENT

$750B

in financing, investing and advisory activity to nine areas that focus on climate transition and inclusive economic growth by 2030

holds. Today, the concept of sustainability has broadened to include not only how a company manages its operations but also how it conducts its core business. Sustainability is increasingly top of mind for our clients and front and center for the next generation of talent. That is why for Goldman Sachs, executing a best-in-class sustainability strategy is central to our long-term success.

We see a clear commercial rationale to this work, where we are able to leverage our leading businesses and global relationships to deliver results for shareholders and progress for society as a whole. To that end, we have announced a 10-year target of $750 billion in financing, investing and advisory activity to nine areas that focus on climate transition and inclusive economic growth. We have created a new team, the Sustainable Finance Group, to partner with our businesses in executing on this ambitious mandate, delivering sustainable solutions consistent with our clients' long-term objectives.

Philanthropic capital also remains critical. We are focused on ensuring our efforts in this area are aligned with and accretive to our overall sustainability objectives. Our signature entrepreneurship programs *10,000 Women* and *10,000 Small Businesses* provide access to capital, mentorship and community for business owners around the world. Milestones in 2019 included *10,000 Women*'s 10th anniversary of operating in China and the expansion of *10,000 Small Businesses* into Iowa, New Hampshire, and Ohio. Graduates of these programs take the knowledge they acquire and apply it to their businesses — creating jobs and driving growth in the communities where they live and work.

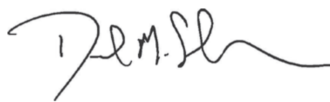
The Path Ahead

The year 2019 was a time to define our strategic plan and financial goals. At the turn of the calendar year, we had a clear-eyed view of our plan and shared it with stakeholders on Investor Day. Its essential elements are now in motion.

The Goldman Sachs of 2020 and beyond will still resemble the firm I joined in 1999 in terms of its core values, cultural attributes and its key businesses. The ethos of this firm is to put capital and ideas to work to expand the potential of organizations, accelerate global economies, and amplify personal prosperity. We are passionate about our role in the world. None of this has changed.

But our approach to the world and our mix of businesses are both progressing. In my 21 years with the firm, we have already seen a significant evolution. This is healthy and even vital to our success.

As we look to the future, we are committed to executing upon our long-term strategy, strengthening the market-leading positions of our core franchises, and investing for growth in new businesses and opportunities. As the current COVID-19 pandemic reminds us, however, the operating environment can shift overnight. This means that, regardless of market conditions, our focus must always remain on what has sustained Goldman Sachs over the last 150 years: our people, our culture, and above all, the evolving needs of our clients. In doing so, we are well-positioned to compete in the years ahead, and to deliver higher, more sustainable returns for our shareholders.



David M. Solomon
Chairman and
Chief Executive Officer

Our Core Values and Business Principles

Our Core Values

We distilled our Business Principles into 4 core values that inform everything we do:

Partnership | Client Service | Integrity | Excellence

Goldman Sachs Business Principles

Our clients' interests always come first.
Our experience shows that if we serve our clients well, our own success will follow.

Our assets are our people, capital and reputation.
If any of these is ever diminished, the last is the most difficult to restore. We are dedicated to complying fully with the letter and spirit of the laws, rules and ethical principles that govern us. Our continued success depends upon unswerving adherence to this standard.

Our goal is to provide superior returns to our shareholders.
Profitability is critical to achieving superior returns, building our capital, and attracting and keeping our best people. Significant employee stock ownership aligns the interests of our employees and our shareholders.

We take great pride in the professional quality of our work.
We have an uncompromising determination to achieve excellence in everything we undertake. Though we may be involved in a wide variety and heavy volume of activity, we would, if it came to a choice, rather be best than biggest.

We stress creativity and imagination in everything we do.
While recognizing that the old way may still be the best way, we constantly strive to find a better solution to a client's problems. We pride ourselves on having pioneered many of the practices and techniques that have become standard in the industry.

We make an unusual effort to identify and recruit the very best person for every job.
Although our activities are measured in billions of dollars, we select our people one by one. In a service business, we know that without the best people, we cannot be the best firm.

We offer our people the opportunity to move ahead more rapidly than is possible at most other places.
Advancement depends on merit and we have yet to find the limits to the responsibility our best people are able to assume. For us to be successful, our people must reflect the diversity of the communities and cultures in which we operate. That means we must attract, retain and motivate people from many backgrounds and perspectives. Being diverse is not optional; it is what we must be.

We stress teamwork in everything we do.
While individual creativity is always encouraged, we have found that team effort often produces the best results. We have no room for those who put their personal interests ahead of the interests of the firm and its clients.

The dedication of our people to the firm and the intense effort they give their jobs are greater than one finds in most other organizations.
We think that this is an important part of our success.

We consider our size an asset that we try hard to preserve.
We want to be big enough to undertake the largest project that any of our clients could contemplate, yet small enough to maintain the loyalty, the intimacy and the esprit de corps that we all treasure and that contribute greatly to our success.

We constantly strive to anticipate the rapidly changing needs of our clients and to develop new services to meet those needs.
We know that the world of finance will not stand still and that complacency can lead to extinction.

We regularly receive confidential information as part of our normal client relationships.
To breach a confidence or to use confidential information improperly or carelessly would be unthinkable.

Our business is highly competitive, and we aggressively seek to expand our client relationships.
However, we must always be fair competitors and must never denigrate other firms.

Integrity and honesty are at the heart of our business.
We expect our people to maintain high ethical standards in everything they do, both in their work for the firm and in their personal lives.

Notes about the Letter to Shareholders

Forward-Looking Statements
This letter contains forward-looking statements, including statements about our financial targets, business initiatives, and operating and interest expense savings. You should read the cautionary notes on forward-looking statements in our Form 10-K for the period ended December 31, 2019.

Footnotes
1 Based on cumulative, publicly disclosed investment banking fees since 2015.
2 Coalition institutional client analytics for FY2018. Institutional clients only. Analysis excludes captive and non-core products.

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-K

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2019 **Commission File Number: 001-14965**

The Goldman Sachs Group, Inc.

(Exact name of registrant as specified in its charter)

Delaware	13-4019460
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
200 West Street New York, N.Y.	10282
(Address of principal executive offices)	(Zip Code)

(212) 902-1000

(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol	Exchange on which registered
Common stock, par value $.01 per share	GS	NYSE
Depositary Shares, Each Representing 1/1,000th Interest in a Share of Floating Rate Non-Cumulative Preferred Stock, Series A	GS PrA	NYSE
Depositary Shares, Each Representing 1/1,000th Interest in a Share of Floating Rate Non-Cumulative Preferred Stock, Series C	GS PrC	NYSE
Depositary Shares, Each Representing 1/1,000th Interest in a Share of Floating Rate Non-Cumulative Preferred Stock, Series D	GS PrD	NYSE
Depositary Shares, Each Representing 1/1,000th Interest in a Share of 5.50% Fixed-to-Floating Rate Non-Cumulative Preferred Stock, Series J	GS PrJ	NYSE
Depositary Shares, Each Representing 1/1,000th Interest in a Share of 6.375% Fixed-to-Floating Rate Non-Cumulative Preferred Stock, Series K	GS PrK	NYSE
Depositary Shares, Each Representing 1/1,000th Interest in a Share of 6.30% Non-Cumulative Preferred Stock, Series N	GS PrN	NYSE
5.793% Fixed-to-Floating Rate Normal Automatic Preferred Enhanced Capital Securities of Goldman Sachs Capital II	GS/43PE	NYSE
Floating Rate Normal Automatic Preferred Enhanced Capital Securities of Goldman Sachs Capital III	GS/43PF	NYSE
Medium-Term Notes, Series A, Index-Linked Notes due 2037 of GS Finance Corp.	GCE	NYSE Arca
Medium-Term Notes, Series B, Index-Linked Notes due 2037	GSC	NYSE Arca
Medium-Term Notes, Series E, Index-Linked Notes due 2028 of GS Finance Corp.	FRLG	NYSE Arca

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. ☒ Yes ☐ No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. ☐ Yes ☒ No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. ☒ Yes ☐ No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). ☒ Yes ☐ No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☒ Accelerated filer ☐ Non-accelerated filer ☐
Smaller reporting company ☐ Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). ☐ Yes ☒ No

As of June 30, 2019, the aggregate market value of the common stock of the registrant held by non-affiliates of the registrant was approximately $73.4 billion.

As of February 7, 2020, there were 345,672,769 shares of the registrant's common stock outstanding.

Documents incorporated by reference: Portions of The Goldman Sachs Group, Inc.'s Proxy Statement for its 2020 Annual Meeting of Shareholders are incorporated by reference in the Annual Report on Form 10-K in response to Part III, Items 10, 11, 12, 13 and 14.

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PART I

Item 1. Business

Introduction

Goldman Sachs is a leading global investment banking, securities and investment management firm that provides a wide range of financial services to a substantial and diversified client base that includes corporations, financial institutions, governments and individuals. Our purpose is to advance sustainable economic growth and financial opportunity. Our goal, reflected in our *One Goldman Sachs* initiative, is to deliver the full range of our services and expertise to support our clients in a more accessible, comprehensive and efficient manner, across businesses and product areas.

When we use the terms "Goldman Sachs," "we," "us" and "our," we mean The Goldman Sachs Group, Inc. (Group Inc. or parent company), a Delaware corporation, and its consolidated subsidiaries. When we use the term "our subsidiaries," we mean the consolidated subsidiaries of Group Inc. References to "this Form 10-K" are to our Annual Report on Form 10-K for the year ended December 31, 2019. All references to 2019, 2018 and 2017 refer to our years ended, or the dates, as the context requires, December 31, 2019, December 31, 2018 and December 31, 2017, respectively.

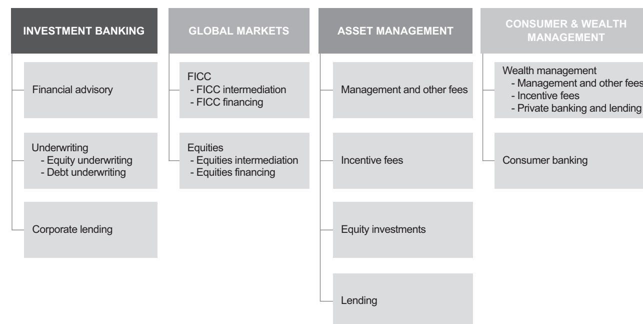
Group Inc. is a bank holding company (BHC) and a financial holding company (FHC) regulated by the Board of Governors of the Federal Reserve System (FRB). Our U.S. depository institution subsidiary, Goldman Sachs Bank USA (GS Bank USA), is a New York State-chartered bank.

As of December 2019, we had offices in over 30 countries and 46% of our headcount was based outside the Americas. Our clients are located worldwide and we are an active participant in financial markets around the world.

Our Business Segments

We report our activities in four business segments: Investment Banking, Global Markets, Asset Management, and Consumer & Wealth Management. Investment Banking generates revenues from financial advisory, underwriting and corporate lending activities. Global Markets consists of Fixed Income, Currency and Commodities (FICC) and Equities, and generates revenues from intermediation and financing activities. Asset Management generates revenues from management and other fees, incentive fees, equity investments and lending. Consumer & Wealth Management consists of Wealth management and Consumer banking, and generates revenues from management and other fees, incentive fees, private banking and lending, and consumer-oriented activities.

The chart below presents our four business segments and their revenue sources.



Prior to the fourth quarter of 2019, we reported our activities in the following four business segments: Investment Banking, Institutional Client Services, Investing & Lending, and Investment Management. Our new segments reflect the following changes:

- Investing & Lending results are now included across the four segments as described below.
- Investment Banking additionally includes the results from lending to corporate clients, including middle-market lending, relationship lending and acquisition financing, previously reported in Investing & Lending.
- Institutional Client Services has been renamed Global Markets and additionally includes the results from providing warehouse lending and structured financing to institutional clients, previously reported in Investing & Lending, and the results from transactions in derivatives related to client advisory and underwriting assignments, previously reported in Investment Banking.
- Investment Management has been renamed Asset Management and additionally includes the results from investments in equity securities and lending activities related to our asset management businesses, including investments in debt securities and loans backed by real estate, both previously reported in Investing & Lending.
- Consumer & Wealth Management is a new segment that includes management and other fees, incentive fees and results from deposit-taking activities related to our wealth management business, all previously reported in Investment Management. It also includes the results from providing loans through our private bank, providing unsecured loans and accepting deposits through our digital platform, *Marcus by Goldman Sachs* (Marcus), and providing credit cards, all previously reported in Investing & Lending.

Investment Banking

Investment Banking serves public and private sector clients around the world. We provide financial advisory services, help companies raise capital to strengthen and grow their businesses and provide financing to corporate clients. We seek to develop and maintain long-term relationships with a diverse global group of institutional clients, including corporations, governments, states and municipalities. Our goal is to deliver to our institutional clients all of our resources in a seamless fashion, with investment banking serving as the main initial point of contact.

Investment Banking generates revenues from the following:

- **Financial advisory.** We are a leader in providing financial advisory services, including strategic advisory assignments with respect to mergers and acquisitions, divestitures, corporate defense activities, restructurings and spin-offs. In particular, we help clients execute large, complex transactions for which we provide multiple services, including cross-border structuring expertise. We also assist our clients in managing their asset and liability exposures and their capital.

- **Underwriting.** We help companies raise capital to fund their businesses. As a financial intermediary, our job is to match the capital of our investing clients, who aim to grow the savings of millions of people, with the needs of our public and private sector clients, who need financing to generate growth, create jobs and deliver products and services. Our underwriting activities include public offerings and private placements, including local and cross-border transactions and acquisition financing, of a wide range of securities and other financial instruments, including loans. Underwriting consists of the following:

  Equity underwriting. We underwrite common and preferred stock and convertible and exchangeable securities. We regularly receive mandates for large, complex transactions and have held a leading position in worldwide public common stock offerings and worldwide initial public offerings for many years.

  Debt underwriting. We underwrite and originate various types of debt instruments, including investment-grade and high-yield debt, bank and bridge loans, including in connection with acquisition financing, and emerging- and growth-market debt, which may be issued by, among others, corporate, sovereign, municipal and agency issuers. In addition, we underwrite and originate structured securities, which include mortgage-related securities and other asset-backed securities.

- **Corporate lending.** We make loans to corporate clients, including middle-market lending, relationship lending and acquisition financing. The hedges related to this lending and financing activity are reported as part of our corporate lending activity. We also provide transaction banking services to certain of our corporate clients.

Global Markets

Global Markets serves our clients who buy and sell financial products, raise funding and manage risk. We do this by acting as a market maker and offering market expertise on a global basis. Global Markets makes markets and facilitates client transactions in fixed income, equity, currency and commodity products. In addition, we make markets in, and clear client transactions on, major stock, options and futures exchanges worldwide.

As a market maker, we provide prices to clients globally across thousands of products in all major asset classes and markets. At times, we take the other side of transactions ourselves if a buyer or seller is not readily available, and at other times we connect our clients to other parties who want to transact. Our willingness to make markets, commit capital and take risk in a broad range of products is crucial to our client relationships. Market makers provide liquidity and play a critical role in price discovery, which contributes to the overall efficiency of the capital markets. In connection with our market-making activities, we maintain (i) market-making positions, typically for a short period of time, in response to, or in anticipation of, client demand, and (ii) positions to actively manage our risk exposures that arise from these market-making activities (collectively, inventory). We carry our inventory at fair value with changes in valuation reflected in net revenues.

Our clients are institutions that are primarily professional market participants, including investment entities whose ultimate clients include individual investors investing for their retirement, buying insurance or putting aside surplus cash in a deposit account.

We execute a high volume of transactions for our clients in large, highly liquid markets (such as markets for U.S. Treasury securities, stocks and certain agency mortgage pass-through securities). We also execute transactions for our clients in less liquid markets (such as mid-cap corporate bonds, emerging market currencies and certain non-agency mortgage-backed securities) for spreads and fees that are generally somewhat larger than those charged in more liquid markets. Additionally, we structure and execute transactions involving customized or tailor-made products that address our clients' risk exposures, investment objectives or other complex needs (such as a jet fuel hedge for an airline), as well as derivative transactions related to client advisory and underwriting activities.

Through our global sales force, we maintain relationships with our clients, receiving orders and distributing investment research, trading ideas, market information and analysis. Much of this connectivity between us and our clients is maintained on technology platforms, including *Marquee*, and operates globally where markets are open for trading. *Marquee* provides institutional investors with market intelligence, risk analytics, proprietary datasets and trade execution across multiple asset classes.

Global Markets and our other businesses are supported by our Global Investment Research division, which, as of December 2019, provided fundamental research on approximately 3,000 companies worldwide and more than 40 national economies, as well as on industries, currencies and commodities.

Global Markets activities are organized by asset class and include both "cash" and "derivative" instruments. "Cash" refers to trading the underlying instrument (such as a stock, bond or barrel of oil). "Derivative" refers to instruments that derive their value from underlying asset prices, indices, reference rates and other inputs, or a combination of these factors (such as an option, which is the right or obligation to buy or sell a certain bond, stock or other asset on a specified date in the future at a certain price, or an interest rate swap, which is the agreement to convert a fixed rate of interest into a floating rate or vice versa).

Global Markets consists of FICC and Equities.

FICC. FICC generates revenues from intermediation and financing activities.

- **FICC intermediation.** Includes client execution activities related to making markets in both trading cash and derivative instruments, as detailed below.

  Interest Rate Products. Government bonds (including inflation-linked securities) across maturities, other government-backed securities, and interest rate swaps, options and other derivatives.

  Credit Products. Investment-grade corporate securities, high-yield securities, credit derivatives, exchange-traded funds (ETFs), bank and bridge loans, municipal securities, emerging market and distressed debt, and trade claims.

  Mortgages. Commercial mortgage-related securities, loans and derivatives, residential mortgage-related securities, loans and derivatives (including U.S. government agency-issued collateralized mortgage obligations and other securities and loans), and other asset-backed securities, loans and derivatives.

  Currencies. Currency options, spot/forwards and other derivatives on G-10 currencies and emerging-market products.

  Commodities. Commodity derivatives and, to a lesser extent, physical commodities, involving crude oil and petroleum products, natural gas, base, precious and other metals, electricity, coal, agricultural and other commodity products.

- **FICC financing.** Includes providing financing to our clients through securities sold under agreements to repurchase (repurchase agreements), as well as through structured credit, warehouse lending (including residential and commercial mortgage lending) and asset-backed lending, which are typically longer term in nature.

Equities. Equities generates revenues from intermediation and financing activities.

- **Equities intermediation.** We make markets in equity securities and equity-related products, including ETFs, convertible securities, options, futures and over-the-counter (OTC) derivative instruments, on a global basis. As a principal, we facilitate client transactions by providing liquidity to our clients, including with large blocks of stocks or derivatives, requiring the commitment of our capital.

We also structure and make markets in derivatives on indices, industry sectors, financial measures and individual company stocks. We develop strategies and provide information about portfolio hedging and restructuring and asset allocation transactions for our clients. We also work with our clients to create specially tailored instruments to enable sophisticated investors to establish or liquidate investment positions or undertake hedging strategies. We are one of the leading participants in the trading and development of equity derivative instruments.

Our exchange-based market-making activities include making markets in stocks and ETFs, futures and options on major exchanges worldwide.

We generate commissions and fees from executing and clearing institutional client transactions on major stock, options and futures exchanges worldwide, as well as OTC transactions. We provide our clients with access to a broad spectrum of equity execution services, including electronic "low-touch" access and more complex "high-touch" execution through both traditional and electronic platforms, including *Marquee*.

- **Equities financing.** Includes prime brokerage and other equities financing activities, including securities lending, margin lending and swaps.

  We earn fees by providing clearing, settlement and custody services globally. In addition, we provide our hedge fund and other clients with a technology platform and reporting that enables them to monitor their security portfolios and manage risk exposures.

  We provide services that principally involve borrowing and lending securities to cover institutional clients' short sales and borrowing securities to cover our short sales and otherwise to make deliveries into the market. In addition, we are an active participant in broker-to-broker securities lending and third-party agency lending activities.

  We provide financing to our clients for their securities trading activities through margin loans that are collateralized by securities, cash or other acceptable collateral. We earn a spread equal to the difference between the amount we pay for funds and the amount we receive from our client.

  We execute swap transactions to provide our clients with exposure to securities and indices.

Asset Management

Asset Management provides investment services to help clients preserve and grow their financial assets. We provide these services to our institutional clients, as well as investors who primarily access our products through a network of third-party distributors around the world.

We manage client assets across a broad range of investment strategies and asset classes, including equity, fixed income and alternative investments. Alternative investments primarily includes hedge funds, credit funds, private equity, real estate, currencies, commodities and asset allocation strategies. Our investment offerings include those managed on a fiduciary basis by our portfolio managers, as well as strategies managed by third-party managers. We offer our investments in a variety of structures, including separately managed accounts, mutual funds, private partnerships and other commingled vehicles.

We also provide customized investment advisory solutions designed to address our clients' investment needs. These solutions begin with identifying clients' objectives and continue through portfolio construction, ongoing asset allocation and risk management and investment realization. We draw from a variety of third-party managers, as well as our proprietary offerings, to implement solutions for clients.

Asset Management generates revenues from the following:

- **Management and Other Fees.** The majority of revenues in management and other fees consists of asset-based fees on client assets that we manage. The fees that we charge vary by asset class, distribution channel and the type of services provided, and are affected by investment performance, as well as asset inflows and redemptions.
- **Incentive Fees.** In certain circumstances, we also receive incentive fees based on a percentage of a fund's or a separately managed account's return, or when the return exceeds a specified benchmark or other performance targets. Such fees include overrides, which consist of the increased share of the income and gains derived primarily from our private equity and credit funds when the return on a fund's investments over the life of the fund exceeds certain threshold returns. Incentive fees are recognized when it is probable that a significant reversal of such fees will not occur.
- **Equity Investments.** Our alternative investing activities relate to public and private equity investments in corporate, real estate and infrastructure entities. We also make investments through consolidated investment entities, substantially all of which are engaged in real estate investment activities.
- **Lending.** We provide financing related to our asset management business and invest in debt securities and loans backed by real estate. These activities include investments in mezzanine debt, senior debt and distressed debt securities.

Consumer & Wealth Management

Consumer & Wealth Management helps clients achieve their individual financial goals by providing a broad range of wealth advisory and banking services, including financial planning, investment management, deposit taking, and lending. Services are offered through our global network of advisors and via our digital platforms.

Wealth Management. Wealth Management provides tailored wealth advisory services to clients across the wealth spectrum. We operate globally serving individuals, families, family offices, and select foundations and endowments. Our relationships are established directly or introduced through corporations that sponsor financial wellness programs for their employees.

We offer personalized financial planning inclusive of income and liability management, compensation and benefits analysis, trust and estate structuring, tax optimization, philanthropic giving, and asset protection. We also provide customized investment advisory solutions, and offer structuring and execution capabilities in security and derivative products across all major global markets. We leverage a broad, open-architecture investment platform and our global execution capabilities to help clients achieve their investment goals. In addition, we offer clients a full range of private banking services, including a variety of deposit alternatives and loans that our clients use to finance investments in both financial and nonfinancial assets, bridge cash flow timing gaps or provide liquidity and flexibility for other needs.

Wealth management generates revenues from the following:

- **Management and other fees.** Includes fees related to managing assets, providing investing and wealth advisory solutions, providing financial planning and counseling services via our subsidiary, The Ayco Company, L.P. and executing brokerage transactions for wealth management clients.
- **Incentive fees.** In certain circumstances, we also receive incentive fees based on a percentage of a fund's return, or when the return exceeds a specified benchmark or other performance targets. Such fees include overrides, which consist of the increased share of the income and gains derived primarily from our private equity and credit funds when the return on a fund's investments over the life of the fund exceeds certain threshold returns. Incentive fees are recognized when it is probable that a significant reversal of such fees will not occur.
- **Private banking and lending.** Includes interest income allocated to deposit-taking and net interest income earned on lending activities for wealth management clients.

Consumer Banking. We engage in consumer-oriented businesses. We issue unsecured loans, through Marcus and credit cards, to finance the purchases of goods or services. We also accept deposits through Marcus, primarily through GS Bank USA and Goldman Sachs International Bank (GSIB). These deposits include savings and time deposits which provide us with a diversified source of funding that reduces our reliance on wholesale funding.

Consumer banking revenues consist of net interest income earned on unsecured loans issued to consumers through Marcus and credit card lending activities, and net interest income allocated to consumer deposits.

Business Continuity and Information Security

Business continuity and information security, including cyber security, are high priorities for us. Their importance has been highlighted by (i) numerous highly publicized events in recent years, including cyber attacks against financial institutions, governmental agencies, large consumer-based companies and other organizations that resulted in the unauthorized disclosure of personal information and other sensitive or confidential information, the theft and destruction of corporate information and requests for ransom payments, and (ii) extreme weather events.

Our Business Continuity & Technology Resilience Program has been developed to provide reasonable assurance of business continuity in the event of disruptions at our critical facilities or of our systems, and to comply with regulatory requirements, including those of FINRA. Because we are a BHC, our Business Continuity & Technology Resilience Program is also subject to review by the FRB. The key elements of the program are crisis management, business continuity, technology resilience, business recovery, assurance and verification, and process improvement. In the area of information security, we have developed and implemented a framework of principles, policies and technology designed to protect the information provided to us by our clients and our own information from cyber attacks and other misappropriation, corruption or loss. Safeguards are designed to maintain the confidentiality, integrity and availability of information.

Human Capital Management

We believe that a major strength and principal reason for our success is the quality and dedication of our people and the shared sense of being part of a team. We strive to maintain a work environment that fosters professionalism, excellence, diversity, cooperation among our employees worldwide and high standards of business ethics.

Instilling our culture in all employees is a continuous process, in which training plays an important part. All employees are offered the opportunity to participate in education and periodic seminars that we sponsor at various locations throughout the world. Another important part of instilling our culture is our employee review process. Employees are reviewed by supervisors, co-workers and employees they supervise in a 360-degree review process that is integral to our team approach, and which includes an evaluation of an employee's performance with respect to risk management, compliance and diversity. As of December 2019, we had headcount of 38,300.

Competition

The financial services industry and all of our businesses are intensely competitive, and we expect them to remain so. Our competitors are other entities that provide investment banking (including transaction banking), market-making, investment management services, and commercial and/or consumer lending and deposit-taking products, as well as those entities that make investments in securities, commodities, derivatives, real estate, loans and other financial assets. These entities include brokers and dealers, investment banking firms, commercial banks, credit card issuers, insurance companies, investment advisers, mutual funds, hedge funds, private equity funds, merchant banks, consumer finance companies and financial technology and other internet-based companies. We compete with some entities globally and with others on a regional, product or niche basis. We compete based on a number of factors, including transaction execution, products and services, innovation, reputation and price.

We have faced, and expect to continue to face, pressure to retain market share by committing capital to businesses or transactions on terms that offer returns that may not be commensurate with their risks. In particular, corporate clients seek such commitments (such as agreements to participate in their loan facilities) from financial services firms in connection with investment banking and other assignments.

Consolidation and convergence have significantly increased the capital base and geographic reach of some of our competitors, and have also hastened the globalization of the securities and other financial services markets. As a result, we have had to commit capital to support our international operations and to execute large global transactions. To take advantage of some of our most significant opportunities, we will have to compete successfully with financial institutions that are larger and have more capital and that may have a stronger local presence and longer operating history outside the U.S.

We also compete with smaller institutions that offer more targeted services, such as independent advisory firms. Some clients may perceive these firms to be less susceptible to potential conflicts of interest than we are, and, as described below, our ability to effectively compete with them could be affected by regulations and limitations on activities that apply to us but may not apply to them.

A number of our businesses are subject to intense price competition. Efforts by our competitors to gain market share have resulted in pricing pressure in our investment banking, market-making and asset management businesses. For example, the increasing volume of trades executed electronically, through the internet and through alternative trading systems, has increased the pressure on trading commissions, in that commissions for electronic trading are generally lower than those for non-electronic trading. It appears that this trend toward low-commission trading will continue. Price competition has also led to compression in the difference between the price at which a market participant is willing to sell an instrument and the price at which another market participant is willing to buy it (i.e., bid/offer spread), which has affected our market-making businesses. In addition, we believe that we will continue to experience competitive pressures in these and other areas in the future as some of our competitors seek to obtain market share by further reducing prices, and as we enter into or expand our presence in markets that may rely more heavily on electronic trading and execution.

We also compete on the basis of the types of financial products that we and our competitors offer. In some circumstances, our competitors may offer financial products that we do not offer and that our clients may prefer.

The provisions of the U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act), the requirements promulgated by the Basel Committee on Banking Supervision (Basel Committee) and other financial regulations could affect our competitive position to the extent that limitations on activities, increased fees and compliance costs or other regulatory requirements do not apply, or do not apply equally, to all of our competitors or are not implemented uniformly across different jurisdictions. For example, the provisions of the Dodd-Frank Act that prohibit proprietary trading and restrict investments in certain hedge and private equity funds differentiate between U.S.-based and non-U.S.-based banking organizations and give non-U.S.-based banking organizations greater flexibility to trade outside of the U.S. and to form and invest in funds outside the U.S.

Likewise, the obligations with respect to derivative transactions under Title VII of the Dodd-Frank Act depend, in part, on the location of the counterparties to the transaction. The impact of the Dodd-Frank Act and other regulatory developments on our competitive position has depended and will continue to depend to a large extent on the manner in which the required rulemaking and regulatory guidance evolve, the extent of international convergence, and the development of market practice and structures under the new regulatory regimes, as described further in "Regulation" below.

We also face intense competition in attracting and retaining qualified employees. Our ability to continue to compete effectively has depended and will continue to 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. Our pay practices and those of certain of our competitors are subject to review by, and the standards of, the FRB and other regulators inside and outside the U.S., including the Prudential Regulation Authority (PRA) and the Financial Conduct Authority (FCA) in the U.K. We also compete for employees with institutions whose pay practices are not subject to regulatory oversight. See "Regulation — Compensation Practices" and "Risk Factors — Our businesses may be adversely affected if we are unable to hire and retain qualified employees" in Part I, Item 1A of this Form 10-K for further information about such regulation.

Regulation

As a participant in the global financial services industry, we are subject to extensive regulation and supervision worldwide. The regulatory regimes applicable to our operations worldwide have recently been, and continue to be, subject to significant changes. The Basel Committee is the primary global standard setter for prudential bank regulation; however, its standards do not become effective in a jurisdiction until the relevant regulators have adopted rules to implement its standards. The implications of these regulations for our businesses depend to a large extent on their implementation by the relevant regulators globally, and the market practices and structures that develop.

New regulations 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.

Our principal subsidiaries operating in Europe, Goldman Sachs International (GSI), GSIB and Goldman Sachs Asset Management International (GSAMI), are incorporated and headquartered in the U.K. As a result of the U.K.'s withdrawal from the E.U. (Brexit), we expect considerable change in the regulatory framework that will govern transactions and business undertaken by our U.K. subsidiaries.

The E.U. and the U.K. agreed to a withdrawal agreement (the Withdrawal Agreement), which became effective on January 31, 2020 when the U.K. ceased to be an E.U. member state. The transition period under the Withdrawal Agreement will last until the end of December 2020 and the U.K. Government has stated that it does not intend to agree to an extension to this period. During the transition period, the U.K. will be treated as if it were a member state of the E.U. and therefore our U.K. subsidiaries will still benefit from non-discriminatory access to E.U. clients and infrastructure. At the end of the transition period, firms established in the U.K., including our U.K. subsidiaries, are expected to lose their pan-E.U. "passports" and generally to be treated like entities in countries outside the E.U., whose access to the E.U. is governed by E.U. and national law and may depend on the making of E.U. equivalence decisions or on their obtaining licenses or exemptions under national regimes, subject to any other arrangements such as a free trade agreement. After the end of the transition period, the U.K. will not be required to continue to apply E.U. financial services legislation and may not adopt rules that correspond to E.U. legislation not already operative in the U.K. by then (such as some parts of the 2019 E.U. capital requirements regulation). We have strengthened the capabilities of our operating subsidiaries in the remaining E.U. countries, particularly Goldman Sachs Bank Europe SE (GSBE), our German bank subsidiary, and have started to move certain activities there.

Banking Supervision and Regulation

Group Inc. is a BHC under the U.S. Bank Holding Company Act of 1956 (BHC Act) and an FHC under amendments to the BHC Act effected by the U.S. Gramm-Leach-Bliley Act of 1999 (GLB Act), and is subject to supervision and examination by the FRB, which is our primary regulator.

The FRB has a rating system for large financial institutions that is intended to align with its supervisory program. It consists of component ratings for capital planning and positions, liquidity risk management and positions, and governance and controls. The FRB has proposed guidance for the governance and controls component.

Under the system of "functional regulation" established under the BHC Act, the primary regulators of our U.S. non-bank subsidiaries directly regulate the activities of those subsidiaries, with the FRB exercising a supervisory role. Such "functionally regulated" subsidiaries include broker-dealers registered with the SEC, such as our principal U.S. broker-dealer, Goldman Sachs & Co. LLC (GS&Co.), entities registered with or regulated by the CFTC with respect to futures-related and swaps-related activities and investment advisers registered with the SEC with respect to their investment advisory activities.

Our principal U.S. bank subsidiary, GS Bank USA, is supervised and regulated by the FRB, the FDIC, the New York State Department of Financial Services (NYDFS) and the Consumer Financial Protection Bureau (CFPB). A number of our activities are conducted partially or entirely through GS Bank USA and its subsidiaries, including: bank loans (including leveraged lending); personal loans and mortgages; credit cards; interest rate, credit, currency and other derivatives; deposit-taking; and agency lending.

Certain of our subsidiaries are regulated by the banking and securities regulatory authorities of the countries in which they operate. As described below, our E.U. subsidiaries, including our U.K. subsidiaries during the Brexit transition period, are subject to various European regulations, as well as national laws, which to some extent implement European directives.

GSI, our U.K. broker-dealer subsidiary and a designated investment firm, and GSIB, our U.K. bank subsidiary, are regulated by the PRA and the FCA. GSI provides broker-dealer services in and from the U.K., and GSIB acts as a primary dealer for European government bonds and is involved in lending (including securities lending) and deposit-taking activities. GSBE, our German bank subsidiary, is primarily regulated by the ECB within the context of the European Single Supervisory Mechanism. Goldman Sachs Paris Inc. et Cie., an investment firm primarily regulated by the French Prudential Supervision and Resolution Authority, may, among other activities, conduct activities that GSBE, as a bank subsidiary, is prevented from undertaking.

Capital and Liquidity Requirements. We and GS Bank USA are subject to 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's framework for strengthening the regulation, supervision and risk management of banks (Basel III) and also implements certain provisions of the Dodd-Frank Act. Under the tailoring rules adopted by the U.S. federal bank regulatory agencies in October 2019, we and GS Bank USA are subject to "Category I" standards because we have been designated as a global systemically important bank (G-SIB). Accordingly, under the Capital Framework, we and GS Bank USA are "Advanced approach" banking organizations. Under the FRB's capital adequacy requirements, we and GS Bank USA 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 and GS Bank USA are also subject to liquidity requirements established by the U.S. federal bank regulatory agencies.

GSI and GSIB are subject to capital requirements prescribed in the E.U. Capital Requirements Regulation (CRR) and the E.U. Fourth Capital Requirements Directive (CRD IV), which are largely based on Basel III. GSI and GSIB are subject to liquidity requirements established by U.K. regulatory authorities that are similar to those applicable to GS Bank USA and us.

Amendments to the CRR and CRD IV (respectively, CRR II and CRD V) became effective on June 27, 2019. CRR II will generally begin to apply in June 2021, and E.U. member states are directed to implement CRD V by December 2020.

Risk-Based Capital Ratios. The Capital Framework provides for an additional capital ratio requirement that includes three components: (i) for capital conservation (capital conservation buffer), (ii) for countercyclicality (countercyclical capital buffer) and (iii) as a consequence of our designation as a G-SIB (G-SIB surcharge). The additional capital ratio requirement must be satisfied entirely with capital that qualifies as Common Equity Tier 1 (CET1). GS Bank USA is not subject to the G-SIB surcharge.

The FRB proposed a rule in April 2018 that would, among other things, replace the capital conservation buffer with a stress capital buffer (SCB) requirement for large BHCs subject to the FRB's Comprehensive Capital Analysis and Review (CCAR). See "Regulation — Banking Supervision and Regulation — Stress Tests" for further information about this proposed rule.

The countercyclical capital buffer is designed to counteract systemic vulnerabilities and currently applies only to banking organizations subject to Category I, II or III standards, including us. Several other national supervisors also require countercyclical capital buffers. The G-SIB surcharge and 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.

The U.S. federal bank regulatory agencies adopted a rule in December 2018 that provides 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 through the 2021 stress test cycle. See Note 3 to the consolidated financial statements in Part II, Item 8 of this Form 10-K for further information about CECL.

The U.S. federal bank regulatory agencies adopted a rule in November 2019 that will implement the Basel Committee's standardized approach for measuring counterparty credit risk exposures in connection with derivative contracts (SA-CCR). Under the rule, beginning January 1, 2022, but with the option to adopt starting April 1, 2020, "Advanced approach" banking organizations will 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 supplementary leverage ratios (SLRs) discussed below.

The Basel Committee standards include guidelines for calculating incremental capital ratio requirements for banking institutions that are systemically significant from a domestic but not global perspective (D-SIBs). When these guidelines are implemented by national regulators, they may apply, among others, to certain subsidiaries of G-SIBs. These guidelines are in addition to the framework for G-SIBs, but are more principles-based. CRD V and CRR II provide that institutions that are systemically important at the E.U. or member state level, known as other systemically important institutions (O-SIIs), may be subject to additional capital ratio requirements of up to 3% of CET1, according to their degree of systemic importance (O-SII buffers). The designated authority may impose an O-SII buffer that is greater than 3% in certain cases. CRD IV and the CRR currently provide for an additional requirement of up to 2%. O-SIIs are identified annually, along with their applicable buffers. The PRA has identified Goldman Sachs Group UK Limited (GSG UK), the parent company of GSI and GSIB, as an O-SII. GSG UK's O-SII buffer is currently set at zero percent.

The Basel Committee finalized revisions to the framework in January 2019 for calculating capital requirements for market risk, which is expected to increase market risk capital requirements for most banking organizations. The revised framework, among other things, revises the standardized approach and internal models used 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. CRR II, which became effective in June 2019 and establishes a reporting standard, will require E.U. financial institutions to report their market risk calculations under the revised framework as early as January 1, 2021. The U.S. federal bank regulatory agencies have not yet proposed rules implementing the 2019 version of the revised market risk framework for U.S. financial institutions.

The Basel Committee published standards in December 2017 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 (CVA) 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. In November 2019, the Basel Committee proposed further revisions to the framework for CVA risk.

The Basel Committee has also published updated frameworks relating to Pillar 3 disclosure requirements and the regulatory capital treatment of securitization exposures and a revised G-SIB assessment methodology. The U.S. federal bank regulatory agencies have not yet proposed rules implementing the December 2017 standards for purposes of risk-based capital ratios or the Basel Committee frameworks.

See "Management's Discussion and Analysis of Financial Condition and Results of Operations — Equity Capital Management and Regulatory Capital" in Part II, Item 7 of this Form 10-K and Note 20 to the consolidated financial statements in Part II, Item 8 of this Form 10-K for information about our capital ratios and those of GS Bank USA and GSI.

As described in "Other Restrictions" below, in September 2016, the FRB issued a proposed rule that would, among other things, require FHCs to hold additional capital in connection with covered physical commodity activities.

Leverage Ratios. Under the Capital Framework, we and GS Bank USA are subject to Tier 1 leverage ratios and SLRs established by the FRB. In April 2018, the FRB and the OCC issued a proposed rule which would replace the current 2% SLR buffer for G-SIBs, including us, with a buffer equal to 50% of their G-SIB surcharge. This proposal, together with the adopted rule requiring use of 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 adopted changes in June 2019 to the leverage ratio treatment of client-cleared derivatives and adopted a requirement to publicly disclose daily average balances for certain components of leverage ratio calculations.

The U.S. federal bank regulatory agencies' November 2019 rule implementing SA-CCR similarly allows for greater recognition of collateral in the calculation of total leverage exposure relating to client-cleared derivative contracts.

CRR II establishes a 3% minimum leverage ratio requirement for certain E.U. financial institutions, including GSI and GSIB. This requirement will begin to apply in June 2021.

See "Management's Discussion and Analysis of Financial Condition and Results of Operations — Equity Capital Management and Regulatory Capital" in Part II, Item 7 of this Form 10-K and Note 20 to the consolidated financial statements in Part II, Item 8 of this Form 10-K for information about our and GS Bank USA's Tier 1 leverage ratios and SLRs, and GSI's leverage ratio.

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 both us and GS Bank USA 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. The LCR rule issued by the European Commission and applicable to GSI and GSIB is also generally consistent with the Basel Committee's framework. We are required to maintain a minimum LCR of 100%. We disclose, on a quarterly basis, our average daily LCR. See "Available Information" below and "Management's Discussion and Analysis of Financial Condition and Results of Operations — Equity Capital Management and Regulatory Capital" in Part II, Item 7 of this Form 10-K for information about our average daily 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%.

The U.S. federal bank regulatory agencies issued a proposed rule in May 2016 that would implement the NSFR for large U.S. banking organizations, including us and GS Bank USA, but have not yet released a final rule. CRR II implements the NSFR for certain E.U. financial institutions, including GSG UK, GSI and GSIB during the Brexit transition period.

The FRB's enhanced prudential standards require BHCs with $100 billion or more in total consolidated assets, to comply with enhanced liquidity and overall risk management standards, which include maintaining a level of highly liquid assets based on projected funding needs for 30 days, and increased involvement by boards of directors in liquidity and overall risk management. Although the liquidity requirement under these rules has some similarities to the LCR, it is a separate requirement.

See "Management's Discussion and Analysis of Financial Condition and Results of Operations — Risk Management — Overview and Structure of Risk Management" and "— Liquidity Risk Management" in Part II, Item 7 of this Form 10-K for information about the LCR and NSFR, as well as our risk management practices and liquidity.

Stress Tests. As required by the FRB's CCAR rules, we submit an annual capital plan for review by the FRB. In addition, we are required to perform company-run stress tests on an annual basis. As described in "Available Information" below, we publish summaries of our stress tests results on our website.

Our annual stress test submission is incorporated into the annual capital plans that we submit to the FRB as part of the CCAR process for large BHCs, which is designed to ensure that capital planning processes will permit continued operations by such institutions during times of economic and financial stress. As part of CCAR, the FRB evaluates an institution's plan to make capital distributions, such as by repurchasing or redeeming stock or making dividend payments, across a range of macroeconomic and company-specific assumptions based on the institution's and the FRB's stress tests. If the FRB objects to an institution's capital plan, the institution is generally prohibited from making capital distributions other than those to which the FRB has not objected. In addition, an institution faces limitations on capital distributions to the extent that actual capital issuances are less than the amounts indicated in its capital plan.

The FRB issued a proposed rule in April 2018 to establish stress buffer requirements. Under the proposal, the SCB would replace the static component of the capital conservation buffer. The SCB, subject to a minimum, would reflect stressed losses in the supervisory severely adverse scenario of the FRB's CCAR stress tests and would also include four quarters of planned common stock dividends. The proposal would also introduce a stress leverage buffer requirement, similar to the SCB, which would apply to the Tier 1 leverage ratio. In addition, the proposal would require BHCs to reduce their planned capital distributions if those distributions would not be consistent with the applicable capital buffer constraints based on the BHCs' own baseline scenario projections.

Under rules adopted by the U.S. federal bank regulatory agencies implementing 2018 amendments to the Dodd-Frank Act, depository institutions with total consolidated assets between $100 billion and $250 billion, such as GS Bank USA, are no longer required to conduct annual company-run stress tests. They are still required to have their own capital planning process. GSI and GSIB have their own capital planning and stress testing process, which incorporates internally designed stress tests and those required under the PRA's Internal Capital Adequacy Assessment Process.

Dividends and Stock Repurchases. Dividend payments to our shareholders and our stock repurchases are subject to the oversight of the FRB.

U.S. federal and state laws impose limitations on the payment of dividends by U.S. depository institutions, such as GS Bank USA. In general, the amount of dividends that may be paid by GS Bank USA 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).

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.

Source of Strength. The Dodd-Frank Act requires BHCs to act as a source of strength to their bank subsidiaries and to commit capital and financial resources to support those subsidiaries. This support may be required by the FRB at times when BHCs might otherwise determine not to provide it. Capital loans by a BHC to a subsidiary bank are subordinate in right of payment to deposits and to certain other indebtedness of the subsidiary bank. In addition, if a BHC commits to a U.S. federal banking agency that it will maintain the capital of its bank subsidiary, whether in response to the FRB's invoking its source-of-strength authority or in response to other regulatory measures, that commitment will be assumed by the bankruptcy trustee for the BHC and the bank will be entitled to priority payment in respect of that commitment, ahead of other creditors of the BHC.

Transactions between Affiliates. Transactions between GS Bank USA or its subsidiaries and Group Inc. or its other subsidiaries and affiliates are subject to restrictions under the Federal Reserve Act and regulations issued by the FRB. These laws and regulations generally limit the types and amounts of transactions (such as loans and other credit extensions, including credit exposure arising from repurchase and reverse repurchase agreements, securities borrowing and derivative transactions, from GS Bank USA or its subsidiaries to Group Inc. or its other subsidiaries and affiliates and purchases of assets by GS Bank USA or its subsidiaries from Group Inc. or its other subsidiaries and affiliates) that may take place and generally require those transactions to be on market terms or better to GS Bank USA or its subsidiaries. These laws and regulations generally do not apply to transactions between GS Bank USA and its subsidiaries.

The BHC Act prohibits the FRB from requiring a payment by a BHC subsidiary to a depository institution if the functional regulator of that subsidiary objects to the payment. In that case, the FRB could instead require the divestiture of the depository institution and impose operating restrictions pending the divestiture.

Resolution and Recovery. We are required by the FRB and the FDIC to submit a periodic plan for our rapid and orderly resolution in the event of material financial distress or failure (resolution plan). If the regulators jointly determine that an institution 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 the institution to divest assets or operations, in order to facilitate orderly resolution in the event of failure. We submitted our 2019 resolution plan in June 2019 and the FRB and FDIC did not identify deficiencies or shortcomings. In October 2019, the FRB and FDIC adopted a rule requiring U.S. G-SIBs to submit resolution plans on a two-year cycle (alternating between full and targeted submissions). Our next required submission is a targeted submission by July 1, 2021. See "Risk Factors — The application of Group Inc.'s proposed resolution strategy could result in greater losses for Group Inc.'s security holders" in Part I, Item 1A of this Form 10-K and "Available Information" in Part I, Item 1 of this Form 10-K for further information about our resolution plan.

We are also required by the FRB to submit, on a periodic basis, a global recovery plan that outlines the steps that we could take to reduce risk, maintain sufficient liquidity, and conserve capital in times of prolonged stress.

The FDIC has issued a rule requiring each insured depository institution (IDI) with $50 billion or more in assets, such as GS Bank USA, to provide a resolution plan. Our resolution plan for GS Bank USA must, among other things, demonstrate that it is adequately protected from risks arising from our other entities. GS Bank USA's most recent resolution plan was submitted in June 2018. In April 2019, the FDIC released an advanced notice of proposed rulemaking about potential changes to its resolution planning requirements for IDIs, including GS Bank USA, and delayed the next round of IDI resolution plan submissions until the rulemaking process is complete.

The U.S. federal bank regulatory agencies have adopted rules imposing restrictions on qualified financial contracts (QFCs) entered into by G-SIBs, which became fully effective on January 1, 2020. The 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 Federal Deposit Insurance Act of 1950 (FDIA), described below. 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.

Certain of our subsidiaries, along with those of a number of other major global banking organizations, adhere 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 OLA or the FDIA in the U.S. In addition, certain Group Inc. subsidiaries 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.

The amended E.U. Bank Recovery and Resolution Directive (BRRD II) establishes a framework for the recovery and resolution of financial institutions in the E.U., such as GSI and GSIB during the Brexit transition period. The BRRD II provides national supervisory authorities with tools and powers to pre-emptively address potential financial crises in order to promote financial stability and minimize taxpayers' exposure to losses, such as the power to impose a temporary stay. The BRRD II requires E.U. member states to grant "bail-in" powers to E.U. resolution authorities to recapitalize a failing entity by writing down its unsecured debt or converting its unsecured debt into equity. Financial institutions in the E.U. must provide that contracts recognize those temporary stay and bail-in powers unless doing so would be impracticable. Further, certain U.K. financial institutions, including GSI and GSIB, have been required by the PRA to submit solvent wind-down plans on how they could be wound down in a stressed environment.

Total Loss-Absorbing Capacity (TLAC). The FRB has issued a rule addressing U.S. implementation of the FSB's TLAC principles and term sheet on minimum TLAC requirements for G-SIBs. The rule (i) establishes minimum TLAC requirements, (ii) establishes minimum "eligible long-term debt" (i.e., debt that is unsecured, has a maturity of at least one year from issuance and satisfies certain additional criteria) requirements, (iii) prohibits certain parent company transactions and (iv) caps the amount of parent company liabilities that are not eligible long-term debt.

The rule also prohibits a BHC that has been designated as a U.S. G-SIB from (i) guaranteeing liabilities of subsidiaries that are subject to early termination provisions if the BHC enters into an insolvency or receivership proceeding, 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 subsidiaries; (iii) issuing short-term debt; or (iv) entering into derivatives and certain other financial contracts with external counterparties.

Additionally, the rule caps, at 5% of the value of the parent company's eligible TLAC, the amount of unsecured non-contingent third-party liabilities that are not eligible long-term debt that could rank equally with or junior to eligible long-term debt.

The FRB, the OCC and the FDIC issued a proposed rule in April 2019 that would require "Advanced approach" banking organizations, such as us, to deduct from their own regulatory capital certain investments above thresholds in unsecured debt instruments issued by G-SIBs, including those issued for purposes of satisfying TLAC requirements.

The BRRD II subjects institutions to a minimum requirement for own funds and eligible liabilities (MREL), which is generally consistent with the FSB's TLAC standard. In June 2018, the Bank of England published a statement of policy on internal MREL, which requires a material U.K. subsidiary of an overseas banking group, such as GSI, to meet a minimum internal MREL requirement to facilitate the transfer of losses to its resolution entity, which for GSI is Group Inc. The transitional minimum internal MREL requirement began to phase in from January 1, 2019 and will become fully effective on January 1, 2022. In order to comply with the MREL statement of policy, bail-in triggers have been provided to the Bank of England over certain intercompany regulatory capital and senior debt instruments issued by GSI. These triggers enable the Bank of England to write down such instruments or convert such instruments to equity. The triggers can be exercised by the Bank of England if it determines that GSI has reached the point of non-viability and the FRB and the FDIC have not objected to the bail-in or if Group Inc. enters bankruptcy or similar proceedings.

CRR II and the BRRD II are designed to, among other things, implement the FSB's minimum TLAC requirement for G-SIBs. For example, CRR II requires subsidiaries of a non-E.U. G-SIB that account for more than 5% of its RWAs, operating income or leverage exposure, such as GSG UK, to meet 90% of the TLAC requirement applicable to E.U. G-SIBs.

CRD V requires a non-E.U. group with more than €40 billion of assets in the E.U., such as us, to establish an E.U. intermediate holding company (E.U. IHC) if it has two or more of certain types of E.U. financial institution subsidiaries, including broker-dealers and banks. CRR II requires E.U. IHCs to satisfy MREL requirements and certain other prudential requirements. The directives are subject to implementing rulemakings by E.U. member states, which have not yet occurred.

Insolvency of an IDI or a BHC. Under the FDIA, if the FDIC is appointed as conservator or receiver for an IDI such as GS Bank USA, upon its insolvency or in certain other events, the FDIC has broad powers, including the power:

- To transfer any of the IDI'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 IDI'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 IDI is a party, the performance of which is determined by the FDIC to be burdensome and the repudiation or disaffirmance of which is determined by the FDIC to promote the orderly administration of the IDI.

In addition, the claims of holders of domestic deposit liabilities and certain claims for administrative expenses against an IDI would be afforded a priority over other general unsecured claims, including deposits at non-U.S. branches and claims of debtholders of the IDI, 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 debt obligations of GS Bank USA, the debtholders (other than depositors at U.S. branches) would be treated differently from, and could receive, if anything, substantially less than, the depositors at U.S. branches of GS Bank USA.

The Dodd-Frank Act created a new resolution regime (known as OLA) for BHCs and their affiliates that are systemically important. Under OLA, the FDIC may be appointed as receiver for the systemically important institution and its failed non-bank subsidiaries if, upon the recommendation of applicable regulators, the U.S. Secretary of the Treasury determines, among other things, that the institution is in default or in danger of default, that the institution's failure would have serious adverse effects on the U.S. financial system and that resolution under OLA would avoid or mitigate those effects.

If the FDIC is appointed as receiver under OLA, then the powers of the receiver, and the rights and obligations of creditors and other parties who have dealt with the institution, would be determined under OLA, and not under the bankruptcy or insolvency law that would otherwise apply. The powers of the receiver under OLA were generally based on the powers of the FDIC as receiver for depository institutions under the FDIA.

Substantial differences in the rights of creditors exist between OLA and the U.S. Bankruptcy Code, including the right of the FDIC under OLA to disregard the strict priority of creditor claims in some circumstances, the use of an administrative claims procedure to determine creditors' claims (as opposed to the judicial procedure utilized in bankruptcy proceedings), and the right of the FDIC to transfer claims to a "bridge" entity. In addition, OLA limits the ability of creditors to enforce certain contractual cross-defaults against affiliates of the institution in receivership. The FDIC has issued a notice that it would likely resolve a failed FHC by transferring its assets to a "bridge" holding company under its "single point of entry" or "SPOE" strategy pursuant to OLA.

Deposit Insurance. Deposits at GS Bank USA have the benefit of FDIC insurance up to the applicable limits. The FDIC's Deposit Insurance Fund is funded by assessments on IDIs. GS Bank USA's assessment (subject to adjustment by the FDIC) is currently based on its average total consolidated assets less its average tangible equity during the assessment period, its supervisory ratings and specified forward-looking financial measures used to calculate the assessment rate. In addition, deposits at GSIB are covered by the Financial Services Compensation Scheme up to the applicable limits.

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 GS Bank USA: 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. Ultimately, critically undercapitalized institutions are subject to the appointment of a receiver or conservator, as described in "Insolvency of an IDI or a BHC" above.

The prompt corrective action regulations do not apply to BHCs. However, the FRB is authorized to take appropriate action at the BHC level, based upon the undercapitalized status of the BHC's depository institution subsidiaries. In certain instances, relating to an undercapitalized depository institution subsidiary, the BHC would be required to guarantee the performance of the undercapitalized subsidiary's capital restoration plan and might be liable for civil money damages for failure to fulfill its commitments on that guarantee. Furthermore, in the event of the bankruptcy of the BHC, the guarantee would take priority over the BHC's general unsecured creditors, as described in "Source of Strength" above.

Volcker Rule and Other Restrictions on Activities. As a BHC, we are subject to limitations on the types of business activities we may engage in.

Volcker Rule. The Volcker Rule prohibits "proprietary trading," but permits activities such as underwriting, market making and risk-mitigation hedging, 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. It also limits certain types of transactions between us and our sponsored and advised funds, similar to the limitations on transactions between depository institutions and their affiliates. Covered funds include our private equity funds, certain of our credit and real estate funds, our hedge funds and certain other investment structures. The limitation on investments in covered funds requires us to limit our investment in each such fund to 3% or less of the fund's net asset value, and to limit our aggregate investment in all such funds to 3% or less of our Tier 1 capital.

The FRB has extended the conformance period to July 2022 for our investments in, and relationships with, certain legacy "illiquid funds" (as defined in the Volcker Rule) that were in place prior to December 2013. See Note 8 to the consolidated financial statements in Part II, Item 8 of this Form 10-K for further information about our investments in such funds.

The FRB, OCC, FDIC, CFTC and SEC (Volcker Rule regulators) finalized amendments in October 2019 to their regulations implementing the Volcker Rule, tailoring compliance requirements based on the size and scope of a banking entity's trading activities and clarifying and amending certain definitions, requirements and exemptions. These amendments became effective on January 1, 2020 but with a required compliance date of January 1, 2021. In January 2020, the Volcker Rule regulators issued a proposal to clarify and amend certain definitions, requirements and exemptions with respect to covered funds. The ultimate impact of any amendments to the Volcker Rule regulations will depend on, among other things, further rulemaking and implementation guidance from the Volcker Rule regulators.

Other Restrictions. FHCs generally can engage in a broader range of financial and related activities than are otherwise permissible for BHCs as long as they continue to meet the eligibility requirements for FHCs. The broader range of permissible activities for FHCs includes underwriting, dealing and making markets in securities and making investments in non-FHCs (merchant banking activities). In addition, certain FHCs are permitted to engage in certain commodities activities in the U.S. that may otherwise be impermissible for BHCs, so long as the assets held pursuant to these activities do not equal 5% or more of their consolidated assets.

The FRB, however, has the authority to limit an FHC's ability to conduct activities that would otherwise be permissible, and will likely do so if the FHC does not satisfactorily meet certain requirements of the FRB. For example, if an FHC or any of its U.S. depository institution subsidiaries ceases to maintain its status as well-capitalized or well-managed, the FRB may impose corrective capital and/or managerial requirements, as well as additional limitations or conditions. If the deficiencies persist, the FHC may be required to divest its U.S. depository institution subsidiaries or to cease engaging in activities other than the business of banking and certain closely related activities.

If any IDI subsidiary of an FHC fails to maintain at least a "satisfactory" rating under the Community Reinvestment Act, the FHC would be subject to restrictions on certain new activities and acquisitions.

In addition, we are required to obtain prior FRB approval before engaging in certain banking and other financial activities both within and outside the U.S.

The FRB issued a proposed rule in September 2016 which, if adopted, would impose new requirements on the physical commodity activities and certain merchant banking activities of FHCs. The proposed rule would, among other things, (i) require FHCs to hold additional capital in connection with covered physical commodity activities, including merchant banking investments in companies engaged in physical commodity activities; (ii) tighten the quantitative limits on permissible physical trading activity; and (iii) establish new public reporting requirements on the nature and extent of an FHC's physical commodity holdings and activities. In addition, in a September 2016 report, the FRB recommended that Congress repeal (i) the authority of FHCs to engage in merchant banking activities; and (ii) the authority described above for certain FHCs to engage in certain otherwise impermissible commodities activities.

Effective January 1, 2020, U.S. G-SIBs, like us, are required to comply with a rule regarding single counterparty credit limits, which imposes more stringent requirements for credit exposures among major financial institutions. In addition, the FRB has proposed early remediation requirements, which are modeled on the prompt corrective action regime, described in "Prompt Corrective Action" above, but are designed to require action to begin in earlier stages of a company's financial distress, based on a range of triggers, including capital and leverage, stress test results, liquidity and risk management.

The New York State banking law imposes lending limits (which take into account credit exposure from derivative transactions) and other requirements that could impact the manner and scope of GS Bank USA's activities.

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.

Broker-Dealer and Securities Regulation

Our broker-dealer subsidiaries are subject to regulations that cover all aspects of the securities business, including sales methods, trade practices, use and safekeeping of clients' funds and securities, capital structure, record-keeping, the financing of clients' purchases, and the conduct of directors, officers and employees. In the U.S., the SEC is the federal agency responsible for the administration of the federal securities laws. GS&Co. is registered as a broker-dealer, a municipal advisor and an investment adviser with the SEC and as a broker-dealer in all 50 states and the District of Columbia. U.S. self-regulatory organizations, such as FINRA and the NYSE, adopt rules that apply to, and examine, broker-dealers such as GS&Co.

U.S. state securities and other U.S. regulators also have regulatory or oversight authority over GS&Co. Similarly, our businesses are also subject to regulation by various non-U.S. governmental and regulatory bodies and self-regulatory authorities in virtually all countries where we have offices, as described further below, as well as in "Other Regulation." For a description of net capital requirements applicable to GS&Co., see "Management's Discussion and Analysis of Financial Condition and Results of Operations — Equity Capital Management and Regulatory Capital — U.S. Regulated Broker-Dealer Subsidiaries" in Part II, Item 7 of this Form 10-K.

In Europe, we provide broker-dealer services, including through GSI, that are subject to oversight by national regulators. These services are regulated in accordance with national laws, many of which implement E.U. directives, and, increasingly, by directly applicable E.U. regulations. These national and E.U. laws require, among other things, compliance with certain capital adequacy standards, customer protection requirements and market conduct and trade reporting rules. Certain of our European subsidiaries are also regulated by the securities, derivatives and commodities exchanges of which they are members.

Goldman Sachs Japan Co., Ltd. (GSJCL), our regulated Japanese broker-dealer, is subject to capital requirements imposed by Japan's Financial Services Agency. GSJCL is also regulated by the Tokyo Stock Exchange, the Osaka Exchange, the Tokyo Financial Exchange, the Japan Securities Dealers Association, the Tokyo Commodity Exchange, the Securities and Exchange Surveillance Commission, the Bank of Japan and the Ministry of Finance, among others.

The Securities and Futures Commission in Hong Kong, the Monetary Authority of Singapore, the China Securities Regulatory Commission, the Korean Financial Supervisory Service, the Reserve Bank of India, the Securities and Exchange Board of India, the Australian Securities and Investments Commission and the Australian Securities Exchange, among others, regulate various of our subsidiaries and also have capital standards and other requirements comparable to the rules of the SEC.

Our exchange-based market-making activities are subject to extensive regulation by a number of securities exchanges. As a market maker on exchanges, we are required to maintain orderly markets in the securities to which we are assigned.

In the E.U., MiFID II includes extensive market structure reforms, such as the establishment of new trading venue categories for the purposes of discharging the obligation to trade OTC derivatives on a trading platform and enhanced pre- and post-trade transparency covering a wider range of financial instruments. In equities, MiFID II introduced volume caps on non-transparent liquidity trading for trading venues, limited the use of broker-dealer crossing networks and created a new regime for systematic internalizers, which are investment firms that execute client transactions outside a trading venue. Additional control requirements were introduced for algorithmic trading, high frequency trading and direct electronic access. Commodities trading firms are required to calculate their positions and adhere to specific limits. Other reforms introduced enhanced transaction reporting, the publication of best execution data by investment firms and trading venues, transparency on costs and charges of service to investors, changes to the way investment managers can pay for the receipt of investment research and mandatory unbundling for broker-dealers between execution and other major services.

The SEC adopted a rule in June 2019 that requires broker-dealers to act in the best interest of their customers, and also issued an interpretation clarifying the SEC's views of the existing fiduciary duty owed by investment advisers to their clients. Additionally, the SEC adopted a rule that requires broker-dealers and investment advisers to provide a standardized, short-form disclosure highlighting services offered, applicable standards of conduct, fees and costs, the differences between brokerage and advisory services, and any conflicts of interest. Several states have also proposed adopting uniform fiduciary duty standards applicable to broker-dealers and advisers.

The SEC, FINRA and regulators in various non-U.S. jurisdictions have imposed both conduct-based and disclosure-based requirements with respect to research reports and research analysts and may impose additional regulations.

GS&Co., GS Bank USA and other U.S. subsidiaries are also subject to rules adopted by U.S. 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.

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 U.S. 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. The rules and regulations of various self-regulatory organizations, such as the Chicago Mercantile Exchange, other futures exchanges and the National Futures Association, also govern commodity futures, commodity options and swaps activities.

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. GS&Co. and other subsidiaries, including GS Bank USA, GSI and J. Aron & Company LLC (J. Aron), are registered with the CFTC as swap dealers. In December 2016, the CFTC proposed revised capital regulations for swap dealers 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. Certain of our registered swap dealers will be subject to the CFTC's capital requirements, when they are adopted.

Our affiliates registered as swap dealers are subject to the margin rules issued by the CFTC (in the case of our non-bank swap dealers) and the FRB (in the case of GS Bank USA). The rules for variation margin have become effective, and those for initial margin will phase in through September 2020 depending on certain activity levels of the swap dealer and the relevant counterparty. In contrast to the FRB margin rules, inter-affiliate transactions under the CFTC margin rules are generally exempt from initial margin requirements. The FRB issued proposed rules in September 2019 to conform its margin rules on inter-affiliate transactions to the CFTC's margin rules and to allow initial margin requirements to phase in through September 2021 depending on certain activity levels of the swap dealer and the relevant counterparty. The CFTC issued proposed rules in October 2019 to similarly modify the phase-in of initial margin requirements.

The CFTC has adopted rules relating to cross-border regulation of swaps, and has proposed cross-border business conduct and registration rules. The CFTC has entered into agreements with certain non-U.S. regulators, including in the E.U., regarding the cross-border regulation of derivatives and the mutual recognition of cross-border clearing houses, and has approved substituted compliance with certain non-U.S. regulations, including E.U. regulations, related to certain business conduct requirements and margin rules. The U.S. prudential regulators have not yet made a determination with respect to substituted compliance for transactions subject to non-U.S. margin rules.

Similar types of swap regulation have been proposed or adopted in jurisdictions outside the U.S., including in the E.U. and Japan. For example, the E.U. has established regulatory requirements relating to portfolio reconciliation and reporting, clearing certain OTC derivatives and margining for uncleared derivatives activities under the European Market Infrastructure Regulation.

SEC rules govern the registration and regulation of security-based swap dealers. The SEC adopted a number of rules and rule amendments for security-based swap dealers in 2019, including (i) capital, margin and segregation requirements, (ii) record-keeping, reporting and notification requirements, and (iii) the application of risk mitigation techniques to uncleared portfolios of security-based swaps and the cross-border application of certain security-based swap requirements. The compliance date for these SEC rules, as well as SEC rules addressing registration requirements and business conduct standards, is generally October 2021.

The CFTC has proposed position limit rules that will limit the size of positions in physical 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. Currently, position limits on futures on physical commodities are administered by the relevant exchanges, with the exception of futures on agricultural commodities, which are administered by the CFTC.

J. Aron is authorized by the U.S. Federal Energy Regulatory Commission (FERC) to sell wholesale physical power at market-based rates. As a FERC-authorized power marketer, J. Aron is subject to regulation under the U.S. Federal Power Act and FERC regulations and to the oversight of FERC. As a result of our investing activities, Group Inc. is also an "exempt holding company" under the U.S. Public Utility Holding Company Act of 2005 and applicable FERC rules.

In addition, as a result of our power-related and commodities activities, we are subject to energy, environmental and other governmental laws and regulations, as described in "Risk Factors — Our commodities activities, particularly our physical commodities activities, subject us to extensive regulation and involve certain potential risks, including environmental, reputational and other risks that may expose us to significant liabilities and costs" in Part I, Item 1A of this Form 10-K.

GS&Co. is registered with the CFTC as a futures commission merchant, and several of our subsidiaries, including GS&Co., are registered with the CFTC and act as commodity pool operators and commodity trading advisors. Goldman Sachs Financial Markets, L.P. is registered with the SEC as an OTC derivatives dealer.

Asset Management and Wealth Management Regulation

Our asset management and wealth management businesses are subject to extensive oversight by regulators around the world relating to, among other things, the safeguarding of client assets, offerings of funds, marketing activities, transactions among affiliates and our management of client funds.

Certain of our European subsidiaries, including GSAMI, are subject to the Alternative Investment Fund Managers Directive and related regulations, which govern the approval, organizational, marketing and reporting requirements of E.U.-based alternative investment managers and the ability of alternative investment fund managers located outside the E.U. to access the E.U. market.

Consumer Regulation

Our U.S. consumer-oriented activities are subject to extensive oversight by federal and state regulators. These businesses are subject to supervision and regulation by the CFPB with respect to federal consumer protection laws, including laws relating to fair lending and the prohibition of unfair, deceptive or abusive acts or practices in connection with the offer, sale or provision of consumer financial products and services. Our consumer-oriented businesses are also subject to various state and local consumer protection laws. These laws, rules and regulations, among other things, impose obligations relating to our marketing, origination, servicing and collections activity in our consumer businesses. Our U.K. consumer deposit-taking activities are subject to U.K consumer protection regulations.

Compensation Practices

Our compensation practices are subject to oversight by the FRB and, with respect to some of our subsidiaries and employees, by other regulatory bodies worldwide.

The FSB has released standards for local regulators to implement certain compensation principles for banks and other financial companies designed to encourage sound compensation practices. 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 and SEC, to adopt rules on incentive-based payment arrangements at specified regulated entities having at least $1 billion in total assets. The U.S. financial regulators proposed revised rules in 2016, which have not been finalized.

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

In the E.U., the CRR and CRD IV include compensation provisions designed to implement the FSB's compensation standards. These rules have been implemented by E.U. member states and, among other things, limit the ratio of variable to fixed compensation of certain employees, including those identified as having a material impact on the risk profile of E.U.-regulated entities, including GSI. CRR II and CRD V amend certain aspects of these rules, including, among other things, by increasing minimum compensation deferral periods.

The E.U. has also introduced rules regulating compensation for certain persons providing services to certain investment funds. These requirements are in addition to the guidance issued by U.S. financial regulators and the Dodd-Frank Act provision, each as described above.

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 and financial transparency laws and mandates 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. Anti-money laundering laws outside the U.S. contain some similar provisions.

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 financial institutions to identify their 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.

Privacy and Cyber Security Regulation

Certain of our businesses are subject to laws and regulations enacted by U.S. federal and state governments, the E.U. or other non-U.S. jurisdictions and/or enacted by various regulatory organizations or exchanges relating to the privacy of the information of clients, employees or others, including the GLB Act, the E.U.'s General Data Protection Regulation (GDPR), the Japanese Personal Information Protection Act, the Hong Kong Personal Data (Privacy) Ordinance, the Australian Privacy Act and the Brazilian Bank Secrecy Law. 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, California and several other states have recently enacted, or are actively considering, consumer privacy laws that impose compliance obligations with regard to the collection, use and disclosure of personal information.

The NYDFS also requires financial institutions regulated by the NYDFS, including GS Bank USA, 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.

Information about our Executive Officers

Set forth below are the name, age, present title, principal occupation and certain biographical information for the executive officers who have been appointed by, and serve at the pleasure of, Group Inc.'s Board of Directors (Board).

Sheara Fredman, 44
Ms. Fredman has been Controller and Chief Accounting Officer since November 2019. She had previously served as Head of Regulatory Controllers from September 2017 and, prior to that, she had served as Global Product Controller.

Elizabeth M. Hammack, 48
Ms. Hammack has been Global Treasurer since January 2018. She had previously served as Global Head of Short Term Macro Trading and Global Repo Trading from August 2015 to January 2018. Prior to that, she was Co-Head of U.S. Interest Rate Products Cash Trading from January 2011 to August 2015.

Brian J. Lee, 53
Mr. Lee has been Chief Risk Officer since November 2019. He had previously served as Controller and Chief Accounting Officer from March 2017 and, prior to that, he had served as Deputy Controller from 2014.

John F.W. Rogers, 63
Mr. Rogers has been an Executive Vice President since April 2011 and Chief of Staff and Secretary to the Board since December 2001.

Stephen M. Scherr, 55
Mr. Scherr has been Chief Financial Officer since November 2018. He had previously served as Chief Executive Officer of Goldman Sachs Bank USA from May 2016, and Head of the Consumer & Commercial Banking Division from 2016 to 2018. From June 2014 to November 2017, he was Chief Strategy Officer, and from 2011 to 2016 he was Head of the Latin America business. He was also Global Head of the Financing Group from 2008 to 2014.

Karen P. Seymour, 58
Ms. Seymour has been an Executive Vice President, General Counsel and Secretary since January 2018. Since January 2019, she has been Head of the Legal Division and was previously Co-Head of the Legal Division from January 2018 to January 2019. From 2000 through January 2002 and 2005 through 2017, she was a partner at Sullivan & Cromwell LLP, a global law firm, including serving as a member of its management committee from April 2015 to December 2017, and as the co-managing partner of its litigation group from December 2012 to April 2015.

David M. Solomon, 58
Mr. Solomon has been Chairman of the Board since January 2019 and Chief Executive Officer and a director since October 2018. He had previously served as President and Chief or Co-Chief Operating Officer from January 2017 and Co-Head of the Investment Banking Division from July 2006 to December 2016.

Laurence Stein, 52
Mr. Stein has been Chief Administrative Officer since January 2018. He had previously served as Global Head of the Operations Division from October 2015 to December 2017. From August 2009 to October 2015, he was Chief Operating Officer of the Securities Division.

John E. Waldron, 50
Mr. Waldron has been President and Chief Operating Officer since October 2018. He had previously served as Co-Head of the Investment Banking Division from December 2014. Prior to that he was Global Head of Investment Banking Services/Client Coverage for the Investment Banking Division and had oversight of the Investment Banking Services Leadership Group, and from 2007 to 2009 was Global Co-Head of the Financial Sponsors Group.

Available Information

Our internet address is www.goldmansachs.com and the investor relations section of our website is located at www.goldmansachs.com/investor-relations, where we make available, free of charge, our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act, as well as proxy statements, as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. Also posted on our website, and available in print upon request of any shareholder to our Investor Relations Department (Investor Relations), are our certificate of incorporation and by-laws, charters for our Audit, Risk, Compensation, Corporate Governance and Nominating, and Public Responsibilities Committees, our Policy Regarding Director Independence Determinations, our Policy on Reporting of Concerns Regarding Accounting and Other Matters, our Corporate Governance Guidelines and our Code of Business Conduct and Ethics governing our directors, officers and employees. Within the time period required by the SEC, we will post on our website any amendment to the Code of Business Conduct and Ethics and any waiver applicable to any executive officer, director or senior financial officer.

Our website also includes information about (i) purchases and sales of our equity securities by our executive officers and directors; (ii) disclosure relating to certain non-GAAP financial measures (as defined in the SEC's Regulation G) that we may make public orally, telephonically, by webcast, by broadcast or by other means; (iii) DFAST results; (iv) the public portion of our resolution plan submission; (v) our Pillar 3 disclosure; and (vi) our average daily LCR.

Investor Relations can be contacted at The Goldman Sachs Group, Inc., 200 West Street, 29th Floor, New York, New York 10282, Attn: Investor Relations, telephone: 212-902-0300, e-mail: gs-investor-relations@gs.com. We use our website, our Twitter account (twitter.com/GoldmanSachs), our Instagram account (instagram.com/GoldmanSachs) and other social media channels as additional means of disclosing public information to investors, the media and others. Our officers may use similar social media channels to disclose public information. It is possible that certain information we or our officers post on our website and on social media could be deemed material, and we encourage investors, the media and others interested in Goldman Sachs to review the business and financial information we or our officers post on our website and on the social media channels identified above. The information on our website and those social media channels is not incorporated by reference into this Form 10-K.

Cautionary Statement Pursuant to the U.S. Private Securities Litigation Reform Act of 1995

We have included in this Form 10-K, and our management may make, statements that may constitute "forward-looking statements" within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. Forward-looking statements are not historical facts or statements of current conditions, but instead represent only our beliefs regarding future events, many of which, by their nature, are inherently uncertain and outside our control.

These statements may relate to, among other things, (i) our future plans and results, including our target ROE, ROTE, efficiency ratio and CET1 capital ratio, and how they can be achieved, (ii) various legal proceedings, governmental investigations or other contingencies as set forth in Notes 27 and 18 to the consolidated financial statements in Part II, Item 8 of this Form 10-K, (iii) the results of stress tests, (iv) the objectives and effectiveness of our business continuity plan, information security program, risk management and liquidity policies, (v) our resolution plan and resolution strategy and their implications for stakeholders, (vi) the design and effectiveness of our resolution capital and liquidity models and triggers and alerts framework, (vii) trends in or growth opportunities for our businesses, including the timing and benefits of business and strategic initiatives and changes in and the importance of the efficiency ratio, (viii) the effect of changes to regulations, as well as our future status, activities or reporting under banking and financial regulation, (ix) our NSFR and SCB, (x) our level of future compensation expense as a percentage of operating expenses, (xi) our investment banking transaction backlog, (xii) our expected tax rate, (xiii) our proposed capital actions (including those permitted by our CCAR 2019 capital plan), (xiv) our expected interest income, (xv) our credit exposures, (xvi) our expected provisions for credit losses, (xvii) our preparations for Brexit, including a hard Brexit scenario, (xviii) the replacement of LIBOR and other IBORs and our program for the transition to alternative risk-free reference rates, (xix) the adequacy of our allowance for credit losses, (xx) the projected growth of our deposits and associated interest expense savings, (xxi) the projected growth of our consumer loan and credit card businesses, (xxii) our business initiatives, including those related to transaction banking and new consumer financial products, (xxiii) our expense savings initiatives and increasing use of strategic locations, (xxiv) our planned 2020 parent vanilla debt issuances, (xxv) the amount of GCLA we expect to hold, (xxvi) our expected G-SIB surcharge and (xxvii) expenses we may incur, including future litigation expense and those associated with investing in our consumer lending, credit card and transaction banking businesses.

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 in these forward-looking statements. Important factors that could cause our results, financial condition and capital actions to differ from those in these statements include, among others, those described below and in "Risk Factors" in Part I, Item 1A of this Form 10-K.

Statements about our investment banking transaction backlog are subject to the risk that such transactions may be modified or may not be completed at all and related net revenues may not be realized or may be materially less than expected. Important factors that could have such a result include, for underwriting transactions, a decline or weakness in general economic conditions, outbreak of hostilities, volatility in the securities markets or an adverse development with respect to the issuer of the securities and, for financial advisory transactions, a decline in the securities markets, an inability to obtain adequate financing, an adverse development with respect to a party to the transaction or a failure to obtain a required regulatory approval. For information about other important factors that could adversely affect our investment banking transactions, see "Risk Factors" in Part I, Item 1A of this Form 10-K.

Statements about our future effective income tax rate are subject to the risk that it may differ from the anticipated rate indicated in such statements, possibly materially, due to, among other things, changes in our earnings mix, our profitability and entities in which we generate profits, the assumptions we have made in forecasting our expected tax rate, as well as guidance that may be issued by the U.S. Internal Revenue Service.

Statements about our NSFR and SCB are based on our current interpretation and expectations of the relevant proposals, and reflect significant assumptions about how our NSFR and SCB are calculated. Our actual NSFR and SCB will depend on the final rules and, for the SCB, the results of the applicable supervisory stress tests, and the methods used to calculate our NSFR and SCB may differ, possibly materially, from those used to calculate our NSFR and SCB for future disclosures.

Statements about the level of compensation expense, including as a percentage of operating expenses, and our efficiency ratio as our platform business initiatives reach scale are subject to the risks that the compensation and other costs to operate our businesses, including platform initiatives, may be greater than currently expected.

Statements about our expected provisions for credit losses are subject to the risk that actual credit losses may differ and our expectations may change, possibly materially, from that currently anticipated due to, among other things, changes to the composition of our loan portfolio and changes in the economic environment in future periods and our forecasts of future economic conditions, as well as changes in our models, policies and other management judgments.

Statements about the projected growth of our deposits and associated interest expense savings, and our consumer loan and credit card businesses, are subject to the risk that actual growth may differ, possibly materially, from that currently anticipated due to, among other things, changes in interest rates and competition from other similar products.

Statements about our target ROE, ROTE, efficiency ratio, and expense savings, and how they can be achieved, are based on our current expectations regarding our business prospects and are subject to the risk that we may be unable to achieve our targets due to, among other things, changes in our business mix, lower profitability of new business initiatives, increases in technology and other costs to launch and bring new business initiatives to scale, and increases in liquidity requirements.

Statements about our target ROE, ROTE and CET1 capital ratio, and how they can be achieved, are based on our current expectations regarding the capital requirements applicable to us and are subject to the risk that our actual capital requirements may be higher than currently anticipated because of, among other factors, changes in the regulatory capital requirements applicable to us resulting from changes in regulations or the interpretation or application of existing regulations or changes in the nature and composition of our activities.

Statements about the timing, costs and benefits of business and expense savings initiatives, the level and composition of more durable revenues and increases in market share are based on our current expectations regarding our ability to implement these initiatives and actual results may differ, possibly materially, from current expectations due to, among other things, a delay in the timing of these initiatives, increased competition and an inability to reduce expenses and grow businesses with durable revenues.

Statements about planned 2020 parent vanilla debt issuances and the amount of GCLA we expect to hold are subject to the risk that actual issuances and GCLA levels may differ, possibly materially, from that currently expected due to changes in market conditions, business opportunities or our funding and projected liquidity needs.

Item 1A. Risk Factors

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

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

Our businesses, by their nature, do not produce predictable earnings, and all of our businesses are materially affected by conditions in the global financial markets and economic conditions generally, both directly and through their impact on client activity levels and creditworthiness. These conditions can change suddenly and negatively.

Our financial performance is highly dependent on the environment in which our businesses operate. A favorable business environment is generally characterized by, among other factors, high global gross domestic product growth, regulatory and market conditions that 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: declines in economic growth, business activity or investor, business or consumer 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; 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; the imposition of tariffs or other limitations on international trade and travel; outbreaks of domestic or international tensions or hostilities, terrorism, nuclear proliferation, cyber security 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 securities and other financial markets have been materially and adversely affected in the past by significant declines in the values of nearly all asset classes, by a serious lack of liquidity and by high levels of borrower defaults. In addition, concerns about European sovereign debt risk and its impact on the European banking system, the impact of Brexit, the imposition of tariffs and actions taken by other countries in response, and changes in interest rates and other market conditions or actual changes in interest rates and other market conditions, have resulted, at times, in significant volatility while negatively impacting the levels of client activity.

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, has in the past negatively impacted client activity, which can adversely affect many of our businesses. 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 businesses.

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.

Our revenues and profitability and those of our competitors have been and will continue to be impacted by requirements relating to capital, additional loss-absorbing capacity, 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.

Our businesses and those of our clients are subject to extensive and pervasive regulation around the world.

As a participant in the financial services industry and a systemically important financial institution, we are subject to extensive regulation in jurisdictions around the world. We face the risk of significant intervention by law enforcement, regulatory and taxing authorities, as well as private litigation, in all jurisdictions in which we conduct our businesses. In many cases, our activities have been and may continue to be subject to overlapping and divergent regulation in different jurisdictions. Among other things, as a result of law enforcement authorities, regulators or private parties challenging our compliance with existing laws and regulations, we or our employees have been, and could be, fined, criminally charged or sanctioned; prohibited from engaging in some of our business activities; subjected to limitations or conditions on our business activities, including higher capital requirements; or subjected to new or substantially higher taxes or other governmental charges in connection with the conduct of our businesses or with respect to our employees. These 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 has involved and will, except to the extent that some of these 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 our businesses or those of our clients, including capital, liquidity, leverage, long-term debt, total loss-absorbing capacity and margin requirements, restrictions on leveraged lending or other business practices, reporting requirements, requirements relating to recovery and resolution planning, tax burdens and compensation restrictions, that are imposed on a limited subset of financial institutions (whether 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 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 businesses.

These developments could impact our profitability in the affected jurisdictions, or even make it uneconomic for us to continue to conduct all or certain of our businesses in those jurisdictions, or could cause us to incur significant costs associated with changing our business practices, restructuring our businesses, moving all or certain of our businesses and our employees to other locations or complying with applicable capital requirements, including reducing dividends or share repurchases, liquidating assets or raising capital in a manner that adversely increases our funding costs or otherwise adversely affects our shareholders and creditors.

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 our businesses 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; requirements to reorganize or limit activities in connection with recovery and resolution planning; increased deposit insurance assessments; and increased standards of care for broker-dealers and investment advisers in dealing with clients. The implementation of higher capital requirements, more stringent requirements relating to liquidity, long-term debt and total loss-absorbing capacity and the prohibition on proprietary trading and the sponsorship of, or investment in, covered funds by the Volcker Rule may continue to adversely affect our profitability and competitive position, particularly if these requirements do not apply equally to our competitors or are not implemented uniformly across jurisdictions.

As described in "Business — Regulation — Banking Supervision and Regulation" in Part I, Item 1 of this Form 10-K, our proposed capital actions and capital plan are reviewed by the FRB as part of the CCAR process. If the FRB objects to our proposed capital actions in our capital plan, we could be prohibited from taking some or all of the proposed capital actions, including increasing or paying dividends on common or preferred stock or repurchasing common stock or other capital securities. Our inability to carry out our proposed capital actions could, among other things, prevent us from returning capital to our shareholders and impact our return on equity. Additionally, as a consequence of our designation as a G-SIB, we are subject to the G-SIB buffer. Our G-SIB buffer is updated annually based on financial data from the prior year. Expansion of our businesses, growth in our balance sheet or increased reliance on short-term wholesale funding may result in an increase in our G-SIB buffer and a corresponding increase in our capital requirements.

We are also subject to laws and regulations, such as the GDPR and the California Consumer Privacy Act, 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 businesses are increasingly subject to laws and regulations relating to surveillance, encryption and data on-shoring in the jurisdictions in which we operate. Compliance with these 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 consumer-oriented deposit-taking, lending and credit card businesses, and we expect to expand the product and geographic scope of our offerings. Entering into these businesses 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 these regulations is time-consuming, costly and presents new and increased risks.

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 have also increasingly found liability as a "control person" for activities of entities in which financial institutions or funds controlled by financial institutions have an investment, but which they do not actively manage. In addition, 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 brokerage, clearing, market-making, prime brokerage, investing and other similar activities could increase significantly. To the extent that we have fiduciary obligations in connection with acting as a financial adviser or investment adviser or in other roles for individual, institutional, sovereign or investment fund clients, any breach, or even an alleged breach, of such obligations could have materially negative legal, regulatory and reputational consequences.

For information about the extensive regulation to which our businesses are subject, see "Business — Regulation" in Part I, Item 1 of this Form 10-K.

Our businesses have been and may be adversely affected by declining asset values. This is particularly true for those businesses in which we have net "long" positions, receive fees based on the value of assets managed, or receive or post collateral.

Many of our businesses have net "long" positions in debt securities, loans, derivatives, mortgages, equities (including private equity and real estate) and most other asset classes. These include positions we take when we act as a principal to facilitate our clients' activities, including our exchange-based market-making activities, or commit large amounts of capital to maintain positions in interest rate and credit products, as well as through our currencies, commodities, equities and mortgage-related activities. In addition, we invest in similar asset classes. Substantially all of our investing and market-making positions and a portion of our loans are marked-to-market on a daily basis and declines in asset values directly and immediately impact our earnings, unless we have effectively "hedged" our exposures to those declines.

In certain circumstances (particularly in the case of credit products, including leveraged loans, and private equities or other securities that are not freely tradable or lack established and liquid trading markets), it may not be possible or economic to hedge our 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 have in the past and may in the future 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.

In our exchange-based market-making activities, we are obligated by stock exchange rules to maintain an orderly market, including by purchasing securities in a declining market. In markets where asset values are declining and in volatile markets, this results in losses and an increased need for liquidity.

We receive asset-based management fees based on the value of our clients' portfolios or investment in funds managed by us and, in some cases, we also receive incentive fees based on increases in the value of such investments. Declines in asset values would ordinarily reduce the value of our clients' portfolios or fund assets, which in turn would ordinarily reduce the fees we earn for managing such assets.

We post collateral to support our obligations and receive collateral to support the obligations of our clients and counterparties in connection with our client execution businesses. 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 trading position. An example of such a situation is a "margin call" in connection with a brokerage account. 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 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 the 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. In addition, we have been, and may in the future be, subject to claims 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.

Our businesses have 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, as well as significant declines in the availability of credit, have in the past adversely affected our ability to borrow on a secured and unsecured basis and may do so in the future. We fund ourselves on an unsecured basis by issuing long-term debt, by accepting deposits at our bank subsidiaries, by issuing hybrid financial instruments or by obtaining loans or lines of credit from commercial or other banking entities. We seek to finance many of our assets on a secured basis. Any disruptions in the credit markets may make it harder and more expensive to obtain funding for our businesses. 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 business activities and increase our cost of funding, both of which could reduce our profitability, particularly in our businesses that involve investing, lending and market making.

Our clients engaging in mergers, acquisitions and other types of strategic transactions often rely on access to the secured and unsecured credit markets to finance their transactions. A lack of available credit or an increased cost of credit can adversely affect the size, volume and timing of our clients' merger and acquisition transactions, particularly large transactions, and adversely affect our financial advisory and underwriting businesses.

Our credit businesses have been and may in the future be negatively affected by a lack of liquidity in credit markets. A lack of liquidity reduces price transparency, increases price volatility and decreases transaction volumes and size, all of which can increase transaction risk or decrease the profitability of these businesses.

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. 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 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 those 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 investment banking, client execution, asset management and wealth management businesses have been adversely affected and may in the future be adversely affected by market uncertainty or lack of confidence among investors and CEOs due to general declines in economic activity and other unfavorable economic, geopolitical or market conditions.

Our investment banking business has been, and may in the future be, adversely affected by market conditions. Poor economic conditions and other adverse geopolitical conditions may adversely affect and have in the past adversely affected investor and CEO confidence, resulting in significant industry-wide declines in the size and number of underwritings and of financial advisory transactions, which would likely have an adverse effect on our revenues and our profit margins. In particular, because a significant portion of our investment banking revenues is derived from our participation in large transactions, a decline in the number of large transactions has in the past and would in the future adversely affect our investment banking business.

In certain circumstances, market uncertainty or general declines in market or economic activity may affect our client execution businesses by decreasing levels of overall activity or by decreasing volatility, but at other times market uncertainty and even declining economic activity may result in higher trading volumes or higher spreads or both.

Market uncertainty, volatility and adverse economic conditions, as well as declines in asset values, may cause our clients to transfer their assets out of our funds or other products or their brokerage accounts and result in reduced net revenues, principally in our asset management and wealth management businesses. Even if clients do not withdraw their funds, they may invest them in products that generate less fee income.

Our asset management and wealth management businesses may be affected by the poor investment performance of our investment products or a client preference for products other than those which we offer or for products that generate lower fees.

Poor investment returns in our asset management and wealth management businesses, due to either general market conditions or underperformance (relative to our competitors or to benchmarks) by funds or accounts that we manage or investment products that we design or sell, affects our ability to retain existing assets and to attract new clients or additional assets from existing clients. This could affect the management and incentive fees that we earn on assets under supervision or the commissions and net spreads that we earn for selling other investment products, such as structured notes or derivatives. To the extent that our clients choose to invest in products that we do not currently offer, we will suffer outflows and a loss of management fees. Further, if, due to changes in investor sentiment or the relative performance of certain asset classes or otherwise, clients invest in products that generate lower fees (e.g., passively managed or fixed income products), our asset management and wealth management businesses could be adversely affected.

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. Our risk management process seeks to balance our ability to profit from market-making, investing or lending positions, and underwriting activities, 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, in the course of our activities, we have incurred and may in the future 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, 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 have been and may in the future be exacerbated where other market participants are using risk or trading 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, ineffective testing, or 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 market-making or origination activities or we make investments directly through our investing activities, including private equity, 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 those positions. In addition, to the extent permitted by applicable law and regulation, we invest our own capital in private equity, credit, real estate and hedge funds that we manage and limitations on our ability to withdraw some or all of our investments in these funds, whether for legal, reputational or other reasons, may make it more difficult for us to control the risk exposures relating to these investments.

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 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 policies and procedures, see “Management’s Discussion and Analysis of Financial Condition and Results of Operations — Risk Management” in Part II, Item 7 of this Form 10-K.

Our liquidity, profitability and businesses may be adversely affected by an inability to access the debt capital markets or to sell assets or by a reduction in our credit ratings or by an increase in our credit spreads.

Liquidity is essential to our businesses. 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 access secured and/or unsecured debt markets, an inability to access funds from our subsidiaries or otherwise allocate liquidity optimally, an inability to sell assets or redeem our investments, or unforeseen outflows of cash or collateral. This situation 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 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. 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. Our investing and financing 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 are important to our liquidity. A reduction in our credit ratings could adversely affect our liquidity and competitive position, increase our borrowing costs, limit our access to the capital markets or trigger our obligations under certain provisions in some of our trading and collateralized financing contracts. Under these provisions, counterparties could be permitted to terminate contracts with us or require us to post additional collateral. Termination of our trading 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.

As of December 2019, our counterparties could have called for additional collateral or termination payments related to our net derivative liabilities under bilateral agreements in an aggregate amount of $358 million in the event of a one-notch downgrade of our credit ratings and $1.27 billion in the event of a two-notch downgrade of our credit ratings. A downgrade by any one rating agency, depending on the agency's relative ratings of us 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, Item 7 of this Form 10-K.

Our cost of obtaining long-term unsecured funding is directly related to our credit spreads (the amount in excess of the interest rate of benchmark securities that we need to pay). Increases in our credit spreads can significantly increase our 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 and 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.

Regulatory changes relating to liquidity may also negatively impact our results of operations and competitive position. Numerous regulations have been adopted or proposed to introduce more stringent liquidity requirements for large financial institutions. 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, including rules relating to minimum long-term debt requirements and TLAC, guidance on the treatment of brokered deposits and the capital, leverage and resolution and recovery frameworks applicable to large financial institutions. Given the overlap and complex interactions among these new and prospective regulations, they may have unintended cumulative effects, and their full impact will remain uncertain, while regulatory reforms are being adopted and market practices develop.

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

A number of our recent and planned business initiatives and expansions of existing businesses, including through acquisitions, may bring us into contact, directly or indirectly, with individuals and entities that are not within our traditional client and counterparty base, expose us to new asset classes and new markets, and present us with integration challenges. For example, we continue to transact business and invest in new regions, including a wide range of emerging and growth markets. Furthermore, in a number of our businesses, including where we make markets, invest and lend, we own interests in, or otherwise become affiliated with the ownership and operation of, public services, such as airports, toll roads and shipping ports, as well as physical commodities and commodities infrastructure components, both within and outside the U.S.

We have increased and intend to further increase our consumer-oriented deposit-taking and lending activities. For example, during 2019, we started to issue credit cards to consumers. To the extent we engage in those and other consumer-oriented activities, we have faced, and would continue to face, additional compliance, legal and regulatory risk, increased reputational risk and increased operational risk due to, among other things, higher transaction volumes and significantly increased retention and transmission of consumer and client information. We are also subject to additional legal requirements, including with respect to suitability and consumer protection (for example, Regulation Best Interest, fair lending laws and regulations and privacy laws and regulations). Further, identity fraud may increase and credit reporting practices may change in a manner that makes it more difficult for financial institutions, such as us, to evaluate the creditworthiness of consumers.

We have increased and intend to further increase our transaction banking activities. As a result, we expect to face additional compliance, legal and regulatory risk, including with respect to know-your-customer, anti-money laundering and reporting requirements and prohibitions on transfers of property belonging to countries, entities and individuals subject to sanctions by U.S. or other governmental authorities.

New business initiatives expose us to new and enhanced risks, including risks associated with dealing with governmental entities, reputational concerns arising from dealing with different types of clients, counterparties and investors, greater regulatory scrutiny of these activities, increased credit-related, market, sovereign and operational risks, risks arising from accidents or acts of terrorism, and reputational concerns with the manner in which certain assets are being operated or held or in which we interact with these counterparties. 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.

We have developed and pursued new business and strategic initiatives, and expect to continue to do so. If and to the extent we are unable to successfully execute those initiatives, we may incur unanticipated costs and losses, and face other adverse consequences, such as negative reputational effects. In addition, the actual effects of pursuing those initiatives may differ, possibly materially, from the benefits that we expect to realize from them, such as generating additional revenues, achieving expense savings, reducing operational risk exposures or using capital and funding more efficiently. Engaging in new activities exposes us to a variety of risks, including that we may be unable to successfully develop new, competitive, efficient and effective systems and processes, and hire and retain the necessary personnel. Due to our lack of historical experience with unsecured retail lending, our loan loss assumptions may prove to be incorrect and we may incur losses significantly above those which we originally anticipated in entering the business.

In recent years, we have invested, and may continue to invest, more in businesses that we expect will generate a higher level of more consistent revenues. In order to develop and be able to offer consumer financial products that compete effectively, we have made and expect to continue to make significant investments in technology and human capital resources in connection with our consumer-oriented activities. Such investments may not be successful or have returns similar to our other businesses.

Our operating expenses and efficiency ratio depend, in part, on our overall headcount and the proportion of our employees that are located in strategic locations. Our future human capital resource requirements and the benefits provided by strategic locations are uncertain, and we may not realize the benefits we anticipate.

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

Our businesses are 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 worldwide govern our obligations to execute transactions and report such transactions and other information to regulators, exchanges and investors. Compliance with these legal and reporting requirements can be challenging, and we have 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 these rules. As such requirements expand, compliance with these rules and regulations has become more challenging.

As our client base, including through our consumer businesses, and our geographical reach expand 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 errors quickly enough to limit the resulting consequences. As with other similarly situated institutions, we utilize credit underwriting models in connection with our businesses, including our consumer-oriented activities. Allegations, whether or not accurate, that the ultimate underwriting decisions do not treat consumers or clients fairly, or comply with the applicable law or regulation, can result in negative publicity, reputational damage and governmental and regulatory scrutiny.

Our financial, accounting, data processing or other operational systems and facilities 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. We must continuously update these systems to support our operations and growth and to respond to changes in regulations and markets, and invest heavily in systemic controls and training to pursue our objective of ensuring 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. Computers and computer networks are subject to various risks, including, among others, cyber attacks, inherent technological defects, system failures and errors by human operators. For example, 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. Cloud technologies are also critical to the operation of our systems and platforms and our reliance on cloud technologies is growing. Service disruptions may lead to delays in accessing, or the loss of, data that is important to our businesses and may hinder our clients' access to our platforms. Addressing these and similar issues could be costly and affect the performance of these businesses and systems. Operational risks may be incurred in applying fixes and 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. We may be, or may become, exposed to risks related to distributed ledger technology through our facilitation of clients' activities involving financial products linked to distributed ledger technology, such as blockchain or cryptocurrencies, our investments in companies that seek to develop platforms based on distributed ledger technology, and the use of distributed ledger technology 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 businesses ultimately rely 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, malfeasance and other misconduct, including the intentional misuse of client information in connection with insider trading or for other purposes, even if promptly discovered and remediated, can result in reputational damage and 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 securities and 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.

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.

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 businesses or result in financial loss or liability to our clients, impairment of our liquidity, disruption of our businesses, regulatory intervention or reputational damage.

Despite our resiliency plans and facilities, our ability to conduct business may be adversely impacted by a disruption in the infrastructure that supports our businesses and the communities where we are located. This may include a disruption involving electrical, satellite, undersea cable or other communications, internet, transportation or other 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 our 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.

Nearly all of our employees in our primary locations, including the New York metropolitan area, London, Bengaluru, Hong Kong, Tokyo and Salt Lake City, work in close proximity to one another, in one or more buildings. Notwithstanding our efforts to maintain business continuity, given that our headquarters and the largest concentration of our employees are in the New York metropolitan area, and our 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 our 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 our 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 businesses, 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 our computer systems and networks and those of our vendors. 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 are regularly the target of attempted cyber attacks, including denial-of-service attacks, and must continuously monitor and develop our systems to protect the integrity and functionality of our technology infrastructure and access to and the security of our data. We may face an increasing number of attempted cyber attacks as we expand our mobile- and other internet-based products and services, as well as our usage of mobile and cloud technologies, and as we provide more of these services to a greater number of individual consumers. The increasing migration of our communication from devices we provide to employee-owned devices presents additional risks of cyber attacks. In addition, due to our interconnectivity with 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 impacts 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 certain of our businesses.

Despite our efforts to ensure the integrity of our systems and information, we 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 in our offices or induce employees, clients or other users of our systems to disclose sensitive information or provide access to our data or that of our clients, and these types of risks may be difficult to detect or prevent.

Although we take protective measures proactively and endeavor to modify them as circumstances warrant, our 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 our systems, the process of enhancing our protective measures can itself create a risk of systems disruptions and security issues. In addition, protective measures that we employ to compartmentalize our data may reduce our visibility into, and adversely affect our ability to respond to, cyber threats and issues with our systems.

If one or more of such events occur, this potentially could jeopardize our or our clients' or counterparties' confidential and other information processed, stored in, or transmitted through our computer systems and networks, or otherwise cause interruptions or malfunctions in our operations or those of our clients, counterparties or third parties, 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.

We have expended, and expect to continue to expend, significant resources on an ongoing basis to modify our protective measures and to investigate and remediate vulnerabilities or other exposures, but these measures may be ineffective and we may be subject to legal or regulatory action, as well as financial losses that are either not insured against or not fully covered through any insurance maintained by us.

Our clients' confidential information may also be at risk from the compromise of clients' personal electronic devices or as a result of a data security breach at an unrelated company. Losses due to unauthorized account activity could harm our reputation and may have adverse effects on our business, financial condition and results of operations.

The increased use of mobile and cloud technologies can heighten these and other operational risks. Certain aspects of the security of such technologies are unpredictable or beyond our control, and the failure by mobile technology and cloud service providers to adequately safeguard their systems and prevent cyber attacks could disrupt our 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.

We routinely transmit and receive personal, confidential and proprietary information by email and other electronic means. We have discussed and worked with clients, vendors, service providers, counterparties and other third parties to develop secure transmission capabilities and protect against cyber attacks, but we do not have, and may be unable to put in place, secure capabilities with all of our clients, vendors, service providers, counterparties and other third parties and we 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.

Our businesses, profitability and liquidity may be adversely affected by Brexit.

On January 31, 2020, the U.K. left the E.U. As discussed in "Business — Regulation" in Part I, Item 1 of this Form 10-K we expect considerable change in the regulatory framework that will govern transactions and business undertaken by our U.K. subsidiaries in the E.U. As a result, we face numerous risks that could adversely affect how we conduct our businesses or our profitability and liquidity.

Our principal subsidiaries operating in the E.U., GSI, GSIB and GSAMI, are incorporated and headquartered in the U.K. They all currently benefit from non-discriminatory access to E.U. clients and infrastructure based on E.U. treaties and E.U. legislation, including arrangements for cross-border "passporting" and the establishment of E.U. branches. The E.U and the U.K. Parliament have ratified the Withdrawal Agreement, which provides for a transition period for the U.K. and E.U. to negotiate and agree to a framework for their future relationship. The transition period is currently scheduled to end on December 31, 2020 and the relationship between the U.K and E.U. beyond that date is uncertain. At the end of the transition period, firms based in the U.K. are expected to lose their existing access arrangements to the E.U. markets.

As necessary, our German bank subsidiary, GSBE, will act as our main operating subsidiary in the E.U. and will assume certain functions that can no longer be efficiently and effectively performed by our U.K. operating subsidiaries, including GSI, GSIB and GSAMI. Implementing this strategy could materially adversely affect the manner in which we operate certain businesses in Europe, require us to restructure certain of our operations and expose us to higher operational, regulatory and compliance costs, higher taxes, higher subsidiary-level capital and liquidity requirements, additional restrictions on intercompany transactions, and new restrictions on the ability of our subsidiaries to share personal data, including client data, all of which could adversely affect our liquidity and profitability.

We have strengthened the capabilities of our operating subsidiaries in the remaining E.U. countries, particularly GSBE. Depending on the terms of the future relationship between the U.K. and E.U., Brexit could necessitate a rapid and significant expansion in the scope of GSBE's activities, as well as its headcount, balance sheet, and capital and funding needs. Although we have invested significant resources to plan for and address Brexit, there can be no assurance that we will be able to successfully execute our strategy. In addition, even if we are able to successfully execute our strategy, we face the risk that Brexit could have a disproportionately adverse effect on our E.U operations compared to some of our competitors who have more extensive pre-existing operations in the E.U. outside of the U.K.

In addition, Brexit has created an uncertain political and economic environment in the U.K., and may create such environments in current E.U. member states. Political and economic uncertainty has in the past led to, and the impact of Brexit could lead to, declines in market liquidity and activity levels, volatile market conditions, a contraction of available credit, changes in interest rates or exchange rates, weaker economic growth and reduced business confidence all of which could adversely impact our business.

Our businesses, 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.

We are exposed to the risk that third parties that owe us money, securities or other assets will not perform 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. Default rates, downgrades and disputes with counterparties as to the valuation of collateral typically increase significantly in times of market stress, increased volatility and illiquidity.

As part of our clearing and prime brokerage activities, we finance our clients' positions, and we could be held responsible for the defaults or misconduct of our clients. 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 market-making, underwriting, investing and financing activities.

Concentration of risk increases the potential for significant losses in our market-making, underwriting, investing and financing activities. The number and size of these transactions has affected and may in the future affect our results of operations in a given period. Moreover, 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. In addition, we extend large commitments as part of our credit origination activities.

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. 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) or geographic area or group of related countries, such as the E.U., and a failure or downgrade of, or default by, such entity could negatively impact our businesses, perhaps materially, and the systems by which we set limits and monitor the level of our credit exposure to individual entities, industries, countries and regions 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 brokers and dealers, commercial banks, clearing houses, exchanges and investment funds. This has resulted in significant credit concentration with respect to these counterparties.

The financial services industry is both highly competitive and interrelated.

The financial services industry and all of our businesses are intensely competitive, and we expect them to remain so. We compete on the basis of a number of factors, including transaction execution, our products and services, innovation, reputation, creditworthiness and price. There has been substantial consolidation and convergence among companies in the financial services industry. This has hastened the globalization of the securities and other financial services markets. As a result, we have had to commit capital to support our international operations and to execute large global transactions. To the extent we expand into new business areas and new geographic regions, 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 impacted or may impact our ability to conduct certain of our businesses 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 our U.S. or non-U.S. competitors, could impact our ability to compete effectively.

Pricing and other competitive pressures in our businesses have continued to increase, particularly in situations where some of our competitors may seek to increase market share by reducing prices. For example, in connection with investment banking and other assignments, in response to competitive pressure we have experienced, we have extended and priced credit at levels that may not always fully compensate us for the risks we take.

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 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 we have 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.

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

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

In addition, our status as a BHC subjects us to heightened regulation and increased regulatory scrutiny by the FRB with respect to transactions between GS Bank USA and entities that are or could be viewed as affiliates of ours and, under the Volcker Rule, transactions between us and covered funds.

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 our businesses. However, appropriately identifying and dealing with conflicts of interest is complex and difficult, 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 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. Additionally, our *One Goldman Sachs* initiative aims to increase collaboration among our businesses, which may increase the potential for actual or perceived conflicts of interest and improper information sharing.

Our results have been and may in the future be adversely affected by the composition of our client base.

Our client base is not the same as that of our major competitors. Our businesses may have a higher or lower percentage of clients in certain industries or markets than some or all of our competitors. Therefore, unfavorable industry developments or market conditions affecting certain industries or markets have resulted in the past and may result in the future in our businesses underperforming relative to similar businesses of a competitor if our businesses have a higher concentration of clients in such industries or markets. For example, our market-making businesses have a higher percentage of clients with actively managed assets than our competitors and such clients have in the past and may in the future be disproportionately affected by low volatility.

Correspondingly, favorable or simply less adverse developments or market conditions involving industries or markets in a business where we have a lower concentration of clients in such industry or market have also resulted in the past and may result in the future in our underperforming relative to a similar business of a competitor that has a higher concentration of clients in such industry or market. For example, we have a smaller corporate client base in our market-making businesses than many of our peers and therefore those competitors may benefit more from increased activity by corporate clients.

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 credit 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 to us.

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 or U.S. ISDA Protocol (ISDA Protocols) and being subject to the FRB's and FDIC'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 ISDA Protocols and these rules and regulations extend to repurchase agreements and other instruments that are not derivative contracts, and their impact will depend on the development of market practices and structures.

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 these 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 financial products may be adversely affected by changes in or the discontinuance of Interbank Offered Rates (IBORs), in particular LIBOR.

The FCA, 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 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 contracts and financial instruments that define IBORs, in particular LIBOR, have developed over time and 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 often give the calculation agent (which may be us) 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 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 businesses and our funding may be adversely affected by changes in other reference rates, currencies, indexes, baskets or ETFs to which products we offer or funding that we raise are linked.

Many of the products that we own or that we offer, such as structured notes, warrants, 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, ETF 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 ETF sponsor materially alters the composition of an index or ETF) 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 businesses 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 businesses, to manage our businesses effectively and to expand into new businesses and geographic areas depends on our ability to attract new talented and diverse employees and to retain and motivate our existing employees. Factors that affect our ability to attract and retain such employees include the level and composition of our compensation and benefits, and our reputation as a successful business with a culture of fairly hiring, training and promoting qualified employees. As a significant portion of the compensation that we pay to our 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 our profitability, or in the outlook for our future profitability, as well as regulatory limitations on compensation levels and terms, can negatively impact our ability to hire and retain highly qualified employees.

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. We have experienced increased competition in hiring and retaining employees to address the demands of new regulatory requirements, expanding consumer-oriented businesses and our technology initiatives. This is also the case in emerging and growth markets, where we are often competing for qualified employees with entities that have a significantly greater presence or more extensive experience in the region.

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" in Part I, Item 1 of this Form 10-K, our compensation practices are subject to review by, and the standards of, the FRB. As a large global financial and banking institution, we are subject to limitations on compensation practices (which may or may not affect our competitors) by the FRB, the PRA, the FCA, the FDIC and other regulators worldwide. These limitations, including any imposed by or as a result of future legislation or regulation, may require us to alter our compensation practices in ways that could adversely affect our ability to attract and retain talented employees.

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 compensation, our business practices, our past actions 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) 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 businesses and results of operations.

The financial services industry generally and our businesses in particular have been subject to negative publicity. Our reputation and businesses may be adversely affected by negative publicity or information regarding our businesses and personnel, whether or not accurate or true, that may be posted on social media or other internet forums or published by news organizations. The speed and pervasiveness with which information can be disseminated through these channels, in particular social media, may magnify risks relating to negative publicity.

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

We face significant legal risks in our businesses, and the volume of claims and amount of damages and penalties claimed in litigation and regulatory proceedings against financial institutions remain high. See Notes 18 and 27 to the consolidated financial statements in Part II, Item 8 of this Form 10-K for information about certain legal and regulatory proceedings and investigations in which we are involved. Our experience has been that legal claims by consumers and clients increase in a market downturn and that employment-related claims increase following periods in which we have reduced our headcount. Additionally, governmental entities have been and are plaintiffs in certain of the legal proceedings in which we are involved, and we may face future civil or criminal actions or claims by the same or other governmental entities, as well as follow-on civil litigation that is often commenced after regulatory settlements.

Significant settlements by several large financial institutions, including, in some cases, us, with governmental entities have been publicly announced. 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 losses, which can lead to substantial disparities between legal reserves and subsequent actual settlements or penalties.

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 resulted in significant settlements in the past and may do so in the future.

We are subject to laws and regulations worldwide, including the FCPA and the U.K. Bribery Act, relating to corrupt and illegal payments to, and hiring practices with regard to, government officials and others. Violation of these or similar laws and regulations could result in significant monetary penalties, severe restrictions on our activities and damage to our reputation.

Certain law enforcement authorities have recently required admissions of wrongdoing, and, in some cases, criminal pleas, as part of the resolutions of matters brought against financial institutions or their employees. Any such resolution of a criminal matter involving us or our 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.

Group Inc. is a holding company and is dependent for liquidity on payments from its subsidiaries, many of which are subject to restrictions.

Group Inc. is a holding company and, therefore, depends on dividends, distributions and other payments from its subsidiaries to fund dividend payments and to fund all payments on its obligations, including debt obligations. Many of our subsidiaries, including our broker-dealer and bank subsidiaries, are subject to laws that restrict dividend payments or authorize regulatory bodies to block or reduce the flow of funds from those subsidiaries to Group Inc.

In addition, our broker-dealer and bank subsidiaries are subject to restrictions on their ability to lend or transact with affiliates and to minimum regulatory capital and other requirements, as well as restrictions on their ability to use funds deposited with them in brokerage or bank accounts to fund their businesses. Additional restrictions on related-party transactions, increased capital and liquidity requirements and additional limitations on the use of funds on deposit in bank or brokerage accounts, as well as lower earnings, can reduce the amount of funds available to meet the obligations of Group Inc., including under the FRB's source of strength requirement, and even require Group Inc. to provide additional funding to such subsidiaries. Restrictions or regulatory action of that kind could impede access to funds that Group Inc. needs to make payments on its obligations, including debt obligations, or dividend payments. In addition, Group Inc.'s right to participate in a distribution of assets upon a subsidiary's liquidation or reorganization is subject to the prior claims of the subsidiary's creditors.

There has been a trend towards increased regulation and supervision of our subsidiaries by the governments and regulators in the countries in which those subsidiaries are located or do business. Concerns about protecting clients and creditors of financial institutions that are controlled by persons or entities located outside of the country in which such entities are located or do business have caused or may cause a number of governments and regulators to take additional steps to "ring fence" or require internal total loss-absorbing capacity (which may also be subject to "bail-in" powers, as described below) at those entities in order to protect clients and creditors of those entities in the event of financial difficulties involving those entities. The result has been and may continue to be additional limitations on our ability to efficiently move capital and liquidity among our affiliated entities, thereby increasing the overall level of capital and liquidity required by us on a consolidated basis.

Furthermore, Group Inc. has guaranteed the payment obligations of certain of its subsidiaries, including GS&Co. and GS Bank USA, subject to certain exceptions. In addition, Group Inc. guarantees many of the obligations of its other consolidated subsidiaries on a transaction-by-transaction basis, as negotiated with counterparties. These guarantees may require Group Inc. to provide substantial funds or assets to its subsidiaries or their creditors or counterparties at a time when Group Inc. is in need of liquidity to fund its own obligations.

The requirements for us and GS Bank USA to develop and submit recovery and resolution plans to regulators, and the incorporation of feedback received from regulators, may require us to increase capital or liquidity levels or issue additional long-term debt at Group Inc. or particular subsidiaries or otherwise incur additional or duplicative operational or other costs at multiple entities, and may reduce our ability to provide Group Inc. guarantees of the obligations of our subsidiaries or raise debt at Group Inc. Resolution planning may also impair our ability to structure our intercompany and external activities in a manner that we may otherwise deem most operationally efficient. Furthermore, arrangements to facilitate our resolution planning may cause us to be subject to additional taxes. Any such limitations or requirements would be in addition to the legal and regulatory restrictions described above on our ability to engage in capital actions or make intercompany dividends or payments.

See "Business — Regulation" in Part I, Item 1 of this Form 10-K for further information about regulatory restrictions.

The application of regulatory strategies and requirements in the U.S. and non-U.S. jurisdictions to facilitate the orderly resolution of large financial institutions could create greater risk of loss for Group Inc.'s security holders.

As described in "Business — Regulation — Banking Supervision and Regulation — Insolvency of an IDI or a BHC," if the FDIC is appointed as receiver under OLA, the rights of Group Inc.'s creditors would be determined under OLA, and substantial differences exist in the rights of creditors between OLA and the U.S. Bankruptcy Code, including the right of the FDIC under OLA to disregard the strict priority of creditor claims in some circumstances, which could have a material adverse effect on debtholders.

The FDIC has announced that a single point of entry strategy may be a desirable strategy under OLA to resolve a large financial institution in a manner that would, among other things, impose losses on shareholders, debtholders and other creditors of the top-tier BHC (in our case, Group Inc.), while the BHC's subsidiaries may continue to operate. It is possible that the application of the single point of entry strategy under OLA, in which Group Inc. would be the only entity to enter resolution proceedings (and its material broker-dealer, bank and other operating entities would not enter resolution proceedings), would result in greater losses to Group Inc.'s security holders (including holders of our fixed rate, floating rate and indexed debt securities), than the losses that would result from the application of a bankruptcy proceeding or a different resolution strategy, such as a multiple point of entry resolution strategy for Group Inc. and certain of its material subsidiaries.

Assuming Group Inc. entered resolution proceedings and that support from Group Inc. or other available resources to its subsidiaries was sufficient to enable the subsidiaries to remain solvent, losses at the subsidiary level would be transferred to Group Inc. and ultimately borne by Group Inc.'s security holders, third-party creditors of Group Inc.'s subsidiaries would receive full recoveries on their claims, and Group Inc.'s security holders (including our shareholders, debtholders and other unsecured creditors) could face significant and possibly complete losses. In that case, Group Inc.'s security holders would face losses while the third-party creditors of Group Inc.'s subsidiaries would incur no losses because the subsidiaries would continue to operate and would not enter resolution or bankruptcy proceedings. In addition, holders of Group Inc.'s eligible long-term debt and holders of Group Inc.'s other debt securities could face losses ahead of its other similarly situated creditors in a resolution under OLA if the FDIC exercised its right, described above, to disregard the priority of creditor claims.

OLA also provides the FDIC with authority to cause creditors and shareholders of the financial company in receivership to bear losses before taxpayers are exposed to such losses, and amounts owed to the U.S. government would generally receive a statutory payment priority over the claims of private creditors, including senior creditors.

In addition, under OLA, claims of creditors (including debtholders) could be satisfied through the issuance of equity or other securities in a bridge entity to which Group Inc.'s assets are transferred. If such a securities-for-claims exchange were implemented, there can be no assurance that the value of the securities of the bridge entity would be sufficient to repay or satisfy all or any part of the creditor claims for which the securities were exchanged. While the FDIC has issued regulations to implement OLA, not all aspects of how the FDIC might exercise this authority are known and additional rulemaking is possible.

In addition, certain jurisdictions, including the U.K. and the E.U., have implemented, or are considering, changes to resolution regimes to provide resolution authorities with the ability to recapitalize a failing entity by writing down its unsecured debt or converting its unsecured debt into equity. Such "bail-in" powers are intended to enable the recapitalization of a failing institution by allocating losses to its shareholders and unsecured debtholders. For example, the Bank of England requires a certain amount of intercompany funding that we provide to our material U.K. subsidiaries to contain a contractual trigger to expressly permit the Bank of England to exercise such "bail-in" powers in certain circumstances. If the intercompany funding we provide to our subsidiaries is "bailed in," Group Inc.'s claims on its subsidiaries would be subordinated to the claims of the subsidiaries' third-party creditors or written down. U.S. regulators are considering and non-U.S. authorities have adopted requirements that certain subsidiaries of large financial institutions maintain minimum amounts of total loss-absorbing capacity that would pass losses up from the subsidiaries to the top-tier BHC and, ultimately, to security holders of the top-tier BHC in the event of failure.

The application of Group Inc.'s proposed resolution strategy could result in greater losses for Group Inc.'s security holders.

In our resolution plan, Group Inc. would be resolved under the U.S. Bankruptcy Code. The strategy described in our resolution plan is a variant of the single point of entry strategy: Group Inc. and Goldman Sachs Funding LLC (Funding IHC), a wholly-owned, direct subsidiary of Group Inc., would recapitalize and provide liquidity to certain major subsidiaries, including through the forgiveness of intercompany indebtedness, the extension of the maturities of intercompany indebtedness and the extension of additional intercompany loans. If this strategy were successful, creditors of some or all of Group Inc.'s major subsidiaries would receive full recoveries on their claims, while Group Inc.'s security holders could face significant and possibly complete losses.

To facilitate the execution of our resolution plan, we formed Funding IHC. In exchange for an unsecured subordinated funding note and equity interest, Group Inc. transferred certain intercompany receivables and substantially all of its global core liquid assets (GCLA) to Funding IHC, and agreed to transfer additional GCLA above prescribed thresholds.

We also put in place a Capital and Liquidity Support Agreement (CLSA) among Group Inc., Funding IHC and our major subsidiaries. Under the CLSA, Funding IHC has provided Group Inc. with a committed line of credit that allows Group Inc. to draw sufficient funds to meet its cash needs during the ordinary course of business. In addition, if our financial resources deteriorate so severely that resolution may be imminent, (i) the committed line of credit will automatically terminate and the unsecured subordinated funding note will automatically be forgiven, (ii) all intercompany receivables owed by the major subsidiaries to Group Inc. will be transferred to Funding IHC or their maturities will be extended to five years, (iii) Group Inc. will be obligated to transfer substantially all of its remaining intercompany receivables and GCLA (other than an amount to fund anticipated bankruptcy expenses) to Funding IHC, and (iv) Funding IHC will be obligated to provide capital and liquidity support to the major subsidiaries. Group Inc.'s and Funding IHC's obligations under the CLSA are secured pursuant to a related security agreement. Such actions would materially and adversely affect Group Inc.'s liquidity. As a result, during a period of severe stress, Group Inc. might commence bankruptcy proceedings at an earlier time than it otherwise would if the CLSA and related security agreement had not been implemented.

If Group Inc.'s proposed resolution strategy were successful, Group Inc.'s security holders could face losses while the third-party creditors of Group Inc.'s major subsidiaries would incur no losses because those subsidiaries would continue to operate and not enter resolution or bankruptcy proceedings. As part of the strategy, Group Inc. could also seek to elevate the priority of its guarantee obligations relating to its major subsidiaries' derivative contracts or transfer them to another entity so that cross-default and early termination rights would be stayed under the ISDA Protocols, as applicable, which would result in holders of Group Inc.'s eligible long-term debt and holders of Group Inc.'s other debt securities incurring losses ahead of the beneficiaries of those guarantee obligations. It is also possible that holders of Group Inc.'s eligible long-term debt and other debt securities could incur losses ahead of other similarly situated creditors.

If Group Inc.'s proposed resolution strategy were not successful, Group Inc.'s financial condition would be adversely impacted and Group Inc.'s security holders, including debtholders, may as a consequence be in a worse position than if the strategy had not been implemented. In all cases, any payments to debtholders are dependent on our ability to make such payments and are therefore subject to our credit risk.

As a result of our recovery and resolution planning processes, including incorporating feedback from our regulators, we may incur increased operational, funding or other costs and face limitations on our ability to structure our internal organization or engage in internal or external activities in a manner that we may otherwise deem most operationally efficient.

The growth of electronic trading and the introduction of new trading technology may adversely affect our business and may increase competition.

Technology is fundamental to our business and our industry. The growth of electronic trading and the introduction of new technologies is changing our businesses and presenting us with new challenges. Securities, futures and options transactions are increasingly occurring electronically, both on our own systems and through other alternative trading systems, and it appears that the trend toward alternative trading systems will continue. Some of these alternative trading systems compete with us, particularly our exchange-based market-making activities, and we may experience continued competitive pressures in these and other areas. In addition, the increased use by our clients of low-cost electronic trading systems and direct electronic access to trading markets could cause a reduction in commissions and spreads. As our clients increasingly use our systems to trade directly in the markets, we may incur liabilities as a result of their use of our order routing and execution infrastructure.

We have invested significant resources into the development of electronic trading systems and expect to continue to do so, but there is no assurance that the revenues generated by these systems will yield an adequate return on our investment, particularly given the generally lower commissions arising from electronic trades.

In conducting our businesses around the world, we are subject to political, economic, legal, operational and other risks that are inherent in operating in many countries.

In conducting our businesses and maintaining and supporting our global operations, we are subject to risks of possible nationalization, expropriation, price controls, capital controls, exchange controls and other restrictive governmental actions, as well as the outbreak of hostilities or acts of terrorism. For example, sanctions have been imposed by the U.S. and the E.U. on certain individuals and companies in Russia and Venezuela. In many countries, the laws and regulations applicable to the securities and financial services industries and many of the transactions in which we are involved are uncertain and evolving, and it may be difficult for us to determine the exact requirements of local laws in every market. Any determination by local regulators that we have not acted in compliance with the application of local laws in a particular market or our failure to develop effective working relationships with local regulators could have a significant and negative effect not only on our businesses in that market, but also on our reputation generally. Further, in some jurisdictions a failure, or alleged failure, to comply with laws and regulations has subjected, and may in the future subject, us and our personnel not only to civil actions, but also criminal actions. We are also subject to the enhanced risk that transactions we structure might not be legally enforceable in all cases.

Our businesses and operations are increasingly expanding throughout the world, including in emerging and growth markets, and we expect this trend to continue. Various emerging and growth market countries have experienced severe economic and financial disruptions, including significant devaluations of their currencies, defaults or threatened defaults on sovereign debt, capital and currency exchange controls, and low or negative growth rates in their economies, as well as military activity, civil unrest or acts of terrorism. The possible effects of any of these conditions include an adverse impact on our businesses and increased volatility in financial markets generally.

While business and other practices throughout the world differ, our principal entities are subject in their operations worldwide to rules 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 USA PATRIOT Act and the U.K. Bribery Act. While we have invested and continue to invest significant resources in training and in compliance monitoring, the geographical diversity of our operations, employees, clients and consumers, 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 have had, and may in the future have, employee misconduct. This misconduct has included and may also in the future include intentional efforts to ignore or circumvent applicable policies, rules or procedures or misappropriation of funds and the theft of proprietary information, including proprietary software. It is not always possible to deter or prevent employee misconduct and the precautions we take to prevent and detect this activity have not been and may not be effective in all cases. See for example, "1Malaysia Development Berhad (1MDB)-Related Matters" in Note 27 to the consolidated financial statements in Part II, Item 8 of this Form 10-K.

Our commodities activities, particularly our physical commodities activities, subject us to extensive regulation and involve certain potential risks, including environmental, reputational and other risks that may expose us to significant liabilities and costs.

As part of our commodities business, we purchase and sell certain physical commodities, arrange for their storage and transport, and engage in market making of commodities. The commodities involved in these activities may include crude oil, refined oil products, natural gas, liquefied natural gas, electric power, agricultural products, metals (base and precious), minerals (including unenriched uranium), emission credits, coal, freight and related products and indices.

We make investments in and finance entities that engage in the production, storage and transportation of numerous commodities, including many of the commodities referenced above.

These activities subject us and/or the entities in which we invest to extensive and evolving federal, state and local energy, environmental, antitrust and other governmental laws and regulations worldwide, including environmental laws and regulations relating to, among others, air quality, water quality, waste management, transportation of hazardous substances, natural resources, site remediation and health and safety. Additionally, rising climate change concerns have led to additional regulation that could increase the operating costs and adversely affect the profitability of certain of our investments.

There may be substantial costs in complying with current or future laws and regulations relating to our commodities-related activities and investments. Compliance with these laws and regulations could require significant commitments of capital toward environmental monitoring, renovation of storage facilities or transport vessels, payment of emission fees and carbon or other taxes, and application for, and holding of, permits and licenses.

Commodities involved in our intermediation activities and investments are also subject to the risk of unforeseen or catastrophic events, which are likely to be outside of our control, including those arising from the breakdown or failure of transport vessels, storage facilities or other equipment or processes or other mechanical malfunctions, fires, leaks, spills or release of hazardous substances, performance below expected levels of output or efficiency, terrorist attacks, extreme weather events or other natural disasters or other hostile or catastrophic events. In addition, we rely on third-party suppliers or service providers to perform their contractual obligations and any failure on their part, including the failure to obtain raw materials at reasonable prices or to safely transport or store commodities, could expose us to costs or losses. Also, while we seek to insure against potential risks, we may not be able to obtain insurance to cover some of these risks and the insurance that we have may be inadequate to cover our losses.

The occurrence of any of such events may prevent us from performing under our agreements with clients, may impair our operations or financial results and may result in litigation, regulatory action, negative publicity or other reputational harm.

We may also be required to divest or discontinue certain of these activities for regulatory or legal reasons.

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 coronavirus, 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 businesses.

Climate change concerns could disrupt our businesses, affect client activity levels and creditworthiness and damage our reputation.

Climate change may cause extreme weather events that disrupt operations at one or more of our primary locations, which may negatively affect our ability to service and interact with our clients, and also may adversely affect the value of our investments, including our real estate investments. Climate change may also have a negative impact on the financial condition of our clients, which may decrease revenues from those clients and increase the credit risk associated with loans and other credit exposures to those clients. Additionally, our reputation may be damaged as a result of our involvement, or our clients' involvement, in certain industries or projects associated with climate change.

Item 1B. Unresolved Staff Comments

There are no material unresolved written comments that were received from the SEC staff 180 days or more before the end of our fiscal year relating to our periodic or current reports under the Exchange Act.

Item 2. Properties

In the U.S. and elsewhere in the Americas, we have offices consisting of approximately 6.8 million square feet of leased and owned space. Our principal executive offices are located at 200 West Street, New York, New York and consist of approximately 2.1 million square feet. The building is located on a parcel leased from Battery Park City Authority pursuant to a ground lease. Under the lease, Battery Park City Authority holds title to all improvements, including the office building, subject to our right of exclusive possession and use until June 2069, the expiration date of the lease. Under the terms of the ground lease, we made a lump sum ground rent payment in June 2007 of $161 million for rent through the term of the lease.

In Europe, the Middle East and Africa, we have offices consisting of approximately 2.2 million square feet of leased and owned space. Our European headquarters is located in London at Plumtree Court, consisting of 826,000 square feet under a lease which can be terminated in 2039.

In Asia, Australia and New Zealand, we have offices consisting of approximately 2.6 million square feet, including our offices in India, and regional headquarters in Tokyo and Hong Kong. In India, we have offices with approximately 1.6 million square feet, the majority of which have leases that will expire in 2028.

In the preceding paragraphs, square footage figures are provided only for properties that are used in the operation of our businesses. Our occupancy expenses include costs for office space held in excess of our current requirements. This space, the cost of which is charged to earnings as incurred, is held for potential growth or to replace currently occupied space that we may exit in the future. We regularly evaluate our space capacity in relation to current and projected headcount. We may incur exit costs in the future if we (i) reduce our space capacity or (ii) commit to, or occupy, new properties in locations in which we operate and dispose of existing space that had been held for potential growth. These costs may be material to our operating results in a given period.

Item 3. Legal Proceedings

We are involved in a number of judicial, regulatory and arbitration proceedings concerning matters arising in connection with the conduct of our businesses. Many of these proceedings are in early stages, and many of these cases seek an indeterminate amount of damages. We have estimated the upper end of the range of reasonably possible aggregate loss for matters where we have been able to estimate a range and we believe, based on currently available information, that the results of matters where we have not been able to estimate a range of reasonably possible loss, in the aggregate, will not have a material adverse effect on our financial condition, but may be material to our operating results in a given period. Given the range of litigation and investigations presently under way, our litigation expenses can be expected to remain high. See "Management's Discussion and Analysis of Financial Condition and Results of Operations — Use of Estimates" in Part II, Item 7 of this Form 10-K. See Notes 18 and 27 to the consolidated financial statements in Part II, Item 8 of this Form 10-K for information about our reasonably possible aggregate loss estimate and judicial, regulatory and legal proceedings.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

The principal market on which our common stock is traded is the NYSE under the symbol "GS." Information relating to the performance of our common stock from December 31, 2014 through December 31, 2019 is set forth in "Supplemental Financial Information — Common Stock Performance" in Part II, Item 8 of this Form 10-K. As of February 7, 2020, there were 6,845 holders of record of our common stock.

The table below presents purchases made by or on behalf of Group Inc. or any "affiliated purchaser" (as defined in Rule 10b-18(a)(3) under the Exchange Act) of our common stock during the fourth quarter of 2019.

	Total Shares Purchased	Average Price Paid Per Share	Total Shares Purchased as Part of a Publicly Announced Program	Maximum Shares That May Yet Be Purchased Under the Program
October	5,607,574	$206.69	5,607,574	62,411,047
November	4,560,133	$220.03	4,560,133	57,850,914
December	–	–	–	57,850,914
Total	**10,167,707**		**10,167,707**	

Since March 2000, our Board has approved a repurchase program authorizing repurchases of up to 605 million shares of our common stock. The repurchase program is effected primarily through regular open-market purchases (which may include repurchase plans designed to comply with Rule 10b5-1 and accelerated share repurchases), the amounts and timing of which are determined primarily by our current and projected capital position, but which may also be influenced by general market conditions and the prevailing price and trading volumes of our common stock. The repurchase program has no set expiration or termination date. Prior to repurchasing common stock, we must receive confirmation that the FRB does not object to such capital action.

Information relating to compensation plans under which our equity securities are authorized for issuance is presented in Part III, Item 12 of this Form 10-K.

Item 6. Selected Financial Data

The Selected Financial Data table is set forth in Part II, Item 8 of this Form 10-K.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

Introduction

The Goldman Sachs Group, Inc. (Group Inc. or parent company), a Delaware corporation, together with its consolidated subsidiaries, is a leading global investment banking, securities and investment management firm that provides a wide range of financial services to a substantial and diversified client base that includes corporations, financial institutions, governments and individuals. Founded in 1869, we are headquartered in New York and maintain offices in all major financial centers around the world. We report our activities in four business segments: Investment Banking, Global Markets, Asset Management, and Consumer & Wealth Management. See "Results of Operations" for further information about our business segments.

When we use the terms "we," "us" and "our," we mean Group Inc. and its consolidated subsidiaries. When we use the term "our subsidiaries," we mean the consolidated subsidiaries of Group Inc. References to "this Form 10-K" are to our Annual Report on Form 10-K for the year ended December 31, 2019. All references to "the consolidated financial statements" or "Supplemental Financial Information" are to Part II, Item 8 of this Form 10-K. All references to 2019, 2018 and 2017 refer to our years ended, or the dates, as the context requires, December 31, 2019, 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.

In this discussion and analysis of our financial condition and results of operations, we have included information that may constitute "forward-looking statements" within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. Forward-looking statements are not historical facts or statements of current conditions, but instead represent only our beliefs regarding future events, many of which, by their nature, are inherently uncertain and outside our control.

By identifying the following 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 in these forward-looking statements. Important factors that could cause our results, financial condition and capital actions to differ from those in these statements include, among others, those described in "Risk Factors" in Part I, Item 1A of this Form 10-K and "Cautionary Statement Pursuant to the U.S. Private Securities Litigation Reform Act of 1995" in Part I, Item 1 of this Form 10-K.

These statements may relate to, among other things, (i) our future plans and results, including our target ROE, ROTE, efficiency ratio and CET1 capital ratio, and how they can be achieved, (ii) various legal proceedings, governmental investigations or other contingencies as set forth in Notes 27 and 18 to the consolidated financial statements in Part II, Item 8 of this Form 10-K, (iii) the results of stress tests, (iv) the objectives and effectiveness of our business continuity plan, information security program, risk management and liquidity policies, (v) our resolution plan and resolution strategy and their implications for stakeholders, (vi) the design and effectiveness of our resolution capital and liquidity models and triggers and alerts framework, (vii) trends in or growth opportunities for our businesses, including the timing and benefits of business and strategic initiatives and changes in and the importance of the efficiency ratio, (viii) the effect of changes to regulations, as well as our future status, activities or reporting under banking and financial regulation, (ix) our NSFR and SCB, (x) our level of future compensation expense as a percentage of operating expenses, (xi) our investment banking transaction backlog, (xii) our expected tax rate, (xiii) our proposed capital actions (including those permitted by our CCAR 2019 capital plan), (xiv) our expected interest income, (xv) our credit exposures, (xvi) our expected provisions for credit losses, (xvii) our preparations for Brexit, including a hard Brexit scenario, (xviii) the replacement of LIBOR and other IBORs and our program for the transition to alternative risk-free reference rates, (xix) the adequacy of our allowance for credit losses, (xx) the projected growth of our deposits and associated interest expense savings, (xxi) the projected growth of our consumer loan and credit card businesses, (xxii) our business initiatives, including those related to transaction banking and new consumer financial products, (xxiii) our expense savings initiatives and increasing use of strategic locations, (xxiv) our planned 2020 parent vanilla debt issuances, (xxv) the amount of GCLA we expect to hold, (xxvi) our expected G-SIB surcharge and (xxvii) expenses we may incur, including future litigation expense and those associated with investing in our consumer lending, credit card and transaction banking businesses.

Executive Overview

We generated net earnings of $8.47 billion for 2019, a decrease of 19%, compared with $10.46 billion for 2018. Diluted earnings per common share was $21.03 for 2019, a decrease of 17%, compared with $25.27 for 2018. Return on average common shareholders' equity (ROE) was 10.0% for 2019, compared with 13.3% for 2018. Book value per common share was $218.52 as of December 2019, 5.4% higher compared with December 2018.

During 2019, we recorded net provisions for litigation and regulatory proceedings of $1.24 billion, which reduced diluted earnings per common share by $3.16 and ROE by 1.5 percentage points.

Net revenues were $36.55 billion for 2019, essentially unchanged compared with 2018, reflecting lower net revenues in Investment Banking, driven by lower net revenues in Underwriting and Financial advisory, offset by slightly higher net revenues in Global Markets, due to higher net revenues in Fixed Income, Currency and Commodities (FICC). Net revenues in Asset Management and Consumer & Wealth Management were both essentially unchanged.

Provision for credit losses was $1.07 billion for 2019, 58% higher than 2018, primarily reflecting higher impairments related to corporate loans and higher provisions related to credit card loans.

Operating expenses were $24.90 billion for 2019, 6% higher than 2018, primarily reflecting significantly higher net provisions for litigation and regulatory proceedings and higher expenses for consolidated investments and technology. Our efficiency ratio (total operating expenses divided by total net revenues) for 2019 was 68.1%, compared with 64.1% for 2018.

Pre-tax earnings were $10.58 billion for 2019 and included our investments in our digital platform, *Marcus by Goldman Sachs* (Marcus), our credit card activities and the planned launch of our transaction banking activities, which collectively had a pre-tax loss of approximately $700 million.

We returned $6.88 billion of capital to common shareholders during 2019, including $5.34 billion of common share repurchases and $1.54 billion of common stock dividends. As of December 2019, our Common Equity Tier 1 (CET1) capital ratio as calculated in accordance with the Standardized Capital Rules was 13.3% and as calculated in accordance with the Advanced Capital Rules was 13.7%. See Note 20 to the consolidated financial statements for further information about our capital ratios.

In 2020, we announced strategic initiatives related to expense efficiencies and funding optimization with an emphasis on improving profitability and shareholder returns. We estimated that over the next three years we will generate (i) $1.3 billion of expense efficiencies, which will create capacity to fund growth, and (ii) $1.0 billion of interest expense savings through funding optimization from the growth of deposits and the reduction of wholesale unsecured funding.

Business Environment

During 2019, global real gross domestic product (GDP) growth appeared to decrease compared with 2018, reflecting decreased growth in both emerging markets and advanced economies, including in the U.S. Concerns about future global growth and a mixed macroeconomic environment led to accommodative monetary policies by global central banks, including three cuts to the federal funds rate by the U.S. Federal Reserve during the year to a target range of 1.5% to 1.75%. The market sentiment in 2019 was also impacted by geopolitical uncertainty, including ongoing trade concerns between the U.S. and China and multiple extensions of the deadline related to the U.K.'s decision to leave the E.U. (Brexit). See "Results of Operations — Segment Operating Results" for further information about the operating environment for each of our business segments.

Critical Accounting Policies

Fair Value

Fair Value Hierarchy. Trading assets and liabilities, certain investments and loans, and certain other financial assets and liabilities, are included in our consolidated balance sheets at fair value (i.e., marked-to-market), with related gains or losses generally recognized in our consolidated statements of earnings. The use of fair value to measure financial instruments is fundamental to our risk management practices and is our most critical accounting policy.

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 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 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 liabilities may require appropriate valuation adjustments that a market participant would require to arrive at fair value for factors, such as counterparty and our 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 2.3% as of December 2019 and 2.4% as of December 2018, of our total assets. See Notes 4 through 10 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. Market makers and investment professionals in our revenue-producing units are responsible for pricing our financial instruments. Our 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 our 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, market-making 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 Note 4 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 our 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. Our independent model risk management group (Model Risk), consisting of quantitative professionals who are separate from model developers, performs an independent model review and validation process of our valuation models. New or changed models are reviewed and approved prior to implementation. Models are reviewed 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 our valuation models.

Allowance for Credit Losses

We estimate and record an allowance for credit losses related to our loans held for investment and accounted for at amortized cost. The allowance for loan losses consists of specific loan-level reserves, portfolio-level reserves and reserves on Purchased Credit Impaired loans. The determination of each of these components entails significant judgment on 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 and credit card loans include Fair Isaac Corporation (FICO) credit scores and delinquency status.

Our estimate of credit losses entails judgment about collectability at the reporting dates, and there are uncertainties inherent in those judgments. While we use 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. See Note 3 to the consolidated financial statements for further information about adoption of ASU No. 2016-13, "Financial Instruments — Credit Losses (Topic 326) — Measurement of Credit Losses on Financial Instruments."

We also record an allowance for losses on lending commitments which are held for investment and accounted for at amortized cost. 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.

See Note 9 to the consolidated financial statements for further information about the allowance for credit losses.

Use of Estimates

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

Goodwill is assessed for impairment annually in the fourth quarter or more frequently if events occur or circumstances change that indicate an impairment may exist. When assessing goodwill for impairment, first, a qualitative assessment can be made to determine whether it is more likely than not that the estimated fair value of a reporting unit is less than its estimated carrying value. If the results of the qualitative assessment are not conclusive, a quantitative goodwill test is performed. Alternatively, a quantitative goodwill test can be performed without performing a qualitative assessment.

Estimating the fair value of our reporting units requires judgment. Critical inputs to the fair value estimates include projected earnings and allocated equity. There is inherent uncertainty in the projected earnings. The estimated carrying value of each reporting unit reflects an allocation of total shareholders' equity and represents the estimated amount of total shareholders' equity required to support the activities of the reporting unit under currently applicable regulatory capital requirements. See Note 12 to the consolidated financial statements for further information about goodwill.

If we experience a prolonged or severe period of weakness in the business environment, financial markets, our performance or our common stock price, or additional increases in capital requirements, our goodwill could be impaired in the future.

Identifiable intangible assets are tested for impairment whenever events or changes in circumstances suggest that an asset's or asset group's carrying value may not be fully recoverable. Judgment is required to evaluate whether indications of potential impairment have occurred, and to test intangible assets for impairment, if required. An impairment is recognized if the total of the estimated undiscounted cash flows relating to the asset or asset group is less than the corresponding carrying value. See Note 12 to the consolidated financial statements for further information about identifiable intangible assets.

We also estimate and provide for potential losses that may arise out of litigation and regulatory proceedings to the extent that such losses are probable and can be reasonably estimated. In addition, we estimate the upper end of the range of reasonably possible aggregate loss in excess of the related reserves for litigation and regulatory proceedings where we believe the risk of loss is more than slight. See Notes 18 and 27 to the consolidated financial statements for information about certain judicial, litigation and regulatory proceedings. Significant judgment is required in making these estimates and our final liabilities may ultimately be materially different. Our total 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.

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 24 to the consolidated financial statements for further information about income taxes.

Recent Accounting Developments

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

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 U.S. and global economic and market conditions. See "Risk Factors" in Part I, Item 1A of this Form 10-K 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 our financial results and selected financial ratios.

	Year Ended December		
$ in millions, except per share amounts	**2019**	2018	2017
Net revenues	**$36,546**	$36,616	$32,730
Pre-tax earnings	**$10,583**	$12,481	$11,132
Net earnings	**$ 8,466**	$10,459	$ 4,286
Net earnings to common	**$ 7,897**	$ 9,860	$ 3,685
Diluted earnings per common share	**$ 21.03**	$ 25.27	$ 9.01
ROE	**10.0%**	13.3%	4.9%
ROTE	**10.6%**	14.1%	5.2%
Net earnings to average total assets	**0.9%**	1.1%	0.5%
Return on average total shareholders' equity	**9.4%**	12.3%	5.0%
Average equity to average assets	**9.3%**	8.8%	9.5%
Dividend payout ratio	**19.7%**	12.5%	32.2%

In the table above:

- Net earnings to common represents net earnings applicable to common shareholders, which is calculated as net earnings less preferred stock dividends.
- Average equity to average assets is calculated by dividing average total shareholders' equity by average total assets.
- Dividend payout ratio is calculated by dividing dividends declared per common share by diluted earnings per common share.
- ROE is calculated by dividing net earnings to common by average monthly common shareholders' equity. Tangible common shareholders' equity is calculated as total shareholders' equity less preferred stock, goodwill and identifiable intangible assets. Return on average tangible common shareholders' equity (ROTE) is calculated by dividing net earnings to common by average monthly tangible common shareholders' equity. We believe that tangible common shareholders' equity is meaningful because it is a measure that we and investors use to assess capital adequacy and that ROTE is meaningful because it measures the performance of businesses consistently, whether they were acquired or developed internally. Tangible common shareholders' equity and ROTE are non-GAAP measures and may not be comparable to similar non-GAAP measures used by other companies. Return on average total shareholders' equity is calculated by dividing net earnings by average monthly total shareholders' equity.

  The table below presents our average equity and the reconciliation of average common shareholders' equity to average tangible common shareholders' equity.

	Average for the Year Ended December		
$ in millions	**2019**	2018	2017
Total shareholders' equity	**$ 90,297**	$ 85,238	$ 85,959
Preferred stock	**(11,203)**	(11,253)	(11,238)
Common shareholders' equity	**$ 79,094**	$ 73,985	$ 74,721
Goodwill and identifiable intangible assets	**(4,464)**	(4,090)	(4,065)
Tangible common shareholders' equity	**$ 74,630**	$ 69,895	$ 70,656

- In 2017, we recorded $4.40 billion of estimated income tax expense related to the Tax Cuts and Jobs Act (Tax Legislation). Excluding this expense, diluted earnings per common share was $19.76, ROE was 10.8% and ROTE was 11.4% for 2017. In the fourth quarter of 2018, we finalized this estimate to reflect the impact of updated information, including subsequent guidance issued by the U.S. Internal Revenue Service (IRS), resulting in a $487 million income tax benefit for 2018. Excluding this benefit, diluted earnings per common share was $24.02, ROE was 12.7% and ROTE was 13.4% for 2018. We believe that presenting our results excluding Tax Legislation is meaningful as excluding the above items increases the comparability of period-to-period results. See "Results of Operations — Provision for Taxes" for further information about Tax Legislation. Diluted earnings per common share, ROE and ROTE, excluding the impact of the above items related to Tax Legislation, are non-GAAP measures and may not be comparable to similar non-GAAP measures used by other companies. The tables below present the calculation of net earnings to common, diluted earnings per common share and average common shareholders' equity, excluding the impact of the above items related to Tax Legislation.

	Year Ended December	
in millions, except per share amounts	2018	2017
Net earnings to common, as reported	$9,860	$3,685
Impact of Tax Legislation	(487)	4,400
Net earnings to common, excluding the impact of Tax Legislation	$9,373	$8,085
Divided by average diluted common shares	390.2	409.1
Diluted earnings per common share, excluding the impact of Tax Legislation	$24.02	$19.76

	Average for the Year Ended December	
$ in millions	2018	2017
Common shareholders' equity, as reported	$73,985	$74,721
Impact of Tax Legislation	(42)	338
Common shareholders' equity, excluding the impact of Tax Legislation	$73,943	$75,059
Goodwill and identifiable intangible assets	(4,090)	(4,065)
Tangible common shareholders' equity, excluding the impact of Tax Legislation	$69,853	$70,994

- In 2017, as required, we adopted ASU No. 2016-09, "Compensation — Stock Compensation (Topic 718) — Improvements to Employee Share-Based Payment Accounting." The impact of adoption was a reduction to our provision for taxes of $719 million for 2017, which increased diluted earnings per common share by approximately $1.75 and both ROE and ROTE by approximately 1.0 percentage points. The impact for 2019 and 2018 was not material.

Net Revenues

The table below presents our net revenues by line item.

	Year Ended December		
$ in millions	**2019**	2018	2017
Investment banking	**$ 6,798**	$ 7,430	$ 7,076
Investment management	**6,189**	6,590	5,867
Commissions and fees	**2,988**	3,199	3,051
Market making	**10,157**	9,724	7,853
Other principal transactions	**6,052**	5,906	5,951
Total non-interest revenues	**32,184**	32,849	29,798
Interest income	**21,738**	19,679	13,113
Interest expense	**17,376**	15,912	10,181
Net interest income	**4,362**	3,767	2,932
Total net revenues	**$36,546**	$36,616	$32,730

In the table above:

- Investment banking consists of revenues (excluding net interest) from financial advisory and underwriting assignments. These activities are included in our Investment Banking segment. Revenues from transactions in derivatives related to client advisory and underwriting assignments, previously reported in investment banking, are now reported in market making. Reclassifications have been made to previously reported amounts to conform to the current presentation.
- Investment management consists of revenues (excluding net interest) from providing asset management services across all major asset classes to a diverse set of asset management clients (included in our Asset Management segment), as well as asset management services, wealth advisory services and certain transaction services for wealth management clients (included in our Consumer & Wealth Management segment).
- Commissions and fees consists of revenues from executing and clearing client transactions on major stock, options and futures exchanges worldwide, as well as over-the-counter (OTC) transactions. These activities are included in our Global Markets and Consumer & Wealth Management segments.
- Market making consists of revenues (excluding net interest) from client execution activities related to making markets in interest rate products, credit products, mortgages, currencies, commodities and equity products. These activities are included in our Global Markets segment.
- Other principal transactions consists of revenues (excluding net interest) from our equity investing activities, including revenues related to our consolidated investments (included in our Asset Management segment), and lending activities (included across our four segments).

Operating Environment. During 2019, market-making activities operated in an environment generally characterized by macroeconomic concerns, driven by continued trade tensions and concerns over a slowdown in future global economic growth. Volatility in equity markets decreased with the average daily VIX for the year lower compared with 2018. Monetary policies set by global central banks remained accommodative throughout the year. Investment banking activities reflected decreases in industry-wide completed mergers and acquisitions transactions and industry-wide equity underwriting transactions. Other principal transactions revenues benefited from company-specific events, including sales. Our assets under supervision increased from acquisitions, organic net inflows and appreciation in our client assets, reflecting generally higher equity and fixed income prices.

If macroeconomic concerns continue, or if there are continued declines in market-making activity levels, volatility or investment banking transaction levels, or if there are declines in assets under supervision or global equity markets, net revenues would likely be negatively impacted. See "Segment Operating Results" for information about the operating environment and material trends and uncertainties that may impact our results of operations.

2019 versus 2018

Net revenues in the consolidated statements of earnings were $36.55 billion for 2019, essentially unchanged compared with 2018, primarily reflecting lower investment banking revenues and investment management revenues, offset by higher net interest income and slightly higher market making revenues.

Non-Interest Revenues. Investment banking revenues in the consolidated statements of earnings were $6.80 billion for 2019, 9% lower than 2018, reflecting lower revenues in underwriting and financial advisory. The decrease in underwriting revenues was due to lower revenues in debt underwriting, driven by lower revenues from investment-grade and leveraged finance activity, and in equity underwriting, reflecting a decline in industry-wide initial public offerings. The decrease in financial advisory revenues reflected a decrease in industry-wide completed mergers and acquisitions transactions.

Investment management revenues in the consolidated statements of earnings were $6.19 billion for 2019, 6% lower than 2018, driven by significantly lower incentive fees. This decrease was partially offset by slightly higher management and other fees (including the impact of United Capital Financial Partners, Inc. (United Capital)), reflecting the impact of higher average assets under supervision, partially offset by a lower average effective fee due to shifts in the mix of client assets and strategies. United Capital was acquired in the third quarter of 2019.

Commissions and fees in the consolidated statements of earnings were $2.99 billion for 2019, 7% lower than 2018, primarily reflecting a decrease in our listed cash equity volumes in the U.S., generally consistent with market volumes.

Market making revenues in the consolidated statements of earnings were $10.16 billion for 2019, 4% higher than 2018, primarily reflecting significantly higher revenues in interest rate products and commodities, and slightly higher revenues in equity products, partially offset by significantly lower revenues in currencies and lower revenues in mortgages.

Other principal transactions in the consolidated statements of earnings were $6.05 billion for 2019, 2% higher than 2018, primarily reflecting significantly higher net gains from investments in public equities, partially offset by lower net gains from investments in debt instruments and slightly lower net gains from investments in private equities.

Net Interest Income. Net interest income in the consolidated statements of earnings was $4.36 billion for 2019, 16% higher than 2018, reflecting an increase in interest income primarily related to trading assets and loans reflecting the impact of higher average balances, and collateralized agreements reflecting the impact of higher interest rates, partially offset by impact of lower average balances. The increase in interest income was partially offset by higher interest expense primarily related to deposits reflecting the impact of higher interest rates and higher average balances, and collateralized financings reflecting an impact of higher interest rates. See "Statistical Disclosures — Distribution of Assets, Liabilities and Shareholders' Equity" for further information about our sources of net interest income.

2018 versus 2017

Net revenues in the consolidated statements of earnings were $36.62 billion for 2018, 12% higher than 2017, primarily due to significantly higher market making revenues and net interest income, as well as higher investment management revenues and slightly higher investment banking revenues.

Non-Interest Revenues. Investment banking revenues in the consolidated statements of earnings were $7.43 billion for 2018, 5% higher than 2017. Revenues in financial advisory were higher, reflecting an increase in industry-wide completed mergers and acquisitions volumes. Revenues in underwriting were slightly higher, due to significantly higher revenues in equity underwriting, driven by initial public offerings, partially offset by lower revenues in debt underwriting, reflecting a decline in leveraged finance activity.

Investment management revenues in the consolidated statements of earnings were $6.59 billion for 2018, 12% higher than 2017, primarily due to significantly higher incentive fees, as a result of harvesting. Management and other fees were also higher, reflecting higher average assets under supervision and the impact of the revenue recognition standard, partially offset by shifts in the mix of client assets and strategies. See Note 3 to the consolidated financial statements for further information about ASU No. 2014-09, "Revenue from Contracts with Customers (Topic 606)."

Commissions and fees in the consolidated statements of earnings were $3.20 billion for 2018, 5% higher than 2017, reflecting an increase in our listed cash equity and futures volumes, generally consistent with market volumes.

Market making revenues in the consolidated statements of earnings were $9.72 billion for 2018, 24% higher than 2017, due to significantly higher revenues in equity products, interest rate products and commodities. These increases were partially offset by significantly lower results in mortgages and lower revenues in credit products.

Other principal transactions revenues in the consolidated statements of earnings were $5.91 billion for 2018, essentially unchanged compared with 2017, reflecting net losses from investments in public equities compared with net gains in the prior year, offset by significantly higher net gains from investments in private equities, driven by company-specific events, including sales, and corporate performance.

Net Interest Income. Net interest income in the consolidated statements of earnings was $3.77 billion for 2018, 28% higher than 2017, reflecting an increase in interest income primarily related to collateralized agreements and other interest-earning assets, reflecting the impact of higher interest rates, as well as loans reflecting the impact of higher average balances and higher yields. The increase in interest income was partially offset by higher interest expense primarily related to other interest-bearing liabilities, deposits and collateralized financings, each reflecting the impact of higher interest rates. See "Statistical Disclosures — Distribution of Assets, Liabilities and Shareholders' Equity" for further information about our sources of net interest income.

Provision for Credit Losses

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

The table below presents our provision for credit losses.

	Year Ended December		
$ in millions	**2019**	2018	2017
Provision for credit losses	**$ 1,065**	$ 674	$ 657

2019 versus 2018. Provision for credit losses in the consolidated statements of earnings was $1.07 billion for 2019, 58% higher than 2018, primarily reflecting higher impairments related to corporate loans, and higher provisions related to credit card loans.

2018 versus 2017. Provision for credit losses in the consolidated statements of earnings was $674 million for 2018, 3% higher than 2017, as the higher provision for credit losses primarily related to consumer loan growth in 2018 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, year-end discretionary compensation, amortization of equity awards and other items such as benefits. Discretionary compensation is significantly impacted by, among other factors, the level of net revenues, overall financial performance, prevailing labor markets, business mix, the structure of our share-based compensation programs and the external environment.

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

	Year Ended December		
$ in millions	**2019**	2018	2017
Compensation and benefits	**$12,353**	$12,328	$11,653
Brokerage, clearing, exchange and distribution fees	**3,252**	3,200	2,876
Market development	**739**	740	588
Communications and technology	**1,167**	1,023	897
Depreciation and amortization	**1,704**	1,328	1,152
Occupancy	**1,029**	809	733
Professional fees	**1,316**	1,214	1,165
Other expenses	**3,338**	2,819	1,877
Total operating expenses	**$24,898**	$23,461	$20,941
Headcount at period-end	**38,300**	36,600	33,600

2019 versus 2018. Operating expenses in the consolidated statements of earnings were $24.90 billion for 2019, 6% higher than 2018. Our efficiency ratio (total operating expenses divided by total net revenues) for 2019 was 68.1%, compared with 64.1% for 2018.

The increase in operating expenses compared with 2018 primarily reflected significantly higher net provisions for litigation and regulatory proceedings and higher expenses for consolidated investments and technology (increases primarily in depreciation and amortization, communications and technology, occupancy and other expenses). In addition, 2019 included higher expenses related to our credit card and transaction banking activities (increases were primarily in professional fees and other expenses) and also included the impact of United Capital. Compensation and benefits expenses were essentially unchanged compared with 2018.

Net provisions for litigation and regulatory proceedings for 2019 were $1.24 billion compared with $844 million for 2018. 2019 included a $140 million charitable contribution to Goldman Sachs Gives, our donor-advised fund.

As of December 2019, headcount increased 5% compared with December 2018, reflecting an increase in our technology professionals and the impact of United Capital.

2018 versus 2017. Operating expenses in the consolidated statements of earnings were $23.46 billion for 2018, 12% higher than 2017. Our efficiency ratio (total operating expenses divided by total net revenues) for 2018 was 64.1%, compared with 64.0% for 2017.

The increase in operating expenses compared with 2017 was primarily due to higher compensation and benefits expenses, reflecting improved operating performance, and significantly higher net provisions for litigation and regulatory proceedings. Brokerage, clearing, exchange and distribution fees were also higher, reflecting an increase in activity levels, and technology expenses increased, reflecting higher expenses related to computing services. In addition, expenses related to consolidated investments and our digital lending and deposit platform increased, with the increases primarily in depreciation and amortization expenses, market development expenses and other expenses. The increase compared with 2017 also included $297 million related to the 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)."

Net provisions for litigation and regulatory proceedings for 2018 were $844 million compared with $188 million for 2017. 2018 included a $132 million charitable contribution to Goldman Sachs Gives, our donor-advised fund. Compensation was reduced to fund this charitable contribution to Goldman Sachs Gives.

As of December 2018, headcount increased 9% compared with December 2017, reflecting an increase in technology professionals and investments in new business initiatives.

Provision for Taxes

The effective income tax rate for 2019 was 20.0%, up from 16.2% for 2018, which included a $487 million income tax benefit in 2018 related to the finalization of the impact of the Tax Legislation. Additionally, the increase compared with 2018 was due to an increase in non-deductible litigation provisions and changes in the geographic mix of earnings partially offset by discrete tax benefits in 2019.

The effective income tax rate for 2018 was 16.2%, down from 61.5% for 2017, as 2017 included the estimated impact of Tax Legislation, which increased our effective income tax rate by 39.5 percentage points. Additionally, the decrease compared with 2017 reflected the impact of the lower U.S. corporate income tax rate in 2018. The estimated impact of Tax Legislation was an increase in income tax expense of $4.40 billion for 2017. During 2018, we finalized this estimate to reflect the impact of updated information, including subsequent guidance issued by the IRS, resulting in a $487 million income tax benefit for 2018.

In June 2019, the IRS and the U.S. Department of the Treasury (U.S. Treasury) released final, temporary and proposed regulations relating to the implementation of Global Intangible Low Taxed Income. The proposed regulations would be applicable only after final regulations are published. In December 2019, the IRS and U.S. Treasury released final and proposed regulations relating to the implementation of Base Erosion and Anti-Abuse Tax. The final regulations are generally consistent, with certain modifications, to the proposed regulations issued in December 2018. These final and proposed regulations did not have a material impact on our effective tax rate for 2019.

Based on our current interpretations of the rules and legislative guidance to date, we expect our 2020 tax rate to be approximately 21%, excluding the impact of tax benefits on employee share based awards and any non-deductible litigation.

Segment Assets and Operating Results

Commencing with the fourth quarter of 2019, we made certain changes to our business segments. Prior to the fourth quarter of 2019, we reported our activities in the following four business segments: Investment Banking, Institutional Client Services, Investing & Lending, and Investment Management. Beginning with the fourth quarter of 2019, we report our activities in four business segments: Investment Banking, Global Markets, Asset Management, and Consumer & Wealth Management. See "Business — Our Business Segments" in Part I, Item 1 of this Form 10-K for further information about changes to our business segments.

Segment Assets. The table below presents assets by segment.

$ in millions	Investment Banking	Global Markets	Asset Management	Consumer & Wealth Management	Total
As of December 2019					
Cash and cash equivalents	**$25,301**	**$ 82,819**	**$ 6,756**	**$18,670**	**$133,546**
Collateralized agreements	**13,376**	**196,278**	**3,433**	**8,675**	**221,762**
Customer and other receivables	**3,576**	**63,277**	**1,579**	**6,173**	**74,605**
Trading assets	**20,737**	**316,242**	**5,266**	**13,087**	**355,332**
Investments	**854**	**25,937**	**37,096**	**50**	**63,937**
Loans	**26,565**	**31,111**	**17,101**	**34,127**	**108,904**
Other assets	**1,600**	**9,396**	**20,871**	**3,015**	**34,882**
Total assets	**$92,009**	**$725,060**	**$92,102**	**$83,797**	**$992,968**
As of December 2018					
Cash and cash equivalents	$24,007	$ 82,521	$ 8,357	$15,662	$130,547
Collateralized agreements	18,619	238,682	6,481	10,761	274,543
Customer and other receivables	4,199	60,201	1,486	6,569	72,455
Trading assets	14,925	250,512	4,949	9,809	280,195
Investments	493	14,249	32,435	47	47,224
Loans	26,020	28,876	13,956	28,985	97,837
Other assets	1,188	8,661	17,339	1,807	28,995
Total assets	$89,451	$683,702	$85,003	$73,640	$931,796

The allocation process for segment assets is based on the activities of these segments. The allocation of assets includes allocation of global core liquid assets (GCLA) (which consists of unencumbered, highly liquid securities and cash), which is generally included within cash and cash equivalents, collateralized agreements and trading assets on our balance sheet. Due to the integrated nature of these segments, estimates and judgments are made in allocating these assets. See "Risk Management — Liquidity Risk Management" for further information about our GCLA.

Segment Operating Results. The table below presents our segment operating results.

	Year Ended December		
$ in millions	**2019**	2018	2017
Investment Banking			
Net revenues	**$ 7,599**	$ 8,178	$ 7,459
Provision for credit losses	**333**	124	34
Operating expenses	**4,685**	4,473	3,613
Pre-tax earnings	**$ 2,581**	$ 3,581	$ 3,812
Net earnings to common	**$ 1,996**	$ 2,924	$ 1,394
Average common equity	**$11,167**	$ 8,737	$ 8,753
Return on average common equity	**17.9%**	33.5%	15.9%
Global Markets			
Net revenues	**$14,779**	$14,438	$12,295
Provision for credit losses	**35**	52	178
Operating expenses	**10,851**	10,585	9,981
Pre-tax earnings	**$ 3,893**	$ 3,801	$ 2,136
Net earnings to common	**$ 2,729**	$ 2,796	$ 397
Average common equity	**$40,060**	$41,237	$44,448
Return on average common equity	**6.8%**	6.8%	0.9%
Asset Management			
Net revenues	**$ 8,965**	$ 8,835	$ 8,530
Provision for credit losses	**274**	160	322
Operating expenses	**4,817**	4,179	3,773
Pre-tax earnings	**$ 3,874**	$ 4,496	$ 4,435
Net earnings to common	**$ 3,013**	$ 3,668	$ 1,639
Average common equity	**$21,575**	$19,061	$16,904
Return on average common equity	**14.0%**	19.2%	9.7%
Consumer & Wealth Management			
Net revenues	**$ 5,203**	$ 5,165	$ 4,446
Provision for credit losses	**423**	338	123
Operating expenses	**4,545**	4,224	3,574
Pre-tax earnings	**$ 235**	$ 603	$ 749
Net earnings to common	**$ 159**	$ 472	$ 255
Average common equity	**$ 6,292**	$ 4,950	$ 4,616
Return on average common equity	**2.5%**	9.5%	5.5%
Total net revenues	**$36,546**	$36,616	$32,730
Total provision for credit losses	**1,065**	674	657
Total operating expenses	**24,898**	23,461	20,941
Total pre-tax earnings	**$10,583**	$12,481	$11,132
Net earnings to common	**$ 7,897**	$ 9,860	$ 3,685
Average common equity	**$79,094**	$73,985	$74,721
Return on average common equity	**10.0%**	13.3%	4.9%

In the table above, operating expenses related to corporate charitable contributions, previously not allocated to our segments, have now been allocated. This allocation reflects a change in the manner in which we measure the performance of our segments. As a result of this change, all operating expenses are now allocated to segments. Reclassifications have been made to previously reported segment amounts to conform to the current presentation.

Net revenues in our segments include allocations of interest income and expense to specific positions in relation to the cash generated by, or funding requirements of, such positions. See Note 25 to the consolidated financial statements for further information about our business segments.

The allocation of common shareholders' equity and preferred stock dividends to each segment is based on the estimated amount of equity required to support the activities of the segment under current applicable regulatory capital requirements. Net earnings for each segment is calculated by applying the firmwide tax rate to each segment's pre-tax earnings.

Compensation and benefits expenses within our segments reflect, among other factors, our overall performance, as well as the performance of individual businesses. Consequently, pre-tax margins in one segment of our business may be significantly affected by the performance of our other business segments. A description of segment operating results follows.

Investment Banking

Investment Banking generates revenues from the following:

- **Financial advisory.** Includes strategic advisory assignments with respect to mergers and acquisitions, divestitures, corporate defense activities, restructurings and spin-offs.
- **Underwriting.** Includes public offerings and private placements, including local and cross-border transactions and acquisition financing, of a wide range of securities and other financial instruments, including loans.
- **Corporate lending.** Includes lending to corporate clients, including middle-market lending, relationship lending and acquisition financing.

The table below presents the operating results of our Investment Banking segment.

	Year Ended December		
$ in millions	**2019**	2018	2017
Financial advisory	**$ 3,197**	$3,444	$3,161
Equity underwriting	**1,482**	1,628	1,235
Debt underwriting	**2,119**	2,358	2,680
Underwriting	**3,601**	3,986	3,915
Corporate lending	**801**	748	383
Net revenues	**7,599**	8,178	7,459
Provision for credit losses	**333**	124	34
Operating expenses	**4,685**	4,473	3,613
Pre-tax earnings	**2,581**	3,581	3,812
Provision for taxes	**516**	580	2,344
Net earnings	**2,065**	3,001	1,468
Preferred stock dividends	**69**	77	74
Net earnings to common	**$ 1,996**	$2,924	$1,394
Average common equity	**$11,167**	$8,737	$8,753
Return on average common equity	**17.9%**	33.5%	15.9%

The table below presents our financial advisory and underwriting transaction volumes.

	Year Ended December		
$ in billions	**2019**	2018	2017
Announced mergers and acquisitions	**$ 1,401**	$1,274	$ 869
Completed mergers and acquisitions	**$ 1,256**	$1,168	$ 942
Equity and equity-related offerings	**$ 68**	$ 67	$ 69
Debt offerings	**$ 245**	$ 256	$ 289

In the table above:

- Volumes are per Dealogic.
- Announced and completed mergers and acquisitions volumes are based on full credit to each of the advisors in a transaction. Equity and equity-related offerings and debt offerings are based on full credit for single book managers and equal credit for joint book managers. Transaction volumes may not be indicative of net revenues in a given period. In addition, transaction volumes for prior periods may vary from amounts previously reported due to the subsequent withdrawal or a change in the value of a transaction.
- Equity and equity-related offerings includes Rule 144A and public common stock offerings, convertible offerings and rights offerings.
- Debt offerings includes non-convertible preferred stock, mortgage-backed securities, asset-backed securities and taxable municipal debt. Includes publicly registered and Rule 144A issues and excludes leveraged loans.

Operating Environment. During 2019, industry-wide completed mergers and acquisitions transactions decreased and industry-wide announced mergers and acquisitions transactions decreased slightly, both compared with a strong 2018. In underwriting, industry-wide equity underwriting transactions decreased compared with 2018, reflecting a decline in initial public offerings. Industry-wide debt underwriting activity reflected a decrease in loan syndications compared with 2018. In the future, if industry-wide mergers and acquisitions transactions, equity underwriting transactions or loan syndications continue to decline, net revenues in Investment Banking would likely be negatively impacted.

2019 versus 2018. Net revenues in Investment Banking were $7.60 billion for 2019, 7% lower compared with a strong 2018, reflecting lower net revenues in Underwriting and Financial advisory, partially offset by higher net revenues in Corporate lending.

The decrease in Underwriting net revenues was due to lower net revenues in Debt underwriting, driven by lower net revenues from investment-grade and leveraged finance activity, and in Equity underwriting, reflecting a decline in industry-wide initial public offerings. The decrease in Financial advisory net revenues reflected a decrease in industry-wide completed mergers and acquisitions transactions.

Provision for credit losses was $333 million for 2019, compared with $124 million for 2018, primarily reflecting higher impairments related to corporate loans.

Operating expenses were $4.69 billion for 2019, 5% higher than 2018, primarily due to higher net provisions for litigation and regulatory proceedings and higher expenses related to transaction banking activities. Pre-tax earnings were $2.58 billion for 2019, 28% lower than 2018.

As of December 2019, our investment banking transaction backlog was essentially unchanged compared with December 2018, due to lower estimated net revenues from potential debt underwriting transactions, particularly from asset-backed transactions, and equity underwriting transactions, offset by higher estimated net revenues from potential advisory transactions.

Our investment banking transaction backlog represents an estimate of our future net revenues from investment banking transactions where we believe that future revenue realization is more likely than not. We believe changes in our investment banking transaction backlog may be a useful indicator of client activity levels which, over the long term, impact our net revenues. However, the time frame for completion and corresponding revenue recognition of transactions in our backlog varies based on the nature of the assignment, as certain transactions may remain in our backlog for longer periods of time and others may enter and leave within the same reporting period. In addition, our transaction backlog is subject to certain limitations, such as assumptions about the likelihood that individual client transactions will occur in the future. Transactions may be cancelled or modified, and transactions not included in the estimate may also occur.

2018 versus 2017. Net revenues in Investment Banking were $8.18 billion for 2018, 10% higher than 2017, reflecting significantly higher net revenues in Corporate lending, higher net revenues in Financial advisory and slightly higher net revenues in Underwriting.

The increase in Corporate lending net revenues was driven by significantly higher net interest income from middle-market lending activities and higher results on hedges related to relationship lending activities. The increase in Financial advisory net revenues reflected an increase in industry-wide completed mergers and acquisitions volumes. The increase in Underwriting net revenues was due to significantly higher net revenues in Equity underwriting, driven by initial public offerings, partially offset by lower net revenues in Debt underwriting, reflecting a decline in leveraged finance activity.

Provision for credit losses was $124 million for 2018, compared with $34 million for 2017, primarily reflecting higher impairments related to corporate loans.

Operating expenses were $4.47 billion for 2018, 24% higher than 2017, due to higher net provisions for litigation and regulatory proceedings, increased compensation and benefits expenses, reflecting improved operating performance, and the impact of the revenue recognition standard. Pre-tax earnings were $3.58 billion for 2018, 6% lower than 2017.

As of December 2018, our investment banking transaction backlog increased compared with December 2017, driven by significantly higher estimated net revenues from potential advisory transactions. Estimated net revenues from potential debt and equity underwriting transactions were lower.

Global Markets

Our Global Markets segment consists of:

FICC. FICC generates revenues from intermediation and financing activities.

- **FICC intermediation.** Includes client execution activities related to making markets in both trading cash and derivative instruments, as detailed below.

  Interest Rate Products. Government bonds (including inflation-linked securities) across maturities, other government-backed securities, and interest rate swaps, options and other derivatives.

  Credit Products. Investment-grade corporate securities, high-yield securities, credit derivatives, exchange-traded funds (ETFs), bank and bridge loans, municipal securities, emerging market and distressed debt, and trade claims.

  Mortgages. Commercial mortgage-related securities, loans and derivatives, residential mortgage-related securities, loans and derivatives (including U.S. government agency-issued collateralized mortgage obligations and other securities and loans), and other asset-backed securities, loans and derivatives.

  Currencies. Currency options, spot/forwards and other derivatives on G-10 currencies and emerging-market products.

  Commodities. Commodity derivatives and, to a lesser extent, physical commodities, involving crude oil and petroleum products, natural gas, base, precious and other metals, electricity, coal, agricultural and other commodity products.

  For further information about market-making activities, see "Market-Making Activities" below.

- **FICC financing.** Includes providing financing to our clients through securities sold under agreements to repurchase (repurchase agreements), as well as through structured credit, warehouse lending (including residential and commercial mortgage lending) and asset-backed lending, which are typically longer term in nature.

Equities. Equities generates revenues from intermediation and financing activities.

- **Equities intermediation.** We make markets in equity securities and equity-related products, including ETFs, convertible securities, options, futures and over-the-counter (OTC) derivative instruments, on a global basis. We also structure and make markets in derivatives on indices, industry sectors, financial measures and individual company stocks. Our exchange-based market-making activities include making markets in stocks and ETFs, futures and options on major exchanges worldwide. In addition, we generate commissions and fees from executing and clearing institutional client transactions on major stock, options and futures exchanges worldwide, as well as OTC transactions. For further information about market-making activities, see "Market-Making Activities" below.
- **Equities financing.** Includes prime brokerage and other equities financing activities, including securities lending, margin lending and swaps. We earn fees by providing clearing, settlement and custody services globally. We provide services that principally involve borrowing and lending securities to cover institutional clients' short sales and borrowing securities to cover our short sales and otherwise to make deliveries into the market. In addition, we are an active participant in broker-to-broker securities lending and third-party agency lending activities. We provide financing to our clients for their securities trading activities through margin loans that are collateralized by securities, cash or other acceptable collateral. In addition, we execute swap transactions to provide our clients with exposure to securities and indices.

Market-Making Activities

As a market maker, we facilitate transactions in both liquid and less liquid markets, primarily for institutional clients, such as corporations, financial institutions, investment funds and governments, to assist clients in meeting their investment objectives and in managing their risks. In this role, we seek to earn the difference between the price at which a market participant is willing to sell an instrument to us and the price at which another market participant is willing to buy it from us, and vice versa (i.e., bid/offer spread). In addition, we maintain (i) market-making positions, typically for a short period of time, in response to, or in anticipation of, client demand, and (ii) positions to actively manage our risk exposures that arise from these market-making activities (collectively, inventory). Our inventory is recorded in trading assets (long positions) or trading liabilities (short positions) in our consolidated balance sheets.

Our results are influenced by a combination of interconnected drivers, including (i) client activity levels and transactional bid/offer spreads (collectively, client activity), and (ii) changes in the fair value of our inventory and interest income and interest expense related to the holding, hedging and funding of our inventory (collectively, market-making inventory changes). Due to the integrated nature of our market-making activities, disaggregation of net revenues into client activity and market-making inventory changes is judgmental and has inherent complexities and limitations.

The amount and composition of our net revenues vary over time as these drivers are impacted by multiple interrelated factors affecting economic and market conditions, including volatility and liquidity in the market, changes in interest rates, currency exchange rates, credit spreads, equity prices and commodity prices, investor confidence, and other macroeconomic concerns and uncertainties.

In general, assuming all other market-making conditions remain constant, increases in client activity levels or bid/offer spreads tend to result in increases in net revenues, and decreases tend to have the opposite effect. However, changes in market-making conditions can materially impact client activity levels and bid/offer spreads, as well as the fair value of our inventory. For example, a decrease in liquidity in the market could have the impact of (i) increasing our bid/offer spread, (ii) decreasing investor confidence and thereby decreasing client activity levels, and (iii) widening of credit spreads on our inventory positions.

The table below presents the operating results of our Global Markets segment.

	Year Ended December		
$ in millions	**2019**	2018	2017
FICC intermediation	**$ 6,009**	$ 5,737	$ 5,067
FICC financing	**1,379**	1,248	1,151
FICC	**7,388**	6,985	6,218
Equities intermediation	**4,374**	4,681	4,000
Equities financing	**3,017**	2,772	2,077
Equities	**7,391**	7,453	6,077
Net revenues	**14,779**	14,438	12,295
Provision for credit losses	**35**	52	178
Operating expenses	**10,851**	10,585	9,981
Pre-tax earnings	**3,893**	3,801	2,136
Provision for taxes	**779**	616	1,313
Net earnings	**3,114**	3,185	823
Preferred stock dividends	**385**	389	426
Net earnings to common	**$ 2,729**	$ 2,796	$ 397
Average common equity	**$40,060**	$41,237	$44,448
Return on average common equity	**6.8%**	6.8%	0.9%

The table below presents the net revenues of our Global Markets segment by line item in the consolidated statements of earnings.

$ in millions	FICC	Equities	Global Markets
Year Ended December 2019			
Market making	**$5,813**	**$4,344**	**$10,157**
Commissions and fees	**–**	**2,900**	**2,900**
Other principal transactions	**1**	**51**	**52**
Net interest income	**1,574**	**96**	**1,670**
Total net revenues	**$7,388**	**$7,391**	**$14,779**
Year Ended December 2018			
Market making	$5,531	$4,193	$ 9,724
Commissions and fees	–	3,055	3,055
Other principal transactions	19	33	52
Net interest income	1,435	172	1,607
Total net revenues	$6,985	$7,453	$14,438
Year Ended December 2017			
Market making	$4,612	$3,241	$ 7,853
Commissions and fees	–	2,920	2,920
Other principal transactions	60	20	80
Net interest income	1,546	(104)	1,442
Total net revenues	$6,218	$6,077	$12,295

In the table above:

- The difference between commissions and fees and those in the consolidated statements of earnings represents commissions and fees included in our Consumer & Wealth Management segment.
- See "Net Revenues" for further information about market making revenues, commissions and fees, and net interest income. See Note 25 to the consolidated financial statements for net interest income by business segment.
- The primary driver of net revenues for FICC intermediation was client activity.

Operating Environment. During 2019, Global Markets operated in an environment generally characterized by concerns about future global growth and a mixed macroeconomic environment, which led to accommodative monetary policies set by global central banks. Volatility was lower, with the average daily VIX decreasing to 15 for 2019 compared with 17 for 2018. The yield curve for the U.S. Treasury 2-year note versus the 10-year widened 15 basis points and global equity markets generally increased (with the MSCI World Index up 24% compared with the end of 2018). These conditions contributed to lower client activity, primarily in Equities, compared with 2018. If activity levels or volatility continue to decline, or if macroeconomic concerns continue, net revenues in Global Markets would likely be negatively impacted.

2019 versus 2018. Net revenues in Global Markets were $14.78 billion for 2019, 2% higher than 2018.

Net revenues in FICC were $7.39 billion, 6% higher than 2018, due to slightly higher net revenues in FICC intermediation, driven by improved market-making conditions on our inventory, and higher net revenues in FICC financing, reflecting higher net revenues in structured credit financing.

The following provides information about our FICC intermediation net revenues by business, compared with 2018 results:

- Net revenues in commodities were significantly higher and interest rate products were higher, reflecting improved market-making conditions on our inventory.
- Net revenues in mortgages were significantly higher, primarily reflecting higher client activity.
- Net revenues in currencies were significantly lower, primarily reflecting challenging market-making conditions on our inventory.
- Net revenues in credit products were lower, reflecting lower client activity.

Net revenues in Equities were $7.39 billion, essentially unchanged compared with 2018. Net revenues in Equities intermediation were lower, reflecting lower net revenues in derivatives, partially offset by higher net revenues in cash products. This decrease was offset by higher net revenues in Equities financing, reflecting improved spreads.

Provision for credit losses was $35 million for 2019, compared with $52 million for 2018.

Operating expenses were $10.85 billion for 2019, 3% higher than 2018, due to higher net provisions for litigation and regulatory proceedings and higher expenses for technology (increases primarily in depreciation and amortization and communications and technology), partially offset by decreased compensation and benefits expenses. Pre-tax earnings were $3.89 billion for 2019, 2% higher than 2018.

2018 versus 2017. Net revenues in Global Markets were $14.44 billion for 2018, 17% higher than 2017.

Net revenues in FICC were $6.99 billion, 12% higher than 2017, due to higher net revenues in FICC intermediation, reflecting higher client activity and the impact of improved market-making conditions on our inventory, and FICC financing, reflecting an increase in lending activity.

The following provides information about our FICC intermediation net revenues by business, compared with 2017 results:

- Net revenues in currencies were significantly higher, reflecting higher client activity and the impact of improved market-making conditions on our inventory.
- Net revenues in commodities were significantly higher, reflecting higher client activity and the impact of improved market-making conditions on our inventory, compared with challenging conditions in 2017.
- Net revenues in credit products were higher, reflecting higher client activity, partially offset by the impact of challenging market-making conditions on our inventory.
- Net revenues in interest rate products were lower, reflecting lower client activity, partially offset by the impact of improved market-making conditions on our inventory.
- Net revenues in mortgages were lower, reflecting the impact of challenging market-making conditions on our inventory.

Net revenues in Equities were $7.45 billion, 23% higher than 2017. Net revenues in Equities financing were significantly higher, reflecting improved spreads and higher average client balances. Net revenues in Equities intermediation were higher, reflecting significantly higher net revenues in derivatives.

Provision for credit losses was $52 million for 2018, 71% lower than 2017, due to an impairment of approximately $130 million on a secured loan in 2017.

Operating expenses were $10.59 billion for 2018, 6% higher than 2017, primarily due to higher net provisions for litigation and regulatory proceedings, increased compensation and benefits expenses, reflecting improved operating performance, and higher brokerage, clearing, exchange and distribution fees. Pre-tax earnings were $3.80 billion for 2018, 78% higher than 2017.

Asset Management

We manage client assets across a broad range of investment strategies and asset classes to a diverse set of institutional clients and a network of third-party distributors around the world, including equity, fixed income and alternative investments. We provide investment solutions including those managed on a fiduciary basis by our portfolio managers, as well as those managed by a variety of third-party managers. We offer our investment solutions in a variety of structures, including separately managed accounts, mutual funds, private partnerships and other comingled vehicles. These solutions begin with identifying clients' objectives and continue through portfolio construction, ongoing asset allocation and risk management and investment realization.

In addition to managing client assets, we invest in alternative investments across a range of asset classes that seek to deliver long-term accretive risk-adjusted returns. Our investing activities, which are typically longer term, include investments in public and private equity and debt investments in real estate and infrastructure entities.

Asset Management generates revenues from the following:

- **Management and Other Fees.** The majority of revenues in management and other fees consists of asset-based fees on client assets that we manage. For further information about assets under supervision (AUS), see "Assets Under Supervision" below. The fees that we charge vary by asset class, distribution channel and the types of services provided, and are affected by investment performance, as well as asset inflows and redemptions.
- **Incentive Fees.** In certain circumstances, we also receive incentive fees based on a percentage of a fund's or a separately managed account's return, or when the return exceeds a specified benchmark or other performance targets. Such fees include overrides, which consist of the increased share of the income and gains derived primarily from our private equity and credit funds when the return on a fund's investments over the life of the fund exceeds certain threshold returns. Incentive fees are recognized when it is probable that a significant reversal of such fees will not occur.
- **Equity Investments.** Our alternative investing activities relate to public and private equity investments in corporate, real estate and infrastructure entities. We also make investments through consolidated investment entities, substantially all of which are engaged in real estate investment activities.
- **Lending.** We provide financing related to our asset management businesses and invest in debt securities and loans backed by real estate. These activities include investments in mezzanine debt, senior debt and distressed debt securities.

The table below presents the operating results of our Asset Management segment.

	Year Ended December		
$ in millions	**2019**	2018	2017
Management and other fees	**$ 2,600**	$ 2,612	$ 2,329
Incentive fees	**130**	384	296
Equity investments	**4,765**	4,207	4,405
Lending	**1,470**	1,632	1,500
Net revenues	**8,965**	8,835	8,530
Provision for credit losses	**274**	160	322
Operating expenses	**4,817**	4,179	3,773
Pre-tax earnings	**3,874**	4,496	4,435
Provision for taxes	**775**	729	2,728
Net earnings	**3,099**	3,767	1,707
Preferred stock dividends	**86**	99	68
Net earnings to common	**$ 3,013**	$ 3,668	$ 1,639
Average common equity	**$21,575**	$19,061	$16,904
Return on average common equity	**14.0%**	19.2%	9.7%

Operating Environment. Higher global equity markets and increased fixed income asset prices contributed positively to our assets under supervision and our global equity and lending investment portfolio within our Asset Management segment. In the future, if asset prices decline, or investors continue to favor asset classes that typically generate lower fees or investors withdraw their assets, or if macroeconomic concerns negatively impact company-specific events, net revenues in Asset Management would likely be negatively impacted.

2019 versus 2018. Net revenues in Asset Management were $8.97 billion for 2019, essentially unchanged compared with 2018, reflecting higher net revenues in Equity investments, offset by significantly lower Incentive fees and lower net revenues in Lending. Management and other fees were essentially unchanged.

The increase in Equity investments net revenues reflected significantly higher net gains from investments in public equities (2019 included $477 million of net gains), partially offset by slightly lower net gains from investments in private equities (2019 included $4.29 billion of net gains, driven by company-specific events, including sales, and corporate performance). For 2019, 50% of the net revenues in Equity investments were generated from corporate investments and 50% were generated from real estate.

The decrease in Lending net revenues primarily reflected lower net gains from investments in debt instruments. Management and other fees reflected the impact of higher average assets under supervision, offset by a lower average effective fee due to shifts in the mix of client assets and strategies.

Provision for credit losses was $274 million for 2019, 71% higher than 2018, primarily reflecting higher impairments related to Purchased Credit Impaired (PCI) loans.

Operating expenses were $4.82 billion for 2019, 15% higher than 2018, primarily due to higher expenses related to consolidated investments and increased compensation and benefits expenses. Pre-tax earnings were $3.87 billion for 2019, 14% lower than 2018.

2018 versus 2017. Net revenues in Asset Management were $8.84 billion for 2018, 4% higher than 2017, reflecting higher Management and other fees, net revenues in Lending and Incentive fees, partially offset by slightly lower net revenues in Equity investments.

The increase in Management and other fees reflected higher average assets under supervision and the impact of the revenue recognition standard, partially offset by shifts in the mix of client assets and strategies. The increase in Lending net revenues reflected significantly higher net interest income, partially offset by significantly lower net gains from investments in debt instruments.

The decrease in Equity investments net revenues reflected net losses from investments in public equities (2018 included $183 million of net losses) compared with net gains in the prior year, partially offset by significantly higher net gains from investments in private equities (2018 included $4.39 billion of net gains), driven by company-specific events, including sales, and corporate performance. For 2018, 57% of the net revenues in Equity investments were generated from corporate investments and 43% were generated from real estate.

Provision for credit losses was $160 million for 2018, 50% lower than 2017, primarily reflecting lower impairments related to PCI loans.

Operating expenses were $4.18 billion for 2018, 11% higher than 2017, primarily due to higher expenses related to consolidated investments and the impact of the revenue recognition standard. Pre-tax earnings were $4.50 billion for 2018, essentially unchanged compared with 2017.

Consumer & Wealth Management

Consumer & Wealth Management helps clients achieve their individual financial goals by providing a broad range of wealth advisory and banking services, including financial planning, investment management, deposit taking, and lending. Services are offered through our global network of advisors and via our digital platforms.

Wealth Management. Wealth Management provides tailored wealth advisory services to clients across the wealth spectrum. We operate globally serving individuals, families, family offices, and select foundations and endowments. Our relationships are established directly or introduced through corporations that sponsor financial wellness programs for their employees.

We offer personalized financial planning inclusive of income and liability management, compensation and benefits analysis, trust and estate structuring, tax optimization, philanthropic giving, and asset protection. We also provide customized investment advisory solutions, and offer structuring and execution capabilities in security and derivative products across all major global markets. We leverage a broad, open-architecture investment platform and our global execution capabilities to help clients achieve their investment goals. In addition, we offer clients a full range of private banking services, including a variety of deposit alternatives and loans that our clients use to finance investments in both financial and nonfinancial assets, bridge cash flow timing gaps or provide liquidity and flexibility for other needs.

Wealth management generates revenues from the following:

- **Management and other fees.** Includes fees related to managing assets, providing investing and wealth advisory solutions, providing financial planning and counseling services via our subsidiary, The Ayco Company, L.P. and executing brokerage transactions for wealth management clients.
- **Incentive fees.** In certain circumstances, we also receive incentive fees based on a percentage of a fund's return, or when the return exceeds a specified benchmark or other performance targets. Such fees include overrides, which consist of the increased share of the income and gains derived primarily from our private equity and credit funds when the return on a fund's investments over the life of the fund exceeds certain threshold returns. Incentive fees are recognized when it is probable that a significant reversal of such fees will not occur.
- **Private banking and lending.** Includes interest income allocated to deposit-taking and net interest income earned on lending activities for wealth management clients.

Consumer Banking. Our Consumer banking business issues unsecured loans, through Marcus and credit cards to finance the purchases of goods or services. We also accept deposits through Marcus, primarily through Goldman Sachs Bank USA and Goldman Sachs International Bank, that are used as a source of funding. These deposits include savings and time deposits which provide us with a diversified source of funding that reduces our reliance on wholesale funding.

Consumer banking revenues consist of net interest income earned on unsecured loans issued to consumers through Marcus and credit card lending activities, and net interest income allocated to consumer deposits.

The table below presents the operating results of our Consumer & Wealth Management segment.

	Year Ended December		
$ in millions	**2019**	2018	2017
Management and other fees	**$3,475**	$3,282	$3,156
Incentive fees	**81**	446	121
Private banking and lending	**783**	826	790
Wealth management	**4,339**	4,554	4,067
Consumer banking	**864**	611	379
Net revenues	**5,203**	5,165	4,446
Provision for credit losses	**423**	338	123
Operating expenses	**4,545**	4,224	3,574
Pre-tax earnings	**235**	603	749
Provision for taxes	**47**	97	461
Net earnings	**188**	506	288
Preferred stock dividends	**29**	34	33
Net earnings to common	**$ 159**	$ 472	$ 255
Average common equity	**$6,292**	$4,950	$4,616
Return on average common equity	**2.5%**	9.5%	5.5%

Operating Environment. Higher global equity markets and increased fixed income asset prices contributed positively to our assets under supervision within our Consumer & Wealth Management segment. Our consumer banking activities continue to reflect increased deposits and loans. In the future, if asset prices decline, or investors continue to favor asset classes that typically generate lower fees or investors withdraw their assets, or if consumers withdraw their deposits or consumer credit deteriorates, net revenues in Consumer & Wealth Management would likely be negatively impacted.

2019 versus 2018. Net revenues in Consumer & Wealth Management were $5.20 billion for 2019, essentially unchanged compared with 2018.

Net revenues in Wealth management were $4.34 billion, 5% lower than 2018, reflecting significantly lower Incentive fees and slightly lower net revenues in Private banking and lending. These decreases were partially offset by higher Management and other fees (including the impact of United Capital), reflecting higher average assets under supervision.

Net revenues in Consumer banking were $864 million, 41% higher than 2018, driven by higher net interest income, primarily reflecting an increase in deposit balances.

Provision for credit losses was $423 million for 2019, 25% higher than 2018, primarily reflecting higher provisions related to credit card loans.

Operating expenses were $4.55 billion for 2019, 8% higher than 2018, due to higher expenses related to our credit card activities and the impact of United Capital. Pre-tax earnings were $235 million for 2019, 61% lower than 2018.

2018 versus 2017. Net revenues in Consumer & Wealth Management were $5.17 billion for 2018, 16% higher than 2017.

Net revenues in Wealth management were $4.55 billion, 12% higher than 2017, primarily reflecting significantly higher Incentive fees, as a result of harvesting. In addition, Management and other fees were slightly higher, reflecting higher average assets under supervision and the impact of the revenue recognition standard, partially offset by shifts in the mix of client assets and strategies. Net revenues in Private banking and lending were slightly higher.

Net revenues in Consumer banking were $611 million, 61% higher than 2017, driven by significantly higher net interest income, primarily reflecting an increase in deposit balances.

Provision for credit losses was $338 million for 2018, compared with $123 million for 2017, reflecting higher provisions primarily related to consumer loan growth.

Operating expenses were $4.22 billion for 2018, 18% higher than 2017, primarily due to increased compensation and benefits expenses, reflecting improved operating performance, higher expenses related to our digital lending and deposit platform and the impact of the revenue recognition standard. Pre-tax earnings were $603 million for 2018, 19% lower than 2017.

Assets Under Supervision

Assets under supervision includes our institutional clients' assets and assets sourced through third-party distributors (both included in our Asset Management segment), as well as high-net-worth clients' assets (included in our Consumer & Wealth Management segment), where we earn a fee for managing assets on a discretionary basis. This includes net assets in our mutual funds, hedge funds, credit funds, private equity funds, real estate funds, and separately managed accounts for institutional and individual investors. Assets under supervision also include client assets invested with third-party managers, private bank deposits and advisory relationships where we earn a fee for advisory and other services, but do not have investment discretion. Assets under supervision do not include the self-directed brokerage assets of our clients.

The table below presents our firmwide period-end assets under supervision by segment, asset class, distribution channel, region and vehicle.

	As of December		
$ in billions	**2019**	2018	2017
Segment			
Asset Management	**$1,298**	$1,087	$1,036
Consumer & Wealth Management	**561**	455	458
Total AUS	**$1,859**	$1,542	$1,494
Asset Class			
Alternative investments	**$ 185**	$ 167	$ 168
Equity	**423**	301	321
Fixed income	**789**	677	660
Total long-term AUS	**1,397**	1,145	1,149
Liquidity products	**462**	397	345
Total AUS	**$1,859**	$1,542	$1,494
Distribution Channel			
Institutional	**$ 684**	$ 575	$ 576
Wealth management	**561**	455	458
Third-party distributed	**614**	512	460
Total AUS	**$1,859**	$1,542	$1,494
Region			
Americas	**$1,408**	$1,151	$1,120
EMEA	**279**	239	229
Asia	**172**	152	145
Total AUS	**$1,859**	$1,542	$1,494
Vehicle			
Separate accounts	**$1,069**	$ 867	$ 857
Public funds	**603**	506	482
Private funds and other	**187**	169	155
Total AUS	**$1,859**	$1,542	$1,494

In the table above:

- Liquidity products includes money market funds and private bank deposits.
- EMEA represents Europe, Middle East and Africa.

Asset classes, such as alternative investment and equity assets, typically generate higher fees relative to fixed income and liquidity product assets. The average effective management fee (which excludes non-asset-based fees) we earned on our firmwide assets under supervision was 32 basis points for 2019, 34 basis points for 2018 and 35 basis points for 2017. These decreases reflected shifts in the mix of client assets and strategies.

We earn management fees on client assets that we manage and also receive incentive fees based on a percentage of a fund's or a separately managed account's return, or when the return exceeds a specified benchmark or other performance targets. These incentive fees are recognized when it is probable that a significant reversal of such fees will not occur. Our unrecognized incentive fees, assuming liquidation at fair value, were $1.63 billion as of December 2019, $1.50 billion as of December 2018 and $2.06 billion as of December 2017. These fees will be recognized, assuming no decline in fair value, if and when it is probable that a significant reversal of such fees will not occur, which is generally when such fees are no longer subject to fluctuations in the market value of the assets of the funds.

The table below presents changes in our assets under supervision.

$ in billions	Year Ended December 2019	2018	2017
Asset Management			
Beginning balance	**$1,087**	$1,036	$ 966
Net inflows/(outflows):			
Alternative investments	**2**	6	16
Equity	**34**	6	2
Fixed income	**35**	14	7
Total long-term AUS net inflows/(outflows)	**71**	26	25
Liquidity products	**52**	51	(12)
Total AUS net inflows/(outflows)	**123**	77	13
Net market appreciation/(depreciation)	**88**	(26)	57
Ending balance	**$1,298**	$1,087	$1,036
Consumer & Wealth Management			
Beginning balance	**$ 455**	$ 458	$ 413
Net inflows/(outflows):			
Alternative investments	**9**	(5)	(1)
Equity	**11**	7	–
Fixed income	**17**	9	18
Total long-term AUS net inflows/(outflows)	**37**	11	17
Liquidity products	**13**	1	(1)
Total AUS net inflows/(outflows)	**50**	12	16
Net market appreciation/(depreciation)	**56**	(15)	29
Ending balance	**$ 561**	$ 455	$ 458
Firmwide			
Beginning balance	**$1,542**	$1,494	$1,379
Net inflows/(outflows):			
Alternative investments	**11**	1	15
Equity	**45**	13	2
Fixed income	**52**	23	25
Total long-term AUS net inflows/(outflows)	**108**	37	42
Liquidity products	**65**	52	(13)
Total AUS net inflows/(outflows)	**173**	89	29
Net market appreciation/(depreciation)	**144**	(41)	86
Ending balance	**$1,859**	$1,542	$1,494

In the table above:

- Total AUS net inflows/(outflows) for 2019 included $71 billion of inflows (substantially all in equity and fixed income assets) in connection with the acquisitions of Standard & Poor's Investment Advisory Services (SPIAS), United Capital and Rocaton Investment Advisors (Rocaton). SPIAS and Rocaton were included in the Asset Management segment and United Capital was included in the Consumer & Wealth Management segment.
- Total AUS net inflows/(outflows) for 2017 included $23 billion of inflows ($20 billion in long-term AUS and $3 billion in liquidity products) in connection with the acquisition of a portion of Verus Investors' outsourced chief investment officer business (Verus acquisition) and $5 billion of equity asset outflows in connection with the divestiture of our local Australian-focused investment capabilities and fund platform (Australian divestiture). The Verus acquisition and Australian divestiture were included in the Asset Management segment.

The table below presents information about our average monthly firmwide assets under supervision.

$ in billions	Average for the Year Ended December 2019	2018	2017
Segment			
Asset Management	**$1,182**	$1,050	$ 979
Consumer & Wealth Management	**505**	467	438
Total AUS	**$1,687**	$1,517	$1,417
Asset Class			
Alternative investments	**$ 176**	$ 171	$ 162
Equity	**364**	329	292
Fixed income	**746**	665	633
Total long-term AUS	**1,286**	1,165	1,087
Liquidity products	**401**	352	330
Total AUS	**$1,687**	$1,517	$1,417

In addition to our assets under supervision, we have discretion over alternative investments where we currently do not earn management fees (non-fee-earning alternative assets).

The table below presents information about our assets under supervision for alternative assets, non-fee-earning alternative assets and total alternative assets.

$ in billions	AUS	Non-fee-earning alternative assets	Total alternative assets
As of December 2019			
Private equity	**$ 81**	**$ 38**	**$119**
Credit	**14**	**51**	**65**
Real estate	**13**	**43**	**56**
Hedge funds and multi-asset	**77**	**1**	**78**
Other	**–**	**1**	**1**
Total	**$185**	**$134**	**$319**
As of December 2018			
Private equity	$ 72	$ 35	$107
Credit	11	47	58
Real estate	10	38	48
Hedge funds and multi-asset	74	1	75
Other	–	1	1
Total	$167	$122	$289
As of December 2017			
Private equity	$ 74	$ 35	$109
Credit	7	37	44
Real estate	10	28	38
Hedge funds and multi-asset	77	1	78
Other	–	1	1
Total	$168	$102	$270

In the table above:

- Total alternative assets included uncalled capital that is available for future investing of $32 billion as of December 2019, $27 billion as of December 2018 and $26 billion as of December 2017.
- Non-fee-earning alternative assets primarily includes investments that we hold on our balance sheet, our unfunded commitments, unfunded commitments of our clients (where we do not charge fees on commitments), credit facilities collateralized by fund assets and employee funds. Our calculation of non-fee-earning alternative assets may not be comparable to similar calculations used by other companies.

The table below presents information about alternative investments in our Asset Management segment that we hold on our balance sheet.

$ in billions	Loans and debt securities	Equity	Other assets	Total
As of December 2019				
Private equity	**$ –**	**$17**	**$ –**	**$17**
Credit	**20**	**–**	**–**	**20**
Real estate	**11**	**5**	**17**	**33**
Other	**–**	**–**	**1**	**1**
Total	**$31**	**$22**	**$18**	**$71**
As of December 2018				
Private equity	$ –	$17	$ –	$17
Credit	14	–	–	14
Real estate	10	4	13	27
Other	–	–	1	1
Total	$24	$21	$14	$59
As of December 2017				
Private equity	$ –	$18	$ –	$18
Credit	13	–	–	13
Real estate	9	4	9	22
Other	–	–	1	1
Total	$22	$22	$10	$54

In the table above:

- Private equity includes positions which converted to public equity upon the initial public offering of the underlying company of $2 billion as of December 2019, $1 billion as of December 2018 and $2 billion as of December 2017.
- Other assets represents investments held by consolidated investment entities (CIEs), which were funded with liabilities of approximately $9 billion as of December 2019, $6 billion as of December 2018 and $4 billion as of December 2017. Substantially all such liabilities were nonrecourse, thereby reducing our equity at risk.

The table below presents information about our equity investments by vintage.

$ in billions	As of December 2019
Equity investments	**$22**
2012 or earlier	**29%**
2013 - 2015	**31%**
2016 - thereafter	**40%**
Total	**100%**

Geographic Data

See Note 25 to the consolidated financial statements for a summary of our total net revenues, pre-tax earnings and net earnings by geographic region.

Balance Sheet and Funding Sources

Balance Sheet Management

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

Although our balance sheet fluctuates on a day-to-day basis, our total assets at quarter-end and year-end dates are generally not materially different from those occurring within our reporting periods.

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

Balance Sheet Planning. We prepare a balance sheet plan that combines our projected total assets and composition of assets with our 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. The objectives of this planning process are:

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

Treasury and our independent risk oversight and control functions, along with our 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.

Our consolidated balance sheet plan, including our balance sheets by business, funding projections and projected key metrics, is reviewed and approved by the Firmwide Asset Liability Committee and the Risk Governance Committee. 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 Risk Governance Committee have the responsibility to review and approve balance sheet limits. These limits are set at levels which are close to actual operating levels, rather than at levels which reflect our maximum risk appetite, in order to ensure prompt escalation and discussion among our revenue-producing units, Treasury and our independent risk oversight and control functions on a routine basis. Additionally, the Risk Governance Committee sets aged limits for certain financial instruments as a disincentive to hold such positions over longer periods of time. Requests for changes in limits are evaluated after giving consideration to their impact on our key metrics. Compliance with limits is monitored by our revenue-producing units and Treasury, as well as our independent risk oversight and control functions.

Monitoring of Key Metrics. We monitor key balance sheet metrics both by business and on a consolidated basis, including asset and liability size and composition, limit utilization and risk measures. We allocate assets to businesses and review and analyze movements resulting from new business activity, as well as market fluctuations.

Scenario Analyses. We conduct various scenario analyses including as part of the Comprehensive Capital Analysis and Review (CCAR) and U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) Stress Tests (DFAST), as well as our resolution and recovery planning. See "Equity Capital Management and Regulatory Capital — Equity Capital Management" for further information about these scenario analyses. These scenarios cover short- and long-term time horizons using various macroeconomic and firm-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 2019, total assets in our consolidated balance sheets were $992.97 billion, an increase of $61.17 billion from December 2018, primarily reflecting increases in trading assets of $75.14 billion, investments of $16.71 billion, and loans of $11.07 billion, partially offset by a net decrease in collateralized agreements of $52.78 billion. The increase in trading assets primarily reflected higher client activity in government and agency obligations, and equity securities. The increase in investments primarily reflected an increase in U.S. government obligations accounted for as available-for-sale and held to maturity. The increase in loans primarily reflected an increase in corporate, wealth management, and commercial real estate loans, partially offset by a decrease in residential real estate loans. The net decrease in collateralized agreements primarily reflected the impact of our and our clients' activities.

As of December 2019, total liabilities in our consolidated balance sheets were $902.70 billion, an increase of $61.09 billion from December 2018, primarily reflecting increases in collateralized financings of $40.05 billion and deposits of $31.76 billion, partially offset by a decrease in unsecured borrowings of $9.29 billion. The net increase in collateralized financings primarily reflected our and our clients' activities. The increase in deposits primarily reflected an increase in consumer deposits. The decrease in unsecured borrowings was primarily due to net maturities.

Our total repurchase agreements, accounted for as collateralized financings, were $117.76 billion as of December 2019 and $78.72 billion as of December 2018, which were 32% higher as of December 2019 and 1% higher as of December 2018 than the average daily amount of repurchase agreements over the respective quarters, and 40% higher as of December 2019 and 12% lower as of December 2018 than the average daily amount of repurchase agreements over the respective years. As of December 2019, the increase in our repurchase agreements relative to the average daily amount of repurchase agreements during the quarter and year resulted from higher levels of our and our clients' activity at the end of the period.

The level of our repurchase agreements fluctuates between and within periods, primarily due to providing clients with access to highly liquid collateral, such as liquid government and agency obligations, through collateralized financing activities.

The table below presents information about our balance sheet and leverage ratios.

	As of December	
$ in millions	**2019**	2018
Total assets	**$992,968**	$931,796
Unsecured long-term borrowings	**$207,076**	$224,149
Total shareholders' equity	**$ 90,265**	$ 90,185
Leverage ratio	**11.0x**	10.3x
Debt to equity ratio	**2.3x**	2.5x

In the table above:

- The leverage ratio equals total assets divided by total shareholders' equity and measures the proportion of equity and debt we use to finance assets. This ratio is different from the leverage ratios included in Note 20 to the consolidated financial statements.
- The debt-to-equity ratio equals unsecured long-term borrowings divided by total shareholders' equity.

The table below presents information about our shareholders' equity and book value per common share, including the reconciliation of common shareholders' equity to tangible common shareholders' equity.

	As of December	
$ in millions, except per share amounts	**2019**	2018
Total shareholders' equity	**$ 90,265**	$ 90,185
Preferred stock	**(11,203)**	(11,203)
Common shareholders' equity	**79,062**	78,982
Goodwill and identifiable intangible assets	**(4,837)**	(4,082)
Tangible common shareholders' equity	**$ 74,225**	$ 74,900
Book value per common share	**$ 218.52**	$ 207.36
Tangible book value per common share	**$ 205.15**	$ 196.64

In the table above:

- Tangible common shareholders' equity is calculated as total shareholders' equity less preferred stock, goodwill and identifiable intangible assets. We believe that tangible common shareholders' equity is meaningful because it is a measure that we and investors use to assess capital adequacy. Tangible common shareholders' equity is a non-GAAP measure and may not be comparable to similar non-GAAP measures used by other companies.
- Book value per common share and tangible book value per common share are based on common shares outstanding and restricted stock units granted to employees with no future service requirements and not subject to performance conditions (collectively, basic shares) of 361.8 million as of December 2019 and 380.9 million as of December 2018. We believe that tangible book value per common share (tangible common shareholders' equity divided by basic shares) is meaningful because it is a measure that we and investors use to assess capital adequacy. Tangible book value per common share is a non-GAAP measure and may not be comparable to similar non-GAAP measures used by other companies.

Funding Sources

Our primary sources of funding are deposits, collateralized financings, unsecured short- and long-term borrowings, and shareholders' equity. We seek to maintain broad and diversified funding sources globally across products, programs, markets, currencies and creditors to avoid funding concentrations.

The table below presents information about our funding sources.

	As of December			
$ in millions	**2019**		2018	
Deposits	**$190,019**	**28%**	$158,257	25%
Collateralized financings	**152,018**	**22%**	111,964	18%
Unsecured short-term borrowings	**48,287**	**7%**	40,502	7%
Unsecured long-term borrowings	**207,076**	**30%**	224,149	36%
Total shareholders' equity	**90,265**	**13%**	90,185	14%
Total funding sources	**$687,665**	**100%**	$625,057	100%

Our funding is primarily raised in U.S. dollar, Euro, British pound and Japanese yen. We generally distribute our funding products through our own sales force and third-party distributors to a large, diverse creditor base in a variety of markets in the Americas, Europe and Asia. We believe that our relationships with our creditors are critical to our liquidity. Our creditors include banks, governments, securities lenders, corporations, pension funds, insurance companies, mutual funds and individuals. 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. We raise deposits, including savings, demand and time deposits, through internal and third-party broker-dealers, and from consumers and institutional clients, and primarily through Goldman Sachs Bank USA (GS Bank USA) and Goldman Sachs International Bank (GSIB). See Note 13 to the consolidated financial statements for further information about our deposits.

Secured Funding. We fund a significant amount of inventory and a portion of investments on a secured basis. Secured funding includes collateralized financings in the consolidated balance sheets. We may also pledge our inventory and investments as collateral for securities borrowed under a securities lending agreement. We also use our own inventory and investments to cover transactions in which we or our clients have sold securities that have not yet been purchased. Secured funding is less sensitive to changes in our credit quality than unsecured funding, due to our posting of collateral to our lenders. Nonetheless, we analyze the refinancing risk of our secured funding activities, taking into account trade tenors, maturity profiles, counterparty concentrations, collateral eligibility and counterparty rollover probabilities. We seek to mitigate our refinancing risk by executing term trades with staggered maturities, diversifying counterparties, raising excess secured funding and pre-funding residual risk through our GCLA.

We seek to raise secured funding with a term appropriate for the liquidity of the assets that are being financed, and we seek longer maturities for secured funding collateralized by asset classes that may be harder to fund on a secured basis, especially during times of market stress. Our secured funding, excluding funding collateralized by liquid government and agency obligations, is primarily executed for tenors of one month or greater and is primarily executed through term repurchase agreements and securities loaned contracts.

The weighted average maturity of our secured funding included in collateralized financings in the consolidated balance sheets, excluding funding that can only be collateralized by liquid government and agency obligations, exceeded 120 days as of December 2019.

Assets that may be harder to fund on a secured basis during times of market stress include certain financial instruments in the following categories: mortgage and other asset-backed loans and securities, non-investment-grade corporate debt securities, equity securities and emerging market securities. Assets that are classified in level 3 of the fair value hierarchy are generally funded on an unsecured basis. See Notes 4 through 10 to the consolidated financial statements for further information about the classification of financial instruments in the fair value hierarchy and "Unsecured Long-Term Borrowings" below for further information about the use of unsecured long-term borrowings as a source of funding.

We also raise financing through other types of collateralized financings, such as secured loans and notes. GS Bank USA has access to funding from the Federal Home Loan Bank. Our outstanding borrowings against the Federal Home Loan Bank were $527 million as of December 2019 and $528 million as of December 2018.

GS Bank USA also has 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 Short-Term Borrowings. A significant portion of our unsecured short-term borrowings was originally long-term debt that is scheduled to mature within one year of the reporting date. We use unsecured short-term borrowings, including U.S. and non-U.S. hybrid financial instruments, to finance liquid assets and for other cash management purposes. In light of regulatory developments, Group Inc. no longer issues debt with an original maturity of less than one year, other than to its subsidiaries. See Note 14 to the consolidated financial statements for further information about our unsecured short-term borrowings.

Unsecured Long-Term Borrowings. Unsecured long-term borrowings, including structured notes, are raised through syndicated U.S. registered offerings, U.S. registered and Rule 144A medium-term note programs, offshore medium-term note offerings and other debt offerings. We issue in different tenors, currencies and products to maximize the diversification of our investor base.

The table below presents our quarterly unsecured long-term borrowings maturity profile as of December 2019.

$ in millions	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total
2021	**$5,174**	**$5,354**	**$7,896**	**$7,913**	**$ 26,337**
2022	**$6,409**	**$6,327**	**$6,406**	**$6,145**	**25,287**
2023	**$9,629**	**$4,558**	**$8,029**	**$4,476**	**26,692**
2024	**$5,983**	**$4,186**	**$5,842**	**$3,133**	**19,144**
2025 - thereafter					**109,616**
Total					**$207,076**

The weighted average maturity of our unsecured long-term borrowings as of December 2019 was approximately eight years. To mitigate refinancing risk, we seek to limit the principal amount of debt maturing over the course of any monthly, quarterly or annual time horizon. We enter into interest rate swaps to convert a portion of our unsecured long-term borrowings into floating-rate obligations to manage our exposure to interest rates. See Note 14 to the consolidated financial statements for further information about our unsecured long-term borrowings.

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

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 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 process, the results of resolution capital models and other factors, such as rating agency guidelines, subsidiary capital requirements, the business environment and conditions in the financial markets.

We manage our capital requirements and the levels of our capital usage principally by setting limits on the balance sheet and/or limits on risk, in each case at both the firmwide and business levels.

We principally manage the level and composition of our equity capital through issuances and repurchases of our common stock. We may also, from time to time, issue or repurchase our preferred stock, junior subordinated debt issued to trusts, and other subordinated debt or other forms of capital as business conditions warrant. Prior to any repurchases, we must receive confirmation that the Board of Governors of the Federal Reserve System (FRB) does not object to such capital action. See Notes 14 and 19 to the consolidated financial statements for further information about our preferred stock, junior subordinated debt issued to trusts and other subordinated debt.

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.

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 after experiencing a severe stress event. Our assessment of capital adequacy is viewed in tandem with our assessment of liquidity adequacy and is integrated into our overall risk management structure, governance and policy framework.

Our stress tests incorporate our internally designed stress scenarios, including our internally developed severely adverse scenario, and those required under CCAR and DFAST, and are designed to capture our specific vulnerabilities and risks. We provide further information about our stress test processes and a summary of the results on our website as described in "Business — Available Information" in Part I, Item 1 of this Form 10-K.

As required by the FRB's CCAR rules, we submit an annual capital plan for review by the FRB. The purpose of the FRB's review is to ensure that we have a robust, forward-looking capital planning process that accounts for our unique risks and that permits continued operation during times of economic and financial stress.

The FRB evaluates us based, in part, on whether we have the capital necessary to continue operating under the baseline and severely adverse scenarios provided by the FRB and those developed internally. This evaluation also takes into account our process for identifying risk, our controls and governance for capital planning, and our guidelines for making capital planning decisions. In addition, the FRB evaluates our plan to make capital distributions (i.e., dividend payments and repurchases or redemptions of stock, subordinated debt or other capital securities) and issue capital, across the range of macroeconomic scenarios and firm-specific assumptions.

With respect to our 2019 CCAR submission, the FRB informed us that it did not object to our capital plan, which includes the return of up to $8.8 billion of capital from the third quarter of 2019 through the second quarter of 2020 (2019 CCAR cycle). The capital plan provides for up to $7.0 billion in repurchases of outstanding common stock and $1.8 billion in total common stock dividends, including an increase in our common stock dividend from $0.85 to $1.25 per share in the third quarter of 2019. During the third and fourth quarters of 2019, we returned a total of $3.75 billion of capital, including stock repurchases of $2.83 billion and common stock dividends of $919 million. Our stock repurchase amount was less than the authorized amount included in our capital plan submission for the first half of the 2019 CCAR cycle. The unutilized amount will be carried forward to the second half of the 2019 CCAR cycle. We may elect to execute only a portion or all of our capital actions, based on, among other things, our current and projected capital position, and capital deployment opportunities. Our target CET1 capital ratio over the next three years is between 13.0% to 13.5% (including management buffers). This target reflects, among other things, our calculations and our current interpretation of the proposed SCB rule and may change when the rule is finalized and implemented. We published a summary of our annual DFAST results in June 2019. See "Business — Available Information" in Part I, Item 1 of this Form 10-K.

In October 2019, in accordance with the DFAST rules, we submitted our Mid-Cycle DFAST results to the FRB and published a summary of the results of our internally developed severely adverse scenario. The FRB eliminated the requirement to conduct the Mid-Cycle DFAST beginning in 2020. We are still required to conduct a stress test on an annual basis and publish a summary of the results. The FRB also conducts its own annual stress tests and publishes a summary of certain results. See "Business — Available Information" in Part I, Item 1 of this Form 10-K.

GS Bank USA has its own capital planning process, but was not required to conduct its annual stress test in 2019.

Goldman Sachs International (GSI) and GSIB also have their own capital planning and stress testing process, which incorporates internally designed stress tests and those required under the Prudential Regulation Authority's (PRA) Internal Capital Adequacy Assessment Process.

Contingency Capital Plan. As part of our comprehensive capital management policy, we maintain a contingency capital plan. Our contingency capital plan provides a framework for analyzing and responding to a perceived or actual capital deficiency, including, but not limited to, identification of drivers of a capital deficiency, as well as mitigants and potential actions. It outlines the appropriate communication procedures to follow during a crisis period, including internal dissemination of information, as well as timely communication with external stakeholders.

Capital Attribution. We assess each of our businesses' capital usage based on our internal assessment of risks, which incorporates an attribution of all of our relevant regulatory capital requirements. These regulatory capital requirements are allocated using our attributed equity framework, which takes into consideration our most binding capital constraints. Our most binding capital constraint is based on the results of the FRB's annual stress test scenarios which include the Standardized risk-based capital and leverage ratios. See "Segment Assets and Operating Results — Segment Operating Results" for information about our attributed equity by segment.

Share Repurchase Program. We use our share repurchase program to help maintain the appropriate level of common equity. The repurchase program is effected primarily through regular open-market purchases (which may include repurchase plans designed to comply with Rule 10b5-1 and accelerated share repurchases), the amounts and timing of which are determined primarily by our current and projected capital position and our capital plan submitted to the FRB as part of CCAR. The amounts and timing of the repurchases may also be influenced by general market conditions and the prevailing price and trading volumes of our common stock.

On July 15, 2019, the Board of Directors of Group Inc. (Board) authorized the repurchase of an additional 50 million shares of common stock pursuant to our existing share repurchase program; however, we are only permitted to make repurchases to the extent that such repurchases have not been objected to by the FRB. As of December 2019, the remaining share authorization under our existing repurchase program was 57.9 million shares. See "Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities" in Part II, Item 5 of this Form 10-K and Note 19 to the consolidated financial statements for further information about our share repurchase program, and see above for information about our capital planning and stress testing process.

Resolution Capital Models. In connection with our resolution planning efforts, we have established a Resolution Capital Adequacy and Positioning framework, which is designed to ensure that our major subsidiaries (GS Bank USA, Goldman Sachs & Co. LLC (GS&Co.), GSI, GSIB, Goldman Sachs Japan Co., Ltd. (GSJCL), Goldman Sachs Asset Management, L.P. and Goldman Sachs Asset Management International) have access to sufficient loss-absorbing capacity (in the form of equity, subordinated debt and unsecured senior debt) so that they are able to wind-down following a Group Inc. bankruptcy filing in accordance with our preferred resolution strategy.

In addition, we have established a triggers and alerts framework, which is designed to provide the Board with information needed to make an informed decision on whether and when to commence bankruptcy proceedings for Group Inc.

Rating Agency Guidelines

The credit rating agencies assign credit ratings to the obligations of Group Inc., which directly issues or guarantees substantially all of our senior unsecured debt obligations. GS&Co. and GSI have been assigned long-term and short-term issuer ratings by certain credit rating agencies. GS Bank USA and GSIB have also been assigned long-term and short-term issuer ratings, as well as ratings on their long-term and short-term bank deposits. In addition, credit rating agencies have assigned ratings to debt obligations of certain other subsidiaries of Group Inc.

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 credit ratings of Group Inc., GS Bank USA, GSIB, GS&Co. and GSI.

Consolidated Regulatory Capital

We are subject to consolidated regulatory capital requirements which are calculated in accordance with the regulations of the FRB (Capital Framework). Under the Capital Framework, we are an "Advanced approach" banking organization and have been designated as a global systemically important bank (G-SIB).

The capital requirements calculated in accordance with the Capital Framework include the risk-based capital buffers and G-SIB surcharge. The risk-based capital buffers, applicable to us for 2019, include the capital conservation buffer of 2.5% and the countercyclical capital buffer, which the FRB has set to zero percent. In addition, the G-SIB surcharge applicable to us for 2019 is 2.5% based on 2017 financial data. The G-SIB surcharge applicable to us for 2020 is 2.5% based on 2018 financial data and 2.5% for 2021 based on 2019 financial data. The G-SIB surcharge and countercyclical buffer in the future may differ due to additional guidance from our regulators and/or positional changes. We expect that our G-SIB surcharge will increase to 3% over the next three years. This increase would be effective on January 1 of the year that is one full calendar year after the increased G-SIB surcharge is finalized. See Note 20 to the consolidated financial statements for further information about our risk-based capital ratios and leverage ratios, and the Capital Framework.

Subsidiary Capital Requirements

Many of our subsidiaries, including our bank and broker-dealer subsidiaries, are subject to separate regulation and capital requirements of the jurisdictions in which they operate.

Bank Subsidiaries. GS Bank USA is our primary U.S. banking subsidiary and GSIB is our primary non-U.S. banking subsidiary. These entities are subject to regulatory capital requirements. See Note 20 to the consolidated financial statements for further information about the regulatory capital requirements of our bank subsidiaries.

U.S. Regulated Broker-Dealer Subsidiaries. GS&Co. is our primary U.S. regulated broker-dealer subsidiary and is subject to regulatory capital requirements, including those imposed by the SEC and the Financial Industry Regulatory Authority, Inc. In addition, GS&Co. is a registered futures commission merchant and is subject to regulatory capital requirements imposed by the CFTC, the Chicago Mercantile Exchange and the National Futures Association. Rule 15c3-1 of the SEC and Rule 1.17 of the CFTC specify uniform minimum net capital requirements, as defined, for their registrants, and also effectively require that a significant part of the registrants' assets be kept in relatively liquid form. GS&Co. has elected to calculate its minimum capital requirements in accordance with the "Alternative Net Capital Requirement" as permitted by Rule 15c3-1.

GS&Co. had regulatory net capital, as defined by Rule 15c3-1, of $20.88 billion as of December 2019 and $17.45 billion as of December 2018, which exceeded the amount required by $18.15 billion as of December 2019 and $15.00 billion as of December 2018. In addition to its alternative minimum net capital requirements, GS&Co. is also required to hold tentative net capital in excess of $1 billion and net capital in excess of $500 million in accordance with the market and credit risk standards of Appendix E of Rule 15c3-1. GS&Co. is also required to notify the SEC in the event that its tentative net capital is less than $5 billion. As of both December 2019 and December 2018, GS&Co. had tentative net capital and net capital in excess of both the minimum and the notification requirements.

In February 2020, GS&Co. made a cash dividend distribution of $4.00 billion to Group Inc.

Non-U.S. Regulated Broker-Dealer Subsidiaries. Our principal non-U.S. regulated broker-dealer subsidiaries include GSI and GSJCL.

GSI, our U.K. broker-dealer, is regulated by the PRA and the Financial Conduct Authority (FCA). GSI is subject to the capital framework for E.U.-regulated financial institutions prescribed in the E.U. Fourth Capital Requirements Directive and the E.U. Capital Requirements Regulation (CRR). These capital regulations are largely based on Basel III.

The table below presents GSI's risk-based capital requirements.

	As of December	
	2019	2018
Risk-based capital requirements		
CET1 capital ratio	**8.8%**	8.1%
Tier 1 capital ratio	**10.8%**	10.1%
Total capital ratio	**13.4%**	12.7%

In the table above, the risk-based capital requirements incorporate capital guidance received from the PRA and could change in the future. GSI's future capital requirements may also be impacted by developments, such as the introduction of risk-based capital buffers.

The table below presents information about GSI's risk-based capital ratios.

	As of December	
$ in millions	**2019**	2018
Risk-based capital and risk-weighted assets (RWAs)		
CET1 capital	**$ 24,142**	$ 23,956
Tier 1 capital	**$ 32,442**	$ 32,256
Tier 2 capital	**$ 5,374**	$ 5,377
Total capital	**$ 37,816**	$ 37,633
RWAs	**$206,669**	$200,089
Risk-based capital ratios		
CET1 capital ratio	**11.7%**	12.0%
Tier 1 capital ratio	**15.7%**	16.1%
Total capital ratio	**18.3%**	18.8%

In the table above, CET1 capital, Tier 1 capital and Total capital as of December 2019 excluded GSI's undistributed profits from December 1, 2018 through December 31, 2019, which may be distributed as dividends in the future by GSI, subject to approval by the Board of Directors of GSI.

In November 2016, the European Commission proposed amendments to the CRR to implement a 3% leverage ratio requirement for certain E.U. financial institutions. This leverage ratio compares the CRR's definition of Tier 1 capital to a measure of leverage exposure, defined as the sum of certain assets plus certain off-balance-sheet exposures (which include a measure of derivatives, securities financing transactions, commitments and guarantees), less Tier 1 capital deductions. The required leverage ratio is expected to become effective for GSI on June 28, 2021. GSI had a leverage ratio of 4.6% as of December 2019 and 4.4% as of December 2018. GSI's leverage ratio as of December 2019 excluded GSI's undistributed profits from December 1, 2018 through December 31, 2019, which may be distributed as dividends in the future by GSI, subject to approval by the Board of Directors of GSI. This leverage ratio is based on our current interpretation and understanding of this rule and may evolve as we discuss the interpretation and application of this rule with GSI's regulators.

GSI is also subject to a minimum requirement for own funds and eligible liabilities issued to affiliates. This requirement is subject to a transitional period which began to phase in from January 1, 2019 and will become fully effective on January 1, 2022. As of December 2019, GSI was in compliance with this requirement.

GSJCL, our Japanese broker-dealer, is regulated by Japan's Financial Services Agency. GSJCL and certain other non-U.S. subsidiaries are also subject to capital requirements promulgated by authorities of the countries in which they operate. As of both December 2019 and December 2018, these subsidiaries were in compliance with their local capital requirements.

Regulatory Matters and Other Developments

Regulatory Matters

Our businesses are subject to extensive regulation and supervision worldwide. Regulations have been adopted or are being considered by regulators and policy makers worldwide. 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, Item 1 of this Form 10-K for further information about the laws, rules and regulations and proposed laws, rules and regulations that apply to us and our operations.

TLAC. We are subject to the FRB's TLAC and related requirements, which became effective in January 2019. Failure to comply with the TLAC and related requirements could result in restrictions being imposed by the FRB and could limit our ability to repurchase shares, pay dividends and make certain discretionary compensation payments.

The table below presents TLAC and external long-term debt requirements.

	Requirements
TLAC to RWAs	**22.0%**
TLAC to leverage exposure	**9.5%**
External long-term debt to RWAs	**8.5%**
External long-term debt to leverage exposure	**4.5%**

In the table above:

- The TLAC to RWAs requirement includes (i) the 18% minimum, (ii) the 2.5% buffer, (iii) the 1.5% G-SIB surcharge (Method 1) and (iv) the countercyclical capital buffer, which the FRB has set to zero percent.
- The TLAC to leverage exposure requirement includes (i) the 7.5% minimum and (ii) the 2.0% leverage exposure buffer.
- The external long-term debt to RWAs requirement includes (i) the 6% minimum and (ii) the 2.5% G-SIB surcharge (Method 2).
- The external long-term debt to total leverage exposure is the 4.5% minimum.

The table below presents information about our TLAC and external long-term debt ratios.

	As of December	
$ in millions	**2019**	2018
TLAC	**$ 236,850**	$ 254,836
External long-term debt	**$ 141,770**	$ 160,493
RWAs	**$ 563,575**	$ 558,111
Leverage exposure	**$1,375,467**	$1,342,906
TLAC to RWAs	**42.0%**	45.7%
TLAC to leverage exposure	**17.2%**	19.0%
External long-term debt to RWAs	**25.2%**	28.8%
External long-term debt to leverage exposure	**10.3%**	12.0%

In the table above:

- TLAC includes common and preferred stock, and eligible long-term debt issued by Group Inc. Eligible long-term debt represents unsecured debt, which has a remaining maturity of at least one year and satisfies additional requirements.
- External long-term debt consists of eligible long-term debt subject to a haircut if it is due to be paid between one and two years.
- RWAs represent Standardized RWAs as of December 2019 and Advanced RWAs as of December 2018. In accordance with the TLAC rules, the higher of Advanced or Standardized RWAs are used in the calculation of TLAC and external long-term debt ratios and applicable requirements.
- Leverage exposure consists of average adjusted total assets and certain off-balance-sheet exposures.

See "Business — Regulation" in Part I, Item 1 of this Form 10-K for further information about TLAC.

Other Developments

Brexit. In March 2017, the U.K. government commenced the formal proceedings to withdraw from the E.U. The E.U. and the U.K. agreed to a withdrawal agreement (the Withdrawal Agreement), which became effective on January 31, 2020. The transition period under the Withdrawal Agreement will last until the end of December 2020 to allow the two sides to negotiate a future trade agreement. During the transition period, the U.K. will be treated as if it were a member state of the E.U. and therefore the existing arrangements between the U.K. and the E.U. will not change. The Withdrawal Agreement provides for the possibility of an extension of the transition period for either one or two more years. However, the U.K. has pledged not to extend the transition period beyond December 31, 2020.

Based upon the existing non-E.U. country equivalence regimes, the E.U. and the U.K. have agreed to complete their assessments of equivalence by the end of June 2020. There is significant uncertainty as to whether the outcome of those assessments will be published before the end of the transition period, and whether U.K. firms can rely upon the availability of equivalence in their post-transition planning. We continue to prepare for a scenario where the U.K. financial services firms will lose access to E.U. markets on December 31, 2020 (a "hard" Brexit) while ensuring we remain flexible and well positioned to allow our clients to benefit from any more favorable scenarios. Our planning also recognizes that after the end of the transition period, we can rely on a degree of continuing access for our U.K. entities pursuant to national cross-border access regimes in certain jurisdictions (for example, based on specific licenses or exemptions).

In a hard Brexit scenario or as otherwise necessary, our plan is to service our E.U. client base in the following manner:

- Our German bank subsidiary, Goldman Sachs Bank Europe SE (GSBE), will act as our main operating subsidiary in the E.U. and will assume certain functions that can no longer be efficiently and effectively performed by our U.K. operating subsidiaries, including GSI, GSIB and GSAMI. For clients in jurisdictions which do not benefit from a specific "permissive" regime, we will actively work with those clients to plan the most appropriate timeline for any required migration of their business to GSBE in an orderly fashion which may be required before the end of the transition period.
- We have set up branches of GSBE in a number of jurisdictions in the E.U. to enable Investment Banking, Global Markets and Consumer & Wealth Management personnel to be situated in our offices in those countries.
- A meaningful portion of our Global Markets and Investment Banking clients are classified as professionals or eligible counterparties in specific jurisdictions and may choose to continue being serviced by, and to continue to transact with, the U.K. service providers and entities under domestic arrangements provided by individual member states (licenses or exemptions). We expect to continue providing products and services in this manner to the extent that clients prefer such coverage and it is available. Such clients could continue to face GSI and we have applied for the applicable cross-border licenses and exemptions for GSI where these are available. We also plan to have authorized third-country branches of GSI in the E.U. which will be used for our Global Markets business with domestic clients in the jurisdictions in which those branches are authorized.
- We intend to use Goldman Sachs Paris Inc. et Cie (GSPIC) as our primary broker-dealer entity for E.U. clients primarily to conduct certain activities that GSBE may be prevented from undertaking (such as activities related to physical commodities and related products).
- We have opened accounts to enable clients to transact with GSBE and will continue to facilitate our clients trading with our subsidiaries and branches in the E.U.
- The internal infrastructure build-out and external connectivity to financial market infrastructure required for the new E.U. entities is complete. GSBE is connected and operational with E.U. exchange, clearing and settlement platforms.
- GSBE has been assigned a credit rating of A/F1 by Fitch, Inc. (Fitch), A1/P-1 by Moody's Investors Service (Moody's) and A+/A-1 by Standard & Poor's Ratings Services (S&P), which are consistent with those issued to GSI.
- In order to service our Asset Management clients, we have received approval from the Irish Financial Regulator, the Central Bank of Ireland, for a Collective Investment Fund and Alternative Investment Fund Manager in Ireland, to replace the similar existing London-based Alternative Investment Fund Manager, which will lose its E.U. passport post-Brexit.
- Headcount in our E.U. offices has increased over the course of 2019, with further roles expected to transition into the E.U. under our current planning assumptions.
- We have developed additional real estate capacity in Frankfurt, Stockholm, Milan and Dublin and are sourcing further real estate capacity in Paris.

Replacement of Interbank Offered Rates (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. FCA, which regulates LIBOR, has announced that it will not compel panel banks to contribute to LIBOR 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 are expected to 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 market-making activities, as well as 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.

We are seeking to facilitate an orderly transition from IBORs to alternative risk-free reference rates for us and our clients. Accordingly, we have created a program that focuses on:

- Evaluating and monitoring the impacts across our 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, we have 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, the potential for disputes relating to the interpretation and implementation of fallback provision and operational impediments to the transition). We are 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 our clients and counterparties to facilitate an orderly transition to alternative risk-free reference rates.

The markets for alternative risk-free reference rates continue to develop and as they develop we expect to transition to these alternative risk-free reference rates. Where liquidity allows, we have begun this transition. In particular, during 2019 we have:

- Issued debt and deposits linked to the Secured Overnight Financing Rate (SOFR) and Sterling Overnight Index Average (SONIA), as well as preferred stock with the rate reset based on 5-year U.S. Treasury rates.
- Executed SOFR- and SONIA-based derivative contracts to make markets and facilitate client activities.
- Executed transactions in the market to reduce our LIBOR exposures arising from hedges to our fixed-rate debt issuances and replace with alternative risk-free reference rates exposures.

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:

- Purchasing or retaining residual and other interests in special purpose entities, such as mortgage-backed and other asset-backed securitization vehicles;
- Holding senior and subordinated debt, interests in limited and general partnerships, and preferred and common stock in other nonconsolidated vehicles;
- Entering into interest rate, foreign currency, equity, commodity and credit derivatives, including total return swaps; and
- Providing guarantees, indemnifications, commitments, letters of credit and representations and warranties.

We enter into these arrangements for a variety of business purposes, including securitizations. The securitization vehicles that purchase mortgages, corporate bonds, and other types of financial assets are critical to the functioning of several significant investor markets, including the mortgage-backed and other asset-backed securities markets, since they offer investors access to specific cash flows and risks created through the securitization process.

We also enter into these arrangements to underwrite client securitization transactions; provide secondary market liquidity; make investments in performing and nonperforming debt, distressed loans, power-related assets, equity securities, real estate and other assets; provide investors with credit-linked and asset-repackaged notes; and receive or provide letters of credit to satisfy margin requirements and to facilitate the clearance and settlement process.

The table below presents where information about our various off-balance-sheet arrangements may be found in this Form 10-K. In addition, see Note 3 to the consolidated financial statements for information about our consolidation policies.

Off-Balance-Sheet Arrangement	Disclosure in Form 10-K
Variable interests and other obligations, including contingent obligations, arising from variable interests in nonconsolidated variable interest entities (VIEs)	See Note 17 to the consolidated financial statements.
Guarantees, letters of credit, and lending and other commitments	See Note 18 to the consolidated financial statements.
Derivatives	See "Risk Management — Credit Risk Management — Credit Exposures — OTC Derivatives" and Notes 4, 5, 7 and 18 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, interest payments and operating lease 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 18 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 24 to the consolidated financial statements for further information about our unrecognized tax benefits.

The table below presents our contractual obligations by type.

	As of December	
$ in millions	**2019**	2018
Time deposits	**$ 32,273**	$ 28,413
Financings and borrowings:		
Secured long-term	**$ 11,953**	$ 11,878
Unsecured long-term	**$207,076**	$224,149
Interest payments	**$ 47,649**	$ 54,594
Operating lease payments	**$ 3,980**	$ 2,399

The table below presents our contractual obligations by expiration.

	As of December 2019			
$ in millions	**2020**	**2021 - 2022**	**2023 - 2024**	**2025 - Thereafter**
Time deposits	**$ –**	**$17,340**	**$10,351**	**$ 4,582**
Financings and borrowings:				
Secured long-term	**$ –**	**$ 5,525**	**$ 2,757**	**$ 3,671**
Unsecured long-term	**$ –**	**$51,624**	**$45,836**	**$109,616**
Interest payments	**$6,024**	**$10,648**	**$ 7,289**	**$ 23,688**
Operating lease payments	**$ 384**	**$ 576**	**$ 454**	**$ 2,566**

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 Note 14 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.
- As of December 2019, unsecured long-term borrowings had maturities extending through 2067, consisted principally of senior borrowings, and included $7.69 billion of adjustments to the carrying value of certain unsecured long-term borrowings resulting from the application of hedge accounting. See Note 14 to the consolidated financial statements for further information about our unsecured long-term borrowings.
- As of December 2019, the difference between the aggregate contractual principal amount and the related fair value of long-term other secured financings for which the fair value option was elected was not material.
- As of December 2019, the fair value of unsecured long-term borrowings for which the fair value option was elected exceeded the aggregate contractual principal amount by $199 million.
- Interest payments represents estimated future contractual interest payments related to unsecured long-term borrowings, secured long-term financings and time deposits based on applicable interest rates as of December 2019, and includes stated coupons, if any, on structured notes.

- Operating lease payments include lease commitments for office space that expire on various dates through 2069. Certain agreements are subject to periodic escalation provisions for increases in real estate taxes and other charges. See Note 15 to the consolidated financial statements for further information about our operating lease liabilities.

Risk Management

Risks are inherent in our businesses and include liquidity, market, credit, operational, model, legal, compliance, conduct, regulatory and reputational risks. Our risks include the risks across our risk categories, regions or global 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 risk management processes, see "Overview and Structure of Risk Management" and for 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, Item 1A of this Form 10-K.

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. Our risk management structure 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 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 objectives included in our strategic business plan, while remaining in compliance with regulatory requirements. The Board reviews our strategic business plan and is ultimately responsible for overseeing and providing direction about our strategy and risk appetite.

The Board receives regular briefings on firmwide risks, including liquidity risk, market risk, credit risk, operational risk and model risk from our independent risk oversight and control functions, including the chief risk officer, and on compliance risk and conduct risk from the head of Compliance, on legal and regulatory matters from the general counsel, and on other matters impacting our reputation from the chair of our Firmwide Client and Business Standards Committee and our Firmwide Reputational Risk Committee. The chief risk officer reports to our chief executive officer and to the Risk Committee of the Board. As part of the review of the firmwide risk portfolio, the chief risk officer regularly advises the Risk Committee of the Board of relevant risk metrics and material exposures, including risk limits and thresholds established in our risk appetite statement.

The implementation of our risk governance structure and core risk management processes are overseen by Enterprise Risk, which reports to our chief risk officer, and is responsible for ensuring that our enterprise risk management framework 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.

Our revenue-producing units, as well as Treasury, Engineering, Human Capital Management, Operations and Services, are considered our first line of defense. They are accountable for the outcomes of our risk-generating activities, as well as for assessing and managing those risks within our risk appetite.

Our 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 committees. Independent risk oversight and control functions include Compliance, Conflicts Resolution, Controllers, Credit Risk, Enterprise Risk, Legal, Liquidity Risk, Market Risk, Model Risk, Operational Risk and Tax.

Internal Audit is considered our third line of defense and reports to the Audit Committee of the Board and administratively to our chief executive officer. 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.

Processes. We maintain various processes that are critical components of our risk management framework, including (i) risk identification and assessment, (ii) risk appetite, limit and threshold setting, (iii) risk reporting and monitoring, and (iv) risk decision-making.

- **Risk Identification and Assessment.** We believe that the identification and assessment of our risks is a critical step in providing our Board and senior management transparency and insight into the range and materiality of our risks. We have a comprehensive data collection process, including firmwide policies and procedures that require all employees to report and escalate risk events. Our approach for risk identification and assessment is comprehensive across all risk types, is dynamic and forward-looking to reflect and adapt to our changing risk profile and business environment, leverages subject matter expertise, and allows for prioritization of our most critical risks.

  To effectively assess our risks, we maintain a daily discipline of marking substantially all of our inventory to current market levels. We carry our inventory at fair value, with changes in valuation reflected immediately in our risk management systems and in net revenues. We do so because we believe this discipline is one of the most effective tools for assessing and managing risk and that it provides transparent and realistic insight into our inventory exposures.

  An important part of our risk management process is firmwide stress testing. 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. Firmwide stress tests are performed on a regular basis and 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. We also perform ad hoc stress tests in anticipation of market events or conditions. Stress tests are also used to assess capital adequacy as part of our capital planning and stress testing process. See "Equity Capital Management and Regulatory Capital — Equity Capital Management" for further information.

- **Risk Appetite, Limit and Threshold Setting.** We apply a rigorous framework of limits and thresholds to control and monitor risk across transactions, products, businesses and markets. The Board, directly or indirectly through its Risk Committee, approves limits and thresholds included in our risk appetite statement at firmwide, business and product levels. In addition, the Firmwide Enterprise Risk Committee is responsible for approving our risk limits framework, subject to the overall limits approved by the Risk Committee of the Board, and monitoring these limits.

  The Risk Governance Committee is responsible for approving limits at firmwide, business and product levels. Certain 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 and senior management, as well as rapid escalation of risk-related matters. Additionally, through delegated authority from the Risk Governance Committee, Market Risk sets limits at certain product and desk levels, and Credit Risk sets limits for individual counterparties, counterparties and their subsidiaries, industries and countries. Limits are reviewed regularly and amended on a permanent or temporary basis to reflect changing market conditions, business conditions or risk tolerance.

- **Risk Reporting and Monitoring.** 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 provide us with complete, accurate and timely information. Our risk reporting and monitoring processes are designed to take into account information about both existing and emerging risks, thereby enabling our risk committees and senior management to perform their responsibilities with the appropriate level of insight into risk exposures. Furthermore, our limit and threshold breach processes provide means for timely escalation. We evaluate changes in our risk profile and our businesses, including changes in business mix or jurisdictions in which we operate, by monitoring risk factors at a firmwide level.

- **Risk Decision-Making.** 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 risk committees that meet regularly and serve as an important means to facilitate and foster ongoing discussions to manage and mitigate risks.

  We maintain strong and proactive 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. We regularly reinforce our strong culture of escalation and accountability across all functions.

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 our professionals, and their understanding of the nuances and limitations of each risk measure, guides us in assessing exposures and maintaining them within prudent levels.

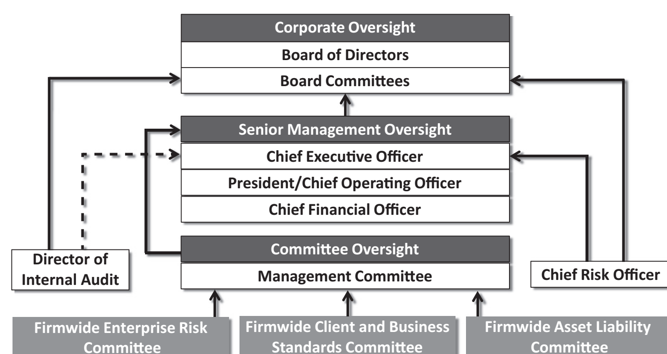
We reinforce a culture of effective risk management, consistent with our risk appetite, in our training and development programs, as well as in the way we evaluate performance, and recognize and reward our people. Our training and development programs, including certain sessions led by our most senior leaders, are focused on the importance of risk management, client relationships and reputational excellence. As part of our annual performance review process, we assess reputational excellence, including how an employee exercises good risk management and reputational judgment, and adheres to our code of conduct and compliance policies. Our review and reward processes 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 our highest standards.

Structure

Ultimate oversight of risk is the responsibility of our Board. The Board oversees risk both directly and through its committees, including its Risk Committee. We have a series of committees with specific risk management mandates that have oversight or decision-making responsibilities for risk management activities. 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, most of which also have additional sub-committees or working groups, are described below. In addition to these committees, we have other risk committees that provide oversight for different businesses, activities, products, regions and entities. All of our committees have responsibility for considering the impact of transactions and activities, which they oversee, 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.

The chart below presents an overview of our risk management governance structure.



Management Committee. The Management Committee oversees our global activities. 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. Most members of the Management Committee are also members of other committees. The following are the committees that are principally involved in firmwide risk management.

Firmwide Enterprise Risk Committee. The Firmwide Enterprise Risk Committee is responsible for overseeing all of our financial and nonfinancial risks. As a part of such oversight, the committee is responsible for the ongoing review, approval and monitoring of our enterprise risk management framework, as well as our risk limits framework. This committee is co-chaired by our chief financial officer and our chief risk officer, who are appointed as chairs by our chief executive officer, and reports to the Management Committee. The following are the primary committees that report to the Firmwide Enterprise Risk Committee:

- **Firmwide Risk Committee.** The Firmwide Risk Committee is responsible for the ongoing monitoring of relevant financial risks and related risk limits at the firmwide, business and product levels. This committee is co-chaired by the chairs of the Firmwide Enterprise Risk Committee.
- **Firmwide New Activity Committee.** The Firmwide New Activity Committee is responsible for reviewing new activities and for establishing a process to identify and review 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. This committee is co-chaired by the controller and chief accounting officer, and the head of Operations and Engineering for the Global Markets Division, who are appointed as chairs by the chairs of the Firmwide Enterprise Risk Committee.
- **Firmwide Resilience and Operational Risk Committee.** The Firmwide Resilience and Operational Risk Committee is globally responsible for overseeing operational risk, and for ensuring our business and operational resilience. To assist the Firmwide Resilience and Operational Risk Committee in carrying out its mandate, other risk committees with dedicated oversight for technology-related risks, including cyber security matters, report into the Firmwide Resilience and Operational Risk Committee. This committee is co-chaired by our chief administrative officer and deputy chief risk officer, who are appointed as chairs by the chairs of the Firmwide Enterprise Risk Committee.
- **Firmwide Conduct Committee.** The Firmwide Conduct Committee is globally responsible for the ongoing approval and monitoring of the frameworks and policies which govern our conduct risks. Conduct risk is the risk that our people fail to act in a manner consistent with our Business Principles and related core values, policies or codes, or applicable laws or regulations, thereby falling short in fulfilling their responsibilities to us, our clients, colleagues, other market participants or the broader community. The co-chairs of this committee are appointed by the chairs of the Firmwide Enterprise Risk Committee.
- **Risk Governance Committee.** The Risk Governance Committee (through delegated authority from the Firmwide Enterprise Risk Committee) is responsible for the ongoing approval and monitoring of risk frameworks and policies related to our core risk management processes, as well as limits, at firmwide, business and product levels. In addition, this committee reviews the results of stress tests and scenario analyses. To assist the Risk Governance Committee in carrying out its mandate, a number of other risk committees with dedicated oversight for stress testing, model risks and Volcker Rule compliance report into the Risk Governance Committee. This committee is chaired by our chief risk officer, who is appointed as chair by the chairs of the Firmwide Enterprise Risk Committee.

Firmwide Client and Business Standards Committee. The Firmwide Client and Business Standards Committee is responsible for overseeing relationships with our clients, client service and experience, and related business standards, as well as client-related reputational matters. This committee is chaired by our president and chief operating officer, who is appointed as chair by the chief executive officer, and reports to the Management Committee. This committee periodically provides updates to, and receives guidance from, the Public Responsibilities Committee of the Board.

The following committees report jointly to the Firmwide Enterprise Risk Committee and the Firmwide Client and Business Standards Committee:

- **Firmwide Reputational Risk Committee.** The Firmwide Reputational Risk Committee is responsible for assessing reputational risks arising from transactions that have been identified as having potential heightened reputational risk pursuant to the criteria established by the Firmwide Reputational Risk Committee. This committee is chaired by our president and chief operating officer, and the vice-chairs are the chair of Compliance and the head of Conflicts Resolution, who are appointed as vice-chairs by the chair of the Firmwide Reputational Risk Committee. This committee periodically provides updates to, and receives guidance from, the Public Responsibilities Committee of the Board.
- **Firmwide Suitability Committee.** The Firmwide Suitability Committee is responsible for setting standards and policies for product, transaction and client suitability and providing a forum for consistency across functions, regions and products on suitability assessments. This committee also reviews suitability matters escalated from other committees. This committee is co-chaired by the head of Compliance, and the co-head of EMEA FICC sales, who are appointed as chairs by the chair of the Firmwide Client and Business Standards Committee.
- **Firmwide Investment Policy Committee.** The Firmwide Investment Policy Committee reviews, approves, sets policies, and provides oversight for certain illiquid principal investments, including review of risk management and controls for these types of investments. This committee is co-chaired by the chairman of our Merchant Banking Division, the head of our Merchant Banking Division and the chief risk officer, who are appointed as chairs by our president and chief operating officer and our chief financial officer.
- **Firmwide Capital Committee.** The Firmwide Capital Committee provides approval and oversight of debt-related transactions, including principal commitments of our capital. This committee aims to ensure that business, reputational and suitability standards for underwritings and capital commitments are maintained on a global basis. This committee is co-chaired by the head of Credit Risk and a co-head of the Financing Group, who are appointed as chairs by the chairs of the Firmwide Enterprise Risk Committee.
- **Firmwide Commitments Committee.** The Firmwide Commitments Committee reviews our underwriting and distribution activities with respect to equity and equity-related product offerings, and sets and maintains policies and procedures designed to ensure that legal, reputational, regulatory and business standards are maintained on a global basis. In addition to reviewing specific transactions, this committee periodically conducts general strategic reviews of sectors and products and establishes policies in connection with transaction practices. This committee is co-chaired by the co-head of the Industrials Group in our Investment Banking Division, the chief debt underwriting officer for EMEA, and a managing director in our Investment Banking Division, who are appointed as chairs by the chair of the Firmwide Client and Business Standards Committee.

Firmwide Asset Liability Committee. The Firmwide Asset Liability Committee reviews and approves the strategic direction for our financial resources, including capital, liquidity, funding and balance sheet. This committee has oversight responsibility for asset liability management, including interest rate and currency risk, funds transfer pricing, capital allocation and incentives, and credit ratings. This committee makes recommendations as to any adjustments to asset liability management and financial resource allocation in light of current events, risks, exposures, and regulatory requirements and approves related policies. This committee is co-chaired by our chief financial officer and our global treasurer, who are appointed as chairs by our chief executive officer, and reports to the Management Committee.

Conflicts Management

Conflicts of interest and our approach to dealing with them are fundamental to our client relationships, our reputation and our long-term success. The term "conflict of interest" does not have a universally accepted meaning, and conflicts can arise in many forms within a business or between businesses. The responsibility for identifying potential conflicts, as well as complying with our policies and procedures, is shared by all of our employees.

We have a multilayered approach to resolving conflicts and addressing reputational risk. Our senior management oversees policies related to conflicts resolution, and, in conjunction with Conflicts Resolution, Legal and Compliance, the Firmwide Client and Business Standards Committee, and other internal committees, formulates policies, standards and principles, and assists in making judgments regarding the appropriate resolution of particular conflicts. Resolving potential conflicts necessarily depends on the facts and circumstances of a particular situation and the application of experienced and informed judgment.

As a general matter, Conflicts Resolution reviews financing and advisory assignments in Investment Banking and certain of our investing, lending and other activities. In addition, we have various transaction oversight committees, such as the Firmwide Capital, Commitments and Suitability Committees and other committees that also review new underwritings, loans, investments and structured products. These groups and committees work with internal and external counsel and Compliance to evaluate and address any actual or potential conflicts. Conflicts Resolution reports to our president and chief operating officer. We regularly assess our policies and procedures that address conflicts of interest in an effort to conduct our business in accordance with the highest ethical standards and in compliance with all applicable laws, rules and regulations.

Compliance Risk Management

Compliance risk is the risk of legal or regulatory sanctions, material financial loss or damage to our reputation arising from our failure to comply with the requirements of applicable laws, rules and regulations, and our internal policies and procedures. Compliance risk is inherent in all activities through which we conduct our businesses. Our Compliance Risk Management Program, administered by Compliance, assesses our compliance, regulatory and reputational risk; monitors for compliance with new or amended laws, rules and regulations; designs and implements controls, policies, procedures and training; conducts independent testing; investigates, surveils and monitors for compliance risks and breaches; and leads our responses to regulatory examinations, audits and inquiries. We monitor and review business practices to assess whether they meet or exceed minimum regulatory and legal standards in all markets and jurisdictions in which we conduct business.

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 firm-specific, 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.

Treasury, which reports to our chief financial officer, has primary responsibility for developing, managing and executing our liquidity and funding strategy within our risk appetite.

Liquidity Risk, which is independent of our revenue-producing units and Treasury, and reports to our chief risk officer, has primary responsibility for assessing, monitoring and managing our liquidity risk through firmwide oversight across our global businesses and the establishment of stress testing and limits frameworks.

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. Our businesses are diverse, and our 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 debt, 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 unencumbered securities and have larger funding balances than our businesses would otherwise require. We believe that our liquidity is stronger with greater balances of highly liquid unencumbered securities, even though it increases our total assets and our funding costs.

We maintain our GCLA across Group Inc., Goldman Sachs Funding LLC (Funding IHC) and Group Inc.'s major broker-dealer and bank subsidiaries, asset types and clearing agents to provide us with sufficient operating liquidity to ensure timely settlement in all major markets, even in a difficult funding environment. In addition to the GCLA, we maintain cash balances and securities in several of our other entities, primarily for use in specific currencies, entities or jurisdictions where we do not have immediate access to parent company liquidity.

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 manage the maturities and diversity of our funding across markets, products and counterparties, and seek to maintain a diversified funding profile with an appropriate tenor, taking into consideration the characteristics and liquidity profile of our assets.

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 "— Funding Sources — Secured Funding" for further information about asset classes that may be harder to fund on a secured basis; and
- Raising secured and unsecured financing that has a long 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. Because we maintain a highly liquid balance sheet, the holding period of certain of our assets may be materially shorter than their contractual maturity dates.

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. Through our dynamic balance sheet management process, we use actual and projected asset balances to determine secured and unsecured funding requirements. Funding plans are reviewed and approved by the Firmwide Asset Liability Committee. In addition, our independent risk oversight and control functions analyze, and the Firmwide Asset Liability Committee reviews, our consolidated total capital position (unsecured long-term borrowings plus total shareholders' equity) so that we maintain a level of long-term funding that is sufficient to meet our long-term financing requirements. 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.

Subsidiary Funding Policies

The majority of our unsecured funding is raised by Group Inc., which lends the necessary funds to Funding IHC and other subsidiaries, some of which are regulated, to meet their asset financing, liquidity and capital requirements. In addition, Group Inc. provides its regulated subsidiaries with the necessary capital to meet their regulatory requirements. The benefits of this approach to subsidiary funding are enhanced control and greater flexibility to meet the funding requirements of our subsidiaries. Funding is also raised at the subsidiary level through a variety of products, including deposits, secured funding and unsecured borrowings.

Our intercompany funding policies assume that a subsidiary's funds or securities are not freely available to its parent, Funding IHC or other subsidiaries unless (i) legally provided for and (ii) there are no additional regulatory, tax or other restrictions. In particular, many of our subsidiaries are subject to laws that authorize regulatory bodies to block or reduce the flow of funds from those subsidiaries to Group Inc. or Funding IHC. Regulatory action of that kind could impede access to funds that Group Inc. needs to make payments on its obligations. Accordingly, we assume that the capital provided to our regulated subsidiaries is not available to Group Inc. or other subsidiaries and any other financing provided to our regulated subsidiaries is not available to Group Inc. or Funding IHC until the maturity of such financing.

Group Inc. has provided substantial amounts of equity and subordinated indebtedness, directly or indirectly, to its regulated subsidiaries. For example, as of December 2019, Group Inc. had $32.05 billion of equity and subordinated indebtedness invested in GS&Co., its principal U.S. registered broker-dealer; $39.60 billion invested in GSI, a regulated U.K. broker-dealer; $2.85 billion invested in GSJCL, a regulated Japanese broker-dealer; $33.57 billion invested in GS Bank USA, a regulated New York State-chartered bank; and $4.03 billion invested in GSIB, a regulated U.K. bank. Group Inc. also provided, directly or indirectly, $83.78 billion of unsubordinated loans (including secured loans of $23.08 billion) and $15.04 billion of collateral and cash deposits to these entities, substantially all of which was to GS&Co., GSI and GSJCL, as of December 2019. In addition, as of December 2019, Group Inc. had significant amounts of capital invested in and loans to its other regulated subsidiaries.

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. Our 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 our potential responses if our assessments indicate that we have entered a liquidity crisis, which include pre-funding for what we estimate will be our 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 and their responsibilities, which include fostering effective coordination, control and distribution of information, implementing liquidity maintenance activities and managing internal and external communication, all of which are critical in the management of a crisis or period of market stress.

Stress Tests

In order to determine the appropriate size of our GCLA, we model liquidity outflows over a range of scenarios and time horizons. One of our primary internal liquidity risk models, referred to as the Modeled Liquidity Outflow, quantifies our liquidity risks over a 30-day stress scenario. We also consider other factors, including, but not limited to, an assessment of our potential intraday liquidity needs through an additional internal liquidity risk model, referred to as the Intraday Liquidity Model, the results of our long-term stress testing models, our resolution liquidity models and other applicable regulatory requirements and a qualitative assessment 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 firmwide stress tests. See "Overview and Structure of Risk Management" for information about firmwide stress tests.

Modeled Liquidity Outflow. Our Modeled Liquidity Outflow is based on conducting multiple scenarios that include combinations of market-wide and firm-specific stress. 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 firm-specific crisis potentially triggered by material losses, reputational damage, litigation and/or a ratings downgrade.

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

- Liquidity needs over a 30-day scenario;
- A two-notch downgrade of our long-term senior unsecured credit ratings;
- Changing conditions in funding markets, which limit our access to unsecured and secured funding;
- No support from additional government funding facilities. Although we have access to various central bank funding programs, we do not assume reliance on additional sources of funding in a liquidity crisis; and
- A combination of contractual outflows, such as upcoming maturities of unsecured debt, and contingent outflows, including but not limited to, the withdrawal of customer credit balances in our prime brokerage business or an increase in variation margin requirements due to adverse changes in the value of our exchange-traded and OTC-cleared derivatives and withdrawals of deposits that have no contractual maturity.

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.

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.

Resolution Liquidity Models. In connection with our resolution planning efforts, we have established our Resolution Liquidity Adequacy and Positioning framework, which estimates liquidity needs of our major subsidiaries in a stressed environment. The liquidity needs are measured using our Modeled Liquidity Outflow assumptions and include certain additional inter-affiliate exposures. We have also established our Resolution Liquidity Execution Need framework, which measures the liquidity needs of our major subsidiaries to stabilize and wind-down following a Group Inc. bankruptcy filing in accordance with our preferred resolution strategy.

In addition, we have established a triggers and alerts framework, which is designed to provide the Board with information needed to make an informed decision on whether and when to commence bankruptcy proceedings for Group Inc.

Limits

We use liquidity risk 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. See "Overview and Structure of Risk Management" for information about the limit approval process.

Limits are monitored by Treasury and Liquidity Risk. Liquidity Risk 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.

GCLA and Unencumbered Metrics

GCLA. Based on the results of our internal liquidity risk models, described above, as well as our consideration of other factors, including, but not limited to, a qualitative assessment of our condition, as well as the financial markets, we believe our liquidity position as of both December 2019 and December 2018 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 GCLA.

	Average for the Year Ended December	
$ in millions	**2019**	2018
Denomination		
U.S. dollar	**$146,751**	$155,348
Non-U.S. dollar	**86,899**	77,995
Total	**$233,650**	$233,343
Asset Class		
Overnight cash deposits	**$ 68,733**	$ 98,811
U.S. government obligations	**94,500**	79,810
U.S. agency obligations	**14,005**	12,171
Non-U.S. government obligations	**56,412**	42,551
Total	**$233,650**	$233,343
Entity Type		
Group Inc. and Funding IHC	**$ 40,043**	$ 40,920
Major broker-dealer subsidiaries	**95,281**	104,364
Major bank subsidiaries	**98,326**	88,059
Total	**$233,650**	$233,343

In the table above:

- The U.S. dollar-denominated GCLA consists of (i) 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 (ii) certain overnight U.S. dollar cash deposits.
- The non-U.S. dollar-denominated GCLA consists of non-U.S. government obligations (only unencumbered German, French, Japanese and U.K. government obligations) and certain overnight cash deposits in highly liquid currencies.

We maintain our GCLA to enable us to meet current and potential liquidity requirements of our parent company, Group Inc., and its subsidiaries. Our Modeled Liquidity Outflow and Intraday Liquidity Model incorporate a requirement for Group Inc., as well as a standalone requirement for each of our major broker-dealer and bank subsidiaries. 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 major subsidiaries in the event of our material financial distress or failure. Liquidity held directly in each of our major broker-dealer and bank subsidiaries is intended for use only by that subsidiary to meet its liquidity requirements and is assumed not to be available to Group Inc. or Funding IHC unless (i) legally provided for and (ii) there are no additional regulatory, tax or other restrictions. In addition, the Modeled Liquidity Outflow and Intraday Liquidity Model also incorporate a broader assessment of standalone liquidity requirements for other subsidiaries and we hold a portion of our GCLA directly at Group Inc. or Funding IHC to support such requirements.

Other Unencumbered Assets. In addition to our GCLA, we have a significant amount of other unencumbered cash and financial instruments, including other government obligations, high-grade money market securities, corporate obligations, marginable equities, loans and cash deposits not included in our GCLA. The fair value of our unencumbered assets averaged $202.03 billion for 2019 and $177.08 billion for 2018. We do not consider these assets liquid enough to be eligible for our GCLA.

Liquidity Regulatory Framework

As a bank holding company (BHC), 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 (HQLA) to expected net cash outflows under an acute short-term liquidity stress scenario. Eligible HQLA excludes HQLA held by subsidiaries that is in excess of their minimum requirement and is subject to transfer restrictions. We are required to maintain a minimum LCR of 100%. We expect that fluctuations in client activity, business mix and the market environment will impact our LCR.

The table below presents information about our average daily LCR.

	Average for the Three Months Ended		
$ in millions	**December 2019**	September 2019	December 2018
Total HQLA	**$229,029**	$233,620	$226,473
Eligible HQLA	**$170,371**	$175,937	$160,016
Net cash outflows	**$134,436**	$131,227	$126,511
LCR	**127%**	134%	127%

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 and includes quarterly disclosure of the ratio and a description of the banking organization's stable funding sources. We expect that we will be compliant with the NSFR requirement when it is effective.

The following provides information about our subsidiary liquidity regulatory requirements:

- **GS Bank USA.** GS Bank USA is subject to a minimum LCR of 100% under the LCR rule approved by the U.S. federal bank regulatory agencies. As of December 2019, GS Bank USA's LCR exceeded the minimum requirement. The NSFR requirement described above would also apply to GS Bank USA.
- **GSI.** GSI is subject to a minimum LCR of 100% under the LCR rule approved by the U.K. regulatory authorities and the European Commission. GSI's average monthly LCR for the trailing twelve-month period ended December 2019 exceeded the minimum requirement.
- **Other Subsidiaries.** We monitor local regulatory liquidity requirements of our subsidiaries to ensure compliance. For many of our subsidiaries, these requirements either have changed or are likely to change in the future due to the implementation of the Basel Committee on Banking Supervision's framework for liquidity risk measurement, standards and monitoring, as well as other regulatory developments.

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

We rely on the short- and long-term debt capital markets to fund a significant portion of our day-to-day operations and the cost and availability of debt financing is influenced by our credit ratings. Credit ratings are also 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, Item 1A of this Form 10-K for information about the risks associated with a reduction in our credit ratings.

The table below presents the unsecured credit ratings and outlook of Group Inc.

	As of December 2019				
	DBRS	Fitch	Moody's	R&I	S&P
Short-term debt	R-1 (middle)	F1	P-2	a-1	A-2
Long-term debt	A (high)	A	A3	A	BBB+
Subordinated debt	A	A-	Baa2	A-	BBB-
Trust preferred	A	BBB-	Baa3	N/A	BB
Preferred stock	BBB (high)	BB+	Ba1	N/A	BB
Ratings outlook	Stable	Stable	Stable	Stable	Stable

In the table above:

- The ratings and outlook are by DBRS, Inc. (DBRS), Fitch, Moody's, Rating and Investment Information, Inc. (R&I), and S&P.
- The ratings for trust preferred relate to the guaranteed preferred beneficial interests issued by Goldman Sachs Capital I.
- The DBRS, Fitch, Moody's and S&P ratings for preferred stock include the APEX issued by Goldman Sachs Capital II and Goldman Sachs Capital III.

The table below presents the unsecured credit ratings and outlook of GS Bank USA, GSIB, GS&Co. and GSI, by Fitch, Moody's and S&P.

	As of December 2019		
	Fitch	Moody's	S&P
GS Bank USA			
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	Stable	Stable
GSIB			
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	A	A1	N/A
Ratings outlook	Stable	Stable	Stable
GS&Co.			
Short-term debt	F1	N/A	A-1
Long-term debt	A+	N/A	A+
Ratings outlook	Stable	N/A	Stable
GSI			
Short-term debt	F1	P-1	A-1
Long-term debt	A	A1	A+
Ratings outlook	Stable	Stable	Stable

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

- Our liquidity, market, credit and operational risk management practices;
- Our level and variability of earnings;
- Our capital base;
- Our franchise, 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 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 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- or two-notch downgrade in our credit ratings.

Cash Flows

As a global financial institution, 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 2019. Our cash and cash equivalents increased by $3.00 billion to $133.55 billion at the end of 2019, primarily due to net cash provided by operating activities and financing activities, partially offset by net cash used for investing activities. The net cash provided by operating activities primarily reflected cash provided by collateralized transactions (a decrease in collateralized agreements and an increase in collateralized financings) as a result of our and our clients' activities, partially offset by an increase in trading assets, as a result of client activity. The net cash provided by financing activities primarily reflected an increase in consumer deposits, partially offset by net repayments of unsecured long-term borrowings and common stock repurchases. The net cash used for investing activities primarily reflected net purchases of investments and an increase in loans.

Year Ended December 2018. Our cash and cash equivalents increased by $20.50 billion to $130.55 billion at the end of 2018, primarily due to net cash provided by financing activities and operating activities, partially offset by net cash used for investing activities. The net cash provided by financing activities primarily reflected increases in consumer deposits. The net cash provided by operating activities primarily reflected net earnings and a decrease in collateralized agreements included in collateralized transactions, partially offset by an increase in trading assets. The net cash used for investing activities primarily reflected an increase in loans and net purchases of investments.

Year Ended December 2017. Our cash and cash equivalents decreased by $11.66 billion to $110.05 billion at the end of 2017, primarily due to net cash used for investing activities and operating activities, partially offset by net cash provided by financing activities. The net cash used for investing activities primarily reflected an increase in loans and net purchases of investments. The net cash used for operating activities primarily reflected an increase in net customer and other receivables and payables, partially offset by an increase in collateralized financings included in collateralized transactions. The net cash provided by financing activities primarily reflected net issuances of unsecured long-term borrowings and increases in institutional and consumer deposits, partially offset by repurchases of common stock.

Market Risk Management

Overview

Market risk is the risk of loss in the value of our inventory, investments, loans and other financial assets and liabilities accounted for at fair value due to changes in market conditions. We hold such positions primarily for market making for our clients and for our investing and financing activities, and therefore, these positions change based on client demands and our investment opportunities. Since these positions are accounted for at fair value, they fluctuate on a daily basis, with the related gains and losses included in the consolidated statements of earnings. We employ a variety of risk measures, each described in the respective sections below, to monitor market risk. 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;
- Equity price risk: results from exposures to changes in prices and volatilities of individual equities, baskets of equities and equity indices;
- Currency rate risk: results from exposures to changes in spot prices, forward prices and volatilities of currency rates; and
- Commodity price risk: results from exposures to changes in spot prices, forward prices and volatilities of commodities, such as crude oil, petroleum products, natural gas, electricity, and precious and base metals.

Market Risk, which is independent of our revenue-producing units and reports to our chief risk officer, has primary responsibility for assessing, monitoring and managing our market risk through firmwide oversight across our global businesses.

Managers in revenue-producing units and Market Risk 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 the critical components of our risk management framework described in the "Overview and Structure of Risk Management," as well as the following:

- Monitoring compliance with established market risk limits and reporting our exposures;
- Diversifying exposures;
- Controlling position sizes; and
- Evaluating mitigants, such as economic hedges in related securities or derivatives.

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, product type or entity) and produce ad hoc analyses in a timely manner.

Risk Measures

We produce risk measures and monitor them against established market risk limits. These measures reflect an extensive range of scenarios and the results are aggregated at product, business and firmwide 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- and long-term time horizons. Our primary risk measures are VaR, which is used for shorter-term periods, and stress tests. Our risk reports detail key risks, drivers and changes for each desk and business, and are distributed daily to senior management of both our revenue-producing units and our 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. For assets and liabilities included in VaR, see "Financial Statement Linkages to Market Risk Measures." 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, equity prices, currency rates and commodity prices. As such, VaR facilitates comparison across portfolios of different risk characteristics. VaR also captures the diversification of aggregated risk at the firmwide 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 our 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 firmwide level and for each of our businesses and major regulated subsidiaries.

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 firmwide stress tests, sensitivity analysis and scenario analysis. The results of our various stress tests are analyzed together for risk management purposes. See "Overview and Structure of Risk Management" for information about firmwide stress tests.

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. For example, for sovereign stress testing we calculate potential direct exposure associated with our sovereign positions, as well as the corresponding debt, equity and currency exposures associated with our non-sovereign positions that may be impacted by the sovereign distress. When conducting scenario analysis, we often 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.

Unlike VaR measures, which have an implied probability because they are calculated at a specified confidence level, there may not be an implied probability that our stress testing scenarios will occur. Instead, stress testing is 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).

Limits

We use market risk limits at various levels to manage the size of our market exposures. These limits are set based on VaR and on a range of stress tests relevant to our exposures. See "Overview and Structure of Risk Management" for information about the limit approval process.

Market Risk is responsible for monitoring these limits, and identifying and escalating to senior management and/or the appropriate risk committee, on a timely basis, instances where limits have been exceeded (e.g., due to positional changes or changes in market conditions, such as increased volatilities or changes in correlations). Such instances are remediated by a reduction in the positions we hold and/or a temporary or permanent increase to the limit.

Metrics

We analyze VaR at the firmwide level and a variety of more detailed levels, including by risk category, business and region. Diversification effect in the tables below represents the difference between total VaR and the sum of the VaRs for the four risk categories. This effect arises because the four market risk categories are not perfectly correlated.

The table below presents our average daily VaR.

	Year Ended December	
$ in millions	**2019**	2018
Categories		
Interest rates	**$ 46**	$ 46
Equity prices	**27**	31
Currency rates	**11**	14
Commodity prices	**12**	11
Diversification effect	**(40)**	(42)
Total	**$ 56**	$ 60

Our average daily VaR decreased to $56 million in 2019 from $60 million in 2018, primarily due to decreases in the equity prices and currency rates categories, partially offset by a decrease in the diversification effect. The overall decrease was primarily due to reduced exposures.

The table below presents our period-end VaR.

	As of December	
$ in millions	**2019**	2018
Categories		
Interest rates	**$ 54**	$ 46
Equity prices	**24**	32
Currency rates	**10**	12
Commodity prices	**10**	11
Diversification effect	**(28)**	(44)
Total	**$ 70**	$ 57

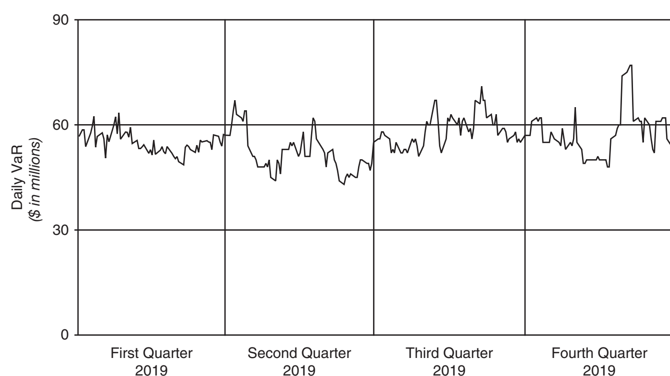
Our period-end VaR increased to $70 million as of December 2019 from $57 million as of December 2018, primarily due to a decrease in the diversification effect and an increase in the interest rates category, partially offset by decreases in the equity prices and currency rates categories. The overall increase was due to higher levels of volatility and increased exposures.

During 2019 and 2018, the firmwide VaR risk limit was not exceeded, raised or reduced.

The table below presents our high and low VaR.

	Year Ended December			
	2019		2018	
$ in millions	**High**	**Low**	High	Low
Categories				
Interest rates	**$64**	**$35**	$61	$34
Equity prices	**$38**	**$20**	$45	$24
Currency rates	**$22**	**$ 6**	$27	$ 7
Commodity prices	**$16**	**$ 9**	$17	$ 8
Firmwide				
VaR	**$77**	**$43**	$86	$42

The chart below presents our daily VaR for 2019.



The table below presents, by number of business days, the frequency distribution of our daily net revenues for positions included in VaR.

	Year Ended December	
$ in millions	**2019**	2018
>$100	**16**	12
$75 - $100	**17**	22
$50 - $75	**45**	56
$25 - $50	**71**	66
$0 - $25	**72**	64
$(25) - $0	**26**	23
$(50) - $(25)	**5**	6
$(75) - $(50)	**–**	1
$(100) - $(75)	**–**	1
Total	**252**	251

Daily net revenues for positions included in VaR are compared with VaR calculated as of the end of the prior business day. Net losses incurred on a single day for such positions did not exceed our 95% one-day VaR (i.e., a VaR exception) during 2019 and exceeded our 95% one-day VaR on two occasions during 2018.

During periods in which we have significantly more positive net revenue days than net revenue loss days, we expect to have fewer VaR exceptions because, under normal conditions, our business model generally produces positive net revenues. In periods in which our franchise revenues are adversely affected, we generally have more loss days, resulting in more VaR exceptions. The daily net revenues for positions included in VaR used to determine VaR exceptions reflect the impact of any intraday activity, including bid/offer net revenues, which are more likely than not to be positive by their nature.

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 our market risk by asset category for positions accounted for at fair value, that are not included in VaR.

	As of December	
$ in millions	**2019**	2018
Equity	**$1,865**	$1,923
Debt	**2,368**	1,890
Total	**$4,233**	$3,813

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 private and restricted public equity securities, including interests in funds that invest in corporate equities and real estate and interests in hedge funds.
- Debt positions include interests in funds that invest in corporate mezzanine and senior debt instruments, loans backed by commercial and residential real estate, corporate bank loans and other corporate debt, including acquired portfolios of distressed loans.
- Funded equity and debt positions are included in our consolidated balance sheets in investments and loans. See Note 8 to the consolidated financial statements for further information about investments and Note 9 to the consolidated financial statements for further information about loans.
- These measures do not reflect the diversification effect across asset categories or across other market risk measures.

Credit and Funding Spread Sensitivity on Derivatives and Financial Liabilities. VaR excludes the impact of changes in counterparty credit spreads, our own credit spreads and unsecured funding spreads on derivatives, as well as changes in our own credit spreads (debt valuation adjustment) on financial liabilities for which the fair value option was elected. The estimated sensitivity to a one basis point increase in credit spreads (counterparty and our own) and unsecured funding spreads on derivatives (including hedges) was a loss of $2 million as of both December 2019 and December 2018. In addition, the estimated sensitivity to a one basis point increase in our own credit spreads on financial liabilities for which the fair value option was elected was a gain of $29 million as of December 2019 and $41 million as of December 2018. However, the actual net impact of a change in our own credit spreads is also affected by the liquidity, duration and convexity (as the sensitivity is not linear to changes in yields) of those financial liabilities for which the fair value option was elected, as well as the relative performance of any hedges undertaken.

Interest Rate Sensitivity. Loans accounted for at amortized cost were $89.20 billion as of December 2019 and $80.59 billion as of December 2018, substantially all of which had floating interest rates. The estimated sensitivity to a 100 basis point increase in interest rates on such loans was $681 million as of December 2019 and $607 million as of December 2018 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 accounted for at amortized cost.

Other Market Risk Considerations

As of both December 2019 and December 2018, we had commitments and held loans for which we have obtained credit loss protection from Sumitomo Mitsui Financial Group, Inc. See Note 18 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, held-to-maturity or under the equity method which are included in investments in the consolidated balance sheets. See Note 8 to the consolidated financial statements for further information.

Direct investments in real estate are accounted for at cost less accumulated depreciation. See Note 12 to the consolidated financial statements for further information about other assets.

Financial Statement Linkages to Market Risk Measures

We employ a variety of risk measures, each described in the respective sections above, to monitor market risk across the consolidated balance sheets and consolidated statements of earnings. The related gains and losses on these positions are included in market making, other principal transactions, interest income and interest expense in the consolidated statements of earnings, and debt valuation adjustment in the consolidated statements of comprehensive income.

The table below presents certain assets and liabilities in our consolidated balance sheets and the market risk measures used to assess those assets and liabilities.

Assets or Liabilities	Market Risk Measures
Collateralized agreements, at fair value	VaR
Receivables	VaR Interest Rate Sensitivity
Trading assets	VaR Credit Spread Sensitivity — Derivatives
Investments	VaR 10% Sensitivity Measures
Loans	VaR 10% Sensitivity Measures
Deposits, at fair value	VaR Credit Spread Sensitivity — Financial Liabilities
Collateralized financings, at fair value	VaR
Trading liabilities	VaR Credit Spread Sensitivity — Derivatives
Unsecured short- and long-term borrowings, at fair value	VaR Credit Spread Sensitivity — Financial Liabilities

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 OTC derivatives and loans and lending commitments. Credit risk also comes from cash placed with banks, securities financing transactions (i.e., resale and repurchase agreements and securities borrowing and lending activities) and customer and other receivables.

Credit Risk, which is independent of our revenue-producing units and reports to our chief risk officer, has primary responsibility for assessing, monitoring and managing our credit risk through firmwide oversight across our global businesses. The Risk Governance Committee reviews and approves credit policies and parameters. In addition, we hold other positions that give rise to credit risk (e.g., bonds and secondary bank loans). These credit risks are captured as a component of market risk measures, which are monitored and managed by Market Risk. 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.

Credit Risk Management Process

Our process for managing credit risk includes the critical components of our risk management framework described in the "Overview and Structure of Risk Management," as well as the following:

- Monitoring compliance with established credit risk limits and reporting our credit exposures and credit concentrations;
- 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 a counterparty default;
- Using credit risk mitigants, including collateral and hedging; and
- Maximizing recovery through active workout and restructuring of claims.

We also perform credit reviews, which include initial and ongoing analyses of our counterparties. 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, 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, Fair Isaac Corporation credit scores and other risk factors.

Our credit risk management systems capture credit exposure to individual counterparties and on an aggregate basis to counterparties and their subsidiaries. These systems also provide management with comprehensive information about our aggregate credit risk by product, internal credit rating, industry, country and region.

Risk Measures

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 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. For loans and lending commitments, the primary measure is a function of the notional amount of the position.

Stress Tests

We conduct 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, interest rates, equity prices). These shocks cover a wide range of moderate and more extreme market movements, including shocks to multiple risk factors, consistent with the occurrence of a severe market or economic event. In the case of sovereign default, we estimate the direct impact of the default on our sovereign credit exposures, changes to our credit exposures arising from potential market moves in response to the default, and the impact of credit market deterioration on corporate borrowers and counterparties that may result from the sovereign default. Unlike potential exposure, which is calculated within a specified confidence level, stress testing does not generally assume a probability of these events occurring. We also perform firmwide stress tests. See "Overview and Structure of Risk Management" for information about firmwide stress tests.

To supplement these regular stress tests, as described above, we also conduct tailored stress tests on an ad hoc basis in response to specific market events that we deem significant. We also utilize these stress tests to estimate the indirect impact of certain hypothetical events on our country exposures, such as the impact of credit market deterioration on corporate borrowers and counterparties along with the shocks to the risk factors described above. The parameters of these shocks vary based on the scenario reflected in each stress test. We review estimated losses produced by the stress tests in order to understand their magnitude, highlight potential loss concentrations, and assess and mitigate our exposures where necessary.

Limits

We use credit risk limits at various levels, as well as underwriting standards to manage the size and nature of our credit exposures. 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. See "Overview and Structure of Risk Management" for information about the limit approval process.

Credit Risk is responsible for monitoring these limits, and identifying and escalating to senior management and/or the appropriate risk committee, on a timely basis, instances where limits have been exceeded.

Risk Mitigants

To reduce our credit exposures on 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.

For 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.

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 2019, our aggregate credit exposure increased as compared with December 2018, primarily reflecting an increase in loans and lending commitments and securities financing transactions. 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 2018, primarily reflecting an increase in non-investment-grade loans and lending commitments. Our credit exposure to counterparties that defaulted during 2019 was higher as compared with our credit exposure to counterparties that defaulted during the same prior year period, and substantially all of such exposure was related to loans and lending commitments. Our credit exposure to counterparties that defaulted during 2019 remained low, representing less than 0.5% of our total credit exposure. Estimated losses associated with these defaults have been recognized in earnings. Our credit exposures are described further below.

Cash and Cash Equivalents. Our credit exposure on cash and cash equivalents arises from our unrestricted cash, and includes both interest-bearing and non-interest-bearing deposits. To mitigate the risk of credit loss, we place substantially all of our deposits with highly rated banks and central banks.

The table below presents our credit exposure from unrestricted cash and cash equivalents, and the concentration by industry, region and credit quality.

	As of December	
$ in millions	**2019**	2018
Cash and Cash Equivalents	**$110,774**	$107,408
Industry		
Financial Institutions	**12%**	16%
Sovereign	**88%**	84%
Total	**100%**	100%
Region		
Americas	**50%**	36%
EMEA	**31%**	41%
Asia	**19%**	23%
Total	**100%**	100%
Credit Quality (Credit Rating Equivalent)		
AAA	**66%**	62%
AA	**11%**	10%
A	**22%**	27%
BBB	**1%**	1%
Total	**100%**	100%

The table above excludes cash segregated for regulatory and other purposes of $22.78 billion as of December 2019 and $23.14 billion as of December 2018.

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 our net credit exposure from OTC derivatives and the concentration by industry and region.

	As of December	
$ in millions	**2019**	2018
OTC derivative assets	**$ 43,011**	$ 40,576
Collateral (not netted under U.S. GAAP)	**(15,420)**	(14,278)
Net credit exposure	**$ 27,591**	$ 26,298
Industry		
Consumer, Retail & Healthcare	**4%**	2%
Diversified Industrials	**7%**	8%
Financial Institutions	**13%**	14%
Funds	**11%**	17%
Municipalities & Nonprofit	**8%**	7%
Natural Resources & Utilities	**15%**	13%
Sovereign	**25%**	25%
Technology, Media & Telecommunications	**9%**	7%
Other (including Special Purpose Vehicles)	**8%**	7%
Total	**100%**	100%
Region		
Americas	**44%**	35%
EMEA	**48%**	55%
Asia	**8%**	10%
Total	**100%**	100%

In the table above:

- OTC derivative assets, included in the consolidated balance sheets, 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, that we consider when determining credit risk, but such collateral is not eligible for netting under U.S. GAAP.

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

$ in millions	Investment-Grade	Non-Investment-Grade / Unrated	Total
As of December 2019			
Less than 1 year	**$ 18,764**	**$ 4,247**	**$ 23,011**
1 - 5 years	**18,674**	**6,879**	**25,553**
Greater than 5 years	**60,190**	**5,896**	**66,086**
Total	**97,628**	**17,022**	**114,650**
Netting	**(78,081)**	**(8,978)**	**(87,059)**
Net credit exposure	**$ 19,547**	**$ 8,044**	**$ 27,591**
As of December 2018			
Less than 1 year	$ 15,697	$ 5,427	$ 21,124
1 - 5 years	21,300	4,091	25,391
Greater than 5 years	51,737	4,191	55,928
Total	88,734	13,709	102,443
Netting	(68,736)	(7,409)	(76,145)
Net credit exposure	$ 19,998	$ 6,300	$ 26,298

In the table above:

- Tenor is based on remaining contractual maturity.
- Netting includes counterparty netting across tenor categories and cash and securities collateral that we consider 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 our 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 2019					
Less than 1 year	**$ 326**	**$ 2,022**	**$ 10,002**	**$ 6,414**	**$ 18,764**
1 - 5 years	**669**	**3,196**	**8,635**	**6,174**	**18,674**
Greater than 5 years	**12,381**	**5,770**	**22,324**	**19,715**	**60,190**
Total	**13,376**	**10,988**	**40,961**	**32,303**	**97,628**
Netting	**(8,146)**	**(8,273)**	**(35,932)**	**(25,730)**	**(78,081)**
Net credit exposure	**$ 5,230**	**$ 2,715**	**$ 5,029**	**$ 6,573**	**$ 19,547**
As of December 2018					
Less than 1 year	$ 1,262	$ 2,506	$ 6,473	$ 5,456	$ 15,697
1 - 5 years	881	5,192	9,072	6,155	21,300
Greater than 5 years	9,202	3,028	21,415	18,092	51,737
Total	11,345	10,726	36,960	29,703	88,734
Netting	(6,444)	(7,107)	(32,390)	(22,795)	(68,736)
Net credit exposure	$ 4,901	$ 3,619	$ 4,570	$ 6,908	$ 19,998

	Non-Investment-Grade / Unrated		
$ in millions	BB or lower	Unrated	Total
As of December 2019			
Less than 1 year	**$ 3,964**	**$ 283**	**$ 4,247**
1 - 5 years	**6,772**	**107**	**6,879**
Greater than 5 years	**5,835**	**61**	**5,896**
Total	**16,571**	**451**	**17,022**
Netting	**(8,811)**	**(167)**	**(8,978)**
Net credit exposure	**$ 7,760**	**$ 284**	**$ 8,044**
As of December 2018			
Less than 1 year	$ 5,255	$ 172	$ 5,427
1 - 5 years	4,053	38	4,091
Greater than 5 years	4,138	53	4,191
Total	13,446	263	13,709
Netting	(7,339)	(70)	(7,409)
Net credit exposure	$ 6,107	$ 193	$ 6,300

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 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 our credit exposure from commercial loans and lending commitments, and the concentration by industry, region and credit quality.

	As of December	
$ in millions	**2019**	2018
Loans and Lending Commitments	**$222,745**	$200,823
Industry		
Consumer, Retail & Healthcare	**19%**	16%
Diversified Industrials	**14%**	16%
Financial Institutions	**8%**	9%
Funds	**3%**	4%
Natural Resources & Utilities	**17%**	15%
Real Estate	**10%**	10%
Technology, Media & Telecommunications	**16%**	18%
Other (including Special Purpose Vehicles)	**13%**	12%
Total	**100%**	100%
Region		
Americas	**73%**	76%
EMEA	**22%**	20%
Asia	**5%**	4%
Total	**100%**	100%
Credit Quality (Credit Rating Equivalent)		
AAA	**1%**	1%
AA	**5%**	5%
A	**13%**	14%
BBB	**27%**	29%
BB or lower	**54%**	51%
Total	**100%**	100%

- **Wealth Management, Residential Real Estate and Other Lending.** We extend wealth management loans and lending commitments through our private bank, substantially all of which are secured by commercial and residential real estate, securities 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 (including distressed loans) and securities.

  The table below presents our credit exposure from Wealth management, residential real estate and other lending, and the concentration by region.

$ in millions	Wealth Management	Residential Real Estate and Other
As of December 2019		
Credit Exposure	**$30,668**	**$10,885**
Americas	**89%**	**74%**
EMEA	**9%**	**26%**
Asia	**2%**	**–**
Total	**100%**	**100%**
As of December 2018		
Credit Exposure	$26,775	$11,976
Americas	91%	72%
EMEA	7%	27%
Asia	2%	1%
Total	100%	100%

- **Consumer and Credit Card Lending.** We originate unsecured consumer and credit card loans.

  The table below presents our credit exposure from originated unsecured consumer loans and the concentration by the five most concentrated U.S. states.

$ in millions	Consumer
As of December 2019	
Credit Exposure	**$4,747**
California	**12%**
Texas	**9%**
New York	**7%**
Florida	**7%**
Illinois	**4%**
Other	**61%**
Total	**100%**
As of December 2018	
Credit Exposure	$4,536
California	12%
Texas	9%
New York	7%
Florida	7%
Illinois	4%
Other	61%
Total	100%

The table below presents our credit exposure from originated credit card loans and the concentration by the five most concentrated U.S. states.

$ in millions	Credit Card
As of December 2019	
Credit Exposure	**$1,858**
California	**21%**
Texas	**9%**
New York	**8%**
Florida	**8%**
Illinois	**4%**
Other	**50%**
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 and securities borrowed 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 and securities loaned 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. and non-U.S. government and agency obligations.

The table below presents our credit exposure from securities financing transactions and the concentration by industry, region and credit quality.

	As of December	
$ in millions	**2019**	2018
Securities Financing Transactions	**$26,958**	$20,979
Industry		
Financial Institutions	**37%**	31%
Funds	**27%**	33%
Municipalities & Nonprofit	**5%**	7%
Sovereign	**28%**	28%
Other (including Special Purpose Vehicles)	**3%**	1%
Total	**100%**	100%
Region		
Americas	**38%**	33%
EMEA	**39%**	41%
Asia	**23%**	26%
Total	**100%**	100%
Credit Quality (Credit Rating Equivalent)		
AAA	**15%**	11%
AA	**27%**	34%
A	**39%**	35%
BBB	**9%**	10%
BB or lower	**6%**	10%
Unrated	**4%**	–
Total	**100%**	100%

The table above reflects both netting agreements and collateral that we consider when determining credit risk.

Other Credit Exposures. We are exposed to credit risk from our receivables from brokers, dealers and clearing organizations and customers and counterparties. Receivables from brokers, dealers and clearing organizations primarily consist of initial margin placed with clearing organizations and receivables related to sales of securities 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 securities settlements. Receivables from customers and counterparties generally consist of collateralized receivables related to customer securities transactions and generally have minimal credit risk due to both the value of the collateral received and the short-term nature of these receivables.

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

	As of December	
$ in millions	**2019**	2018
Other Credit Exposures	**$44,931**	$41,649
Industry		
Financial Institutions	**86%**	84%
Funds	**8%**	7%
Natural Resources & Utilities	**1%**	4%
Other (including Special Purpose Vehicles)	**5%**	5%
Total	**100%**	100%
Region		
Americas	**49%**	44%
EMEA	**41%**	46%
Asia	**10%**	10%
Total	**100%**	100%
Credit Quality (Credit Rating Equivalent)		
AAA	**2%**	3%
AA	**56%**	47%
A	**23%**	26%
BBB	**7%**	8%
BB or lower	**11%**	16%
Unrated	**1%**	–
Total	**100%**	100%

The table above reflects collateral that we consider when determining credit risk.

Selected Exposures

We have credit and market exposures, as described below, that have had heightened focus due to recent events and broad market concerns. Credit exposure represents the potential for loss due to the default or deterioration in credit quality of a counterparty or borrower. Market exposure represents the potential for loss in value of our long and short positions due to changes in market prices.

High inflation in Turkey combined with current account deficits and significant depreciation of the Turkish Lira has led to concerns about its economic stability. As of December 2019, our total credit exposure to Turkey was $2.10 billion, which was with non-sovereign counterparties or borrowers. Such exposure consisted of $1.75 billion related to OTC derivatives, $330 million related to loans and lending commitments and $22 million related to secured receivables. After taking into consideration the benefit of Turkish corporate and sovereign collateral and other risk mitigants provided by Turkish counterparties, our net credit exposure was $434 million. In addition, our total market exposure to Turkey as of December 2019 was not material.

Significant depreciation of the Argentine Peso has resulted in higher inflation and has raised concerns about Argentina's economic stability. As of December 2019, our total credit exposure to Argentina was $132 million, which was with non-sovereign counterparties or borrowers, and was substantially all related to loans and lending commitments. In addition, our total market exposure to Argentina was $180 million, primarily reflecting debt exposure with sovereign issuers or underliers.

The potential restructuring of Lebanon's sovereign debt has led to concerns about its financial stability. As of December 2019, our credit exposure to Lebanon was $689 million, substantially all of which related to loans and lending commitments with non-sovereign borrowers. After taking into consideration the benefit of Lebanese sovereign collateral received, our net credit exposure was $331 million. In addition, our total market exposure to Lebanon as of December 2019 was $101 million, primarily reflecting debt exposure with sovereign issuers or underliers.

Venezuela has delayed payments on its sovereign debt and its political situation remains unclear. As of December 2019, our total credit and market exposure for Venezuela was not material.

We have a comprehensive framework to monitor, measure and assess our country exposures and to determine our risk appetite. We determine the country of risk by the location of the counterparty, issuer or underlier's assets, where they generate revenue, the country in which they are headquartered, the jurisdiction where a claim against them could be enforced, and/or the government whose policies affect their ability to repay their obligations. We monitor our credit exposure to a specific country both at the individual counterparty level, as well as at the aggregate country level. See "Stress Tests" for information about stress tests that are designed to estimate the direct and indirect impact of events involving the above countries.

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, which is independent of our revenue-producing units and reports to our chief risk officer, has primary responsibility for developing and implementing a formalized framework for assessing, monitoring and managing operational risk with the goal of maintaining our exposure to operational risk at levels that are within our risk appetite.

Operational Risk Management Process

Our process for managing operational risk includes the critical components of our risk management framework described in the "Overview and Structure of Risk Management," including a comprehensive data collection process, as well as firmwide policies and procedures, for operational risk events.

We combine top-down and bottom-up approaches to manage and measure operational risk. From a top-down perspective, our senior management assesses firmwide 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.

We maintain a comprehensive control framework designed to provide a well-controlled environment to minimize operational risks. The Firmwide Conduct and Operational Risk Committee is responsible for the ongoing approval and monitoring of the frameworks, policies, parameters, limits and thresholds which govern our operational risks.

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.

We have established policies that require all employees to report and escalate operational risk events. When operational risk events are identified, our 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 our key risk identification and assessment tools is an operational risk and control self-assessment process, which is performed by our 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:

- Evaluations of the complexity of our business activities;
- The degree of automation in our 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. We also perform firmwide stress tests. See "Overview and Structure of Risk Management" for information about firmwide stress tests.

Types of Operational Risks

Increased reliance on technology and third-party relationships has resulted in increased operational risks, such as information and cyber security risk, third-party risk and business resilience risk. We manage those risks as follows:

Information and Cyber Security Risk. Information and cyber security risk is the risk of compromising the confidentiality, integrity or availability of our data and systems, leading to an adverse impact to us, our reputation, our clients and/or the broader financial system. We seek to minimize the occurrence and impact of unauthorized access, disruption or use of information and/or information systems. We deploy and operate preventive and detective controls and processes to mitigate emerging and evolving information security and cyber security threats, including monitoring our network for known vulnerabilities and signs of unauthorized attempts to access our data and systems. There is increased information risk through diversification of our data across external service providers, including use of a variety of cloud-provided or -hosted services and applications. See "Risk Factors" in Part I, Item 1A of this Form 10-K for further information about information and cyber security risk.

Third-Party Risk. Third-party risk, including vendor risk, is the risk of an adverse impact due to reliance on third parties performing services or activities on our behalf. These risks may include legal, regulatory, information security, reputational, operational or any other risks inherent in engaging a third party. We identify, manage and report key third-party risks and conduct due diligence across multiple risk domains, including information security and cyber security, resilience and additional third-party dependencies. The Third-Party Risk Program monitors, reviews and reassesses third-party risks on an ongoing basis. See "Risk Factors" in Part I, Item 1A of this Form 10-K for further information about third-party risk.

Business Resilience Risk. Business resilience risk is the risk of disruption to our critical processes. We monitor threats and assess risks and seek to ensure our state of readiness in the event of a significant operational disruption to the normal operations of our critical functions or their dependencies, such as, critical facilities, systems, third parties, data and/or personnel. We approach business continuity planning (BCP) through the lens of business and operational resilience. The resilience framework defines the fundamental principles for BCP and crisis management to ensure that critical functions can continue to operate in the event of a disruption. The business continuity program is comprehensive, consistent firmwide and up-to-date, incorporating new information, techniques and technologies as and when they become available, and our resilience recovery plans incorporate and test specific and measurable recovery time objectives in accordance with local market best practices and regulatory requirements, and under specific scenarios. See "Business — Business Continuity and Information Security" in Part I, Item 1 of this Form 10-K for further information about business continuity.

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 liabilities, to monitor and manage our risk, and to measure and monitor our regulatory capital.

Model Risk, which is independent of our 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 firmwide oversight across our global businesses, and provides periodic updates to senior management, risk committees and the Risk Committee of the Board.

Our 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 Firmwide Model Risk Control Committee oversees our model risk management framework.

Model Review and Validation Process

Model Risk 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.

We regularly refine and enhance our models to reflect changes in market or economic conditions and our business mix. All models are reviewed on an annual basis, and new models or significant changes to existing models and their assumptions are approved 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.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Quantitative and qualitative disclosures about market risk are set forth in "Management's Discussion and Analysis of Financial Condition and Results of Operations — Risk Management" in Part II, Item 7 of this Form 10-K.

Item 8. Financial Statements and Supplementary Data

Management's Report on Internal Control over Financial Reporting

Management of The Goldman Sachs Group, Inc., together with its consolidated subsidiaries (the firm), is responsible for establishing and maintaining adequate internal control over financial reporting. The firm's internal control over financial reporting is a process designed under the supervision of the firm's principal executive and principal financial officers to provide reasonable assurance regarding the reliability of financial reporting and the preparation of the firm's financial statements for external reporting purposes in accordance with U.S. generally accepted accounting principles.

As of December 31, 2019, management conducted an assessment of the firm's internal control over financial reporting based on the framework established in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this assessment, management has determined that the firm's internal control over financial reporting as of December 31, 2019 was effective.

Our internal control over financial reporting includes policies and procedures that pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect transactions and dispositions of assets; provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with U.S. generally accepted accounting principles, and that receipts and expenditures are being made only in accordance with authorizations of management and the directors of the firm; and provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the firm's assets that could have a material effect on our financial statements.

The firm's internal control over financial reporting as of December 31, 2019 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report appearing on pages 103 and 104, which expresses an unqualified opinion on the effectiveness of the firm's internal control over financial reporting as of December 31, 2019.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and the Shareholders of The Goldman Sachs Group, Inc.:

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of The Goldman Sachs Group, Inc. and its subsidiaries (the Company) as of December 31, 2019 and 2018, and the related consolidated statements of earnings, comprehensive income, changes in shareholders' equity and cash flows for each of the three years in the period ended December 31, 2019, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control — Integrated Framework (2013)* issued by the COSO.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing on page 102. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (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 generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that (i) relate to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Valuation of Certain Level 3 Financial Instruments

As described in Notes 4 through 10 to the consolidated financial statements, the Company carries financial instruments at fair value, which includes $23.1 billion of financial assets and $25.9 billion of financial liabilities classified in Level 3 of the fair value hierarchy as one or more inputs to the financial instrument's valuation technique are significant and unobservable. Significant unobservable inputs used by management to value certain of these Level 3 financial instruments included (i) industry multiples and public comparables, (ii) credit spreads and (iii) correlation.

The principal considerations for our determination that performing procedures relating to the valuation of certain Level 3 financial instruments is a critical audit matter are (i) the valuation of these certain financial instruments involved the application of significant judgment on the part of management, which in turn led to a high degree of auditor subjectivity in performing procedures related to the valuation of these financial instruments, (ii) a high degree of auditor judgment and effort to evaluate the audit evidence obtained related to the aforementioned significant unobservable inputs used for these certain Level 3 financial instruments, and (iii) the involvement of professionals with specialized skill and knowledge to assist in evaluating the audit evidence obtained related to the valuation of these financial instruments.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the valuation of these financial instruments, including controls over the methods and significant unobservable inputs used in the valuation of these financial instruments. These procedures also included, among others, for a sample of financial instruments, the involvement of professionals with specialized skill and knowledge to assist in developing an independent estimate of fair value or testing management's process to determine the fair value of these financial instruments. Developing the independent estimate involved testing the completeness and accuracy of data provided by management, developing independent significant unobservable inputs, and comparing management's estimate to the independently developed estimate of fair value. Testing management's process included evaluating the reasonableness of the aforementioned significant unobservable inputs, evaluating the appropriateness of the methods used, and testing the completeness and accuracy of data provided by management to determine the fair value of these instruments.

Provision for Losses That May Arise from Litigation and Regulatory Proceedings related to 1Malaysia Development Berhad

As described in Note 27 to the consolidated financial statements, the Company has received subpoenas and requests for documents and information from various governmental and regulatory bodies and self-regulatory organizations as part of investigations and reviews relating to financing transactions and other matters involving 1Malaysia Development Berhad (1MDB), a sovereign wealth fund in Malaysia. Management estimates and provides for potential losses that may arise out of litigation and regulatory proceedings to the extent that such losses are probable and can be reasonably estimated. The Company's total 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, management's experience and the experience of others in similar cases, proceedings or investigations, and the opinions and views of legal counsel. In addition, management includes disclosures relating to the actions, proceedings and inquiries related to 1MDB.

The principal considerations for our determination that performing procedures relating to the provision for losses that may arise from litigation and regulatory proceedings related to 1MDB is a critical audit matter are the significant judgment on the part of management when assessing the likelihood of a loss being incurred and in determining a reasonable estimate of the loss, which in turn led to a high degree of auditor judgment, subjectivity, and effort in evaluating management's assessment of the provision for losses and related disclosures.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's estimation of the provision for losses that may arise from litigation and regulatory proceedings, including controls over determining whether a loss is probable and whether the amount of loss can be reasonably estimated, as well as controls over the related financial statement disclosures. These procedures also included, among others, obtaining and evaluating the letters of audit inquiry with internal and external legal counsel, evaluating the reasonableness of management's assessment regarding whether an unfavorable outcome is reasonably possible or probable and reasonably estimable, and evaluating the sufficiency of the Company's litigation and regulatory proceedings disclosures.

/s/ PRICEWATERHOUSECOOPERS LLP

New York, New York
February 20, 2020

We have served as the Company's auditor since 1922.

Consolidated Statements of Earnings

	Year Ended December		
in millions, except per share amounts	**2019**	2018	2017
Revenues			
Investment banking	**$ 6,798**	$ 7,430	$ 7,076
Investment management	**6,189**	6,590	5,867
Commissions and fees	**2,988**	3,199	3,051
Market making	**10,157**	9,724	7,853
Other principal transactions	**6,052**	5,906	5,951
Total non-interest revenues	**32,184**	32,849	29,798
Interest income	**21,738**	19,679	13,113
Interest expense	**17,376**	15,912	10,181
Net interest income	**4,362**	3,767	2,932
Total net revenues	**36,546**	36,616	32,730
Provision for credit losses	**1,065**	674	657
Operating expenses			
Compensation and benefits	**12,353**	12,328	11,653
Brokerage, clearing, exchange and distribution fees	**3,252**	3,200	2,876
Market development	**739**	740	588
Communications and technology	**1,167**	1,023	897
Depreciation and amortization	**1,704**	1,328	1,152
Occupancy	**1,029**	809	733
Professional fees	**1,316**	1,214	1,165
Other expenses	**3,338**	2,819	1,877
Total operating expenses	**24,898**	23,461	20,941
Pre-tax earnings	**10,583**	12,481	11,132
Provision for taxes	**2,117**	2,022	6,846
Net earnings	**8,466**	10,459	4,286
Preferred stock dividends	**569**	599	601
Net earnings applicable to common shareholders	**$ 7,897**	$ 9,860	$ 3,685
Earnings per common share			
Basic	**$ 21.18**	$ 25.53	$ 9.12
Diluted	**$ 21.03**	$ 25.27	$ 9.01
Average common shares			
Basic	**371.6**	385.4	401.6
Diluted	**375.5**	390.2	409.1

Consolidated Statements of Comprehensive Income

	Year Ended December		
$ in millions	**2019**	2018	2017
Net earnings	**$ 8,466**	$10,459	$ 4,286
Other comprehensive income/(loss) adjustments, net of tax:			
Currency translation	**5**	4	22
Debt valuation adjustment	**(2,079)**	2,553	(807)
Pension and postretirement liabilities	**(261)**	119	130
Available-for-sale securities	**158**	(103)	(9)
Other comprehensive income/(loss)	**(2,177)**	2,573	(664)
Comprehensive income	**$ 6,289**	$13,032	$ 3,622

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

Consolidated Balance Sheets

	As of December	
$ in millions	**2019**	2018
Assets		
Cash and cash equivalents	**$133,546**	$130,547
Collateralized agreements:		
Securities purchased under agreements to resell (includes **$85,691** and $139,220 at fair value)	**85,691**	139,258
Securities borrowed (includes **$26,279** and $23,142 at fair value)	**136,071**	135,285
Customer and other receivables (includes **$53** and $160 at fair value)	**74,605**	72,455
Trading assets (at fair value and includes **$66,605** and $47,371 pledged as collateral)	**355,332**	280,195
Investments (includes **$57,827** and $45,579 at fair value, and **$10,968** and $7,710 pledged as collateral)	**63,937**	47,224
Loans (includes **$14,386** and $13,416 at fair value)	**108,904**	97,837
Other assets	**34,882**	28,995
Total assets	**$992,968**	$931,796
Liabilities and shareholders' equity		
Deposits (includes **$17,765** and $21,060 at fair value)	**$190,019**	$158,257
Collateralized financings:		
Securities sold under agreements to repurchase (at fair value)	**117,756**	78,723
Securities loaned (includes **$714** and $3,241 at fair value)	**14,985**	11,808
Other secured financings (includes **$18,071** and $20,904 at fair value)	**19,277**	21,433
Customer and other payables	**174,817**	180,235
Trading liabilities (at fair value)	**108,835**	108,897
Unsecured short-term borrowings (includes **$26,007** and $16,963 at fair value)	**48,287**	40,502
Unsecured long-term borrowings (includes **$43,661** and $46,584 at fair value)	**207,076**	224,149
Other liabilities (includes **$150** and $132 at fair value)	**21,651**	17,607
Total liabilities	**902,703**	841,611
Commitments, contingencies and guarantees		
Shareholders' equity		
Preferred stock; aggregate liquidation preference of **$11,203** and $11,203	**11,203**	11,203
Common stock; **896,782,650** and 891,356,284 shares issued, and **347,343,184** and 367,741,973 shares outstanding	**9**	9
Share-based awards	**3,195**	2,845
Nonvoting common stock; no shares issued and outstanding	**–**	–
Additional paid-in capital	**54,883**	54,005
Retained earnings	**106,465**	100,100
Accumulated other comprehensive income/(loss)	**(1,484)**	693
Stock held in treasury, at cost; **549,439,468** and 523,614,313 shares	**(84,006)**	(78,670)
Total shareholders' equity	**90,265**	90,185
Total liabilities and shareholders' equity	**$992,968**	$931,796

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

Consolidated Statements of Changes in Shareholders' Equity

	Year Ended December		
$ in millions	**2019**	2018	2017
Preferred stock			
Beginning balance	**$ 11,203**	$ 11,853	$ 11,203
Issued	**1,100**	–	1,500
Redeemed	**(1,100)**	(650)	(850)
Ending balance	**11,203**	11,203	11,853
Common stock			
Beginning balance	**9**	9	9
Issued	**–**	–	–
Ending balance	**9**	9	9
Share-based awards			
Beginning balance, as previously reported	**2,845**	2,777	3,914
Cumulative effect of change in accounting principle for forfeiture of share-based awards	**–**	–	35
Beginning balance, adjusted	**2,845**	2,777	3,949
Issuance and amortization of share-based awards	**2,073**	1,355	1,810
Delivery of common stock underlying share-based awards	**(1,623)**	(1,175)	(2,704)
Forfeiture of share-based awards	**(100)**	(80)	(89)
Exercise of share-based awards	**–**	(32)	(189)
Ending balance	**3,195**	2,845	2,777
Additional paid-in capital			
Beginning balance	**54,005**	53,357	52,638
Delivery of common stock underlying share-based awards	**1,617**	1,751	2,934
Cancellation of share-based awards in satisfaction of withholding tax requirements	**(743)**	(1,118)	(2,220)
Preferred stock issuance costs, net of reversals upon redemption	**4**	15	8
Cash settlement of share-based awards	**–**	–	(3)
Ending balance	**54,883**	54,005	53,357
Retained earnings			
Beginning balance, as previously reported	**100,100**	91,519	89,039
Cumulative effect of change in accounting principle for:			
Leases, net of tax	**12**	–	–
Revenue recognition from contracts with clients, net of tax	**–**	(53)	–
Forfeiture of share-based awards, net of tax	**–**	–	(24)
Beginning balance, adjusted	**100,112**	91,466	89,015
Net earnings	**8,466**	10,459	4,286
Dividends and dividend equivalents declared on common stock and share-based awards	**(1,544)**	(1,226)	(1,181)
Dividends declared on preferred stock	**(560)**	(584)	(587)
Preferred stock redemption premium	**(9)**	(15)	(14)
Ending balance	**106,465**	100,100	91,519
Accumulated other comprehensive income/(loss)			
Beginning balance	**693**	(1,880)	(1,216)
Other comprehensive income/(loss)	**(2,177)**	2,573	(664)
Ending balance	**(1,484)**	693	(1,880)
Stock held in treasury, at cost			
Beginning balance	**(78,670)**	(75,392)	(68,694)
Repurchased	**(5,335)**	(3,294)	(6,721)
Reissued	**12**	21	34
Other	**(13)**	(5)	(11)
Ending balance	**(84,006)**	(78,670)	(75,392)
Total shareholders' equity	**$ 90,265**	$ 90,185	$ 82,243

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

Consolidated Statements of Cash Flows

	Year Ended December		
$ in millions	**2019**	2018	2017
Cash flows from operating activities			
Net earnings	**$ 8,466**	$ 10,459	$ 4,286
Adjustments to reconcile net earnings to net cash provided by/(used for) operating activities:			
Depreciation and amortization	**1,704**	1,328	1,152
Deferred income taxes	**(334)**	(2,645)	5,458
Share-based compensation	**2,018**	1,831	1,769
Gain related to extinguishment of unsecured borrowings	**(20)**	(160)	(114)
Provision for credit losses	**1,065**	674	657
Changes in operating assets and liabilities:			
Customer and other receivables and payables, net	**(7,693)**	6,416	(26,981)
Collateralized transactions (excluding other secured financings), net	**94,991**	28,147	10,025
Trading assets	**(68,682)**	(23,652)	(9,586)
Trading liabilities	**(231)**	(3,670)	(5,296)
Loans held for sale, net	**(1,458)**	442	(2,385)
Other, net	**(5,958)**	(2,606)	526
Net cash provided by/(used for) operating activities	**23,868**	16,564	(20,489)
Cash flows from investing activities			
Purchase of property, leasehold improvements and equipment	**(8,443)**	(7,982)	(3,184)
Proceeds from sales of property, leasehold improvements and equipment	**6,632**	3,711	574
Net cash used for business acquisitions	**(803)**	(162)	(2,383)
Purchase of investments	**(29,773)**	(9,418)	(17,381)
Proceeds from sales and paydowns of investments	**17,812**	8,095	13,031
Loans, net (excluding loans held for sale)	**(9,661)**	(13,064)	(17,034)
Net cash used for investing activities	**(24,236)**	(18,820)	(26,377)
Cash flows from financing activities			
Unsecured short-term borrowings, net	**14**	2,337	(501)
Other secured financings (short-term), net	**(2,050)**	586	(405)
Proceeds from issuance of other secured financings (long-term)	**7,257**	4,996	7,401
Repayment of other secured financings (long-term), including the current portion	**(7,468)**	(9,482)	(4,726)
Purchase of Trust Preferred securities	**(206)**	(35)	(237)
Proceeds from issuance of unsecured long-term borrowings	**22,381**	45,927	58,347
Repayment of unsecured long-term borrowings, including the current portion	**(43,936)**	(37,243)	(30,748)
Derivative contracts with a financing element, net	**3,952**	2,294	1,684
Deposits, net	**31,214**	20,206	14,506
Preferred stock redemption	**(1,100)**	(650)	(850)
Common stock repurchased	**(5,335)**	(3,294)	(6,772)
Settlement of share-based awards in satisfaction of withholding tax requirements	**(745)**	(1,118)	(2,223)
Dividends and dividend equivalents paid on common stock, preferred stock and share-based awards	**(2,104)**	(1,810)	(1,769)
Proceeds from issuance of preferred stock, net of issuance costs	**1,098**	–	1,495
Proceeds from issuance of common stock, including exercise of share-based awards	**–**	38	7
Cash settlement of share-based awards	**–**	–	(3)
Other financing, net	**395**	–	–
Net cash provided by financing activities	**3,367**	22,752	35,206
Net increase/(decrease) in cash and cash equivalents	**2,999**	20,496	(11,660)
Cash and cash equivalents, beginning balance	**130,547**	110,051	121,711
Cash and cash equivalents, ending balance	**$133,546**	$130,547	$110,051
Supplemental disclosures:			
Cash payments for interest, net of capitalized interest	**$ 18,645**	$ 16,721	$ 11,174
Cash payments for income taxes, net	**$ 1,266**	$ 1,271	$ 1,425

See Notes 12, 14 and 16 for information about non-cash activities.

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

Note 1.

Description of Business

The Goldman Sachs Group, Inc. (Group Inc. or parent company), a Delaware corporation, together with its consolidated subsidiaries (collectively, the firm), is a leading global investment banking, securities and investment management firm that provides a wide range of financial services to a substantial and diversified client base that includes corporations, financial institutions, governments and individuals. Founded in 1869, the firm is headquartered in New York and maintains offices in all major financial centers around the world.

Commencing with the fourth quarter of 2019, the firm began reporting its activities in the following four business segments consistent with how the firm's activities are now managed: Investment Banking, Global Markets, Asset Management, and Consumer & Wealth Management. Prior periods are presented on a comparable basis.

Investment Banking

The firm provides a broad range of investment banking services to a diverse group of corporations, financial institutions, investment funds and governments. Services include strategic advisory assignments with respect to mergers and acquisitions, divestitures, corporate defense activities, restructurings and spin-offs, and equity and debt underwriting of public offerings and private placements. The firm also provides lending to corporate clients, including middle-market lending, relationship lending and acquisition financing.

Global Markets

The firm facilitates client transactions and makes markets in fixed income, equity, currency and commodity products with institutional clients, such as corporations, financial institutions, investment funds and governments. The firm also makes markets in and clears institutional client transactions on major stock, options and futures exchanges worldwide and provides prime brokerage and other equities financing activities, including securities lending, margin lending and swaps. The firm also provides financing to clients through repurchase agreements, as well as through structured credit, warehouse and asset-backed lending.

Asset Management

The firm manages assets and offers investment products (primarily through separately managed accounts and commingled vehicles, such as mutual funds and private investment funds) across all major asset classes to a diverse set of institutional clients and a network of third-party distributors around the world. The firm makes equity investments, which includes alternative investing activities related to public and private equity investments in corporate, real estate and infrastructure entities, as well as investments through consolidated investment entities, substantially all of which are engaged in real estate investment activities.

The firm also provides financing related to its asset management businesses, including investments in debt securities and loans backed by real estate.

Consumer & Wealth Management

The firm provides investing and wealth advisory solutions, including financial planning and counseling, executing brokerage transactions and managing assets for individuals in its wealth management business. The firm also provides loans and accepts deposits through its consumer banking digital platform, *Marcus by Goldman Sachs*, and through its private bank, as well as issues credit cards to consumers.

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 Group Inc. and all other entities in which the firm has a controlling financial interest. Intercompany transactions and balances have been eliminated.

All references to 2019, 2018 and 2017 refer to the firm's years ended, or the dates, as the context requires, December 31, 2019, 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.

Beginning in the fourth quarter of 2019 and concurrent with the changes to business segments, the firm changed its balance sheet presentation to better reflect the nature of the firm's activities. The primary changes include the elimination of the financial instruments owned and financial instruments sold, but not yet purchased line items, the introduction of new line items for trading assets, trading liabilities and investments, and the inclusion of all non-trading loans in the loans line item, reclassifying the related cash flows, where applicable. Investments and loans generally include positions held for longer-term purposes, while trading assets and liabilities generally include positions held for market-making or risk management activities. In addition, revenues from transactions in derivatives related to client advisory and underwriting assignments, previously reported in investment banking, are now reported in market making within the consolidated statements of earnings.

Reclassifications have been made to previously reported amounts to conform to the current presentation.

Note 3.

Significant Accounting Policies

The firm's significant accounting policies include when and how to measure the fair value of assets and liabilities, measuring the allowance for credit losses on loans and lending commitments accounted for at amortized cost, and when to consolidate an entity. See Note 4 for policies on fair value measurements, Note 9 for policies on the allowance for credit losses, and below and Note 17 for policies on consolidation accounting. All other significant accounting policies are either described below or included in the following footnotes:

Fair Value Measurements	Note 4
Trading Assets and Liabilities	Note 5
Trading Cash Instruments	Note 6
Derivatives and Hedging Activities	Note 7
Investments	Note 8
Loans	Note 9
Fair Value Option	Note 10
Collateralized Agreements and Financings	Note 11
Other Assets	Note 12
Deposits	Note 13
Unsecured Borrowings	Note 14
Other Liabilities	Note 15
Securitization Activities	Note 16
Variable Interest Entities	Note 17
Commitments, Contingencies and Guarantees	Note 18
Shareholders' Equity	Note 19
Regulation and Capital Adequacy	Note 20
Earnings Per Common Share	Note 21
Transactions with Affiliated Funds	Note 22
Interest Income and Interest Expense	Note 23
Income Taxes	Note 24
Business Segments	Note 25
Credit Concentrations	Note 26
Legal Proceedings	Note 27
Employee Benefit Plans	Note 28
Employee Incentive Plans	Note 29
Parent Company	Note 30

Consolidation

The firm consolidates entities in which the firm has a controlling financial interest. The firm 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 firm 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 firm has a controlling financial interest in a VIE when the firm 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 17 for further information about VIEs.

Equity-Method Investments. When the firm does not have a controlling financial interest in an entity but can exert significant influence over the entity's operating and financial policies, the investment is generally accounted for at fair value by electing the fair value option available under U.S. GAAP. Significant influence generally exists when the firm owns 20% to 50% of the entity's common stock or in-substance common stock.

In certain cases, the firm applies the equity method of accounting to new investments that are strategic in nature or closely related to the firm's principal business activities, when the firm has a significant degree of involvement in the cash flows or operations of the investee or when cost-benefit considerations are less significant. See Note 8 for further information about equity-method investments.

Investment Funds. The firm has formed investment funds with third-party investors. These funds are typically organized as limited partnerships or limited liability companies for which the firm acts as general partner or manager. Generally, the firm does not hold a majority of the economic interests in these funds. These funds are usually voting interest entities and generally are not consolidated because third-party investors typically have rights to terminate the funds or to remove the firm as general partner or manager. Investments in these funds are generally measured at net asset value (NAV) and are included in investments. See Notes 8, 18 and 22 for further information about investments in funds.

Use of Estimates

Preparation of these consolidated financial statements requires management to make certain estimates and assumptions, the most important of which relate to fair value measurements, the allowance for credit losses on loans and lending commitments accounted for at amortized cost, accounting for goodwill and identifiable intangible assets, 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 Liabilities at Fair Value. Trading assets and liabilities and certain investments are recorded at fair value either under the fair value option or in accordance with other U.S. GAAP. In addition, the firm has elected to account for certain of its loans and other financial assets and 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 generally included in market making or other principal transactions. See Note 4 for further information about fair value measurements.

Revenue from Contracts with Clients. The firm accounts for revenue earned from contracts with clients for services, such as investment banking, investment management, and execution and clearing (contracts with clients), under ASU No. 2014-09, "Revenue from Contracts with Customers (Topic 606)." As such, revenues for these services are recognized when the performance obligations related to the underlying transaction are completed.

Revenues from contracts with clients subject to this ASU represent approximately 45% of total non-interest revenues for 2019 (including approximately 85% of investment banking revenues, approximately 95% of investment management revenues and all commissions and fees), and approximately 50% of total non-interest revenues for 2018 (including approximately 85% of investment banking revenues, approximately 95% of investment management revenues and all commissions and fees for 2018). Net interest income is not subject to this ASU. See Note 25 for information about net revenues by business segment.

Investment Banking

Advisory. Fees from financial advisory assignments are recognized in revenues when the services related to the underlying transaction are completed under the terms of the assignment. Non-refundable deposits and milestone payments in connection with financial advisory assignments are recognized in revenues upon completion of the underlying transaction or when the assignment is otherwise concluded.

Expenses associated with financial advisory assignments are recognized when incurred and are included in other expenses. Client reimbursements for such expenses are included in investment banking revenues.

Underwriting. Fees from underwriting assignments are recognized in revenues upon completion of the underlying transaction based on the terms of the assignment.

Expenses associated with underwriting assignments are generally deferred until the related revenue is recognized or the assignment is otherwise concluded. Such expenses are included in other expenses.

Investment Management

The firm earns management fees and incentive fees for investment management services, which are included in investment management revenues. The firm makes payments to brokers and advisors related to the placement of the firm's investment funds (distribution fees), which are included in brokerage, clearing, exchange and distribution fees.

Management Fees. Management fees for mutual funds are calculated as a percentage of daily net asset value and are received monthly. Management fees for hedge funds and separately managed accounts are calculated as a percentage of month-end net asset value and are generally received quarterly. Management fees for private equity funds are calculated as a percentage of monthly invested capital or committed capital and are received quarterly, semi-annually or annually, depending on the fund. Management fees are recognized over time in the period the services are provided.

Distribution fees paid by the firm are calculated based on either a percentage of the management fee, the investment fund's net asset value or the committed capital. Such fees are included in brokerage, clearing, exchange and distribution fees.

Incentive Fees. Incentive fees are calculated as a percentage of a fund's or separately managed account's return, or excess return above a specified benchmark or other performance target. Incentive fees are generally based on investment performance over a twelve-month period or over the life of a fund. Fees that are based on performance over a twelve-month period are subject to adjustment prior to the end of the measurement period. For fees that are based on investment performance over the life of the fund, future investment underperformance may require fees previously distributed to the firm to be returned to the fund.

Incentive fees earned from a fund or separately managed account are recognized when it is probable that a significant reversal of such fees will not occur, which is generally when such fees are no longer subject to fluctuations in the market value of investments held by the fund or separately managed account. Therefore, incentive fees recognized during the period may relate to performance obligations satisfied in previous periods.

Commissions and Fees

The firm earns commissions and fees from executing and clearing client transactions on stock, options and futures markets, as well as over-the-counter (OTC) transactions. Commissions and fees are recognized on the day the trade is executed. The firm also provides third-party research services to clients in connection with certain soft-dollar arrangements. Third-party research costs incurred by the firm in connection with such arrangements are presented net within commissions and fees.

Remaining Performance Obligations

Remaining performance obligations are services that the firm has committed to perform in the future in connection with its contracts with clients. The firm's remaining performance obligations are generally related to its financial advisory assignments and certain investment management activities. Revenues associated with remaining performance obligations relating to financial advisory assignments cannot be determined until the outcome of the transaction. For the firm's investment management activities, where fees are calculated based on the net asset value of the fund or separately managed account, future revenues associated with such remaining performance obligations cannot be determined as such fees are subject to fluctuations in the market value of investments held by the fund or separately managed account.

The firm is able to determine the future revenues associated with management fees calculated based on committed capital. As of December 2019, substantially all future net revenues associated with such remaining performance obligations will be recognized through 2026. Annual revenues associated with such performance obligations average less than $250 million through 2026.

Transfers of Financial Assets

Transfers of financial assets are accounted for as sales when the firm has relinquished control over the assets transferred. For transfers of financial assets accounted for as sales, any gains or losses are recognized in net revenues. Assets or liabilities that arise from the firm'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 trading assets and the transfer is accounted for as a collateralized financing, with the related interest expense recognized over the life of the transaction. See Note 11 for further information about transfers of financial assets accounted for as collateralized financings and Note 16 for further information about transfers of financial assets accounted for as sales.

Cash and Cash Equivalents

The firm defines cash equivalents as highly liquid overnight deposits held in the ordinary course of business. Cash and cash equivalents included cash and due from banks of $12.57 billion as of December 2019 and $10.66 billion as of December 2018. Cash and cash equivalents also included interest-bearing deposits with banks of $120.98 billion as of December 2019 and $119.89 billion as of December 2018.

The firm segregates cash for regulatory and other purposes related to client activity. Cash and cash equivalents segregated for regulatory and other purposes were $22.78 billion as of December 2019 and $23.14 billion as of December 2018. In addition, the firm segregates securities for regulatory and other purposes related to client activity. See Note 11 for further information about segregated securities.

Customer and Other Receivables

Customer and other receivables included receivables from customers and counterparties of $50.90 billion as of December 2019 and $46.95 billion as of December 2018, and receivables from brokers, dealers and clearing organizations of $23.71 billion as of December 2019 and $25.50 billion as of December 2018. Such receivables primarily consist of customer margin loans, receivables resulting from unsettled transactions and collateral posted in connection with certain derivative transactions.

Substantially all of these 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 firm's fair value hierarchy in Notes 4 through 10. Had these receivables been included in the firm's fair value hierarchy, substantially all would have been classified in level 2 as of both December 2019 and December 2018. See Note 10 for further information about customer and other receivables accounted for at fair value under the fair value option. Interest on customer and other receivables is recognized over the life of the transaction and included in interest income.

Customer and other receivables includes receivables from contracts with clients and contract assets. Contract assets represent the firm's right to receive consideration for services provided in connection with its contracts with clients for which collection is conditional and not merely subject to the passage of time. The firm's receivables from contracts with clients were $2.27 billion as of December 2019 and $1.94 billion as of December 2018. As of both December 2019 and December 2018 contract assets were not material.

Customer and Other Payables

Customer and other payables included payables to customers and counterparties of $170.21 billion as of December 2019 and $173.99 billion as of December 2018, and payables to brokers, dealers and clearing organizations of $4.61 billion as of December 2019 and $6.24 billion as of December 2018. Such payables primarily consist of customer credit balances related to the firm's prime brokerage activities. 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 firm's fair value hierarchy in Notes 4 through 10. Had these payables been included in the firm's fair value hierarchy, substantially all would have been classified in level 2 as of both December 2019 and December 2018. 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 firm 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 firm 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 firm's right of setoff under netting and credit support agreements, the firm 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 balance sheets 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) and securities borrowed and loaned transactions with the same term and currency are presented on a net-by-counterparty basis in the consolidated balance sheets when such transactions meet certain settlement criteria and are subject to netting agreements.

In the consolidated balance sheets, 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 balance sheets, resale and repurchase agreements, and securities borrowed and loaned, are not reported net of the related cash and securities received or posted as collateral. See Note 11 for further information about collateral received and pledged, including rights to deliver or repledge collateral. See Notes 7 and 11 for further information about offsetting assets and liabilities.

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 balance sheets 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. Gains or losses on translation of the financial statements of a non-U.S. operation, when the functional currency is other than the U.S. dollar, are included, net of hedges and taxes, in the consolidated statements of comprehensive income.

Recent Accounting Developments

Revenue from Contracts with Customers (ASC 606). In May 2014, the FASB issued ASU No. 2014-09. 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 firm adopted this ASU in January 2018 under a modified retrospective approach. As a result of adopting this ASU, the firm, among other things, delays recognition of non-refundable and milestone payments on financial advisory assignments until the assignments are completed, and recognizes certain investment management fees earlier than under the firm's previous revenue recognition policies. The cumulative effect of adopting this ASU as of January 1, 2018 was a decrease to retained earnings of $53 million (net of tax).

The firm also prospectively changed the presentation of certain costs from a net presentation within revenues to a gross basis, and vice versa. Beginning in 2018, certain underwriting expenses, which were netted against investment banking revenues, and certain distribution fees, which were netted against investment management revenues, are presented gross as operating expenses. Costs incurred in connection with certain soft-dollar arrangements, which were presented gross as operating expenses, are presented net within commissions and fees.

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 balance sheet 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. It also requires that for qualifying sale-leaseback transactions the seller recognize any gain or loss (based on the estimated fair value of the asset at the time of sale) when control of the asset is transferred instead of amortizing it over the lease period. In addition, this ASU requires expanded disclosures about the nature and terms of lease agreements.

The firm adopted this ASU in January 2019 under a modified retrospective approach. Upon adoption, in accordance with the ASU, the firm elected to not reassess the lease classification or initial direct costs of existing leases, and to not reassess whether existing contracts contain a lease. In addition, the firm has elected to account for each contract's lease and non-lease components as a single lease component. The impact of adoption was a gross up of $1.77 billion on the firm's consolidated balance sheet and an increase to retained earnings of $12 million (net of tax) as of January 1, 2019.

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 certain 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 (Purchased Credit Deteriorated or PCD loans).

The firm adopted this ASU in January 2020 under a modified retrospective approach. As a result of adopting this ASU, the firm's allowance for credit losses on financial assets and commitments that are measured at amortized cost will reflect management's estimate of credit losses over the remaining expected life of such assets. Expected credit losses for newly recognized financial assets and commitments, as well as changes to expected credit losses during the period, will be recognized in earnings. These expected credit losses will be measured based on historical experience, current conditions and forecasts that affect the collectability of the reported amount.

The cumulative effect of measuring the allowance under CECL as a result of adopting this ASU as of January 1, 2020 was an increase in the allowance for credit losses of $848 million. The increase in the allowance is driven by the fact that the allowance under CECL covers expected credit losses over the full expected life of the loan portfolios and also takes into account forecasts of expected future economic conditions. In addition, in accordance with the ASU, the firm elected the fair value option for loans that were previously accounted for as Purchased Credit Impaired (PCI), which resulted in a decrease to the allowance for PCI loans of $169 million. The cumulative effect of adopting this ASU was a decrease to retained earnings of approximately $640 million (net of tax).

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 firm 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 firm's consolidated financial statements.

Note 4.

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 firm measures certain financial assets and 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 firm 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 firm 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 firm's financial assets and 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 liabilities may require valuation adjustments that a market participant would require to arrive at fair value for factors, such as counterparty and the firm's credit quality, funding risk, transfer restrictions, liquidity and bid/offer spreads. Valuation adjustments are generally based on market evidence.

The valuation techniques and nature of significant inputs used to determine the fair value of the firm's financial instruments are described below. See Notes 5 through 10 for further information about significant unobservable inputs used to value level 3 financial instruments.

Valuation Techniques and Significant Inputs for Trading Cash Instruments, Investments and Loans

Level 1. Level 1 instruments include U.S. government obligations, most non-U.S. government obligations, certain agency obligations, certain corporate debt instruments, certain other debt obligations and actively traded listed equities. These instruments are valued using quoted prices for identical unrestricted instruments in active markets. The firm defines active markets for equity instruments based on the average daily trading volume both in absolute terms and relative to the market capitalization for the instrument. The firm defines active markets for debt instruments based on both the average daily trading volume and the number of days with trading activity.

Level 2. Level 2 instruments include certain non-U.S. government obligations, most agency obligations, most mortgage-backed loans and securities, most corporate debt instruments, most state and municipal obligations, most other debt obligations, restricted or less liquid listed equities, certain private equities, commodities and certain lending commitments.

Valuations of level 2 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 instruments (i) if the 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. Level 3 instruments have one or more significant valuation inputs that are not observable. Absent evidence to the contrary, level 3 instruments are initially valued at transaction price, which is considered to be the best initial estimate of fair value. Subsequently, the firm 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 of level 3 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 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 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);
- Transaction prices in both the underlying collateral and instruments with the same or similar underlying collateral;
- A measure of expected future cash flows in a default scenario (recovery rates) implied by the value of the underlying collateral, which is mainly driven by current performance of the underlying collateral and capitalization rates. Recovery rates are expressed as a percentage of notional or face value of the instrument and reflect the benefit of credit enhancements on certain instruments; and
- Timing of expected future cash flows (duration) which, in certain cases, may incorporate the impact of other unobservable inputs (e.g., prepayment speeds).

Loans and Securities Backed by Residential Real Estate

Loans and securities backed by residential real estate are directly or indirectly collateralized by portfolios of residential real estate and may include tranches of varying levels of subordination. Significant inputs are generally determined based on relative value analyses, which incorporate comparisons to instruments with similar collateral and risk profiles. Significant inputs include:

- Market yields implied by transactions of similar or related assets;
- Transaction prices in both the underlying collateral and instruments with the same or similar underlying collateral;
- Cumulative loss expectations, driven by default rates, home price projections, residential property liquidation timelines, related costs and subsequent recoveries; and
- Duration, driven by underlying loan prepayment speeds and residential property liquidation timelines.

Corporate Debt Instruments

Corporate debt instruments includes corporate loans, debt securities and convertible debentures. 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 or similar 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 firm uses credit default swaps to value the related instrument, the cost of borrowing the underlying reference obligation;
- Duration; and
- Market and transaction multiples for corporate debt instruments with convertibility or participation options.

Equity Securities

Equity securities consists of private equities. Recent third-party completed or pending transactions (e.g., merger proposals, debt restructurings, tender offers) are considered the best evidence for any change in fair value. When these are not available, the following valuation methodologies are used, as appropriate:

- Industry multiples (primarily EBITDA and revenue multiples) and public comparables;
- Transactions in similar instruments;
- Discounted cash flow techniques; and
- Third-party appraisals.

The firm also considers changes in the outlook for the relevant industry and financial performance of the issuer as compared to projected performance. Significant inputs include:

- Market and transaction multiples;
- Discount rates and capitalization rates; and
- For equity securities with debt-like features, market yields implied by transactions of similar or related assets, current performance and recovery assumptions, and duration.

Other Trading Cash Instruments, Investments and Loans

The significant inputs to the valuation of other instruments, such as U.S. and non-U.S. government and agency obligations, state and municipal obligations, and other loans and debt obligations 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;
- Current performance and recovery assumptions and, where the firm uses credit default swaps to value the related instrument, the cost of borrowing the underlying reference obligation; and
- Duration.

Valuation Techniques and Significant Inputs for Derivatives

The firm'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.
- **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.
- **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 only observable for contracts with shorter tenors.
- **Commodity.** Commodity derivatives include transactions referenced to energy (e.g., oil and natural gas), metals (e.g., precious and base) and soft commodities (e.g., agricultural). Price transparency varies based on the underlying commodity, delivery location, tenor and product quality (e.g., diesel fuel compared to unleaded gasoline). In general, price transparency for commodity derivatives is greater for contracts with shorter tenors and contracts that are more closely aligned with major and/or benchmark commodity indices.
- **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.

Level 1. 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. 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. 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 firm'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 and upfront credit points, which are unique to specific reference obligations and reference entities, recovery rates and certain correlations required to value credit derivatives (e.g., the likelihood of default of the underlying reference obligation relative to one another).
- For level 3 commodity derivatives, significant unobservable inputs include volatilities for options with strike prices that differ significantly from current market prices and prices or spreads for certain products for which the product quality or physical location of the commodity is not aligned with benchmark indices.
- For level 3 equity derivatives, significant unobservable inputs generally include equity volatility inputs for options that are long-dated and/or have strike prices that differ significantly from current market prices. In addition, the valuation of certain structured trades requires the use of level 3 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, such as commodities.

Subsequent to the initial valuation of a level 3 derivative, the firm 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 firm 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 Note 7 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 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 firm also makes funding valuation adjustments to collateralized derivatives where the terms of the agreement do not permit the firm 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 firm makes model or exit price adjustments to account for the valuation uncertainty present in the transaction.

Valuation Techniques and Significant Inputs for Other Financial Instruments at Fair Value

In addition to trading cash instruments, derivatives, and certain investments and loans, the firm accounts for certain of its other financial assets and liabilities at fair value under the fair value option. Such instruments include repurchase agreements and substantially all resale agreements; securities borrowed and loaned in Fixed Income, Currency and Commodities (FICC) financing; certain customer and other receivables, including certain margin loans; certain time deposits, including structured certificates of deposit, which are hybrid financial instruments; substantially all other secured financings, including transfers of assets accounted for as financings; certain unsecured short- and long-term borrowings, substantially all of which are hybrid financial instruments; and other liabilities. These instruments 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 firm's credit quality. The significant inputs used to value the firm's other financial instruments are described below.

Resale and Repurchase Agreements and Securities Borrowed and Loaned. The significant inputs to the valuation of resale and repurchase agreements and securities borrowed and loaned are funding spreads, the amount and timing of expected future cash flows and interest rates.

Customer and Other Receivables. The significant inputs to the valuation of receivables are interest rates, the amount and timing of expected future cash flows and funding spreads.

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 firm's other derivative instruments described above. See Note 7 for further information about derivatives and Note 13 for further information about deposits.

Other Secured Financings. The significant inputs to the valuation of other secured financings are the amount and timing of expected future cash flows, interest rates, funding spreads, the fair value of the collateral delivered by the firm (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. See Note 11 for further information about collateralized agreements and financings.

Unsecured Short- and Long-Term Borrowings. The significant inputs to the valuation of unsecured short- and long-term borrowings are the amount and timing of expected future cash flows, interest rates, the credit spreads of the firm and commodity prices for prepaid commodity transactions. The inputs used to value the embedded derivative component of hybrid financial instruments are consistent with the inputs used to value the firm's other derivative instruments described above. See Note 7 for further information about derivatives and Note 14 for further information about borrowings.

Other Liabilities. The significant inputs to the valuation of other liabilities are the amount and timing of expected future cash flows and equity volatility and correlation inputs.

Financial Assets and Liabilities at Fair Value

The table below presents financial assets and liabilities accounted for at fair value.

	As of December	
$ in millions	**2019**	2018
Total level 1 financial assets	**$242,562**	$170,463
Total level 2 financial assets	**325,259**	354,515
Total level 3 financial assets	**23,068**	22,181
Investments in funds at NAV	**4,206**	3,936
Counterparty and cash collateral netting	**(55,527)**	(49,383)
Total financial assets at fair value	**$539,568**	$501,712
Total assets	**$992,968**	$931,796
Total level 3 financial assets divided by:		
Total assets	**2.3%**	2.4%
Total financial assets at fair value	**4.3%**	4.4%
Total level 1 financial liabilities	**$ 54,790**	$ 54,151
Total level 2 financial liabilities	**293,902**	258,335
Total level 3 financial liabilities	**25,938**	23,804
Counterparty and cash collateral netting	**(41,671)**	(39,786)
Total financial liabilities at fair value	**$332,959**	$296,504
Total level 3 financial liabilities divided by total financial liabilities at fair value	**7.8%**	8.0%

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	**2019**	2018
Trading assets:		
Trading cash instruments	**$ 1,242**	$ 1,689
Derivatives	**4,654**	4,948
Investments	**15,282**	13,548
Loans	**1,890**	1,990
Other financial assets	**–**	6
Total	**$ 23,068**	$ 22,181

Level 3 financial assets as of December 2019 increased compared with December 2018, primarily reflecting an increase in level 3 investments. See Notes 5 through 10 for further information about level 3 financial assets (including information about unrealized gains and losses related to level 3 financial assets and transfers in and out of level 3).

Note 5.

Trading Assets and Liabilities

Trading assets and liabilities include trading cash instruments and derivatives held in connection with the firm's market-making or risk management activities. These assets and liabilities are accounted for at fair value either under the fair value option or in accordance with other U.S. GAAP, and the related fair value gains and losses are generally recognized in the consolidated statements of earnings.

The table below presents a summary of trading assets and liabilities.

$ in millions	Trading Assets	Trading Liabilities
As of December 2019		
Trading cash instruments	**$310,080**	**$ 65,033**
Derivatives	**45,252**	**43,802**
Total	**$355,332**	**$108,835**
As of December 2018		
Trading cash instruments	$235,349	$ 66,303
Derivatives	44,846	42,594
Total	$280,195	$108,897

See Note 6 for further information about trading cash instruments and Note 7 for further information about derivatives.

Gains and Losses from Market Making

The table below presents market making revenues by major product type.

	Year Ended December		
$ in millions	**2019**	2018	2017
Interest rates	**$ 3,272**	$(1,917)	$ 6,587
Credit	**682**	1,268	696
Currencies	**2,902**	4,646	(3,240)
Equities	**2,946**	5,264	3,170
Commodities	**355**	463	640
Total	**$10,157**	$ 9,724	$ 7,853

In the table above:

- Gains/(losses) include both realized and unrealized gains and losses. Gains/(losses) exclude related interest income and interest expense. See Note 23 for further information about interest income and interest expense.
- Gains and losses included in market making are primarily related to the firm's trading assets and liabilities, including both derivative and non-derivative financial instruments. Gains/(losses) are not representative of the manner in which the firm manages its business activities because many of the firm's market-making and client facilitation strategies 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, most of the firm's longer-term derivatives across product types are sensitive to changes in interest rates and may be economically hedged with interest rate swaps. Similarly, a significant portion of the firm's trading cash instruments and derivatives across product types has exposure to foreign currencies and may be economically hedged with foreign currency contracts.

Note 6.

Trading Cash Instruments

Trading cash instruments consists of instruments held in connection with the firm's market-making or risk management activities. These instruments are accounted for at fair value and the related fair value gains and losses are recognized in the consolidated statements of earnings.

Fair Value of Trading Cash Instruments by Level

The table below presents trading cash instruments by level within the fair value hierarchy.

$ in millions	Level 1	Level 2	Level 3	Total
As of December 2019				
Assets				
Government and agency obligations:				
U.S.	**$108,200**	**$ 34,714**	**$ 21**	**$142,935**
Non-U.S.	**33,709**	**11,108**	**22**	**44,839**
Loans and securities backed by:				
Commercial real estate	**–**	**2,031**	**191**	**2,222**
Residential real estate	**–**	**5,794**	**231**	**6,025**
Corporate debt instruments	**1,313**	**26,768**	**692**	**28,773**
State and municipal obligations	**–**	**680**	**–**	**680**
Other debt obligations	**409**	**1,074**	**10**	**1,493**
Equity securities	**78,782**	**489**	**75**	**79,346**
Commodities	**–**	**3,767**	**–**	**3,767**
Total	**$222,413**	**$ 86,425**	**$1,242**	**$310,080**
Liabilities				
Government and agency obligations:				
U.S.	**$ (9,914)**	**$ (47)**	**$ –**	**$ (9,961)**
Non-U.S.	**(21,213)**	**(2,205)**	**(6)**	**(23,424)**
Loans and securities backed by:				
Commercial real estate	**–**	**(31)**	**(1)**	**(32)**
Residential real estate	**–**	**(2)**	**–**	**(2)**
Corporate debt instruments	**(115)**	**(7,494)**	**(253)**	**(7,862)**
State and municipal obligations	**–**	**(2)**	**–**	**(2)**
Equity securities	**(23,519)**	**(212)**	**(13)**	**(23,744)**
Commodities	**–**	**(6)**	**–**	**(6)**
Total	**$ (54,761)**	**$ (9,999)**	**$ (273)**	**$ (65,033)**
As of December 2018				
Assets				
Government and agency obligations:				
U.S.	$ 70,220	$ 28,327	$ 25	$ 98,572
Non-U.S.	33,231	10,322	10	43,563
Loans and securities backed by:				
Commercial real estate	–	1,260	332	1,592
Residential real estate	–	4,545	348	4,893
Corporate debt instruments	445	22,431	912	23,788
State and municipal obligations	–	1,210	–	1,210
Other debt obligations	770	1,180	39	1,989
Equity securities	52,531	3,459	23	56,013
Commodities	–	3,729	–	3,729
Total	$157,197	$ 76,463	$1,689	$235,349
Liabilities				
Government and agency obligations:				
U.S.	$ (5,067)	$ (13)	$ –	$ (5,080)
Non-U.S.	(23,872)	(1,475)	–	(25,347)
Loans and securities backed by:				
Residential real estate	–	(1)	–	(1)
Corporate debt instruments	(4)	(10,454)	(31)	(10,489)
Other debt obligations	–	(1)	–	(1)
Equity securities	(25,147)	(220)	(18)	(25,385)
Total	$ (54,090)	$(12,164)	$ (49)	$ (66,303)

See Note 4 for an overview of the firm's fair value measurement policies and the valuation techniques and significant inputs used to determine the fair value of trading cash instruments.

In the table above:

- Trading cash instrument assets are shown as positive amounts and trading cash instrument liabilities are shown as negative amounts.
- Corporate debt instruments includes corporate loans, debt securities, convertible debentures, prepaid commodity transactions and transfers of assets accounted for as secured loans rather than purchases.
- Equity securities includes public equities and exchange-traded funds.
- Other debt obligations includes other asset-backed securities and money market instruments.

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 level 3 trading cash instruments.

	Level 3 Assets and Range of Significant Unobservable Inputs (Weighted Average) as of December	
$ in millions	**2019**	2018
Loans and securities backed by commercial real estate		
Level 3 assets	**$191**	$332
Yield	**2.7% to 21.7% (13.5%)**	6.9% to 22.5% (14.2%)
Recovery rate	**11.4% to 81.1% (55.6%)**	17.0% to 78.4% (53.0%)
Duration (years)	**0.3 to 6.6 (2.8)**	0.4 to 7.1 (3.3)
Loans and securities backed by residential real estate		
Level 3 assets	**$231**	$348
Yield	**1.2% to 12.0% (5.8%)**	2.8% to 11.8% (5.9%)
Cumulative loss rate	**5.4% to 30.4% (16.3%)**	8.3% to 37.7% (15.3%)
Duration (years)	**2.3 to 12.4 (5.7)**	1.5 to 14.0 (8.6)
Corporate debt instruments		
Level 3 assets	**$692**	$912
Yield	**0.1% to 20.4% (7.2%)**	0.7% to 17.3% (8.4%)
Recovery rate	**0.0% to 69.7% (54.9%)**	0.0% to 75.0% (61.2%)
Duration (years)	**1.7 to 16.6 (5.1)**	0.4 to 13.5 (3.6)

Level 3 government and agency obligations, other debt obligations and equity securities were not material as of both December 2019 and December 2018, and therefore, are not included in the table above.

In the table above:

- Ranges represent the significant unobservable inputs that were used in the valuation of each type of trading cash instrument.
- Weighted averages are calculated by weighting each input by the relative fair value of the trading 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 trading 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 trading cash instruments.
- Increases in yield, duration or cumulative loss rate used in the valuation of level 3 trading 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 2019 and December 2018. Due to the distinctive nature of each level 3 trading cash instrument, the interrelationship of inputs is not necessarily uniform within each product type.
- Trading cash instruments are valued using discounted cash flows.

Level 3 Rollforward

The table below presents a summary of the changes in fair value for level 3 trading cash instruments.

	Year Ended December	
$ in millions	**2019**	2018
Total trading cash instrument assets		
Beginning balance	**$1,689**	$1,213
Net realized gains/(losses)	**89**	188
Net unrealized gains/(losses)	**(35)**	(89)
Purchases	**522**	831
Sales	**(885)**	(607)
Settlements	**(252)**	(423)
Transfers into level 3	**256**	698
Transfers out of level 3	**(142)**	(122)
Ending balance	**$1,242**	$1,689
Total trading cash instrument liabilities		
Beginning balance	**$ (49)**	$ (68)
Net realized gains/(losses)	**10**	6
Net unrealized gains/(losses)	**(236)**	(7)
Purchases	**56**	41
Sales	**(35)**	(26)
Settlements	**–**	8
Transfers into level 3	**(24)**	(7)
Transfers out of level 3	**5**	4
Ending balance	**$ (273)**	$ (49)

In the table above:

- Changes in fair value are presented for all trading cash instruments that are classified in level 3 as of the end of the period.
- Net unrealized gains/(losses) relates to trading cash 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 trading cash instrument 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 trading cash instrument assets, increases are shown as positive amounts, while decreases are shown as negative amounts. For level 3 trading cash instrument liabilities, increases are shown as negative amounts, while decreases are shown as positive amounts.
- Level 3 trading cash instruments are frequently economically hedged with level 1 and level 2 trading 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 trading 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 firm's results of operations, liquidity or capital resources.

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

	Year Ended December	
$ in millions	**2019**	2018
Loans and securities backed by commercial real estate		
Beginning balance	**$ 332**	$ 260
Net realized gains/(losses)	**5**	28
Net unrealized gains/(losses)	**(17)**	(28)
Purchases	**49**	119
Sales	**(153)**	(122)
Settlements	**(48)**	(76)
Transfers into level 3	**37**	156
Transfers out of level 3	**(14)**	(5)
Ending balance	**$ 191**	$ 332
Loans and securities backed by residential real estate		
Beginning balance	**$ 348**	$ 436
Net realized gains/(losses)	**14**	28
Net unrealized gains/(losses)	**28**	29
Purchases	**111**	109
Sales	**(223)**	(205)
Settlements	**(37)**	(85)
Transfers into level 3	**19**	99
Transfers out of level 3	**(29)**	(63)
Ending balance	**$ 231**	$ 348
Corporate debt instruments		
Beginning balance	**$ 912**	$ 450
Net realized gains/(losses)	**58**	126
Net unrealized gains/(losses)	**(27)**	(96)
Purchases	**291**	559
Sales	**(458)**	(246)
Settlements	**(134)**	(231)
Transfers into level 3	**142**	395
Transfers out of level 3	**(92)**	(45)
Ending balance	**$ 692**	$ 912
Other		
Beginning balance	**$ 97**	$ 67
Net realized gains/(losses)	**12**	6
Net unrealized gains/(losses)	**(19)**	6
Purchases	**71**	44
Sales	**(51)**	(34)
Settlements	**(33)**	(31)
Transfers into level 3	**58**	48
Transfers out of level 3	**(7)**	(9)
Ending balance	**$ 128**	$ 97

In the table above, other includes U.S. and non-U.S. government and agency obligations, other debt obligations and equity securities.

Level 3 Rollforward Commentary

Year Ended December 2019. The net realized and unrealized gains on level 3 trading cash instrument assets of $54 million (reflecting $89 million of net realized gains and $35 million of net unrealized losses) for 2019 included gains/(losses) of $(56) million reported in market making and $110 million reported in interest income.

The drivers of net unrealized losses on level 3 trading cash instrument assets for 2019 were not material.

Transfers into level 3 trading cash instrument assets during 2019 primarily reflected transfers of certain corporate debt instruments from level 2, principally due to reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments.

The drivers of transfers out of level 3 trading cash instrument assets during 2019 were not material.

Year Ended December 2018. The net realized and unrealized gains on level 3 trading cash instrument assets of $99 million (reflecting $188 million of net realized gains and $89 million of net unrealized losses) for 2018 included gains/(losses) of $(87) million reported in market making and $186 million reported in interest income.

The drivers of net unrealized losses on level 3 trading cash instrument assets for 2018 were not material.

Transfers into level 3 trading cash instrument assets during 2018 primarily reflected transfers of certain corporate debt instruments and loans and securities backed by commercial real estate from level 2, principally due to reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments.

The drivers of transfers out of level 3 trading cash instruments during 2018 were not material.

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 OTC derivatives. Certain of the firm'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 firm enters into derivative transactions to provide liquidity to clients and to facilitate the transfer and hedging of their risks. In this role, the firm typically acts as principal and is required to commit capital to provide execution, and maintains market-making positions in response to, or in anticipation of, client demand.

Risk Management. The firm also enters into derivatives to actively manage risk exposures that arise from its market-making and investing and financing activities. The firm'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. The offsetting impact of this economic hedging is reflected in the same business segment as the related revenues. In addition, the firm may enter into derivatives designated as hedges under U.S. GAAP. These derivatives are used to manage interest rate exposure in certain fixed-rate unsecured long-term and short-term borrowings, and deposits, and to manage foreign currency exposure on the net investment in certain non-U.S. operations.

The firm enters into various types of derivatives, including:

- **Futures and Forwards.** Contracts that commit counterparties to purchase or sell financial instruments, commodities 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, commodities, 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, commodities 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 trading assets and derivative liabilities are included in trading liabilities. Realized and unrealized gains and losses on derivatives not designated as hedges are included in market making (for derivatives included in the Global Markets segment), and other principal transactions (for derivatives included in the remaining business segments) in the consolidated statements of earnings. For the years ended December 2019 and December 2018, substantially all of the firm's derivatives were included in the Global Markets segment.

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 balance sheets, 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 2019		As of December 2018	
$ in millions	**Derivative Assets**	**Derivative Liabilities**	Derivative Assets	Derivative Liabilities
Not accounted for as hedges				
Exchange-traded	**$ 476**	**$ 856**	$ 760	$ 1,553
OTC-cleared	**9,958**	**8,618**	5,040	3,552
Bilateral OTC	**266,387**	**242,046**	227,274	211,091
Total interest rates	**276,821**	**251,520**	233,074	216,196
OTC-cleared	**6,551**	**6,929**	4,778	4,517
Bilateral OTC	**14,178**	**13,860**	14,658	13,784
Total credit	**20,729**	**20,789**	19,436	18,301
Exchange-traded	**35**	**10**	11	16
OTC-cleared	**411**	**391**	656	800
Bilateral OTC	**79,887**	**81,613**	85,772	87,953
Total currencies	**80,333**	**82,014**	86,439	88,769
Exchange-traded	**2,390**	**2,272**	4,445	4,093
OTC-cleared	**180**	**243**	433	439
Bilateral OTC	**8,568**	**13,034**	12,746	15,595
Total commodities	**11,138**	**15,549**	17,624	20,127
Exchange-traded	**13,499**	**16,976**	13,431	11,765
Bilateral OTC	**36,162**	**39,531**	34,687	40,668
Total equities	**49,661**	**56,507**	48,118	52,433
Subtotal	**438,682**	**426,379**	404,691	395,826
Accounted for as hedges				
OTC-cleared	**–**	**–**	2	–
Bilateral OTC	**3,182**	**1**	3,024	7
Total interest rates	**3,182**	**1**	3,026	7
OTC-cleared	**16**	**57**	25	53
Bilateral OTC	**16**	**153**	54	61
Total currencies	**32**	**210**	79	114
Subtotal	**3,214**	**211**	3,105	121
Total gross fair value	**$ 441,896**	**$ 426,590**	$ 407,796	$ 395,947
Offset in the consolidated balance sheets				
Exchange-traded	**$ (14,159)**	**$ (14,159)**	$ (14,377)	$ (14,377)
OTC-cleared	**(15,565)**	**(15,565)**	(8,888)	(8,888)
Bilateral OTC	**(310,920)**	**(310,920)**	(290,961)	(290,961)
Counterparty netting	**(340,644)**	**(340,644)**	(314,226)	(314,226)
OTC-cleared	**(1,302)**	**(526)**	(1,389)	(164)
Bilateral OTC	**(54,698)**	**(41,618)**	(47,335)	(38,963)
Cash collateral netting	**(56,000)**	**(42,144)**	(48,724)	(39,127)
Total amounts offset	**$(396,644)**	**$(382,788)**	$(362,950)	$(353,353)
Included in the consolidated balance sheets				
Exchange-traded	**$ 2,241**	**$ 5,955**	$ 4,270	$ 3,050
OTC-cleared	**249**	**147**	657	309
Bilateral OTC	**42,762**	**37,700**	39,919	39,235
Total	**$ 45,252**	**$ 43,802**	$ 44,846	$ 42,594
Not offset in the consolidated balance sheets				
Cash collateral	**$ (604)**	**$ (1,603)**	$ (614)	$ (1,328)
Securities collateral	**(14,196)**	**(9,252)**	(12,740)	(8,414)
Total	**$ 30,452**	**$ 32,947**	$ 31,492	$ 32,852

	Notional Amounts as of December	
$ in millions	**2019**	2018
Not accounted for as hedges		
Exchange-traded	**$ 4,757,300**	$ 5,139,159
OTC-cleared	**13,440,376**	14,290,327
Bilateral OTC	**11,668,171**	12,858,248
Total interest rates	**29,865,847**	32,287,734
OTC-cleared	**396,342**	394,494
Bilateral OTC	**707,935**	762,653
Total credit	**1,104,277**	1,157,147
Exchange-traded	**4,566**	5,599
OTC-cleared	**134,060**	113,360
Bilateral OTC	**5,926,602**	6,596,741
Total currencies	**6,065,228**	6,715,700
Exchange-traded	**230,018**	259,287
OTC-cleared	**2,639**	1,516
Bilateral OTC	**243,228**	244,958
Total commodities	**475,885**	505,761
Exchange-traded	**910,099**	635,988
Bilateral OTC	**1,182,335**	1,070,211
Total equities	**2,092,434**	1,706,199
Subtotal	**39,603,671**	42,372,541
Accounted for as hedges		
OTC-cleared	**123,531**	85,681
Bilateral OTC	**9,714**	12,022
Total interest rates	**133,245**	97,703
OTC-cleared	**4,152**	2,911
Bilateral OTC	**9,247**	8,089
Total currencies	**13,399**	11,000
Subtotal	**146,644**	108,703
Total notional amounts	**$39,750,315**	$42,481,244

In the tables above:

- Gross fair values exclude the effects of both counterparty netting and collateral, and therefore are not representative of the firm's exposure.
- Where the firm 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 firm's derivative activity and do not represent anticipated losses.
- Total gross fair value of derivatives included derivative assets of \$9.15 billion as of December 2019 and \$10.68 billion as of December 2018, and derivative liabilities of \$14.88 billion as of December 2019 and \$14.58 billion as of December 2018, which are not subject to an enforceable netting agreement or are subject to a netting agreement that the firm has not yet determined to be enforceable.

Fair Value of Derivatives by Level

The table below presents derivatives on a gross basis by level and product type, as well as the impact of netting.

$ in millions	Level 1	Level 2	Level 3	Total
As of December 2019				
Assets				
Interest rates	**$ 3**	**$ 279,443**	**$ 557**	**$ 280,003**
Credit	**–**	**17,204**	**3,525**	**20,729**
Currencies	**–**	**80,178**	**187**	**80,365**
Commodities	**–**	**10,648**	**490**	**11,138**
Equities	**21**	**48,953**	**687**	**49,661**
Gross fair value	**24**	**436,426**	**5,446**	**441,896**
Counterparty netting in levels	**–**	**(340,325)**	**(792)**	**(341,117)**
Subtotal	**$ 24**	**$ 96,101**	**$ 4,654**	**$ 100,779**
Cross-level counterparty netting				**473**
Cash collateral netting				**(56,000)**
Net fair value				**$ 45,252**
Liabilities				
Interest rates	**$ (3)**	**$(251,050)**	**$ (468)**	**$(251,521)**
Credit	**–**	**(19,141)**	**(1,648)**	**(20,789)**
Currencies	**–**	**(81,826)**	**(398)**	**(82,224)**
Commodities	**–**	**(15,306)**	**(243)**	**(15,549)**
Equities	**(26)**	**(53,817)**	**(2,664)**	**(56,507)**
Gross fair value	**(29)**	**(421,140)**	**(5,421)**	**(426,590)**
Counterparty netting in levels	**–**	**340,325**	**792**	**341,117**
Subtotal	**$(29)**	**$ (80,815)**	**$(4,629)**	**$ (85,473)**
Cross-level counterparty netting				**(473)**
Cash collateral netting				**42,144**
Net fair value				**$ (43,802)**
As of December 2018				
Assets				
Interest rates	$ 12	$ 235,680	$ 408	$ 236,100
Credit	–	15,992	3,444	19,436
Currencies	–	85,837	681	86,518
Commodities	–	17,193	431	17,624
Equities	10	47,168	940	48,118
Gross fair value	22	401,870	5,904	407,796
Counterparty netting in levels	–	(312,611)	(956)	(313,567)
Subtotal	$ 22	$ 89,259	$ 4,948	$ 94,229
Cross-level counterparty netting				(659)
Cash collateral netting				(48,724)
Net fair value				$ 44,846
Liabilities				
Interest rates	$(24)	$(215,662)	$ (517)	$(216,203)
Credit	–	(16,529)	(1,772)	(18,301)
Currencies	–	(88,663)	(220)	(88,883)
Commodities	–	(19,808)	(319)	(20,127)
Equities	(37)	(49,910)	(2,486)	(52,433)
Gross fair value	(61)	(390,572)	(5,314)	(395,947)
Counterparty netting in levels	–	312,611	956	313,567
Subtotal	$(61)	$ (77,961)	$(4,358)	$ (82,380)
Cross-level counterparty netting				659
Cash collateral netting				39,127
Net fair value				$ (42,594)

See Note 4 for an overview of the firm's fair value measurement policies and the valuation techniques and significant inputs used to determine the fair value of derivatives.

In the table above:

- Gross fair values exclude the effects of both counterparty netting and collateral netting, and therefore are not representative of the firm'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 derivative assets (liabilities), and ranges, averages and medians of significant unobservable inputs used to value level 3 derivatives.

	Level 3 Assets (Liabilities) and Range of Significant Unobservable Inputs (Average/Median) as of December	
$ in millions, except inputs	**2019**	2018
Interest rates, net	**$89**	$(109)
Correlation	**(42)% to 81% (52%/60%)**	(10)% to 86% (66%/64%)
Volatility (bps)	**31 to 150 (70/61)**	31 to 150 (74/65)
Credit, net	**$1,877**	$1,672
Credit spreads (bps)	**1 to 559 (96/53)**	1 to 810 (109/63)
Upfront credit points	**2 to 90 (38/32)**	2 to 99 (44/40)
Recovery rates	**10% to 60% (31%/25%)**	25% to 70% (40%/40%)
Currencies, net	**$(211)**	$461
Correlation	**20% to 70% (37%/36%)**	10% to 70% (40%/36%)
Commodities, net	**$247**	$112
Volatility	**9% to 57% (26%/25%)**	10% to 75% (28%/27%)
Natural gas spread	**$(1.93) to $1.69 ($(0.16)/$(0.17))**	$(2.32) to $4.68 ($(0.26)/$(0.30))
Oil spread	**$(4.86) to $19.77 ($9.82/$11.15)**	$(3.44) to $16.62 ($4.53/$3.94)
Equities, net	**$(1,977)**	$(1,546)
Correlation	**(70)% to 99% (42%/45%)**	(68)% to 97% (48%/51%)
Volatility	**2% to 72% (14%/7%)**	3% to 102% (20%/18%)

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, credit derivatives are valued using option pricing, correlation and discounted cash flow models, and commodities 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.
- Natural gas spread represents the spread per million British thermal units of natural gas.
- Oil spread represents the spread per barrel of oil and refined products.

Range of Significant Unobservable Inputs

The following is information about the ranges of significant unobservable inputs used to value the firm's level 3 derivative instruments:

- **Correlation.** Ranges for correlation cover a variety of underliers both within one product type (e.g., equity index and equity single stock names) 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. For example, volatility of equity indices is generally lower than volatility of single stocks.
- **Credit spreads, upfront credit points and recovery rates.** The ranges for credit spreads, upfront credit points and recovery rates 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.
- **Commodity prices and spreads.** The ranges for commodity prices and spreads cover variability in products, maturities and delivery locations.

Sensitivity of Fair Value Measurement to Changes in Significant Unobservable Inputs

The following is a description of the directional sensitivity of the firm's level 3 fair value measurements to changes in significant unobservable inputs, in isolation, as of each period-end:

- **Correlation.** In general, for contracts where the holder benefits from the convergence of the underlying asset or index prices (e.g., interest rates, credit spreads, foreign exchange rates, inflation 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, upfront credit points and recovery rates.** In general, the fair value of purchased credit protection increases as credit spreads or upfront credit points increase or recovery rates decrease. Credit spreads, upfront credit points and recovery rates 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.
- **Commodity prices and spreads.** In general, for contracts where the holder is receiving a commodity, an increase in the spread (price difference from a benchmark index due to differences in quality or delivery location) or price results in a higher fair value measurement.

Due to the distinctive nature of each of the firm'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.

$ in millions	Year Ended December 2019	2018
Total level 3 derivatives, net		
Beginning balance	**$ 590**	$ (288)
Net realized gains/(losses)	**118**	(113)
Net unrealized gains/(losses)	**(454)**	1,251
Purchases	**444**	612
Sales	**(668)**	(1,510)
Settlements	**236**	573
Transfers into level 3	**7**	34
Transfers out of level 3	**(248)**	31
Ending balance	**$ 25**	$ 590

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 trading cash instruments. As a result, gains/(losses) included in the level 3 rollforward below do not necessarily represent the overall impact on the firm's results of operations, liquidity or capital resources.

The table below presents information, by product type, for derivatives included in the summary table above.

$ in millions	Year Ended December 2019	2018
Interest rates, net		
Beginning balance	**$ (109)**	$ (410)
Net realized gains/(losses)	**(24)**	(51)
Net unrealized gains/(losses)	**199**	122
Purchases	**8**	8
Sales	**(13)**	(2)
Settlements	**40**	171
Transfers into level 3	**–**	(9)
Transfers out of level 3	**(12)**	62
Ending balance	**$ 89**	$ (109)
Credit, net		
Beginning balance	**$ 1,672**	$ 1,505
Net realized gains/(losses)	**42**	(23)
Net unrealized gains/(losses)	**273**	2
Purchases	**146**	53
Sales	**(114)**	(65)
Settlements	**(251)**	244
Transfers into level 3	**108**	(35)
Transfers out of level 3	**1**	(9)
Ending balance	**$ 1,877**	$ 1,672
Currencies, net		
Beginning balance	**$ 461**	$ (181)
Net realized gains/(losses)	**(32)**	(51)
Net unrealized gains/(losses)	**(327)**	372
Purchases	**11**	36
Sales	**(1)**	(25)
Settlements	**(306)**	212
Transfers into level 3	**(14)**	101
Transfers out of level 3	**(3)**	(3)
Ending balance	**$ (211)**	$ 461
Commodities, net		
Beginning balance	**$ 112**	$ 47
Net realized gains/(losses)	**(34)**	18
Net unrealized gains/(losses)	**219**	61
Purchases	**25**	42
Sales	**(81)**	(64)
Settlements	**(6)**	12
Transfers into level 3	**8**	21
Transfers out of level 3	**4**	(25)
Ending balance	**$ 247**	$ 112
Equities, net		
Beginning balance	**$(1,546)**	$(1,249)
Net realized gains/(losses)	**166**	(6)
Net unrealized gains/(losses)	**(818)**	694
Purchases	**254**	473
Sales	**(459)**	(1,354)
Settlements	**759**	(66)
Transfers into level 3	**(95)**	(44)
Transfers out of level 3	**(238)**	6
Ending balance	**$(1,977)**	$(1,546)

Level 3 Rollforward Commentary

Year Ended December 2019. The net realized and unrealized losses on level 3 derivatives of $336 million (reflecting $118 million of net realized gains and $454 million of net unrealized losses) for 2019 included losses of $305 million reported in market making and $31 million reported in other principal transactions.

The net unrealized losses on level 3 derivatives for 2019 were primarily attributable to losses on certain equity derivatives (primarily reflecting the impact of an increase in equity prices), losses on certain currency derivatives (primarily reflecting the impact of a decrease in interest rates and changes in foreign exchange rates), partially offset by gains on certain credit derivatives (primarily reflecting the impact of a decrease in interest rates), gains on certain commodity derivatives (primarily reflecting the impact of changes in commodity prices), and gains on certain interest rate derivatives (primarily reflecting the impact of a decrease in interest rates).

The drivers of transfers into level 3 derivatives during 2019 were not material.

Transfers out of level 3 derivatives during 2019 primarily reflected transfers of certain equity derivative assets to level 2, principally due to certain unobservable inputs no longer being significant to the valuation of these derivatives.

Year Ended December 2018. The net realized and unrealized gains on level 3 derivatives of $1.14 billion (reflecting $113 million of net realized losses and $1.25 billion of net unrealized gains) for 2018 included gains of $1.11 billion reported in market making and $28 million reported in other principal transactions.

The net unrealized gains on level 3 derivatives for 2018 were primarily attributable to gains on certain equity derivatives (reflecting the impact of a decrease in certain equity prices) and gains on certain currency derivatives (primarily reflecting the impact of changes in foreign exchange rates).

Both transfers into level 3 derivatives and transfers out of level 3 derivatives during 2018 were not material.

OTC Derivatives

The table below presents OTC derivative assets and liabilities by tenor and major product type.

$ in millions	Less than 1 Year	1 - 5 Years	Greater than 5 Years	Total
As of December 2019				
Assets				
Interest rates	**$ 5,521**	**$15,183**	**$57,394**	**$ 78,098**
Credit	**678**	**3,259**	**3,183**	**7,120**
Currencies	**10,236**	**5,063**	**6,245**	**21,544**
Commodities	**2,507**	**1,212**	**302**	**4,021**
Equities	**7,332**	**4,509**	**1,294**	**13,135**
Counterparty netting in tenors	**(3,263)**	**(3,673)**	**(2,332)**	**(9,268)**
Subtotal	**$23,011**	**$25,553**	**$66,086**	**$114,650**
Cross-tenor counterparty netting				**(15,639)**
Cash collateral netting				**(56,000)**
Total OTC derivative assets				**$ 43,011**
Liabilities				
Interest rates	**$ 3,654**	**$ 9,113**	**$36,470**	**$ 49,237**
Credit	**1,368**	**4,052**	**1,760**	**7,180**
Currencies	**12,486**	**6,906**	**4,036**	**23,428**
Commodities	**2,796**	**1,950**	**3,804**	**8,550**
Equities	**5,755**	**7,381**	**3,367**	**16,503**
Counterparty netting in tenors	**(3,263)**	**(3,673)**	**(2,332)**	**(9,268)**
Subtotal	**$22,796**	**$25,729**	**$47,105**	**$ 95,630**
Cross-tenor counterparty netting				**(15,639)**
Cash collateral netting				**(42,144)**
Total OTC derivative liabilities				**$ 37,847**
As of December 2018				
Assets				
Interest rates	$ 2,810	$13,177	$47,426	$ 63,413
Credit	807	3,676	3,364	7,847
Currencies	10,976	5,076	6,486	22,538
Commodities	4,978	2,101	145	7,224
Equities	4,962	5,244	1,329	11,535
Counterparty netting in tenors	(3,409)	(3,883)	(2,822)	(10,114)
Subtotal	$21,124	$25,391	$55,928	$102,443
Cross-tenor counterparty netting				(13,143)
Cash collateral netting				(48,724)
Total OTC derivative assets				$ 40,576
Liabilities				
Interest rates	$ 4,193	$ 9,153	$29,377	$ 42,723
Credit	1,127	4,173	1,412	6,712
Currencies	13,553	6,871	4,474	24,898
Commodities	4,271	2,663	3,145	10,079
Equities	9,278	5,178	3,060	17,516
Counterparty netting in tenors	(3,409)	(3,883)	(2,822)	(10,114)
Subtotal	$29,013	$24,155	$38,646	$ 91,814
Cross-tenor counterparty netting				(13,143)
Cash collateral netting				(39,127)
Total OTC derivative liabilities				$ 39,544

In the table above:

- Tenor is based on remaining contractual maturity.
- Counterparty netting within the same product type and tenor category is included within such product type and tenor category.
- Counterparty netting across product types within the same tenor category is included in counterparty netting in tenors. Where the counterparty netting is across tenor categories, the netting is included in cross-tenor counterparty netting.

Credit Derivatives

The firm enters into a broad array of credit derivatives to facilitate client transactions and to manage the credit risk associated with market-making and investing and financing activities. Credit derivatives are actively managed based on the firm'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 firm 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 firm economically hedges its exposure to written credit derivatives primarily by entering into offsetting purchased credit derivatives with identical underliers. Substantially all of the firm'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 firm 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 2019, written credit derivatives had a total gross notional amount of $522.57 billion and purchased credit derivatives had a total gross notional amount of $581.76 billion, for total net notional purchased protection of $59.19 billion. As of December 2018, written credit derivatives had a total gross notional amount of $554.17 billion and purchased credit derivatives had a total gross notional amount of $603.00 billion, for total net notional purchased protection of $48.83 billion. The firm's written and purchased credit derivatives primarily consist of 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 2019					
Maximum Payout/Notional Amount of Written Credit Derivatives by Tenor					
Less than 1 year	**$143,566**	**$ 7,155**	**$ 759**	**$ 2,953**	**$154,433**
1 – 5 years	**292,444**	**10,125**	**5,482**	**8,735**	**316,786**
Greater than 5 years	**48,109**	**2,260**	**427**	**554**	**51,350**
Total	**$484,119**	**$19,540**	**$ 6,668**	**$12,242**	**$522,569**
Maximum Payout/Notional Amount of Purchased Credit Derivatives					
Offsetting	**$395,127**	**$14,492**	**$ 5,938**	**$10,543**	**$426,100**
Other	**$149,092**	**$ 2,617**	**$ 1,599**	**$ 2,354**	**$155,662**
Fair Value of Written Credit Derivatives					
Asset	**$ 13,103**	**$ 446**	**$ 160**	**$ 202**	**$ 13,911**
Liability	**1,239**	**448**	**372**	**3,490**	**5,549**
Net asset/(liability)	**$ 11,864**	**$ (2)**	**$ (212)**	**$ (3,288)**	**$ 8,362**
As of December 2018					
Maximum Payout/Notional Amount of Written Credit Derivatives by Tenor					
Less than 1 year	$145,828	$ 9,763	$ 1,151	$ 3,848	$160,590
1 – 5 years	298,228	21,100	13,835	7,520	340,683
Greater than 5 years	45,690	5,966	1,121	122	52,899
Total	$489,746	$36,829	$16,107	$11,490	$554,172
Maximum Payout/Notional Amount of Purchased Credit Derivatives					
Offsetting	$413,445	$25,373	$14,243	$ 8,841	$461,902
Other	$115,754	$14,273	$ 7,555	$ 3,513	$141,095
Fair Value of Written Credit Derivatives					
Asset	$ 8,656	$ 543	$ 95	$ 80	$ 9,374
Liability	1,990	1,415	1,199	3,368	7,972
Net asset/(liability)	$ 6,666	$ (872)	$ (1,104)	$ (3,288)	$ 1,402

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 firm'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 firm 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 and Funding Spreads on Derivatives

The firm realizes gains or losses on its derivative contracts. These gains or losses, include credit valuation adjustments (CVA) relating to uncollateralized derivative assets and liabilities, which represents the gains or losses (including hedges) attributable to the impact of changes in credit exposure, counterparty credit spreads, liability funding spreads (which includes the firm's own credit), probability of default and assumed recovery. These gains or losses also include funding valuation adjustments (FVA) relating to uncollateralized derivative assets, which represents the gains or losses (including hedges) attributable to the impact of changes in expected funding exposures and funding spreads.

The table below presents information about CVA and FVA.

	Year Ended December		
$ in millions	**2019**	2018	2017
CVA, net of hedges	**$(289)**	$ 371	$ 66
FVA, net of hedges	**485**	(194)	288
Total	**$ 196**	$ 177	$354

Bifurcated Embedded Derivatives

The table below presents the fair value and the notional amount of derivatives that have been bifurcated from their related borrowings.

	As of December	
$ in millions	**2019**	2018
Fair value of assets	**$ 1,148**	$ 980
Fair value of liabilities	**1,717**	1,297
Net liability	**$ 569**	$ 317
Notional amount	**$11,003**	$10,229

In the table above, derivatives that have been bifurcated from their related borrowings are recorded at fair value and primarily consist of interest rate, equity and commodity products. These derivatives are included in unsecured short- and long-term borrowings with the related borrowings.

Derivatives with Credit-Related Contingent Features

Certain of the firm's derivatives have been transacted under bilateral agreements with counterparties who may require the firm to post collateral or terminate the transactions based on changes in the firm's credit ratings. The firm 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 firm 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 bilateral agreements (excluding collateral posted), the fair value of collateral posted and additional collateral or termination payments that could have been called by counterparties in the event of a one- or two-notch downgrade in the firm's credit ratings.

	As of December	
$ in millions	**2019**	2018
Net derivative liabilities under bilateral agreements	**$32,800**	$29,583
Collateral posted	**$28,510**	$24,393
Additional collateral or termination payments:		
One-notch downgrade	**$ 358**	$ 262
Two-notch downgrade	**$ 1,268**	$ 959

Hedge Accounting

The firm applies hedge accounting for (i) certain interest rate swaps used to manage the interest rate exposure of certain fixed-rate unsecured long-term and short-term borrowings and certain fixed-rate certificates of deposit and (ii) certain foreign currency forward contracts and foreign currency-denominated debt used to manage foreign currency exposures on the firm's net investment in certain non-U.S. operations.

To qualify for hedge accounting, the hedging instrument must be highly effective at reducing the risk from the exposure being hedged. Additionally, the firm 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 firm designates certain interest rate swaps as fair value hedges of certain fixed-rate unsecured long-term and short-term debt and fixed-rate certificates of deposit. These interest rate swaps hedge changes in fair value attributable to the designated benchmark interest rate (e.g., London Interbank Offered Rate (LIBOR) or Overnight Index Swap Rate), effectively converting a substantial portion of fixed-rate obligations into floating-rate obligations.

The firm 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 23 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 borrowings and deposits, and total interest expense.

	Year Ended December		
$ in millions	**2019**	2018	2017
Interest rate hedges	**$ 3,196**	$ (1,854)	$ (2,867)
Hedged borrowings and deposits	**$ (3,657)**	$ 1,295	$ 2,183
Interest expense	**$17,376**	$15,912	$10,181

In the table above:

- The difference between gains/(losses) from interest rate hedges and hedged borrowings and deposits was primarily due to the amortization of prepaid credit spreads resulting from the passage of time.
- Hedge ineffectiveness was $(684) 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.

$ in millions	Carrying Value	Cumulative Hedging Adjustment
As of December 2019		
Deposits	**$19,634**	**$ 200**
Unsecured short-term borrowings	**$ 6,008**	**$ 28**
Unsecured long-term borrowings	**$87,874**	**$7,292**
As of December 2018		
Deposits	$11,924	$ (156)
Unsecured short-term borrowings	$ 4,450	$ (12)
Unsecured long-term borrowings	$68,839	$2,759

In the table above, cumulative hedging adjustment included $3.48 billion as of December 2019 and $1.74 billion as of December 2018 of hedging adjustments from prior hedging relationships that were de-designated and substantially all were related to unsecured long-term borrowings.

In addition, cumulative hedging adjustments for items no longer designated in a hedging relationship were $425 million as of December 2019 and $1.51 billion as of December 2018 and substantially all were related to unsecured long-term borrowings.

Net Investment Hedges

The firm seeks to reduce the impact of fluctuations in foreign exchange rates on its net investments in certain non-U.S. operations through the use of foreign currency forward contracts and foreign currency-denominated debt. For foreign currency forward contracts designated as hedges, the effectiveness of the hedge is assessed based on the overall changes in the fair value of the forward contracts (i.e., based on changes in forward rates). For foreign currency-denominated debt designated as a hedge, the effectiveness of the hedge is assessed based on changes in spot rates. For qualifying net investment hedges, all gains or losses on the hedging instruments are included in currency translation.

The table below presents the gains/(losses) from net investment hedging.

	Year Ended December		
$ in millions	**2019**	2018	2017
Hedges:			
Foreign currency forward contract	**$ 6**	$577	$(805)
Foreign currency-denominated debt	**$(19)**	$ (50)	$ (67)

Gains or losses on individual net investments in non-U.S. operations are reclassified to earnings from accumulated other comprehensive income/(loss) when such net investments are sold or substantially liquidated. The gross and net gains and losses on hedges and the related net investments in non-U.S. operations reclassified to earnings from accumulated other comprehensive income/(loss) were not material for both 2019 and 2018. The net gain reclassified to earnings from accumulated other comprehensive income was $41 million (reflecting a gain of $205 million related to hedges and a loss of $164 million on the related net investments in non-U.S. operations) for 2017. The gain/(loss) related to ineffectiveness was not material for 2017.

The firm had designated $3.05 billion as of December 2019 and $1.99 billion as of December 2018 of foreign currency-denominated debt, included in unsecured long-term and short-term borrowings, as hedges of net investments in non-U.S. subsidiaries.

Note 8.

Investments

Investments includes debt instruments and equity securities that are accounted for at fair value and are generally held by the firm in connection with its long-term investing activities. In addition, investments includes debt securities classified as available-for-sale and held-to-maturity that are generally held in connection with the firm's asset-liability management activities. Investments also consists of equity securities that are accounted for under the equity method.

The table below presents information about investments.

	As of December	
$ in millions	**2019**	2018
Equity securities, at fair value	**$22,163**	$21,430
Debt instruments, at fair value	**16,570**	12,117
Available-for-sale securities, at fair value	**19,094**	12,032
Investments, at fair value	**57,827**	45,579
Held-to-maturity securities	**5,825**	1,288
Equity method investments	**285**	357
Total investments	**$63,937**	$47,224

Equity Securities and Debt Instruments, at Fair Value

Equity securities and debt instruments, at fair value are accounted for at fair value either under the fair value option or in accordance with other U.S. GAAP, and the related fair value gains and losses are recognized in earnings.

Equity Securities, at Fair Value. Equity securities, at fair value consists of the firm's public and private equity-related investments in corporate and real estate entities.

The table below presents information about equity securities, at fair value.

	As of December	
$ in millions	**2019**	2018
Equity securities, at fair value	**$22,163**	$21,430
Equity Type		
Public equity	**11%**	7%
Private equity	**89%**	93%
Total	**100%**	100%
Asset Class		
Corporate	**79%**	81%
Real estate	**21%**	19%
Total	**100%**	100%
Region		
Americas	**50%**	53%
EMEA	**17%**	16%
Asia	**33%**	31%
Total	**100%**	100%

In the table above:

- Equity securities, at fair value included investments accounted for at fair value under the fair value option where the firm would otherwise apply the equity method of accounting of $8.23 billion as of December 2019 and $7.91 billion as of December 2018. Gains recognized by the firm as a result of changes in the fair value of such securities was $1.29 billion for 2019 and $1.41 billion for 2018. These gains are included in other principal transactions in the consolidated statements of earnings.
- Equity securities, at fair value included $3.22 billion as of December 2019 and $3.39 billion as of December 2018 of investments in funds that are measured at NAV.
- EMEA represents Europe, Middle East and Africa.

Debt Instruments, at Fair Value. Debt instruments, at fair value primarily includes mezzanine debt, senior and distressed debt.

The table below presents information about debt instruments, at fair value.

	As of December	
$ in millions	**2019**	2018
Corporate debt securities	**$11,821**	$ 8,434
Securities backed by real estate	**2,619**	1,775
Other	**2,130**	1,908
Total	**$16,570**	$12,117

In the table above:

- Corporate debt securities includes convertible debentures.
- Other primarily includes money market instruments and time deposits.
- Total debt instruments included $983 million as of December 2019 and $548 million as of December 2018 of investments in credit funds that are measured at NAV.

Investments in Funds at Net Asset Value Per Share. Equity securities and debt instruments, at fair value include investments in funds that are measured at NAV of the investment fund. The firm uses NAV to measure the fair value of fund investments when (i) the fund investment does not have a readily determinable fair value and (ii) the NAV of the investment fund is calculated in a manner consistent with the measurement principles of investment company accounting, including measurement of the investments at fair value.

Substantially all of the firm's investments in funds at NAV consist of investments in firm-sponsored private equity, credit, real estate and hedge funds where the firm co-invests with third-party investors.

Private equity funds primarily invest in a broad range of industries worldwide, including leveraged buyouts, recapitalizations, growth investments and distressed investments. Credit funds generally invest in loans and other fixed income instruments and are focused on providing private high-yield capital for leveraged and management buyout transactions, recapitalizations, financings, refinancings, acquisitions and restructurings for private equity firms, private family companies and corporate issuers. Real estate funds invest globally, primarily in real estate companies, loan portfolios, debt recapitalizations and property. Private equity, credit and real estate funds are closed-end funds in which the firm's investments are generally not eligible for redemption. Distributions will be received from these funds as the underlying assets are liquidated or distributed, the timing of which is uncertain.

The firm also invests in hedge funds, primarily multi-disciplinary hedge funds that employ a fundamental bottom-up investment approach across various asset classes and strategies. The firm's investments in hedge funds primarily include interests where the underlying assets are illiquid in nature, and proceeds from redemptions will not be received until the underlying assets are liquidated or distributed, the timing of which is uncertain.

Private equity, hedge and real estate funds described above are primarily "covered funds" as defined in the Volcker Rule of the U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act). The Board of Governors of the Federal Reserve System (FRB) extended the conformance period to July 2022 for the firm's investments in, and relationships with, certain legacy "illiquid funds" (as defined in the Volcker Rule) that were in place prior to December 2013. This extension is applicable to substantially all of the firm's remaining investments in, and relationships with, such covered funds. Substantially all of the credit funds described above are not covered funds.

The table below presents the fair value of investments in funds at NAV and the related unfunded commitments.

$ in millions	Fair Value of Investments	Unfunded Commitments
As of December 2019		
Private equity funds	**$2,767**	**$ 765**
Credit funds	**983**	**820**
Hedge funds	**125**	**–**
Real estate funds	**331**	**196**
Total	**$4,206**	**$1,781**
As of December 2018		
Private equity funds	$2,683	$ 809
Credit funds	548	1,099
Hedge funds	161	–
Real estate funds	544	203
Total	$3,936	$2,111

Available-for-Sale Securities

Available-for-sale securities are accounted for at fair value, and the related unrealized fair value gains and losses are included in accumulated other comprehensive income/(loss).

The table below presents information about available-for-sale securities by tenor.

$ in millions	Amortized Cost	Fair Value	Weighted Average Yield
As of December 2019			
Less than 5 years	**$14,063**	**$14,041**	**1.53%**
Greater than 5 years	**4,974**	**5,053**	**2.10%**
Total	**$19,037**	**$19,094**	**1.68%**
As of December 2018			
Less than 5 years	$ 5,954	$ 5,879	2.10%
Greater than 5 years	6,231	6,153	2.44%
Total	$12,185	$12,032	2.28%

In the table above:

- Available-for-sale securities consists of U.S. government obligations that were classified in level 1 of the fair value hierarchy as of both December 2019 and December 2018.
- The firm sold $9.58 billion of available-for-sale securities during 2019. The realized gains on sales of such securities were $181 million for 2019, and were included in the consolidated statements of earnings. The sales and realized gains during 2018 were not material.
- The gross unrealized gains included in accumulated other comprehensive income/(loss) were $137 million and the gross unrealized losses included in accumulated other comprehensive income/(loss) were not material as of December 2019. The gross unrealized losses included in accumulated other comprehensive income/(loss) were $153 million as of December 2018 and were related to securities in a continuous unrealized loss position for greater than a year.
- Available-for-sale securities in an unrealized loss position are periodically reviewed for other-than-temporary impairment. The firm 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 2019, 2018 or 2017.

Fair Value of Investments by Level

The table below presents investments accounted for at fair value by level within the fair value hierarchy.

$ in millions	Level 1	Level 2	Level 3	Total
As of December 2019				
Government and agency obligations:				
U.S.	**$19,094**	**$ –**	**$ –**	**$19,094**
Non-U.S.	**–**	**36**	**–**	**36**
Corporate debt securities	**48**	**7,325**	**3,465**	**10,838**
Securities backed by real estate	**–**	**2,024**	**595**	**2,619**
Other debt obligations	**732**	**1,043**	**319**	**2,094**
Equity securities	**251**	**7,786**	**10,903**	**18,940**
Subtotal	**$20,125**	**$18,214**	**$15,282**	**$53,621**
Investments in funds at NAV				**4,206**
Total investments				**$57,827**
As of December 2018				
Government and agency obligations:				
U.S.	$12,044	$ –	$ –	$12,044
Non-U.S.	–	44	–	44
Corporate debt securities	23	5,323	2,540	7,886
Securities backed by real estate	–	1,318	457	1,775
Other debt obligations	719	917	216	1,852
Equity securities	458	7,249	10,335	18,042
Subtotal	$13,244	$14,851	$13,548	$41,643
Investments in funds at NAV				3,936
Total investments				$45,579

See Note 4 for an overview of the firm's fair value measurement policies and the valuation techniques and significant inputs used to determine the fair value of investments.

Significant Unobservable Inputs

The table below presents the amount of level 3 investments, and ranges and weighted averages of significant unobservable inputs used to value such investments.

	Level 3 Assets and Range of Significant Unobservable Inputs (Weighted Average) as of December	
$ in millions	**2019**	2018
Corporate debt securities		
Level 3 assets	**$3,465**	$2,540
Yield	**5.5% to 29.8% (12.0%)**	6.5% to 32.3% (12.7%)
Recovery rate	**25.0% to 100.0% (68.5%)**	50.5% to 78.0% (74.6%)
Duration (years)	**2.9 to 5.9 (5.0)**	2.0 to 4.7 (3.8)
Multiples	**0.6x to 24.4x (7.0x)**	1.3x to 20.3x (7.7x)
Securities backed by real estate		
Level 3 assets	**$595**	$457
Yield	**9.4% to 20.3% (16.0%)**	9.5% to 20.3% (15.5%)
Recovery rate	**33.1% to 34.4% (33.5%)**	32.9% to 39.7% (37.9%)
Duration (years)	**0.4 to 3.0 (0.9)**	1.1 to 4.8 (2.2)
Other debt obligations		
Level 3 assets	**$319**	$216
Yield	**3.4% to 5.2% (4.5%)**	4.1% to 6.1% (5.2%)
Duration (years)	**4.0 to 8.0 (6.7)**	4.0 to 9.0 (7.5)
Equity securities		
Level 3 assets	**$10,903**	$10,335
Multiples	**0.8x to 36.0x (8.0x)**	1.0x to 23.6x (8.1x)
Discount rate/yield	**2.1% to 20.3% (13.4%)**	7.2% to 22.1% (14.4%)
Capitalization rate	**3.6% to 15.1% (6.1%)**	3.5% to 12.3% (6.1%)

In the table above:

- Ranges represent the significant unobservable inputs that were used in the valuation of each type of investment.
- Weighted averages are calculated by weighting each input by the relative fair value of the investment.
- 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 investment. For example, the highest multiple for private equity securities is appropriate for valuing a specific private equity security but may not be appropriate for valuing any other private equity security. Accordingly, the ranges of inputs do not represent uncertainty in, or possible ranges of, fair value measurements of level 3 investments.
- Increases in yield, discount rate, capitalization rate or duration used in the valuation of level 3 investments would have resulted in a lower fair value measurement, while increases in recovery rate or multiples would have resulted in a higher fair value measurement as of both December 2019 and December 2018. Due to the distinctive nature of each level 3 investment, the interrelationship of inputs is not necessarily uniform within each product type.
- Corporate debt securities, securities backed by real estate and other debt obligations 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.
- Recovery rate was not significant to the valuation of level 3 securities backed by real estate as of December 2018.

Level 3 Rollforward

The table below presents a summary of the changes in fair value for level 3 investments.

	Year Ended December	
$ in millions	**2019**	2018
Beginning balance	**$13,548**	$12,208
Net realized gains/(losses)	**252**	237
Net unrealized gains/(losses)	**1,295**	834
Purchases	**1,322**	1,366
Sales	**(986)**	(1,512)
Settlements	**(1,192)**	(1,451)
Transfers into level 3	**2,646**	3,456
Transfers out of level 3	**(1,603)**	(1,590)
Ending balance	**$15,282**	$13,548

In the table above:

- Changes in fair value are presented for all investments 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 an investment 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 investments, increases are shown as positive amounts, while decreases are shown as negative amounts.

The table below presents information, by product type, for investments included in the summary table above.

	Year Ended December	
$ in millions	**2019**	2018
Corporate debt securities		
Beginning balance	**$ 2,540**	$ 1,722
Net realized gains/(losses)	**64**	62
Net unrealized gains/(losses)	**198**	66
Purchases	**297**	369
Sales	**(43)**	(231)
Settlements	**(274)**	(358)
Transfers into level 3	**1,106**	1,077
Transfers out of level 3	**(423)**	(167)
Ending balance	**$ 3,465**	$ 2,540
Securities backed by real estate		
Beginning balance	**$ 457**	$ 662
Net realized gains/(losses)	**27**	20
Net unrealized gains/(losses)	**–**	(9)
Purchases	**238**	109
Sales	**(82)**	(97)
Settlements	**(98)**	(56)
Transfers into level 3	**63**	76
Transfers out of level 3	**(10)**	(248)
Ending balance	**$ 595**	$ 457
Equity securities		
Beginning balance	**$10,335**	$ 9,626
Net realized gains/(losses)	**160**	155
Net unrealized gains/(losses)	**1,096**	775
Purchases	**669**	819
Sales	**(852)**	(1,161)
Settlements	**(812)**	(1,007)
Transfers into level 3	**1,477**	2,303
Transfers out of level 3	**(1,170)**	(1,175)
Ending balance	**$10,903**	$10,335
Other debt obligations		
Beginning balance	**$ 216**	$ 198
Net realized gains/(losses)	**1**	–
Net unrealized gains/(losses)	**1**	2
Purchases	**118**	69
Sales	**(9)**	(23)
Settlements	**(8)**	(30)
Ending balance	**$ 319**	$ 216

Level 3 Rollforward Commentary

Year Ended December 2019. The net realized and unrealized gains on level 3 investments of $1.55 billion (reflecting $252 million of net realized gains and $1.30 billion of net unrealized gains) for 2019 included gains of $1.44 billion reported in other principal transactions and $108 million reported in interest income.

The net unrealized gains on level 3 investments for 2019 primarily reflected gains on private equity securities, principally driven by corporate performance and company-specific events.

Transfers into level 3 during 2019 primarily reflected transfers of certain private equity securities and corporate debt securities from level 2, principally due to reduced price transparency as a result of a lack of market evidence, including fewer transactions in these instruments.

Transfers out of level 3 investments during 2019 primarily reflected transfers of certain private equity securities and corporate debt securities to level 2, principally due to increased price transparency as a result of market evidence, including market transactions in these instruments.

Year Ended December 2018. The net realized and unrealized gains on level 3 investments of $1.07 billion (reflecting $237 million of net realized gains and $834 million of net unrealized gains) for 2018 included gains of $848 million reported in other principal transactions and $223 million reported in interest income.

The net unrealized gains on level 3 investments for 2018 primarily reflected gains on private equity securities, principally driven by corporate performance.

Transfers into level 3 during 2018 primarily reflected transfers of certain private equity securities and corporate debt instruments from level 2, principally due to reduced price transparency as a result of a lack of market evidence, including fewer transactions in these instruments.

Transfers out of level 3 investments during 2018 primarily reflected transfers of certain private equity securities to level 2, principally due to increased price transparency as a result of market evidence, including market transactions in these instruments.

Held-to-Maturity Securities

Held-to-maturity securities are accounted for at amortized cost, net of other-than-temporary impairments.

The table below presents information about held-to-maturity securities by type and tenor.

$ in millions	Amortized Cost	Fair Value	Weighted Average Yield
As of December 2019			
Less than 5 years	**$3,534**	**$3,613**	**2.40%**
Greater than 5 years	**1,534**	**1,576**	**2.25%**
Total U.S. government obligations	**5,068**	**5,189**	**2.35%**
Less than 5 years	**6**	**6**	**4.16%**
Greater than 5 years	**751**	**769**	**1.67%**
Total securities backed by real estate	**757**	**775**	**1.69%**
Total held-to-maturity securities	**$5,825**	**$5,964**	**2.27%**
As of December 2018			
Less than 5 years	$ 498	$ 511	3.08%
Total U.S. government obligations	498	511	3.08%
Less than 5 years	5	6	4.61%
Greater than 5 years	785	800	1.78%
Total securities backed by real estate	790	806	1.80%
Total held-to-maturity securities	$1,288	$1,317	2.29%

In the table above:

- Substantially all of the securities backed by real estate consist of securities backed by residential real estate.
- As these securities are not accounted for at fair value, they are not included in the firm's fair value hierarchy in Notes 4 through 10. Had these securities been included in the firm's fair value hierarchy, U.S. government obligations would have been classified in level 1 and substantially all securities backed by real estate would have been classified in level 2 of the fair value hierarchy as of both December 2019 and December 2018.
- The gross unrealized gains were $141 million and the gross unrealized losses were not material as of December 2019. Gross unrealized gains/(losses) were not material as of December 2018.
- Held-to-maturity securities in an unrealized loss position are periodically reviewed for other-than-temporary impairment. The firm 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 2019, 2018 or 2017.

Note 9.

Loans

Loans include (i) loans held for investment that are accounted for at amortized cost net of allowance for loan losses or at fair value under the fair value option and (ii) loans held for sale that are accounted for at the lower of cost or fair value. Interest on loans is recognized over the life of the loan and is recorded on an accrual basis.

The table below presents information about loans.

$ in millions	Amortized Cost	Fair Value	Held For Sale	Total
As of December 2019				
Loan Type				
Corporate	**$41,129**	**$ 3,224**	**$1,954**	**$ 46,307**
Wealth management	**20,116**	**7,824**	**–**	**27,940**
Commercial real estate	**13,258**	**1,876**	**2,609**	**17,743**
Residential real estate	**6,132**	**792**	**34**	**6,958**
Consumer	**4,747**	**–**	**–**	**4,747**
Credit cards	**1,858**	**–**	**–**	**1,858**
Other	**3,396**	**670**	**726**	**4,792**
Total loans, gross	**90,636**	**14,386**	**5,323**	**110,345**
Allowance for loan losses	**(1,441)**	**–**	**–**	**(1,441)**
Total loans	**$89,195**	**$14,386**	**$5,323**	**$108,904**
As of December 2018				
Loan Type				
Corporate	$37,283	$ 2,819	$2,273	$ 42,375
Wealth management	17,518	7,250	–	24,768
Commercial real estate	11,441	1,718	1,019	14,178
Residential real estate	7,284	973	44	8,301
Consumer	4,536	–	–	4,536
Other	3,594	656	495	4,745
Total loans, gross	81,656	13,416	3,831	98,903
Allowance for loan losses	(1,066)	–	–	(1,066)
Total loans	$80,590	$13,416	$3,831	$ 97,837

The following is a description of the loan types in the table above:

- **Corporate.** Corporate loans includes term loans, revolving lines of credit, letter of credit facilities and bridge loans, and are principally used for operating and general corporate purposes, or in connection with acquisitions. Corporate loans may be secured or unsecured, depending on the loan purpose, the risk profile of the borrower and other factors.
- **Wealth Management.** Wealth management loans includes loans extended by the private bank to its wealth management and other clients. 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 of such loans are secured by securities, residential real estate, commercial real estate or other assets.

- **Commercial Real Estate.** Commercial real estate loans includes loans extended by the firm, 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 firm.
- **Residential Real Estate.** Residential real estate loans primarily includes loans extended by the firm, other than those extended by the private bank, to clients who warehouse assets that are directly or indirectly secured by residential real estate and loans purchased by the firm.
- **Consumer.** Consumer loans are unsecured and are originated by the firm.
- **Credit Cards.** Credit card loans are loans made pursuant to revolving lines of credit issued to consumers by the firm.
- **Other.** 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 and credit card loans purchased by the firm.

PCI Loans

Loans accounted for at amortized cost include PCI loans, which represent acquired loans or pools of loans with evidence of credit deterioration subsequent to their origination and where it is probable, at acquisition, that the firm will not be able to collect all contractually required payments. PCI loans are initially recorded at the acquisition price and the difference between the acquisition price and the expected cash flows (accretable yield) is recognized as interest income over the life of such loans on an effective yield method.

The tables below present information about PCI loans.

	As of December	
$ in millions	**2019**	2018
Commercial real estate	**$ 455**	$ 581
Residential real estate	**1,167**	2,457
Other	**–**	4
Total gross carrying value	**$1,622**	$3,042
Total outstanding principal balance	**$3,231**	$5,576
Total accretable yield	**$ 220**	$ 459

In January 2020, the firm elected the fair value option for these PCI loans in accordance with ASU No. 2016-13. See Note 3 for further information about adoption of this ASU.

	Year Ended December		
$ in millions	**2019**	2018	2017
Acquired during the period			
Fair value	**$ –**	$ 839	$1,769
Expected cash flows	**$ –**	$ 937	$1,961
Contractually required cash flows	**$ –**	$1,881	$4,092

In the table above:

- Fair value, expected cash flows and contractually required cash flows were as of the acquisition date.
- Expected cash flows represents the cash flows expected to be received over the life of the loan or as a result of liquidation of the underlying collateral.
- Contractually required cash flows represents cash flows required to be repaid by the borrower over the life of the loan.

Credit Quality

Risk Assessment. The firm's risk assessment process includes evaluating the credit quality of its loans. For loans (excluding originated and purchased consumer and credit card loans, PCI loans and certain wealth management loans backed by residential real estate), the firm performs credit reviews which include initial and ongoing analyses of its borrowers, resulting in an internal credit rating. A credit review is an independent analysis of the capacity and willingness of a borrower to meet its financial obligations. 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 table below presents gross loans by an internally determined public rating agency equivalent or other credit metrics and the concentration of secured and unsecured loans.

$ in millions	Investment-Grade	Non-Investment-Grade	Other/ Unrated	Total
As of December 2019				
Amortized cost	**$30,266**	**$51,222**	**$ 9,148**	**$ 90,636**
Fair value	**2,844**	**5,174**	**6,368**	**14,386**
Held for sale	**323**	**4,368**	**632**	**5,323**
Total	**$33,433**	**$60,764**	**$16,148**	**$110,345**
Secured	**25%**	**50%**	**8%**	**83%**
Unsecured	**5%**	**5%**	**7%**	**17%**
Total	**30%**	**55%**	**15%**	**100%**
As of December 2018				
Amortized cost	$28,290	$45,468	$ 7,898	$ 81,656
Fair value	2,371	4,999	6,046	13,416
Held for sale	1,231	2,088	512	3,831
Total	$31,892	$52,555	$14,456	$ 98,903
Secured	25%	50%	9%	84%
Unsecured	7%	3%	6%	16%
Total	32%	53%	15%	100%

In the table above, other/unrated includes $15.52 billion as of December 2019 and $11.72 billion as of December 2018 of loans evaluated using other credit metrics described below. Such loans primarily include originated and purchased consumer and credit card loans, PCI loans and certain wealth management loans backed by residential real estate.

For purchased consumer and credit card loans, PCI loans and certain wealth management loans backed by residential real estate, the firm's risk assessment process includes reviewing certain key metrics, such as loan-to-value ratio, delinquency status, collateral values, expected cash flows, the Fair Isaac Corporation (FICO) credit score and other risk factors.

For originated consumer and credit card loans, an important credit-quality indicator is the 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 firm to assess the updated creditworthiness of the borrower.

The table below presents gross consumer and credit card loans and the concentration by refreshed FICO credit score.

	As of December	
$ in millions	**2019**	2018
Consumer, gross	**$4,747**	$4,536
Credit cards, gross	**1,858**	–
Total	**$6,605**	$4,536
Refreshed FICO credit score		
Greater than or equal to 660	**85%**	88%
Less than 660	**15%**	12%
Total	**100%**	100%

The firm also assigns a regulatory risk rating to its loans based on the definitions provided by the U.S. federal bank regulatory agencies. The table below presents gross loans by regulatory risk rating.

$ in millions	Non-criticized/ Pass	Criticized	Total
As of December 2019			
Amortized cost	**$ 82,952**	**$ 7,684**	**$ 90,636**
Fair value	**12,153**	**2,233**	**14,386**
Held for sale	**5,216**	**107**	**5,323**
Total	**$100,321**	**$10,024**	**$110,345**
As of December 2018			
Amortized cost	$ 75,596	$ 6,060	$ 81,656
Fair value	10,752	2,664	13,416
Held for sale	3,817	14	3,831
Total	$ 90,165	$ 8,738	$ 98,903

Credit Concentrations. The table below presents the concentration of gross loans by region.

	As of December	
$ in millions	**2019**	2018
Loans, gross	**$110,345**	$98,903
Region		
Americas	**73%**	77%
EMEA	**21%**	18%
Asia	**6%**	5%
Total	**100%**	100%

The table below presents the concentration of gross corporate loans by industry.

	As of December	
$ in millions	**2019**	2018
Corporate, gross	**$46,307**	$42,375
Industry		
Consumer, Retail & Healthcare	**15%**	16%
Diversified Industrials	**17%**	16%
Financial Institutions	**10%**	11%
Funds	**9%**	10%
Natural Resources & Utilities	**12%**	11%
Real Estate	**7%**	6%
Technology, Media & Telecommunications	**17%**	18%
Other (including Special Purpose Vehicles)	**13%**	12%
Total	**100%**	100%

Impaired Loans. Loans accounted for at amortized cost (excluding PCI loans) are determined to be impaired when it is probable that the firm will not collect all principal and interest due under the contractual terms. At that time, such 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 firm 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 (excluding PCI loans) on nonaccrual status was $1.49 billion as of December 2019 and $838 million as of December 2018. Such loans included $251 million as of December 2019 and $27 million as of December 2018 of corporate loans that were modified in a troubled debt restructuring. The firm's lending commitments related to these loans were not material as of both December 2019 and December 2018. The amount of loans 30 days or more past due was $627 million as of December 2019 and $208 million as of December 2018.

When it is determined that the firm cannot reasonably estimate expected cash flows on PCI loans or pools of loans, such loans are placed on nonaccrual status.

Allowance for Credit Losses

The firm's allowance for credit losses consists of the allowance for losses on loans and lending commitments accounted for at amortized cost. Loans and lending commitments accounted for at fair value or accounted for at the lower of cost or fair value are not subject to an allowance for credit losses.

The firm's allowance for loan losses consists of specific loan-level reserves, portfolio-level reserves and reserves on PCI loans, as described below:

- Specific loan-level reserves are determined on loans (excluding PCI loans) that exhibit credit quality weakness and are therefore individually evaluated for impairment.
- Portfolio-level reserves are determined on loans (excluding PCI 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.
- Reserves on PCI loans are recorded when it is determined that the expected cash flows, which are reassessed on a quarterly basis, will be lower than those used to establish the current effective yield for such loans or pools of loans. If the expected cash flows are determined to be significantly higher than those used to establish the current effective yield, such increases are initially recognized as a reduction to any previously recorded allowances for loan losses and any remaining increases are recognized as interest income prospectively over the life of the loan or pools of loans as an increase to the effective yield.

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 and credit card 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 firm also records an allowance for losses on lending commitments that are held for investment and accounted for at amortized cost. 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 and lending commitments accounted for at amortized cost by impairment methodology.

$ in millions	Specific	Portfolio	PCI	Total
As of December 2019				
Loans				
Corporate	**$1,122**	**$ 40,007**	**$ –**	**$ 41,129**
Wealth management	**52**	**20,064**	**–**	**20,116**
Commercial real estate	**175**	**12,628**	**455**	**13,258**
Residential real estate	**143**	**4,822**	**1,167**	**6,132**
Consumer	**–**	**4,747**	**–**	**4,747**
Credit cards	**–**	**1,858**	**–**	**1,858**
Other	**–**	**3,396**	**–**	**3,396**
Total	**$1,492**	**$ 87,522**	**$1,622**	**$ 90,636**
Lending Commitments				
Corporate	**$ 128**	**$127,098**	**$ –**	**$127,226**
Credit card	**–**	**13,669**	**–**	**13,669**
Other	**11**	**9,194**	**–**	**9,205**
Total	**$ 139**	**$149,961**	**$ –**	**$150,100**
As of December 2018				
Loans				
Corporate	$ 358	$ 36,925	$ –	$ 37,283
Wealth management	46	17,472	–	17,518
Commercial real estate	9	10,851	581	11,441
Residential real estate	425	4,402	2,457	7,284
Consumer	–	4,536	–	4,536
Other	–	3,590	4	3,594
Total	$ 838	$ 77,776	$3,042	$ 81,656
Lending Commitments				
Corporate	$ 31	$113,453	$ –	$113,484
Other	–	7,513	–	7,513
Total	$ 31	$120,966	$ –	$120,997

In the table above:

- Gross loans and lending commitments, subject to specific loan-level reserves, included $832 million as of December 2019 and $484 million as of December 2018 of impaired loans and lending commitments, which did not require a reserve as the loan was deemed to be recoverable.
- Gross loans deemed impaired and subject to specific loan-level reserves as a percentage of total gross loans was 1.6% as of December 2019 and 1.0% as of December 2018.
- See Note 18 for further information about lending commitments.

The table below presents information about the allowance for credit losses.

	Year Ended December			
	2019		2018	
$ in millions	**Loans**	**Lending Commitments**	Loans	Lending Commitments
Changes in the allowance for credit losses				
Beginning balance	**$1,066**	**$286**	$ 803	$274
Net charge-offs	**(490)**	**–**	(337)	–
Provision	**990**	**75**	654	20
Other	**(125)**	**–**	(54)	(8)
Ending balance	**$1,441**	**$361**	$1,066	$286
Allowance for losses by impairment methodology				
Specific	**$ 207**	**$ 21**	$ 102	$ 3
Portfolio	**1,065**	**340**	848	283
PCI	**169**	**–**	116	–
Total	**$1,441**	**$361**	$1,066	$286

In the table above:

- Net charge-offs were primarily related to consumer loans for 2019 and consumer loans and commercial real estate PCI loans for 2018.
- The provision for credit losses was primarily related to consumer loans and corporate loans for both 2019 and 2018.
- 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 consumer loans and corporate loans. Specific loan-level reserves were substantially all related to corporate loans. Reserves on PCI loans were related to real estate 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 accounted for at amortized cost was 1.6% as of December 2019 and 1.3% as of December 2018.
- Net charge-offs as a percentage of average total gross loans accounted for at amortized cost were 0.6% for 2019 and 0.5% for 2018.

Fair Value of Loans by Level

The table below presents loans held for investment accounted for at fair value under the fair value option by level within the fair value hierarchy.

$ in millions	Level 1	Level 2	Level 3	Total
As of December 2019				
Loan Type				
Corporate	**$ –**	**$ 2,472**	**$ 752**	**$ 3,224**
Wealth management	**–**	**7,764**	**60**	**7,824**
Commercial real estate	**–**	**1,285**	**591**	**1,876**
Residential real estate	**–**	**571**	**221**	**792**
Other	**–**	**404**	**266**	**670**
Total	**$ –**	**$12,496**	**$1,890**	**$14,386**
As of December 2018				
Loan Type				
Corporate	$ –	$ 2,160	$ 659	$ 2,819
Wealth management	–	7,192	58	7,250
Commercial real estate	–	1,041	677	1,718
Residential real estate	–	683	290	973
Other	–	350	306	656
Total	$ –	$11,426	$1,990	$13,416

The gains as a result of changes in the fair value of loans included in the table above were $355 million for 2019 and $372 million for 2018. These gains were included in other principal transactions.

See Note 4 for an overview of the firm's fair value measurement policies and the valuation techniques and significant inputs used to determine the fair value of loans.

Significant Unobservable Inputs

The table below presents the amount of level 3 loans, and ranges and weighted averages of significant unobservable inputs used to value such loans.

	Level 3 Assets and Range of Significant Unobservable Inputs (Weighted Average) as of December	
$ in millions	**2019**	2018
Corporate		
Level 3 assets	**$752**	$659
Yield	**1.9% to 26.3% (9.5%)**	4.8% to 30.0% (12.5%)
Recovery rate	**13.5% to 78.0% (44.4%)**	13.5% to 55.0% (28.4%)
Duration (years)	**3.7 to 5.8 (3.9)**	1.6 to 6.7 (3.0)
Commercial real estate		
Level 3 assets	**$591**	$677
Yield	**7.0% to 16.0% (9.3%)**	8.3% to 22.0% (11.7%)
Recovery rate	**5.9% to 85.2% (48.6%)**	9.7% to 64.9% (37.8%)
Duration (years)	**0.2 to 5.3 (3.5)**	0.7 to 5.9 (3.8)
Residential real estate		
Level 3 assets	**$221**	$290
Yield	**1.1% to 14.0% (11.5%)**	2.6% to 19.3% (11.9%)
Duration (years)	**1.1 to 4.8 (4.0)**	1.4 to 5.4 (4.6)
Wealth management and other		
Level 3 assets	**$326**	$364
Yield	**3.9% to 16.0% (9.9%)**	4.7% to 11.5% (9.0%)
Duration (years)	**1.6 to 6.7 (3.7)**	2.2 to 4.8 (2.8)

In the table above:

- Ranges represent the significant unobservable inputs that were used in the valuation of each type of loan.
- Weighted averages are calculated by weighting each input by the relative fair value of the loan.
- 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 loan. For example, the highest yield for residential real estate loans is appropriate for valuing a specific residential real estate loan but may not be appropriate for valuing any other residential real estate loan. Accordingly, the ranges of inputs do not represent uncertainty in, or possible ranges of, fair value measurements of level 3 loans.
- Increases in yield or duration used in the valuation of level 3 loans 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 2019 and December 2018. Due to the distinctive nature of each level 3 loan, the interrelationship of inputs is not necessarily uniform within each product type.
- Loans are valued using discounted cash flows.

Level 3 Rollforward

The table below presents a summary of the changes in fair value for level 3 loans.

	Year Ended December	
$ in millions	**2019**	2018
Beginning balance	**$1,990**	$1,973
Net realized gains/(losses)	**46**	74
Net unrealized gains/(losses)	**85**	72
Purchases	**249**	88
Sales	**(14)**	(66)
Settlements	**(795)**	(717)
Transfers into level 3	**444**	995
Transfers out of level 3	**(115)**	(429)
Ending balance	**$1,890**	$1,990

In the table above:

- Changes in fair value are presented for loans that are classified in level 3 as of the end of the period.
- Net unrealized gains/(losses) relates to loans 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 loan was transferred to level 3 during a reporting period, its entire gain or loss for the period is classified in level 3.

The table below presents information, by loan type, for loans included in the summary table above.

	Year Ended December	
$ in millions	**2019**	2018
Corporate		
Beginning balance	**$ 659**	$ 672
Net realized gains/(losses)	**5**	15
Net unrealized gains/(losses)	**(27)**	(11)
Purchases	**151**	69
Sales	**–**	(58)
Settlements	**(298)**	(225)
Transfers into level 3	**290**	310
Transfers out of level 3	**(28)**	(113)
Ending balance	**$ 752**	$ 659
Commercial real estate		
Beginning balance	**$ 677**	$ 853
Net realized gains/(losses)	**20**	38
Net unrealized gains/(losses)	**28**	33
Purchases	**11**	14
Sales	**(9)**	(4)
Settlements	**(229)**	(330)
Transfers into level 3	**94**	382
Transfers out of level 3	**(1)**	(309)
Ending balance	**$ 591**	$ 677
Residential real estate		
Beginning balance	**$ 290**	$ 213
Net realized gains/(losses)	**15**	18
Net unrealized gains/(losses)	**26**	(13)
Purchases	**58**	3
Sales	**(5)**	(4)
Settlements	**(137)**	(70)
Transfers into level 3	**60**	143
Transfers out of level 3	**(86)**	–
Ending balance	**$ 221**	$ 290
Wealth management and other		
Beginning balance	**$ 364**	$ 235
Net realized gains/(losses)	**6**	3
Net unrealized gains/(losses)	**58**	63
Purchases	**29**	2
Sales	**–**	–
Settlements	**(131)**	(92)
Transfers into level 3	**–**	160
Transfers out of level 3	**–**	(7)
Ending balance	**$ 326**	$ 364

Level 3 Rollforward Commentary

Year Ended December 2019. The net realized and unrealized gains on level 3 loans of $131 million (reflecting $46 million of net realized gains and $85 million of net unrealized gains) for 2019 included gains of $98 million reported in other principal transactions and $33 million reported in interest income.

The drivers of the net unrealized gains on level 3 loans for 2019 were not material.

Transfers into level 3 loans during 2019 primarily reflected transfers of certain corporate loans from level 2, principally due to reduced price transparency as a result of a lack of market evidence.

The drivers of transfers out of level 3 loans during 2019 were not material.

Year Ended December 2018. The net realized and unrealized gains on level 3 loans of $146 million (reflecting $74 million of net realized gains and $72 million of net unrealized gains) for 2018 included gains of $52 million reported in other principal transactions and $94 million reported in interest income.

The drivers of the net unrealized gains on level 3 loans for 2018 were not material.

Transfers into level 3 loans during 2018 primarily reflected transfers of certain commercial real estate and corporate loans from level 2, principally due to reduced price transparency as a result of a lack of market evidence.

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

Estimated Fair Value

The table below presents the estimated fair value of loans that are not accounted for at fair value and in what level of the fair value hierarchy they would have been classified if they had been included in the firm's fair value hierarchy.

		Estimated Fair Value		
$ in millions	Carrying Value	Level 2	Level 3	Total
As of December 2019				
Amortized cost	**$89,195**	**$52,091**	**$37,095**	**$89,186**
Held for sale	**$ 5,323**	**$ 4,157**	**$ 1,252**	**$ 5,409**
As of December 2018				
Amortized cost	$80,590	$40,640	$40,103	$80,743
Held for sale	$ 3,831	$ 2,662	$ 1,180	$ 3,842

Note 10.
Fair Value Option

Other Financial Assets and Liabilities at Fair Value

In addition to trading assets and liabilities, and certain investments and loans, the firm accounts for certain of its other financial assets and 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 assets 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 (e.g., physical commodities). If the firm elects to bifurcate the embedded derivative from the associated debt, the derivative is accounted for at fair value and the host contract is accounted for at amortized cost, adjusted for the effective portion of any fair value hedges. If the firm does not elect to bifurcate, the entire hybrid financial instrument is accounted for at fair value under the fair value option.

Other financial assets and liabilities accounted for at fair value under the fair value option include:

- Repurchase agreements and substantially all resale agreements;
- Securities borrowed and loaned in FICC financing;
- Substantially all other secured financings, including transfers of assets accounted for as financings;
- Certain unsecured short- and long-term borrowings, substantially all of which are hybrid financial instruments;
- Certain customer and other receivables, including certain margin loans; 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 Liabilities by Level

The table below presents, by level within the fair value hierarchy, other financial assets and 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 2019				
Assets				
Resale agreements	**$ –**	**$ 85,691**	**$ –**	**$ 85,691**
Securities borrowed	**–**	**26,279**	**–**	**26,279**
Customer and other receivables	**–**	**53**	**–**	**53**
Total	**$ –**	**$ 112,023**	**$ –**	**$ 112,023**
Liabilities				
Deposits	**$ –**	**$ (13,742)**	**$ (4,023)**	**$ (17,765)**
Repurchase agreements	**–**	**(117,726)**	**(30)**	**(117,756)**
Securities loaned	**–**	**(714)**	**–**	**(714)**
Other secured financings	**–**	**(17,685)**	**(386)**	**(18,071)**
Unsecured borrowings:				
Short-term	**–**	**(20,300)**	**(5,707)**	**(26,007)**
Long-term	**–**	**(32,920)**	**(10,741)**	**(43,661)**
Other liabilities	**–**	**(1)**	**(149)**	**(150)**
Total	**$ –**	**$(203,088)**	**$(21,036)**	**$(224,124)**
As of December 2018				
Assets				
Resale agreements	$ –	$ 139,220	$ –	$ 139,220
Securities borrowed	–	23,142	–	23,142
Customer and other receivables	–	154	6	160
Total	$ –	$ 162,516	$ 6	$ 162,522
Liabilities				
Deposits	$ –	$ (17,892)	$ (3,168)	$ (21,060)
Repurchase agreements	–	(78,694)	(29)	(78,723)
Securities loaned	–	(3,241)	–	(3,241)
Other secured financings	–	(20,734)	(170)	(20,904)
Unsecured borrowings:				
Short-term	–	(12,887)	(4,076)	(16,963)
Long-term	–	(34,761)	(11,823)	(46,584)
Other liabilities	–	(1)	(131)	(132)
Total	$ –	$(168,210)	$(19,397)	$(187,607)

In the table above, other financial assets are shown as positive amounts and other financial liabilities are shown as negative amounts.

See Note 4 for an overview of the firm's fair value measurement policies and the valuation techniques and significant inputs used to determine the fair value of other financial assets and liabilities.

Significant Inputs

See below for information about the significant inputs (including the significant unobservable inputs) used to value other financial assets and liabilities at fair value.

Resale and Repurchase Agreements and Securities Borrowed and Loaned. As of both December 2019 and December 2018, the firm had no level 3 resale agreements, securities borrowed or securities loaned. As of both December 2019 and December 2018, the firm's level 3 repurchase agreements were not material.

Customer and Other Receivables. As of December 2019, the firm had no level 3 customer and other receivables. As of December 2018, the firm's level 3 customer and other receivables were not material.

Deposits. The firm's deposits that are classified in level 3 are hybrid financial instruments. As the significant unobservable inputs used to value such instruments primarily relate to the embedded derivative component of these deposits, these unobservable inputs are incorporated in the firm's derivative disclosures in Note 7.

Other Secured Financings. The ranges and weighted averages of significant unobservable inputs used to value level 3 other secured financings as of December 2019 are presented below. These ranges and weighted averages exclude unobservable inputs that are only relevant to a single instrument, and therefore are not meaningful.

- Yield: 3.3% to 4.2% (weighted average: 3.5%)
- Duration: 0.6 to 2.1 years (weighted average: 1.0 year)

Generally, increases in yield or duration, in isolation, would have resulted in a lower fair value measurement as of December 2019. Due to the distinctive nature of each of level 3 other secured financings, the interrelationship of inputs is not necessarily uniform across such financings. As of December 2018, level 3 other secured financings were not material.

Unsecured Short- and Long-Term Borrowings. Certain of the firm's unsecured short- and long-term borrowings are classified in level 3, substantially all of which are hybrid financial instruments. As the significant unobservable inputs used to value hybrid financial instruments primarily relate to the embedded derivative component of these borrowings, these unobservable inputs are incorporated in the firm's derivative disclosures in Note 7.

Other Liabilities. As of both December 2019 and December 2018, the firm's level 3 other liabilities were not material.

Level 3 Rollforward

The table below presents a summary of the changes in fair value for level 3 other financial assets and liabilities accounted for at fair value.

	Year Ended December	
$ in millions	**2019**	2018
Total other financial assets		
Beginning balance	**$ 6**	$ 4
Net realized gains/(losses)	**5**	–
Net unrealized gains/(losses)	**(6)**	2
Settlements	**(5)**	–
Ending balance	**$ –**	$ 6
Total other financial liabilities		
Beginning balance	**$(19,397)**	$(15,462)
Net realized gains/(losses)	**(337)**	(491)
Net unrealized gains/(losses)	**(2,254)**	2,013
Issuances	**(9,892)**	(11,935)
Settlements	**11,104**	7,010
Transfers into level 3	**(877)**	(1,416)
Transfers out of level 3	**617**	884
Ending balance	**$(21,036)**	$(19,397)

In the table above:

- Changes in fair value are presented for all other financial 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 financial 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 other financial assets, increases are shown as positive amounts, while decreases are shown as negative amounts. For level 3 other financial liabilities, increases are shown as negative amounts, while decreases are shown as positive amounts.
- Level 3 other financial assets and liabilities are frequently economically hedged with trading assets and liabilities. 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 trading assets and liabilities. As a result, gains or losses included in the level 3 rollforward below do not necessarily represent the overall impact on the firm's results of operations, liquidity or capital resources.

The table below presents information, by the consolidated balance sheet line items, for liabilities included in the summary table above.

	Year Ended December	
$ in millions	**2019**	2018
Deposits		
Beginning balance	**$ (3,168)**	$ (2,968)
Net realized gains/(losses)	**(3)**	(25)
Net unrealized gains/(losses)	**(473)**	272
Issuances	**(932)**	(796)
Settlements	**452**	298
Transfers into level 3	**(28)**	(8)
Transfers out of level 3	**129**	59
Ending balance	**$ (4,023)**	$ (3,168)
Repurchase agreements		
Beginning balance	**$ (29)**	$ (37)
Net unrealized gains/(losses)	**(4)**	2
Settlements	**3**	6
Ending balance	**$ (30)**	$ (29)
Other secured financings		
Beginning balance	**$ (170)**	$ (389)
Net realized gains/(losses)	**36**	(15)
Net unrealized gains/(losses)	**(52)**	11
Issuances	**(28)**	(8)
Settlements	**19**	157
Transfers into level 3	**(191)**	(10)
Transfers out of level 3	**–**	84
Ending balance	**$ (386)**	$ (170)
Unsecured short-term borrowings		
Beginning balance	**$ (4,076)**	$ (4,594)
Net realized gains/(losses)	**(120)**	(125)
Net unrealized gains/(losses)	**(484)**	558
Issuances	**(5,410)**	(4,564)
Settlements	**4,333**	4,481
Transfers into level 3	**(173)**	(72)
Transfers out of level 3	**223**	240
Ending balance	**$ (5,707)**	$ (4,076)
Unsecured long-term borrowings		
Beginning balance	**$(11,823)**	$ (7,434)
Net realized gains/(losses)	**(278)**	(349)
Net unrealized gains/(losses)	**(1,223)**	1,262
Issuances	**(3,494)**	(6,545)
Settlements	**6,297**	2,068
Transfers into level 3	**(485)**	(1,326)
Transfers out of level 3	**265**	501
Ending balance	**$(10,741)**	$(11,823)
Other liabilities		
Beginning balance	**$ (131)**	$ (40)
Net realized gains/(losses)	**28**	23
Net unrealized gains/(losses)	**(18)**	(92)
Issuances	**(28)**	(22)
Ending balance	**$ (149)**	$ (131)

Level 3 Rollforward Commentary

Year Ended December 2019. The net realized and unrealized losses on level 3 other financial liabilities of $2.59 billion (reflecting $337 million of net realized losses and $2.25 billion of net unrealized losses) for 2019 included losses of $1.98 billion reported in market making, $10 million reported in other principal transactions and $9 million reported in interest expense in the consolidated statements of earnings, and $595 million reported in debt valuation adjustment in the consolidated statements of comprehensive income.

The unrealized losses on level 3 other financial liabilities for 2019 primarily reflected losses on certain hybrid financial instruments included in unsecured long- and short-term borrowings, principally due to an increase in global equity prices, and losses on certain hybrid financial instruments included in deposits, due to the impact of an increase in the market value of the underlying assets.

Transfers into level 3 other financial liabilities during 2019 primarily reflected transfers of certain hybrid financial instruments included in unsecured long- and short-term borrowings and other secured financings from level 2, principally due to reduced price transparency of certain volatility and correlation inputs used to value these instruments.

Transfers out of level 3 other financial liabilities during 2019 primarily reflected transfers of certain hybrid financial instruments included in unsecured long- and short-term borrowings to level 2, principally due to increased price transparency of certain volatility and correlation inputs used to value these instruments.

Year Ended December 2018. The net realized and unrealized gains on level 3 other financial liabilities of $1.52 billion (reflecting $491 million of net realized losses and $2.01 billion of net unrealized gains) for 2018 included gains/(losses) of $883 million reported in market making, $(1) million reported in other principal transactions and $(1) million reported in interest expense in the consolidated statements of earnings, and $641 million reported in debt valuation adjustment in the consolidated statements of comprehensive income.

The net unrealized gains on level 3 other financial liabilities for 2018 primarily reflected gains on certain hybrid financial instruments included in unsecured long-term borrowings, principally due to the impact of wider credit spreads and increases in interest rates, and gains on certain hybrid financial instruments included in unsecured short-term borrowings, principally due to a decrease in global equity prices.

Transfers into level 3 other financial liabilities during 2018 primarily reflected transfers of certain hybrid financial instruments included in unsecured long-term borrowings from level 2, principally due to reduced transparency of certain inputs used to value these instruments as a result of a lack of market transactions in similar instruments.

Transfers out of level 3 other financial liabilities during 2018 primarily reflected transfers of certain hybrid financial instruments included in unsecured long- and short-term borrowings to level 2, principally due to increased transparency of certain volatility and correlation inputs used to value these instruments.

Gains and Losses on Other Financial Assets and 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 election to apply the fair value option to certain financial assets and liabilities.

	Year Ended December		
$ in millions	**2019**	2018	2017
Unsecured short-term borrowings	**$(3,365)**	$1,443	$(2,585)
Unsecured long-term borrowings	**(5,251)**	926	(1,357)
Other	**(883)**	308	(272)
Total	**$(9,499)**	$2,677	$(4,214)

In the table above:

- Gains/(losses) were substantially all included in market making.
- Gains/(losses) exclude contractual interest, which is included in interest income and interest expense, for all instruments other than hybrid financial instruments. See Note 23 for further information about interest income and interest expense.
- Gains/(losses) included in unsecured short- and long-term borrowings were substantially all related to the embedded derivative component of hybrid financial instruments for 2019, 2018 and 2017. These gains and losses would have been recognized under other U.S. GAAP even if the firm had not elected to account for the entire hybrid financial instrument at fair value.
- Other primarily consists of gains/(losses) on customer and other receivables, deposits, other secured financings and other liabilities.
- Other financial assets and liabilities at fair value are frequently economically hedged with trading assets and liabilities. Accordingly, gains or losses on such other financial assets and liabilities can be partially offset by gains or losses on trading assets and liabilities. As a result, gains or losses on other financial assets and liabilities do not necessarily represent the overall impact on the firm's results of operations, liquidity or capital resources.

See Note 8 for information about gains/(losses) on equity securities and Note 9 for information about gains/(losses) on loans which are accounted for at fair value under the fair value option. Gains/(losses) on trading assets and liabilities accounted for at fair value under the fair value option are included in market making. See Note 5 for further information about gains/(losses) from market making.

Long-Term Debt Instruments

The difference between the aggregate contractual principal amount and the related fair value of long-term other secured financings for which the fair value option was elected was not material as of both December 2019 and December 2018.

The fair value of unsecured long-term borrowings exceeded the aggregate contractual principal amount by $199 million as of December 2019, and the aggregate contractual principal amount exceeded the related fair value by $3.47 billion as of December 2018. The amounts above include both principal-protected and non-principal-protected long-term borrowings.

Debt Valuation Adjustment

The firm 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 firm's credit spreads.

The table below presents information about the net debt valuation adjustment (DVA) gains/(losses) on financial liabilities for which the fair value option was elected.

	Year Ended December		
$ in millions	**2019**	2018	2017
DVA (pre-tax)	**$(2,763)**	$3,389	$(1,232)
DVA (net of tax)	**$(2,079)**	$2,553	$ (807)

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/(loss) upon extinguishment of such financial liabilities were not material for 2019, 2018 or 2017.

Loans and Lending Commitments

The table below presents the difference between the aggregate fair value and the aggregate contractual principal amount for loans (included in trading assets and loans on the consolidated balance sheets) for which the fair value option was elected.

	As of December	
$ in millions	**2019**	2018
Performing loans		
Aggregate contractual principal in excess of fair value	**$ 809**	$1,830
Loans on nonaccrual status and/or more than 90 days past due		
Aggregate contractual principal in excess of fair value	**$6,703**	$5,260
Aggregate fair value	**$2,776**	$2,010

In the table above, the aggregate contractual principal amount of loans on nonaccrual status and/or more than 90 days past due (which excludes loans carried at zero fair value and considered uncollectible) exceeds the related fair value primarily because the firm regularly purchases loans, such as distressed loans, at values significantly below the contractual principal amounts.

The fair value of unfunded lending commitments for which the fair value option was elected was a liability of $373 million as of December 2019 and $45 million as of December 2018, and the related total contractual amount of these lending commitments was $1.55 billion as of December 2019 and $1.89 billion as of December 2018. See Note 18 for further information about lending commitments.

Impact of Credit Spreads on Loans and Lending Commitments

The estimated net gain attributable to changes in instrument-specific credit spreads on loans and lending commitments for which the fair value option was elected was $134 million for 2019, $211 million for 2018 and $268 million for 2017. The firm 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.

Note 11.

Collateralized Agreements and Financings

Collateralized agreements are resale agreements and securities borrowed. Collateralized financings are repurchase agreements, securities loaned and other secured financings. The firm 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 firm 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 23 for further information about interest income and interest expense.

The table below presents the carrying value of resale and repurchase agreements and securities borrowed and loaned transactions.

	As of December	
$ in millions	**2019**	2018
Resale agreements	**$ 85,691**	$139,258
Securities borrowed	**$136,071**	$135,285
Repurchase agreements	**$117,756**	$ 78,723
Securities loaned	**$ 14,985**	$ 11,808

In the table above:

- Substantially all resale agreements and all repurchase agreements are carried at fair value under the fair value option. See Note 4 for further information about the valuation techniques and significant inputs used to determine fair value.
- Securities borrowed of $26.28 billion as of December 2019 and $23.14 billion as of December 2018, and securities loaned of $714 million as of December 2019 and $3.24 billion as of December 2018 were at fair value.

Resale and Repurchase Agreements

A resale agreement is a transaction in which the firm 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 firm 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 (including "repos- and reverses-to-maturity") 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, and investment-grade sovereign obligations.

The firm receives financial instruments purchased under resale agreements and makes delivery of financial instruments sold under repurchase agreements. To mitigate credit exposure, the firm 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 firm typically requires collateral with a fair value approximately equal to the carrying value of the relevant assets in the consolidated balance sheets.

Securities Borrowed and Loaned Transactions

In a securities borrowed transaction, the firm borrows securities from a counterparty in exchange for cash or securities. When the firm returns the securities, the counterparty returns the cash or securities. Interest is generally paid periodically over the life of the transaction.

In a securities loaned transaction, the firm lends securities to a counterparty in exchange for cash or securities. When the counterparty returns the securities, the firm returns the cash or securities posted as collateral. Interest is generally paid periodically over the life of the transaction.

The firm receives securities borrowed and makes delivery of securities loaned. To mitigate credit exposure, the firm monitors the market value of these securities on a daily basis, and delivers or obtains additional collateral due to changes in the market value of the securities, as appropriate. For securities borrowed transactions, the firm typically requires collateral with a fair value approximately equal to the carrying value of the securities borrowed transaction.

Securities borrowed and loaned within FICC financing are recorded at fair value under the fair value option. See Note 10 for further information about securities borrowed and loaned accounted for at fair value.

Securities borrowed and loaned within Equities financing are recorded based on the amount of cash collateral advanced or received plus accrued interest. As these agreements generally can be terminated on demand, they exhibit little, if any, sensitivity to changes in interest rates. Therefore, the carrying value of such agreements approximates fair value. As these agreements are not accounted for at fair value, they are not included in the firm's fair value hierarchy in Notes 4 through 10. Had these agreements been included in the firm's fair value hierarchy, they would have been classified in level 2 as of both December 2019 and December 2018.

Offsetting Arrangements

The table below presents resale and repurchase agreements and securities borrowed and loaned transactions included in the consolidated balance sheets, as well as the amounts not offset in the consolidated balance sheets.

	Assets		Liabilities	
$ in millions	Resale agreements	Securities borrowed	Repurchase agreements	Securities loaned
As of December 2019				
Included in the consolidated balance sheets				
Gross carrying value	**$ 152,982**	**$ 140,677**	**$ 185,047**	**$ 19,591**
Counterparty netting	**(67,291)**	**(4,606)**	**(67,291)**	**(4,606)**
Total	**85,691**	**136,071**	**117,756**	**14,985**
Amounts not offset				
Counterparty netting	**(3,058)**	**(2,211)**	**(3,058)**	**(2,211)**
Collateral	**(78,528)**	**(127,901)**	**(114,065)**	**(12,614)**
Total	**$ 4,105**	**$ 5,959**	**$ 633**	**$ 160**
As of December 2018				
Included in the consolidated balance sheets				
Gross carrying value	$ 246,284	$ 139,556	$ 185,749	$ 16,079
Counterparty netting	(107,026)	(4,271)	(107,026)	(4,271)
Total	139,258	135,285	78,723	11,808
Amounts not offset				
Counterparty netting	(5,870)	(1,104)	(5,870)	(1,104)
Collateral	(130,707)	(127,340)	(70,691)	(10,491)
Total	$ 2,681	$ 6,841	$ 2,162	$ 213

In the table above:

- Substantially all of the gross carrying values of these arrangements are subject to enforceable netting agreements.
- Where the firm 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 and Securities Loaned

The table below presents the gross carrying value of repurchase agreements and securities loaned by class of collateral pledged.

$ in millions	Repurchase agreements	Securities loaned
As of December 2019		
Money market instruments	**$ 158**	**$ –**
U.S. government and agency obligations	**112,903**	**–**
Non-U.S. government and agency obligations	**55,575**	**1,051**
Securities backed by commercial real estate	**210**	**–**
Securities backed by residential real estate	**1,079**	**–**
Corporate debt securities	**6,857**	**122**
State and municipal obligations	**242**	**–**
Other debt obligations	**196**	**–**
Equity securities	**7,827**	**18,418**
Total	**$185,047**	**$19,591**
As of December 2018		
Money market instruments	$ 100	$ –
U.S. government and agency obligations	88,060	–
Non-U.S. government and agency obligations	84,443	2,438
Securities backed by commercial real estate	3	–
Securities backed by residential real estate	221	–
Corporate debt securities	5,495	195
Other debt obligations	25	–
Equity securities	7,402	13,446
Total	$185,749	$16,079

The table below presents the gross carrying value of repurchase agreements and securities loaned by maturity.

	As of December 2019	
$ in millions	**Repurchase agreements**	**Securities loaned**
No stated maturity and overnight	**$ 70,260**	**$14,467**
2 - 30 days	**81,440**	**3,117**
31 - 90 days	**12,874**	**841**
91 days - 1 year	**16,266**	**1,166**
Greater than 1 year	**4,207**	**–**
Total	**$185,047**	**$19,591**

In the table above:

- Repurchase agreements and securities loaned that are repayable prior to maturity at the option of the firm are reflected at their contractual maturity dates.
- Repurchase agreements and securities loaned that are redeemable prior to maturity at the option of the holder are reflected at the earliest dates such options become exercisable.

Other Secured Financings

In addition to repurchase agreements and securities loaned transactions, the firm 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:

- Liabilities of consolidated VIEs;
- Transfers of assets accounted for as financings rather than sales (e.g., collateralized central bank financings, pledged commodities, bank loans and mortgage whole loans); and
- Other structured financing arrangements.

Other secured financings included nonrecourse arrangements. Nonrecourse other secured financings were $10.91 billion as of December 2019 and $8.47 billion as of December 2018.

The firm has elected to apply the fair value option to substantially all 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 10 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 firm's fair value hierarchy in Notes 4 through 10. Had these financings been included in the firm's fair value hierarchy, they would have been primarily classified in level 2 as of both December 2019 and December 2018.

The table below presents information about other secured financings.

$ in millions	U.S. Dollar	Non-U.S. Dollar	Total
As of December 2019			
Other secured financings (short-term):			
At fair value	**$ 2,754**	**$4,441**	**$ 7,195**
At amortized cost	**129**	**–**	**129**
Other secured financings (long-term):			
At fair value	**7,402**	**3,474**	**10,876**
At amortized cost	**397**	**680**	**1,077**
Total other secured financings	**$10,682**	**$8,595**	**$19,277**
Other secured financings collateralized by:			
Financial instruments	**$ 5,506**	**$6,509**	**$12,015**
Other assets	**$ 5,856**	**$1,406**	**$ 7,262**
As of December 2018			
Other secured financings (short-term):			
At fair value	$ 3,528	$6,027	$ 9,555
At amortized cost	–	–	–
Other secured financings (long-term):			
At fair value	9,010	2,339	11,349
At amortized cost	529	–	529
Total other secured financings	$13,067	$8,366	$21,433
Other secured financings collateralized by:			
Financial instruments	$ 8,960	$7,550	$16,510
Other assets	$ 4,107	$ 816	$ 4,923

In the table above:

- Short-term other secured financings includes financings maturing within one year of the financial statement date and financings that are redeemable within one year of the financial statement date at the option of the holder.
- U.S. dollar-denominated short-term other secured financings at amortized cost had a weighted average interest rate of 4.32% as of December 2019. These rates include the effect of hedging activities.
- U.S. dollar-denominated long-term other secured financings at amortized cost had a weighted average interest rate of 1.28% as of December 2019 and 4.02% as of December 2018. These rates include the effect of hedging activities.
- Total other secured financings included $2.16 billion as of December 2019 and $2.40 billion as of December 2018 related to transfers of financial assets accounted for as financings rather than sales. Such financings were collateralized by financial assets of $2.21 billion as of December 2019 and $2.41 billion as of December 2018, both primarily included in trading assets.
- Other secured financings collateralized by financial instruments included $9.09 billion as of December 2019 and $12.41 billion as of December 2018 of other secured financings collateralized by trading assets and loans, and included $2.93 billion as of December 2019 and $4.10 billion as of December 2018 of other secured financings collateralized by financial instruments received as collateral and repledged.

The table below presents other secured financings by maturity.

$ in millions	As of December 2019
Other secured financings (short-term)	**$ 7,324**
Other secured financings (long-term):	
2021	**3,683**
2022	**1,842**
2023	**1,399**
2024	**1,358**
2025 - thereafter	**3,671**
Total other secured financings (long-term)	**11,953**
Total other secured financings	**$19,277**

In the table above:

- Long-term other secured financings that are repayable prior to maturity at the option of the firm are reflected at their contractual maturity dates.
- Long-term other secured financings that are redeemable prior to maturity at the option of the holder are reflected at the earliest dates such options become exercisable.

Collateral Received and Pledged

The firm receives cash and securities (e.g., U.S. government and agency obligations, other sovereign and corporate obligations, as well as equity securities) as collateral, primarily in connection with resale agreements, securities borrowed, derivative transactions and customer margin loans. The firm 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 firm is permitted to deliver or repledge financial instruments received as collateral when entering into repurchase agreements and securities loaned transactions, primarily in connection with secured client financing activities. The firm is also permitted to deliver or repledge these financial instruments in connection with other secured financings, collateralized derivative transactions and firm or customer settlement requirements.

The firm also pledges certain trading assets in connection with repurchase agreements, securities loaned transactions and other secured financings, and other assets (substantially all real estate and cash) in connection with other secured financings 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	**2019**	2018
Collateral available to be delivered or repledged	**$661,490**	$681,516
Collateral that was delivered or repledged	**$558,634**	$565,625

In the table above, collateral available to be delivered or repledged excluded $6.15 billion as of December 2019 and $14.10 billion as of December 2018 of securities received under resale agreements and securities borrowed transactions that contractually had the right to be delivered or repledged, but were segregated for regulatory and other purposes.

The table below presents information about assets pledged.

	As of December	
$ in millions	**2019**	2018
Pledged to counterparties that had the right to deliver or repledge		
Trading assets	**$ 66,605**	$ 47,371
Investments	**$ 10,968**	$ 7,710
Pledged to counterparties that did not have the right to deliver or repledge		
Trading assets	**$101,578**	$ 67,683
Investments	**$ 849**	$ 617
Loans	**$ 6,628**	$ 5,240
Other assets	**$ 12,337**	$ 8,037

The firm also segregated securities included in trading assets of $20.61 billion as of December 2019 and $23.03 billion as of December 2018 for regulatory and other purposes. See Note 3 for information about segregated cash.

Note 12.
Other Assets

The table below presents other assets by type.

$ in millions	As of December 2019	2018
Property, leasehold improvements and equipment	**$21,886**	$18,317
Goodwill and identifiable intangible assets	**4,837**	4,082
Operating lease right-of-use assets	**2,360**	–
Income tax-related assets	**2,068**	1,529
Miscellaneous receivables and other	**3,731**	5,067
Total	**$34,882**	$28,995

Property, Leasehold Improvements and Equipment

Property, leasehold improvements and equipment is net of accumulated depreciation and amortization of $9.95 billion as of December 2019 and $9.08 billion as of December 2018. Property, leasehold improvements and equipment included $6.16 billion as of December 2019 and $5.57 billion as of December 2018 that the firm uses in connection with its operations, and $521 million as of December 2019 and $896 million as of December 2018 of foreclosed real estate primarily related to PCI loans. The remainder is held by investment entities, including VIEs, consolidated by the firm. Substantially all property and equipment is depreciated on a straight-line basis over the useful life of the asset. Leasehold improvements are amortized on a straight-line basis over the shorter of the useful life of the improvement or the term of the lease. Capitalized costs of software developed or obtained for internal use are amortized on a straight-line basis over three years.

The firm tests property, leasehold improvements and equipment for impairment whenever events or changes in circumstances suggest that an asset's or asset group's carrying value may not be fully recoverable. To the extent the carrying value of an asset or asset group exceeds the projected undiscounted cash flows expected to result from the use and eventual disposal of the asset or asset group, the firm determines the asset or asset group is impaired and records an impairment equal to the difference between the estimated fair value and the carrying value of the asset or asset group. In addition, the firm will recognize an impairment prior to the sale of an asset or asset group if the carrying value of the asset or asset group exceeds its estimated fair value.

There were no material impairments during 2019, 2018 or 2017.

Goodwill and Identifiable Intangible Assets

Goodwill. Goodwill is the cost of acquired companies in excess of the fair value of net assets, including identifiable intangible assets, at the acquisition date.

During the fourth quarter of 2019, in connection with the changes to the firm's business segments, the firm reassigned the goodwill to its new reporting units.

The table below presents the carrying value of goodwill by reporting unit.

$ in millions	As of December 2019	2018
Investment Banking	**$ 281**	$ 281
Global Markets:		
FICC	**269**	269
Equities	**2,508**	2,508
Asset Management	**390**	244
Consumer & Wealth Management:		
Consumer banking	**48**	48
Wealth management	**700**	408
Total	**$4,196**	$3,758

In the table above:

- Goodwill in Investment Banking and FICC was not reassigned as no businesses were transferred in or out of these reporting units. The Securities services reporting unit, including its goodwill, was combined with the Equities reporting unit in the new segment structure.
- Goodwill related to Consumer banking previously included in Investing & Lending was transferred in its entirety as the consumer banking business had not been integrated with other activities in Investing & Lending. The remaining goodwill previously in Investing & Lending was transferred in its entirety to Asset Management and Wealth management based on underlying business activities.
- Goodwill previously in Investment Management was reassigned to Asset Management and Wealth management based on the relative fair value of the businesses.
- The increase in total goodwill from December 2018 to December 2019 included $398 million related to the acquisition of United Capital Financial Partners, Inc. (United Capital) in the third quarter of 2019.

Goodwill is assessed for impairment annually in the fourth quarter or more frequently if events occur or circumstances change that indicate an impairment may exist. When assessing goodwill for impairment, first, a qualitative assessment can be made to determine whether it is more likely than not that the estimated fair value of a reporting unit is less than its estimated carrying value. If the results of the qualitative assessment are not conclusive, a quantitative goodwill test is performed. Alternatively, a quantitative goodwill test can be performed without performing a qualitative assessment.

The quantitative goodwill test compares the estimated fair value of each reporting unit with its estimated net book value (including goodwill and identifiable intangible assets). If the reporting unit's estimated fair value exceeds its estimated net book value, goodwill is not impaired. An impairment is recognized if the estimated fair value of a reporting unit is less than its estimated net book value.

During the fourth quarter of 2019, goodwill was tested for impairment using a quantitative test (both prior to and following the firm's changes to its business segments) and the qualitative assessment was not performed. For each test, the estimated fair value of each of the reporting units exceeded its respective net carrying value, and therefore, goodwill was not impaired.

To estimate the fair value of each reporting unit, other than Consumer banking, a relative value technique was used because the firm believes market participants would use this technique to value these reporting units. The relative value technique applies observable price-to-earnings multiples or price-to-book multiples of comparable competitors to reporting units' net earnings or net book value. To estimate the fair value of Consumer banking, a discounted cash flow valuation approach was used because the firm believes market participants would use this technique to value that reporting unit given its early stage of development. The estimated net carrying value of each reporting unit reflects an allocation of total shareholders' equity and represents the estimated amount of total shareholders' equity required to support the activities of the reporting unit under currently applicable regulatory capital requirements.

Identifiable Intangible Assets. The table below presents identifiable intangible assets by reporting unit and type.

$ in millions	As of December 2019	As of December 2018
By Reporting Unit		
Global Markets:		
FICC	**$ 3**	$ 10
Equities	**–**	37
Asset Management	**265**	219
Consumer & Wealth Management:		
Consumer banking	**7**	10
Wealth management	**366**	48
Total	**$ 641**	$ 324
By Type		
Customer lists		
Gross carrying value	**$ 1,427**	$ 1,117
Accumulated amortization	**(1,044)**	(970)
Net carrying value	**383**	147
Acquired leases and other		
Gross carrying value	**790**	636
Accumulated amortization	**(532)**	(459)
Net carrying value	**258**	177
Total gross carrying value	**2,217**	1,753
Total accumulated amortization	**(1,576)**	(1,429)
Total net carrying value	**$ 641**	$ 324

The firm acquired $515 million of intangible assets during 2019, primarily related to customer lists, with a weighted average amortization period of 10 years. This amount included $354 million of intangible assets that were acquired in connection with the acquisition of United Capital. The firm acquired $137 million of intangible assets during 2018, primarily related to acquired leases, with a weighted average amortization period of 4 years.

Substantially all of the firm's identifiable intangible assets have finite useful lives and are amortized over their estimated useful lives generally using the straight-line method.

The tables below present information about the amortization of identifiable intangible assets.

$ in millions	Year Ended December 2019	2018	2017
Amortization	**$173**	$152	$150

$ in millions	As of December 2019
Estimated future amortization	
2020	**$122**
2021	**$ 91**
2022	**$ 77**
2023	**$ 71**
2024	**$ 59**

The firm tests intangible assets for impairment whenever events or changes in circumstances suggest that an asset's or asset group's carrying value may not be fully recoverable. To the extent the carrying value of an asset or asset group exceeds the projected undiscounted cash flows expected to result from the use and eventual disposal of the asset or asset group, the firm determines the asset or asset group is impaired and records an impairment equal to the difference between the estimated fair value and the carrying value of the asset or asset group. In addition, the firm will recognize an impairment prior to the sale of an asset or asset group if the carrying value of the asset or asset group exceeds its estimated fair value. There were no material impairments during 2019, 2018 or 2017.

Operating Lease Right-of-Use Assets

The firm enters into operating leases for real estate, office equipment and other assets, substantially all of which are used in connection with its operations. The firm adopted ASU No. 2016-02 in January 2019, which required the firm to recognize, for leases longer than one year, 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 payments. The lease term is generally determined based on the contractual maturity of the lease. For leases where the firm has the option to terminate or extend the lease, an assessment of the likelihood of exercising the option is incorporated into the determination of the lease term. Such assessment is initially performed at the inception of the lease and is updated if events occur that impact the original assessment.

An operating lease right-of-use asset is initially determined based on the operating lease liability, adjusted for initial direct costs, lease incentives and amounts paid at or prior to lease commencement. This amount is then amortized over the lease term. The firm recognized $963 million (primarily related to the firm's new European headquarters in London) of right-of-use assets and operating lease liabilities in non-cash transactions for leases entered into or assumed during 2019. See Note 15 for information about operating lease liabilities.

For leases where the firm will derive no economic benefit from leased space that it has vacated or where the firm has shortened the term of a lease when space is no longer needed, the firm will record an impairment or accelerated amortization of right-of-use assets. There were no material impairments or accelerated amortizations during 2019.

Miscellaneous Receivables and Other

Miscellaneous receivables and other included:

- Investments in qualified affordable housing projects of $606 million as of December 2019 and $653 million as of December 2018.
- Assets classified as held for sale of $470 million as of December 2019 and $365 million as of December 2018 related to the firm's consolidated investments within its Asset Management segment, substantially all of which consisted of property and equipment. In addition, assets classified as held for sale also included assets of $1.01 billion as of December 2018, related to the firm's new European headquarters in London. This property was sold in January 2019 pursuant to a sale and leaseback agreement and the firm recognized a right-of-use asset upon the leaseback.

Note 13.

Deposits

The table below presents the types and sources of deposits.

$ in millions	Savings and Demand	Time	Total
As of December 2019			
Private bank deposits	**$ 53,726**	**$ 2,087**	**$ 55,813**
Consumer deposits	**44,973**	**15,023**	**59,996**
Brokered certificates of deposit	**–**	**39,449**	**39,449**
Deposit sweep programs	**17,760**	**–**	**17,760**
Institutional deposits	**2,291**	**14,710**	**17,001**
Total	**$118,750**	**$71,269**	**$190,019**
As of December 2018			
Private bank deposits	$ 52,028	$ 2,311	$ 54,339
Consumer deposits	27,987	7,641	35,628
Brokered certificates of deposit	–	35,876	35,876
Deposit sweep programs	15,903	–	15,903
Institutional deposits	1	16,510	16,511
Total	$ 95,919	$62,338	$158,257

In the table above:

- Substantially all deposits are interest-bearing.
- 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.
- Time deposits included $17.77 billion as of December 2019 and $21.06 billion as of December 2018 of deposits accounted for at fair value under the fair value option. See Note 10 for further information about deposits accounted for at fair value.
- Time deposits had a weighted average maturity of approximately 1.7 years as of December 2019 and 1.8 years as of December 2018.
- Deposit sweep programs represent long-term contractual agreements with U.S. broker-dealers who sweep client cash to FDIC-insured deposits. As of December 2019, the firm had 12 such deposit sweep program agreements.
- Deposits insured by the FDIC were $103.98 billion as of December 2019 and $86.27 billion as of December 2018.
- Deposits insured by the U.K.'s Financial Services Compensation Scheme were $15.86 billion as of December 2019 and $6.05 billion as of December 2018.

The table below presents the location of deposits.

	As of December	
$ in millions	**2019**	2018
U.S. offices	**$150,759**	$126,444
Non-U.S. offices	**39,260**	31,813
Total	**$190,019**	$158,257

In the table above, U.S. deposits were held at Goldman Sachs Bank USA (GS Bank USA) and substantially all non-U.S. deposits were held at Goldman Sachs International Bank (GSIB).

The table below presents maturities of time deposits held in U.S. and non-U.S. offices.

	As of December 2019		
$ in millions	**U.S.**	**Non-U.S.**	**Total**
2020	**$28,260**	**$10,736**	**$38,996**
2021	**8,741**	**459**	**9,200**
2022	**8,059**	**81**	**8,140**
2023	**5,936**	**57**	**5,993**
2024	**4,233**	**125**	**4,358**
2025 - thereafter	**3,584**	**998**	**4,582**
Total	**$58,813**	**$12,456**	**$71,269**

As of December 2019, deposits in U.S. offices included $8.81 billion and non-U.S. offices included $12.45 billion of time deposits in denominations that met or exceeded the applicable insurance limits, or were otherwise not covered by insurance.

The firm's savings and demand deposits are recorded based on the amount of cash received plus accrued interest, which approximates fair value. In addition, the firm 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 2019 and December 2018. As these savings and demand deposits and time deposits are not accounted for at fair value, they are not included in the firm's fair value hierarchy in Notes 4 through 10. Had these deposits been included in the firm's fair value hierarchy, they would have been classified in level 2 as of both December 2019 and December 2018.

Note 14.

Unsecured Borrowings

The table below presents information about unsecured borrowings.

$ in millions	As of December 2019	2018
Unsecured short-term borrowings	**$ 48,287**	$ 40,502
Unsecured long-term borrowings	**207,076**	224,149
Total	**$255,363**	$264,651

Unsecured Short-Term Borrowings

Unsecured short-term borrowings includes the portion of unsecured long-term borrowings maturing within one year of the financial statement date and unsecured long-term borrowings that are redeemable within one year of the financial statement date at the option of the holder.

The firm accounts for certain hybrid financial instruments at fair value under the fair value option. See Note 10 for further information about unsecured short-term borrowings that are accounted for at fair value. In addition, the firm designates certain derivatives as fair value hedges to convert a portion of its unsecured short-term borrowings not accounted for at fair value from fixed-rate obligations into floating-rate obligations. The carrying value of unsecured short-term borrowings that are not recorded at fair value generally approximates fair value due to the short-term nature of the obligations. As these unsecured short-term borrowings are not accounted for at fair value, they are not included in the firm's fair value hierarchy in Notes 4 through 10. Had these borrowings been included in the firm's fair value hierarchy, substantially all would have been classified in level 2 as of both December 2019 and December 2018.

The table below presents information about unsecured short-term borrowings.

$ in millions	As of December 2019	2018
Current portion of unsecured long-term borrowings	**$30,636**	$27,476
Hybrid financial instruments	**15,814**	10,908
Other unsecured short-term borrowings	**1,837**	2,118
Total unsecured short-term borrowings	**$48,287**	$40,502
Weighted average interest rate	**2.71%**	2.51%

In the table above:

- The current portion of unsecured long-term borrowings included $21.27 billion as of December 2019 and $20.91 billion as of December 2018 issued by Group Inc.
- The weighted average interest rates for these borrowings include the effect of hedging activities and exclude unsecured short-term borrowings accounted for at fair value under the fair value option. See Note 7 for further information about hedging activities.

Unsecured Long-Term Borrowings

The table below presents information about unsecured long-term borrowings.

$ in millions	U.S. Dollar	Non-U.S. Dollar	Total
As of December 2019			
Fixed-rate obligations:			
Group Inc.	**$ 91,256**	**$33,631**	**$124,887**
Subsidiaries	**1,590**	**2,554**	**4,144**
Floating-rate obligations:			
Group Inc.	**25,318**	**18,383**	**43,701**
Subsidiaries	**22,532**	**11,812**	**34,344**
Total	**$140,696**	**$66,380**	**$207,076**
As of December 2018			
Fixed-rate obligations:			
Group Inc.	$ 97,354	$34,030	$131,384
Subsidiaries	2,581	2,624	5,205
Floating-rate obligations:			
Group Inc.	30,565	21,157	51,722
Subsidiaries	23,756	12,082	35,838
Total	$154,256	$69,893	$224,149

In the table above:

- Unsecured long-term borrowings consists principally of senior borrowings, which have maturities extending through 2067.
- Floating-rate obligations includes equity-linked and indexed instruments. Floating interest rates are generally based on LIBOR or Euro Interbank Offered Rate.
- U.S. dollar-denominated debt had interest rates ranging from 2.00% to 10.04% (with a weighted average rate of 3.82%) as of December 2019 and 2.00% to 10.04% (with a weighted average rate of 4.22%) as of December 2018. These rates exclude unsecured long-term borrowings accounted for at fair value under the fair value option.
- Non-U.S. dollar-denominated debt had interest rates ranging from 0.13% to 13.00% (with a weighted average rate of 2.33%) as of December 2019 and 0.31% to 13.00% (with a weighted average rate of 2.43%) as of December 2018. These rates exclude unsecured long-term borrowings accounted for at fair value under the fair value option.

The table below presents unsecured long-term borrowings by maturity.

	As of December 2019		
$ in millions	**Group Inc.**	**Subsidiaries**	**Total**
2021	**$ 20,334**	**$ 6,003**	**$ 26,337**
2022	**21,874**	**3,413**	**25,287**
2023	**21,644**	**5,048**	**26,692**
2024	**15,083**	**4,061**	**19,144**
2025 - thereafter	**89,653**	**19,963**	**109,616**
Total	**$168,588**	**$38,488**	**$207,076**

In the table above:

- Unsecured long-term borrowings maturing within one year of the financial statement date and unsecured long-term borrowings that are redeemable within one year of the financial statement date at the option of the holder are excluded as they are included in unsecured short-term borrowings.
- Unsecured long-term borrowings that are repayable prior to maturity at the option of the firm are reflected at their contractual maturity dates.
- Unsecured long-term borrowings that are redeemable prior to maturity at the option of the holder are reflected at the earliest dates such options become exercisable.
- Unsecured long-term borrowings included $7.69 billion of adjustments to the carrying value of certain unsecured long-term borrowings resulting from the application of hedge accounting by year of maturity as follows: $257 million in 2021, $(44) million in 2022, $83 million in 2023, $355 million in 2024, and $7.04 billion in 2025 and thereafter.

The firm designates certain derivatives as fair value hedges to convert a portion of fixed-rate unsecured long-term borrowings not accounted for at fair value into floating-rate obligations. See Note 7 for further information about hedging activities.

The table below presents unsecured long-term borrowings, after giving effect to such hedging activities.

$ in millions	Group Inc.	Subsidiaries	Total
As of December 2019			
Fixed-rate obligations:			
At fair value	**$ 678**	**$ 47**	**$ 725**
At amortized cost	**44,631**	**2,946**	**47,577**
Floating-rate obligations:			
At fair value	**14,920**	**28,016**	**42,936**
At amortized cost	**108,359**	**7,479**	**115,838**
Total	**$168,588**	**$38,488**	**$207,076**
As of December 2018			
Fixed-rate obligations:			
At fair value	$ –	$ 28	$ 28
At amortized cost	71,221	3,331	74,552
Floating-rate obligations:			
At fair value	16,387	30,169	46,556
At amortized cost	95,498	7,515	103,013
Total	$183,106	$41,043	$224,149

In the table above, the aggregate amounts of unsecured long-term borrowings had weighted average interest rates of 2.87% (3.77% related to fixed-rate obligations and 2.48% related to floating-rate obligations) as of December 2019 and 3.21% (3.79% related to fixed-rate obligations and 2.79% related to floating-rate obligations) as of December 2018. These rates exclude unsecured long-term borrowings accounted for at fair value under the fair value option.

As of both December 2019 and December 2018, the carrying value of unsecured long-term borrowings for which the firm did not elect the fair value option approximated fair value. As these borrowings are not accounted for at fair value, they are not included in the firm's fair value hierarchy in Notes 4 through 10. Had these borrowings been included in the firm's fair value hierarchy, substantially all would have been classified in level 2 as of both December 2019 and December 2018.

Subordinated Borrowings

Unsecured long-term borrowings includes subordinated debt and junior subordinated debt. Junior subordinated debt is junior in right of payment to other subordinated borrowings, which are junior to senior borrowings. Subordinated debt had maturities ranging from 2021 to 2045 as of both December 2019 and December 2018. Subordinated debt that matures within one year is included in unsecured short-term borrowings.

The table below presents information about subordinated borrowings.

$ in millions	Par Amount	Carrying Value	Rate
As of December 2019			
Subordinated debt	**$14,041**	**$16,980**	**3.46%**
Junior subordinated debt	**976**	**1,328**	**2.85%**
Total	**$15,017**	**$18,308**	**3.42%**
As of December 2018			
Subordinated debt	$14,023	$15,703	4.09%
Junior subordinated debt	1,140	1,425	3.19%
Total	$15,163	$17,128	4.02%

In the table above:

- The par amount of subordinated debt issued by Group Inc. was $14.04 billion as of December 2019 and $14.02 billion as of December 2018, and the carrying value of subordinated debt issued by Group Inc. was $16.98 billion as of December 2019 and $15.70 billion as of December 2018.
- The rate is the weighted average interest rate for these borrowings (excluding borrowings accounted for at fair value under the fair value option), including the effect of fair value hedges used to convert fixed-rate obligations into floating-rate obligations. See Note 7 for further information about hedging activities.

Junior Subordinated Debt

In 2004, Group Inc. issued $2.84 billion of junior subordinated debt to Goldman Sachs Capital I (Trust), a Delaware statutory trust. The Trust issued $2.75 billion of guaranteed preferred beneficial interests (Trust Preferred securities) to third parties and $85 million of common beneficial interests to Group Inc. As of December 2019, the outstanding par amount of junior subordinated debt held by the Trust was $976 million and the outstanding par amount of Trust Preferred securities and common beneficial interests issued by the Trust was $947 million and $29 million, respectively. As of December 2018, the outstanding par amount of junior subordinated debt held by the Trust was $1.14 billion and the outstanding par amount of Trust Preferred securities and common beneficial interests issued by the Trust was $1.11 billion and $34.1 million, respectively.

The firm purchased Trust Preferred securities with a par amount and a carrying value of $159 million and $206 million in 2019, $28 million and $35 million in 2018, and $186 million and $237 million in 2017, respectively. These securities were delivered to the Trust, along with common beneficial interests of $5 million in 2019, $1 million in 2018 and $6 million in 2017, in a non-cash exchange for junior subordinated debt with a par amount and carrying value of $164 million and $231 million in 2019, $29 million and $36 million in 2018, and $192 million and $254 million in 2017, respectively. Following the exchanges, these Trust Preferred securities, common beneficial interests and junior subordinated debt were extinguished. The Trust is a wholly-owned finance subsidiary of the firm for regulatory and legal purposes but is not consolidated for accounting purposes.

The firm pays interest semi-annually on the junior subordinated debt at an annual rate of 6.345% and the debt matures on February 15, 2034. The coupon rate and the payment dates applicable to the beneficial interests are the same as the interest rate and payment dates for the junior subordinated debt. The firm has the right, from time to time, to defer payment of interest on the junior subordinated debt, and therefore cause payment on the Trust's preferred beneficial interests to be deferred, in each case up to ten consecutive semi-annual periods. During any such deferral period, the firm will not be permitted to, among other things, pay dividends on or make certain repurchases of its common stock. The Trust is not permitted to pay any distributions on the common beneficial interests held by Group Inc. unless all dividends payable on the preferred beneficial interests have been paid in full.

The firm has covenanted in favor of the holders of Group Inc.'s 6.345% junior subordinated debt due February 15, 2034, that, subject to certain exceptions, the firm will not redeem or purchase the capital securities issued by Goldman Sachs Capital II and Goldman Sachs Capital III (APEX Trusts) or shares of Group Inc.'s Perpetual Non-Cumulative Preferred Stock, Series E (Series E Preferred Stock), Perpetual Non-Cumulative Preferred Stock, Series F (Series F Preferred Stock) or Perpetual Non-Cumulative Preferred Stock, Series O, if the redemption or purchase results in less than $253 million aggregate liquidation preference of that series outstanding, prior to specified dates in 2022 for a price that exceeds a maximum amount determined by reference to the net cash proceeds that the firm has received from the sale of qualifying securities.

The APEX Trusts hold Group Inc.'s Series E Preferred Stock and Series F Preferred Stock. These trusts are Delaware statutory trusts sponsored by the firm and wholly-owned finance subsidiaries of the firm for regulatory and legal purposes but are not consolidated for accounting purposes.

Note 15.

Other Liabilities

The table below presents other liabilities by type.

	As of December	
$ in millions	**2019**	2018
Compensation and benefits	**$ 6,889**	$ 6,834
Income tax-related liabilities	**2,947**	2,864
Operating lease liabilities	**2,385**	–
Noncontrolling interests	**1,713**	1,568
Employee interests in consolidated funds	**81**	122
Accrued expenses and other	**7,636**	6,219
Total	**$21,651**	$17,607

In the table above, accrued expenses and other includes contract liabilities, which represent consideration received by the firm, in connection with its contracts with clients, prior to providing the service. As of both December 2019 and December 2018, the firm's contract liabilities were not material.

Operating Lease Liabilities

The firm adopted ASU No. 2016-02 in January 2019, which required the firm to recognize, for leases longer than one year, 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 payments. See Note 12 for information about operating lease right-of-use assets.

The table below presents information about operating lease liabilities.

$ in millions	**As of December 2019**
2020	**$ 384**
2021	**308**
2022	**268**
2023	**235**
2024	**219**
2025 - thereafter	**2,566**
Total undiscounted lease payments	**3,980**
Imputed interest	**(1,595)**
Total operating lease liabilities	**$ 2,385**
Weighted average remaining lease term	**18 years**
Weighted average discount rate	**5.02%**

In the table above, the weighted average discount rate represents the firm's incremental borrowing rate as of January 2019 for leases existing on the date of adoption of ASU No. 2016-02 and at the lease inception date for leases entered into subsequent to the adoption of this ASU.

Operating lease costs were $538 million for 2019, $409 million for 2018 and $390 million for 2017. Variable lease costs, which are included in operating lease costs, were not material for 2019, 2018 and 2017.

Operating lease liabilities include obligations for office space held in excess of current requirements. Operating lease costs relating to space held for growth is included in occupancy expenses. Total occupancy expenses for space held in excess of the firm's current requirements were not material for both 2019 and 2018.

Lease payments relating to operating lease arrangements that were signed, but had not yet commenced as of December 2019, were not material.

Note 16.

Securitization Activities

The firm securitizes residential and commercial mortgages, corporate bonds, loans and other types of financial assets by selling these assets to securitization vehicles (e.g., trusts, corporate entities and limited liability companies) or through a resecuritization. The firm acts as underwriter of the beneficial interests that are sold to investors. The firm's residential mortgage securitizations are primarily in connection with government agency securitizations.

The firm accounts for a securitization as a sale when it has relinquished control over the transferred financial assets. Prior to securitization, the firm generally accounts for assets pending transfer at fair value and therefore does not typically recognize significant gains or losses upon the transfer of assets. Net revenues from underwriting activities are recognized in connection with the sales of the underlying beneficial interests to investors.

The firm 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 debt instruments. The firm may also purchase senior or subordinated securities issued by securitization vehicles (which are typically VIEs) in connection with secondary market-making activities.

The primary risks included in beneficial interests and other interests from the firm's continuing involvement with securitization vehicles are the performance of the underlying collateral, the position of the firm's investment in the capital structure of the securitization vehicle and the market yield for the security. These interests are primarily accounted for at fair value and classified in level 2 of the fair value hierarchy. Interests not accounted for at fair value are carried at amounts that approximate fair value. See Notes 4 through 10 for further information about fair value measurements.

The table below presents the amount of financial assets securitized and the cash flows received on retained interests in securitization entities in which the firm had continuing involvement as of the end of the period.

	Year Ended December		
$ in millions	**2019**	2018	2017
Residential mortgages	**$15,124**	$21,229	$18,142
Commercial mortgages	**12,741**	8,745	7,872
Other financial assets	**1,252**	1,914	481
Total financial assets securitized	**$29,117**	$31,888	$26,495
Retained interests cash flows	**$ 286**	$ 296	$ 264

In the table above, financial assets securitized included assets of $601 million for 2019, $882 million for 2018 and $572 million for 2017, which were securitized in a non-cash exchange for loans and held-to-maturity securities.

The table below presents information about nonconsolidated securitization entities to which the firm sold assets and had continuing involvement as of the end of the period.

$ in millions	Outstanding Principal Amount	Retained Interests	Purchased Interests
As of December 2019			
U.S. government agency-issued collateralized mortgage obligations	**$14,328**	**$1,530**	**$ 3**
Other residential mortgage-backed	**24,166**	**1,078**	**24**
Other commercial mortgage-backed	**25,588**	**615**	**6**
Corporate debt and other asset-backed	**3,612**	**149**	**–**
Total	**$67,694**	**$3,372**	**$33**
As of December 2018			
U.S. government agency-issued collateralized mortgage obligations	$24,506	$1,758	$29
Other residential mortgage-backed	19,560	941	15
Other commercial mortgage-backed	15,088	448	10
Corporate debt and other asset-backed	3,311	133	3
Total	$62,465	$3,280	$57

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 firm's risk of loss.
- The firm's risk of loss from retained or purchased interests is limited to the carrying value of these interests.
- Purchased interests represent senior and subordinated interests, purchased in connection with secondary market-making activities, in securitization entities in which the firm also holds retained interests.
- Substantially all of the total outstanding principal amount and total retained interests relate to securitizations during 2014 and thereafter.
- The fair value of retained interests was $3.35 billion as of December 2019 and $3.28 billion as of December 2018.

In addition to the interests in the table above, the firm had other continuing involvement in the form of derivative transactions and commitments with certain nonconsolidated VIEs. The carrying value of these derivatives and commitments was a net asset of $57 million as of December 2019 and $75 million as of December 2018, and the notional amount of these derivatives and commitments was $1.20 billion as of December 2019 and $1.09 billion as of December 2018. The notional amounts of these derivatives and commitments are included in maximum exposure to loss in the nonconsolidated VIE table in Note 17.

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	**2019**	2018
Fair value of retained interests	**$3,198**	$ 3,151
Weighted average life (years)	**6.0**	7.2
Constant prepayment rate	**12.9%**	11.9%
Impact of 10% adverse change	**$ (22)**	$ (27)
Impact of 20% adverse change	**$ (42)**	$ (53)
Discount rate	**4.7%**	4.7%
Impact of 10% adverse change	**$ (59)**	$ (75)
Impact of 20% adverse change	**$ (117)**	$ (147)

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.
- The discount rate for retained interests that relate to U.S. government agency-issued collateralized mortgage obligations does not include any credit loss. Expected credit loss assumptions are reflected in the discount rate for the remainder of retained interests.

The firm has other retained interests not reflected in the table above with a fair value of $149 million and a weighted average life of 3.3 years as of December 2019, and a fair value of $133 million and a weighted average life of 4.2 years as of December 2018. 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 both December 2019 and December 2018. The firm's maximum exposure to adverse changes in the value of these interests is the carrying value of $149 million as of December 2019 and $133 million as of December 2018.

Note 17.

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 firm'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; guarantees; and certain of the fees the firm receives from investment funds. Certain interest rate, foreign currency and credit derivatives the firm 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 firm's involvement with VIEs includes securitization of financial assets, as described in Note 16, and investments in and loans to other types of VIEs, as described below. See Note 3 for the firm'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 firm 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 firm reassesses its evaluation of whether an entity is a VIE when certain reconsideration events occur. The firm 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 firm is principally involved with VIEs through the following business activities:

Mortgage-Backed VIEs. The firm sells residential and commercial mortgage loans and securities to mortgage-backed VIEs and may retain beneficial interests in the assets sold to these VIEs. The firm purchases and sells beneficial interests issued by mortgage-backed VIEs in connection with market-making activities. In addition, the firm may enter into derivatives with certain of these VIEs, primarily interest rate swaps, which are typically not variable interests. The firm generally enters into derivatives with other counterparties to mitigate its risk.

Real Estate, Credit- and Power-Related and Other Investing VIEs. The firm purchases equity and debt securities issued by and makes loans to VIEs that hold real estate, performing and nonperforming debt, distressed loans, power-related assets and equity securities. The firm generally does not sell assets to, or enter into derivatives with, these VIEs.

Corporate Debt and Other Asset-Backed VIEs. The firm structures VIEs that issue notes to clients, purchases and sells beneficial interests issued by corporate debt and other asset-backed VIEs in connection with market-making activities, 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 firm, rather than purchasing the underlying assets. In addition, the firm may enter into derivatives, such as total return swaps, with certain corporate debt and other asset-backed VIEs, under which the firm 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 firm 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 firm may sell assets to the corporate debt and other asset-backed VIEs it structures.

Principal-Protected Note VIEs. The firm structures VIEs that issue principal-protected notes to clients. These VIEs own portfolios of assets, principally with exposure to hedge funds. Substantially all of the principal protection on the notes issued by these VIEs is provided by the asset portfolio rebalancing that is required under the terms of the notes. The firm enters into total return swaps with these VIEs under which the firm pays the VIE the return due to the principal-protected note holders and receives the return on the assets owned by the VIE. The firm may enter into derivatives with other counterparties to mitigate its risk. The firm also obtains funding through these VIEs.

Investments in Funds. The firm makes equity investments in certain investment fund VIEs it manages and is entitled to receive fees from these VIEs. The firm has generally not sold assets to, or entered into derivatives with, these VIEs.

Nonconsolidated VIEs

The table below presents a summary of the nonconsolidated VIEs in which the firm holds variable interests.

	As of December	
$ in millions	**2019**	2018
Total nonconsolidated VIEs		
Assets in VIEs	**$128,069**	$118,186
Carrying value of variable interests — assets	**$ 9,526**	$ 9,543
Carrying value of variable interests — liabilities	**$ 619**	$ 478
Maximum exposure to loss:		
Retained interests	**$ 3,372**	$ 3,280
Purchased interests	**901**	983
Commitments and guarantees	**2,697**	2,745
Derivatives	**9,010**	8,975
Debt and equity	**4,806**	4,728
Total maximum exposure to loss	**$ 20,786**	$ 20,711

In the table above:

- The nature of the firm's variable interests is described in the rows under maximum exposure to loss.
- The firm's exposure to the obligations of VIEs is generally limited to its interests in these entities. In certain instances, the firm 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, purchased interests, and debt and equity 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 presents information, by principal business activity, for nonconsolidated VIEs included in the summary table above.

$ in millions	As of December 2019	2018
Mortgage-backed		
Assets in VIEs	**$75,354**	$73,262
Carrying value of variable interests — assets	**$ 3,830**	$ 4,090
Maximum exposure to loss:		
Retained interests	**$ 3,223**	$ 3,147
Purchased interests	**607**	941
Commitments and guarantees	**50**	35
Derivatives	**66**	77
Total maximum exposure to loss	**$ 3,946**	$ 4,200
Real estate, credit- and power-related and other investing		
Assets in VIEs	**$19,602**	$18,851
Carrying value of variable interests — assets	**$ 3,243**	$ 3,601
Carrying value of variable interests — liabilities	**$ 7**	$ 20
Maximum exposure to loss:		
Commitments and guarantees	**$ 1,213**	$ 1,543
Derivatives	**92**	113
Debt and equity	**3,238**	3,572
Total maximum exposure to loss	**$ 4,543**	$ 5,228
Corporate debt and other asset-backed		
Assets in VIEs	**$16,248**	$15,842
Carrying value of variable interests — assets	**$ 2,040**	$ 1,563
Carrying value of variable interests — liabilities	**$ 612**	$ 458
Maximum exposure to loss:		
Retained interests	**$ 149**	$ 133
Purchased interests	**294**	42
Commitments and guarantees	**1,374**	1,113
Derivatives	**8,849**	8,782
Debt and equity	**1,155**	867
Total maximum exposure to loss	**$11,821**	$10,937
Investments in funds		
Assets in VIEs	**$16,865**	$10,231
Carrying value of variable interests — assets	**$ 413**	$ 289
Maximum exposure to loss:		
Commitments and guarantees	**$ 60**	$ 54
Derivatives	**3**	3
Debt and equity	**413**	289
Total maximum exposure to loss	**$ 476**	$ 346

As of both December 2019 and December 2018, the carrying values of the firm's variable interests in nonconsolidated VIEs are included in the consolidated balance sheets as follows:

- Mortgage-backed: Assets were primarily included in trading assets and loans.
- Real estate, credit- and power-related and other investing: Assets were primarily included in loans and investments and liabilities were included in trading liabilities and other liabilities.
- Corporate debt and other asset-backed: Assets were primarily included in loans and liabilities were included in trading liabilities.
- Investments in funds: Assets were included in investments.

Consolidated VIEs

The table below presents a summary of the carrying value and balance sheet classification of assets and liabilities in consolidated VIEs.

$ in millions	As of December 2019	2018
Total consolidated VIEs		
Assets		
Cash and cash equivalents	**$ 112**	$ 84
Trading assets	**27**	264
Investments	**835**	943
Loans	**2,392**	1,148
Other assets	**1,084**	1,261
Total	**$4,450**	$3,700
Liabilities		
Other secured financings	**$1,163**	$1,204
Customer and other payables	**9**	–
Trading liabilities	**10**	20
Unsecured short-term borrowings	**48**	45
Unsecured long-term borrowings	**214**	207
Other liabilities	**959**	1,100
Total	**$2,403**	$2,576

In the table above:

- Assets and liabilities are presented net of intercompany eliminations and exclude the benefit of offsetting financial instruments that are held to mitigate the risks associated with the firm's variable interests.
- VIEs in which the firm holds a majority voting interest are excluded if (i) the VIE meets the definition of a business and (ii) the VIE's assets can be used for purposes other than the settlement of its obligations.
- Substantially all assets can only be used to settle obligations of the VIE.

The table below presents information, by principal business activity, for consolidated VIEs included in the summary table above.

	As of December	
$ in millions	**2019**	2018
Real estate, credit-related and other investing		
Assets		
Cash and cash equivalents	**$ 112**	$ 84
Trading assets	**26**	45
Investments	**835**	943
Loans	**2,392**	1,096
Other assets	**1,084**	1,258
Total	**$4,449**	$3,426
Liabilities		
Other secured financings	**$ 684**	$ 596
Customer and other payables	**9**	–
Trading liabilities	**10**	20
Other liabilities	**959**	1,100
Total	**$1,662**	$1,716
Mortgage-backed and other asset-backed		
Assets		
Trading assets	**$ –**	$ 210
Loans	**–**	52
Other assets	**–**	3
Total	**$ –**	$ 265
Liabilities		
Other secured financings	**$ –**	$ 140
Total	**$ –**	$ 140
Principal-protected notes		
Assets		
Trading assets	**$ 1**	$ 9
Total	**$ 1**	$ 9
Liabilities		
Other secured financings	**$ 479**	$ 468
Unsecured short-term borrowings	**48**	45
Unsecured long-term borrowings	**214**	207
Total	**$ 741**	$ 720

In the table above:

- The majority of the assets in principal-protected notes VIEs are intercompany and are eliminated in consolidation.
- Creditors and beneficial interest holders of real estate, credit-related and other investing VIEs, and mortgage-backed and other asset-backed VIEs do not have recourse to the general credit of the firm.

Note 18.

Commitments, Contingencies and Guarantees

Commitments

The table below presents commitments by type.

	As of December	
$ in millions	**2019**	2018
Commitment Type		
Commercial lending:		
Investment-grade	**$ 89,276**	$ 81,729
Non-investment-grade	**58,718**	51,793
Warehouse financing	**5,581**	4,060
Credit card	**13,669**	–
Total lending	**167,244**	137,582
Collateralized agreement	**62,093**	54,480
Collateralized financing	**10,193**	15,429
Letters of credit	**456**	445
Investment	**7,879**	7,595
Other	**6,135**	4,892
Total commitments	**$254,000**	$220,423

The table below presents commitments by expiration.

	As of December 2019			
$ in millions	**2020**	**2021 - 2022**	**2023 - 2024**	**2025 - Thereafter**
Commitment Type				
Commercial lending:				
Investment-grade	**$ 13,921**	**$31,099**	**$43,303**	**$ 953**
Non-investment-grade	**6,130**	**15,810**	**26,379**	**10,399**
Warehouse financing	**1,644**	**2,320**	**1,596**	**21**
Credit card	**13,669**	**–**	**–**	**–**
Total lending	**35,364**	**49,229**	**71,278**	**11,373**
Collateralized agreement	**61,588**	**505**	**–**	**–**
Collateralized financing	**10,193**	**–**	**–**	**–**
Letters of credit	**409**	**7**	**–**	**40**
Investment	**3,623**	**1,434**	**1,002**	**1,820**
Other	**6,051**	**84**	**–**	**–**
Total commitments	**$117,228**	**$51,259**	**$72,280**	**$13,233**

Lending Commitments

The firm's commercial and warehouse financing 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 firm may syndicate all or substantial portions of these commitments. In addition, commitments can expire unused or be reduced or cancelled at the counterparty's request. The firm also provides credit to consumers by issuing credit card lines.

The table below presents information about lending commitments.

$ in millions	As of December 2019	2018
Held for investment	**$150,100**	$120,997
Held for sale	**15,245**	14,912
At fair value	**1,899**	1,673
Total	**$167,244**	$137,582

In the table above:

- Held for investment lending commitments are accounted for on an accrual basis. The carrying value of lending commitments was a liability of $527 million (including allowance for losses of $361 million) as of December 2019 and $443 million (including allowance for losses of $286 million) as of December 2018. The estimated fair value of such lending commitments was a liability of $3.05 billion as of December 2019 and $3.78 billion as of December 2018. Had these lending commitments been carried at fair value and included in the fair value hierarchy, $1.78 billion as of December 2019 and $1.12 billion as of December 2018 would have been classified in level 2, and $1.27 billion as of December 2019 and $2.66 billion as of December 2018 would have been classified in level 3.
- Held for sale lending commitments are accounted for at the lower of cost or fair value. The carrying value of lending commitments held for sale was a liability of $60 million as of December 2019 and $155 million as of December 2018. The estimated fair value of such lending commitments approximates the carrying value. Had these lending commitments been included in the fair value hierarchy, they would have been primarily classified in level 2 as of both December 2019 and December 2018.
- Gains or losses related to lending commitments at fair value, if any, are generally recorded net of any fees in other principal transactions.

Commercial Lending. The firm's commercial lending commitments were primarily extended to investment-grade corporate borrowers. Such commitments primarily included $102.50 billion as of December 2019 and $93.99 billion as of December 2018, related to relationship lending activities (principally used for operating and general corporate purposes) and $33.47 billion as of December 2019 and $27.92 billion as of December 2018, related to other investment banking 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 firm 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 firm with credit loss protection on certain approved loan commitments (primarily investment-grade commercial lending commitments). The notional amount of such loan commitments was $5.74 billion as of December 2019 and $15.52 billion as of December 2018. The credit loss protection on loan commitments provided by SMFG is generally limited to 95% of the first loss the firm realizes on such commitments, up to a maximum of approximately $950 million. In addition, subject to the satisfaction of certain conditions, upon the firm's request, SMFG will provide protection for 70% of additional losses on such commitments, up to a maximum of $750 million, of which no protection had been provided as of December 2019 and $550 million was provided as of December 2018. The firm 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 credit index.

Warehouse Financing. The firm provides financing to clients who warehouse financial assets. These arrangements are secured by the warehoused assets, primarily consisting of consumer and corporate loans.

Credit Card. The firm's credit card lending commitments represents credit card lines issued by the firm to consumers. These credit card lines are cancelable by the firm.

Collateralized Agreement Commitments/ Collateralized Financing Commitments

Collateralized agreement commitments includes forward starting resale and securities borrowing agreements, and collateralized financing commitments includes forward starting repurchase and secured lending agreements that settle at a future date, generally within three business days. Collateralized agreement commitments also includes transactions where the firm has entered into commitments to provide contingent financing to its clients and counterparties through resale agreements. The firm's funding of these commitments depends on the satisfaction of all contractual conditions to the resale agreement and these commitments can expire unused.

Letters of Credit

The firm has commitments under letters of credit issued by various banks which the firm provides to counterparties in lieu of securities or cash to satisfy various collateral and margin deposit requirements.

Investment Commitments

Investment commitments includes commitments to invest in private equity, real estate and other assets directly and through funds that the firm raises and manages. Investment commitments included $2.06 billion as of December 2019 and $2.42 billion as of December 2018, related to commitments to invest in funds managed by the firm. If these commitments are called, they would be funded at market value on the date of investment.

Contingencies

Legal Proceedings. See Note 27 for information about legal proceedings, including certain mortgage-related matters.

Certain Mortgage-Related Contingencies. During the period 2005 through 2008 in connection with both sales and securitizations of loans, the firm provided loan-level representations and/or assigned the loan-level representations from the party from whom the firm purchased the loans.

Based on the large number of defaults in residential mortgages, including those sold or securitized by the firm, there is a potential for repurchase claims. However, the firm is not in a position to make a meaningful estimate of that exposure at this time. The firm'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 firm entered into with trustees representing certain trusts.

Other Contingencies. In connection with the sale of Metro International Trade Services (Metro), the firm agreed to provide indemnities to the buyer, which primarily relate to fundamental representations and warranties, and potential liabilities for legal or regulatory proceedings arising out of the conduct of Metro's business while the firm owned it.

In connection with the settlement agreement with the Residential Mortgage-Backed Securities Working Group of the U.S. Financial Fraud Enforcement Task Force, the firm agreed to provide $1.80 billion in consumer relief by January 2021. As of December 2019, approximately $1.55 billion of such relief was provided. This relief was provided in the form of principal forgiveness for underwater homeowners and distressed borrowers; financing for construction, rehabilitation and preservation of affordable housing; and support for debt restructuring, foreclosure prevention and housing quality improvement programs, as well as land banks.

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 2019			
Carrying Value of Net Liability	**$ 3,817**	**$ –**	**$ 27**
Maximum Payout/Notional Amount by Period of Expiration			
2020	**$ 91,814**	**$17,891**	**$2,044**
2021 - 2022	**76,693**	**–**	**1,714**
2023 - 2024	**19,377**	**–**	**2,219**
2025 - thereafter	**36,317**	**–**	**149**
Total	**$224,201**	**$17,891**	**$6,126**
As of December 2018			
Carrying Value of Net Liability	$ 4,105	$ –	$ 38
Maximum Payout/Notional Amount by Period of Expiration			
2019	$101,169	$27,869	$1,379
2020 - 2021	77,955	–	2,252
2022 - 2023	17,813	–	2,021
2024 - thereafter	67,613	–	241
Total	$264,550	$27,869	$5,893

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 firm's commitments.
- The carrying value for derivatives included derivative assets of $1.56 billion as of December 2019 and $1.48 billion as of December 2018, and derivative liabilities of $5.38 billion as of December 2019 and $5.59 billion as of December 2018.

Derivative Guarantees. The firm enters into various derivatives that meet the definition of a guarantee under U.S. GAAP, including written equity and commodity put options, 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 firm's overall risk related to derivative activities. Disclosures about derivatives are not required if they may be cash settled and the firm has no basis to conclude it is probable that the counterparties held the underlying instruments at inception of the contract. The firm has concluded that these conditions have been met for certain large, internationally active commercial and investment bank counterparties, central clearing counterparties, hedge funds and certain other counterparties. Accordingly, the firm has not included such contracts in the table above. 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 firm, 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 $19.14 billion as of December 2019 and $28.75 billion as of December 2018. Because the contractual nature of these arrangements requires the firm 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 firm 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 and fund-related guarantees). 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.

Guarantees of Securities Issued by Trusts. The firm has established trusts, including Goldman Sachs Capital I, the APEX Trusts and other entities for the limited purpose of issuing securities to third parties, lending the proceeds to the firm and entering into contractual arrangements with the firm and third parties related to this purpose. The firm does not consolidate these entities. See Note 14 for further information about the transactions involving Goldman Sachs Capital I and the APEX Trusts.

The firm effectively provides for the full and unconditional guarantee of the securities issued by these entities. Timely payment by the firm of amounts due to these entities under the guarantee, borrowing, preferred stock and related contractual arrangements will be sufficient to cover payments due on the securities issued by these entities.

Management believes that it is unlikely that any circumstances will occur, such as nonperformance on the part of paying agents or other service providers, that would make it necessary for the firm to make payments related to these entities other than those required under the terms of the guarantee, borrowing, preferred stock and related contractual arrangements and in connection with certain expenses incurred by these entities.

Indemnities and Guarantees of Service Providers. In the ordinary course of business, the firm 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 firm or its affiliates.

The firm 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 firm has the right to seek indemnification from these third-party service providers for certain relevant losses incurred by the firm. In addition, the firm is a member of payment, clearing and settlement networks, as well as securities exchanges around the world that may require the firm to meet the obligations of such networks and exchanges in the event of member defaults and other loss scenarios.

In connection with the firm's prime brokerage and clearing businesses, the firm agrees to clear and settle on behalf of its clients the transactions entered into by them with other brokerage firms. The firm's obligations in respect of such transactions are secured by the assets in the client's account, as well as any proceeds received from the transactions cleared and settled by the firm on behalf of the client. In connection with joint venture investments, the firm may issue loan guarantees under which it may be liable in the event of fraud, misappropriation, environmental liabilities and certain other matters involving the borrower.

The firm is unable to develop an estimate of the maximum payout under these guarantees and indemnifications. However, management believes that it is unlikely the firm 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 balance sheets as of both December 2019 and December 2018.

Other Representations, Warranties and Indemnifications. The firm 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 firm 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 securities issuances, borrowings or derivatives.

In addition, the firm 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 firm is unable to develop an estimate of the maximum payout under these guarantees and indemnifications. However, management believes that it is unlikely the firm will have to make any material payments under these arrangements, and no material liabilities related to these arrangements have been recognized in the consolidated balance sheets as of both December 2019 and December 2018.

Guarantees of Subsidiaries. Group Inc. fully and unconditionally guarantees the securities issued by GS Finance Corp., a wholly-owned finance subsidiary of the firm. Group Inc. has guaranteed the payment obligations of Goldman Sachs & Co. LLC (GS&Co.) and GS Bank USA, subject to certain exceptions.

Group Inc. guarantees many of the obligations of its other consolidated subsidiaries on a transaction-by-transaction basis, as negotiated with counterparties. Group Inc. is unable to develop an estimate of the maximum payout under its subsidiary guarantees; however, because these obligations are also obligations of consolidated subsidiaries, Group Inc.'s liabilities as guarantor are not separately disclosed.

Note 19.

Shareholders' Equity

Common Equity

As of both December 2019 and December 2018, the firm had 4.00 billion authorized shares of common stock and 200 million authorized shares of nonvoting common stock, each with a par value of $0.01 per share.

The firm's share repurchase program is intended to help maintain the appropriate level of common equity. The share repurchase program is effected primarily through regular open-market purchases (which may include repurchase plans designed to comply with Rule 10b5-1), the amounts and timing of which are determined primarily by the firm's current and projected capital position, and capital deployment opportunities, but which may also be influenced by general market conditions and the prevailing price and trading volumes of the firm's common stock. Prior to repurchasing common stock, the firm must receive confirmation that the FRB does not object to such capital action.

The table below presents information about common stock repurchases.

	Year Ended December		
in millions, except per share amounts	**2019**	2018	2017
Common share repurchases	**25.8**	13.9	29.0
Average cost per share	**$206.56**	$236.22	$231.87
Total cost of common share repurchases	**$ 5,335**	$ 3,294	$ 6,721

Pursuant to the terms of certain share-based compensation plans, employees may remit shares to the firm or the firm may cancel share-based awards to satisfy statutory employee tax withholding requirements and the exercise price of stock options. Under these plans, 7,490 shares in 2019, 1,120 shares in 2018 and 12,165 shares in 2017 were remitted with a total value of $2 million in 2019, $0.3 million in 2018 and $3 million in 2017, and the firm cancelled 3.8 million share-based awards in 2019, 5.0 million in 2018 and 12.7 million in 2017 with a total value of $743 million in 2019, $1.24 billion in 2018 and $3.03 billion in 2017.

The table below presents common stock dividends declared.

	Year Ended December		
	2019	2018	2017
Dividends declared per common share	**$4.15**	$3.15	$2.90

On January 14, 2020, the Board of Directors of Group Inc. declared a dividend of $1.25 per common share. The dividend will be paid on March 30, 2020 to common shareholders of record on March 2, 2020.

Preferred Equity

The tables below present information about the perpetual preferred stock issued and outstanding as of December 2019.

Series	Shares Authorized	Shares Issued	Shares Outstanding	Depositary Shares Per Share
A	50,000	30,000	29,999	1,000
C	25,000	8,000	8,000	1,000
D	60,000	54,000	53,999	1,000
E	17,500	7,667	7,667	N/A
F	5,000	1,615	1,615	N/A
J	46,000	40,000	40,000	1,000
K	32,200	28,000	28,000	1,000
L	52,000	14,000	14,000	25
M	80,000	80,000	80,000	25
N	31,050	27,000	27,000	1,000
O	26,000	26,000	26,000	25
P	66,000	60,000	60,000	25
Q	20,000	20,000	20,000	25
R	24,000	24,000	24,000	25
Total	**534,750**	**420,282**	**420,280**	

Series	Earliest Redemption Date	Liquidation Preference	Redemption Value (*$ in millions*)
A	Currently redeemable	$ 25,000	**$ 750**
C	Currently redeemable	$ 25,000	**200**
D	Currently redeemable	$ 25,000	**1,350**
E	Currently redeemable	$100,000	**767**
F	Currently redeemable	$100,000	**161**
J	May 10, 2023	$ 25,000	**1,000**
K	May 10, 2024	$ 25,000	**700**
L	Currently redeemable	$ 25,000	**350**
M	May 10, 2020	$ 25,000	**2,000**
N	May 10, 2021	$ 25,000	**675**
O	November 10, 2026	$ 25,000	**650**
P	November 10, 2022	$ 25,000	**1,500**
Q	August 10, 2024	$ 25,000	**500**
R	February 10, 2025	$ 25,000	**600**
Total			**$11,203**

In the tables above:

- All shares have a par value of $0.01 per share and, where applicable, each share is represented by the specified number of depositary shares.
- The earliest redemption date represents the date on which each share of non-cumulative Preferred Stock is redeemable at the firm's option.
- Prior to redeeming preferred stock, the firm must receive confirmation that the FRB does not object to such action.
- In June 2019, the firm issued 20,000 shares of Series Q 5.50% Fixed-Rate Reset Non-Cumulative Preferred Stock (Series Q Preferred Stock).
- In November 2019, the firm issued 24,000 shares of Series R 4.95% Fixed-Rate Reset Non-Cumulative Preferred Stock (Series R Preferred Stock).
- The redemption price per share for Series A through F and Series Q and R Preferred Stock is the liquidation preference plus declared and unpaid dividends. The redemption price per share for Series J through P Preferred Stock is the liquidation preference plus accrued and unpaid dividends. Each share of Series E and Series F Preferred Stock is redeemable at the firm's option, subject to certain covenant restrictions governing the firm's ability to redeem the preferred stock without issuing common stock or other instruments with equity-like characteristics. See Note 14 for information about the replacement capital covenants applicable to the Series E and Series F Preferred Stock.
- All series of preferred stock are pari passu and have a preference over the firm's common stock on liquidation.
- The firm's ability to declare or pay dividends on, or purchase, redeem or otherwise acquire, its common stock is subject to certain restrictions in the event that the firm fails to pay or set aside full dividends on the preferred stock for the latest completed dividend period.

In January 2020, the firm issued 14,000 shares of Series S perpetual 4.40% Fixed-Rate Reset Non-Cumulative Preferred Stock (Series S Preferred Stock). Each share of Series S Preferred Stock issued and outstanding has a liquidation preference of $25,000, is represented by 25 depositary shares and is redeemable at the firm's option beginning February 10, 2025 at a redemption price equal to $25,000 plus declared and unpaid dividends. Dividends on Series S Preferred Stock, if declared, are payable semi-annually at (i) 4.40% per annum from the issuance date to, but excluding, February 10, 2025 and, thereafter, (ii) 2.85% per annum plus the five-year treasury rate. In January 2020, the firm issued a notice that it would redeem the remaining 14,000 outstanding shares of its Series L 5.70% Non-Cumulative Preferred Stock (Series L Preferred Stock) with a redemption value of $350 million on February 24, 2020. The difference between the redemption value and net carrying value at the time of the issuance of this notice was $1 million, which was recorded as an addition to preferred stock dividends in 2020.

In 2019, the firm redeemed 38,000 shares of its outstanding Series L Preferred Stock with a redemption value of $950 million ($25,000 per share), plus accrued and unpaid dividends. In addition, in 2019, the firm redeemed the remaining 6,000 outstanding shares of its Series B 6.20% Non-Cumulative Preferred Stock (Series B Preferred Stock) with a redemption value of $150 million ($25,000 per share). The difference between the redemption value and net carrying value at the time of these redemptions was $9 million, which was recorded as an addition to preferred stock dividends in 2019.

In 2018, the firm redeemed 26,000 shares of Series B Preferred Stock with a redemption value of $650 million ($25,000 per share). The difference between the redemption value of the Series B Preferred Stock and the net carrying value at the time of redemption was $15 million, which was recorded as an addition to preferred stock dividends in 2018.

In 2017, the firm redeemed the 34,000 shares of Series I 5.95% Non-Cumulative Preferred Stock (Series I Preferred Stock) for the stated redemption price of $850 million ($25,000 per share), plus accrued and unpaid dividends. The difference between the redemption value of the Series I Preferred Stock and the net carrying value at the time of redemption was $14 million, which was recorded as an addition to preferred stock dividends in 2017.

The table below presents the dividend rates of perpetual preferred stock as of December 2019.

Series	Per Annum Dividend Rate
A	3 month LIBOR + 0.75%, with floor of 3.75%, payable quarterly
C	3 month LIBOR + 0.75%, with floor of 4.00%, payable quarterly
D	3 month LIBOR + 0.67%, with floor of 4.00%, payable quarterly
E	3 month LIBOR + 0.7675%, with floor of 4.00%, payable quarterly
F	3 month LIBOR + 0.77%, with floor of 4.00%, payable quarterly
J	5.50% to, but excluding, May 10, 2023; 3 month LIBOR + 3.64% thereafter, payable quarterly
K	6.375% to, but excluding, May 10, 2024; 3 month LIBOR + 3.55% thereafter, payable quarterly
L	5.70%, payable semi-annually, from issuance date to, but excluding, May 10, 2019; 3 month LIBOR + 3.884%, payable quarterly, thereafter
M	5.375%, payable semi-annually, from issuance date to, but excluding, May 10, 2020; 3 month LIBOR + 3.922%, payable quarterly, thereafter
N	6.30%, payable quarterly
O	5.30%, payable semi-annually, from issuance date to, but excluding, November 10, 2026; 3 month LIBOR + 3.834%, payable quarterly, thereafter
P	5.00%, payable semi-annually, from issuance date to, but excluding, November 10, 2022; 3 month LIBOR + 2.874%, payable quarterly, thereafter
Q	5.50%, payable semi-annually, from issuance date to, but excluding, August 10, 2024; 5 year treasury rate + 3.623%, payable semi-annually, thereafter
R	4.95%, payable semi-annually, from issuance date to, but excluding, February 10, 2025; 5 year treasury rate + 3.224%, payable semi-annually, thereafter

In the table above, dividends on each series of preferred stock are payable in arrears for the periods specified.

The table below presents preferred stock dividends declared.

	Year Ended December					
	2019		2018		2017	
Series	**per share**	**$ in millions**	per share	$ in millions	per share	$ in millions
A	**$ 947.92**	**$ 28**	$ 958.33	$ 29	$ 950.51	$ 29
B	**$ 775.00**	**5**	$1,550.00	19	$1,550.00	50
C	**$1,011.11**	**8**	$1,022.23	8	$1,013.90	8
D	**$1,011.11**	**54**	$1,022.23	55	$1,013.90	55
E	**$4,044.44**	**31**	$4,077.78	31	$4,055.55	31
F	**$4,044.44**	**7**	$4,077.78	7	$4,055.55	6
I	**$ –**	**–**	$ –	–	$1,487.52	51
J	**$1,375.00**	**55**	$1,375.00	55	$1,375.00	55
K	**$1,593.76**	**45**	$1,593.76	45	$1,593.76	45
L	**$1,519.67**	**68**	$1,425.00	74	$1,425.00	74
M	**$1,343.76**	**107**	$1,343.76	107	$1,343.76	107
N	**$1,575.00**	**43**	$1,575.00	43	$1,575.00	42
O	**$1,325.00**	**34**	$1,325.00	34	$1,325.00	34
P	**$1,250.00**	**75**	$1,281.25	77	$ –	–
Total		**$560**		$584		$587

On January 10, 2020, Group Inc. declared dividends of $234.38 per share of Series A Preferred Stock, $250.00 per share of Series C Preferred Stock, $250.00 per share of Series D Preferred Stock, $343.75 per share of Series J Preferred Stock, $398.44 per share of Series K Preferred Stock, $361.54 per share of Series L Preferred Stock, $393.75 per share of Series N Preferred Stock, and $889.93 per share of Series Q Preferred Stock to be paid on February 10, 2020 to preferred shareholders of record on January 26, 2020. In addition, the firm declared dividends of $1,011.11 per share of Series E Preferred Stock and Series F Preferred Stock to be paid on March 2, 2020 to preferred shareholders of record on February 16, 2020.

Accumulated Other Comprehensive Income/(Loss)

The table below presents changes in the accumulated other comprehensive income/(loss), net of tax, by type.

$ in millions	Beginning balance	Other comprehensive income/(loss) adjustments, net of tax	Ending balance
Year Ended December 2019			
Currency translation	**$ (621)**	**$ 5**	**$ (616)**
Debt valuation adjustment	**1,507**	**(2,079)**	**(572)**
Pension and postretirement liabilities	**(81)**	**(261)**	**(342)**
Available-for-sale securities	**(112)**	**158**	**46**
Total	**$ 693**	**$(2,177)**	**$(1,484)**
Year Ended December 2018			
Currency translation	$ (625)	$ 4	$ (621)
Debt valuation adjustment	(1,046)	2,553	1,507
Pension and postretirement liabilities	(200)	119	(81)
Available-for-sale securities	(9)	(103)	(112)
Total	$(1,880)	$ 2,573	$ 693
Year Ended December 2017			
Currency translation	$ (647)	$ 22	$ (625)
Debt valuation adjustment	(239)	(807)	(1,046)
Pension and postretirement liabilities	(330)	130	(200)
Available-for-sale securities	–	(9)	(9)
Total	$(1,216)	$ (664)	$(1,880)

Note 20.

Regulation and Capital Adequacy

The FRB is the primary regulator of Group Inc., a bank holding company (BHC) under the U.S. Bank Holding Company Act of 1956 and a financial holding company under amendments to this Act. The firm is subject to consolidated regulatory capital requirements which are calculated in accordance with the regulations of the FRB (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 firm's regulators and could limit the firm's ability to repurchase shares, pay dividends and make certain discretionary compensation payments. The firm's capital levels are also subject to qualitative judgments by the regulators about components of capital, risk weightings and other factors. Furthermore, certain of the firm's subsidiaries are subject to separate regulations and capital requirements.

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 Dodd-Frank Act. Under the Capital Framework, the firm is an "Advanced approach" banking organization and has been designated as a global systemically important bank (G-SIB).

The capital requirements calculated in accordance with the Capital Framework include the minimum risk-based capital and leverage ratios. In addition, the risk-based capital requirements include the capital conservation buffer, countercyclical capital buffer and the G-SIB surcharge, all of which must consist entirely of capital that qualifies as Common Equity Tier 1 (CET1) capital.

The firm calculates its CET1 capital, 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 Advanced Capital Rules). The lower of each risk-based capital ratio calculated in (i) and (ii) is the ratio against which the firm's compliance with its risk-based capital requirements is assessed. Under the Capital Framework, the firm is also subject to leverage requirements which consist of a minimum Tier 1 leverage ratio and a minimum supplementary leverage ratio (SLR), as well as the SLR buffer.

Consolidated Regulatory Risk-Based Capital and Leverage Ratios

The table below presents the risk-based capital and leverage requirements.

	As of December	
	2019	2018
Risk-based capital requirements		
CET1 capital ratio	**9.5%**	8.3%
Tier 1 capital ratio	**11.0%**	9.8%
Total capital ratio	**13.0%**	11.8%
Leverage requirements		
Tier 1 leverage ratio	**4.0%**	4.0%
SLR	**5.0%**	5.0%

In the table above:

- As of December 2019, the CET1 capital ratio requirement included a minimum of 4.5%, the Tier 1 capital ratio requirement included a minimum of 6.0%, and the Total capital ratio requirement included a minimum of 8.0%. The requirements also included the capital conservation buffer of 2.5%, the G-SIB surcharge of 2.5% (Method 2) and the countercyclical capital buffer, which the FRB has set to zero percent.
- As of December 2018, the CET1 capital ratio requirement included a minimum of 4.5%, the Tier 1 capital ratio requirement included a minimum of 6.0%, and the Total capital ratio requirement included a minimum of 8.0%. The requirements also included the 75% phase-in of the capital conservation buffer of 2.5%, the 75% phase-in of the G-SIB surcharge of 2.5% (Method 2) and the countercyclical capital buffer, which the FRB has set to zero percent.
- The capital conservation buffer, countercyclical capital buffer and G-SIB surcharge phased in ratably from January 1, 2016 through January 1, 2019.
- The G-SIB surcharge is updated annually based on financial data from the prior year and is generally applicable for the following year. The G-SIB surcharge is calculated using two methodologies, the higher of which is reflected in the firm's risk-based capital requirements. The first calculation (Method 1) is based on the Basel Committee's methodology which, among other factors, relies upon measures of the size, activity and complexity of each G-SIB. The second calculation (Method 2) uses similar inputs but includes a measure of reliance on short-term wholesale funding.
- The Tier 1 leverage ratio requirement is a minimum of 4%. The SLR requirement of 5% as of both December 2019 and December 2018 includes a minimum of 3% and a 2% buffer applicable to G-SIBs.

The table below presents information about risk-based capital ratios.

$ in millions	Standardized	Advanced
As of December 2019		
CET1 capital	**$ 74,850**	**$ 74,850**
Tier 1 capital	**$ 85,440**	**$ 85,440**
Tier 2 capital	**$ 14,925**	**$ 13,473**
Total capital	**$100,365**	**$ 98,913**
RWAs	**$563,575**	**$544,653**
CET1 capital ratio	**13.3%**	**13.7%**
Tier 1 capital ratio	**15.2%**	**15.7%**
Total capital ratio	**17.8%**	**18.2%**
As of December 2018		
CET1 capital	$ 73,116	$ 73,116
Tier 1 capital	$ 83,702	$ 83,702
Tier 2 capital	$ 14,926	$ 13,743
Total capital	$ 98,628	$ 97,445
RWAs	$547,910	$558,111
CET1 capital ratio	13.3%	13.1%
Tier 1 capital ratio	15.3%	15.0%
Total capital ratio	18.0%	17.5%

In the table above:

- In accordance with the risk-based Capital Rules, the lower of the Standardized or Advanced ratio is the ratio against which the firm's compliance with the capital requirements is assessed, and therefore, the Standardized ratios applied to the firm as of December 2019 and the Advanced ratios applied to the firm as of December 2018.
- Beginning in the fourth quarter of 2019, the firm made changes to the calculation of the loss given default for certain wholesale exposures. At the date of adoption, the estimated impact of these changes was an increase in the firm's Advanced CET1 capital ratio of approximately 1 percentage point.

The table below presents information about leverage ratios.

	For the Three Months Ended or as of December	
$ in millions	**2019**	2018
Tier 1 capital	**$ 85,440**	$ 83,702
Average total assets	**983,909**	945,961
Deductions from Tier 1 capital	**(5,275)**	(4,754)
Average adjusted total assets	**978,634**	941,207
Average off-balance-sheet exposures	**396,833**	401,699
Total leverage exposure	**$1,375,467**	$1,342,906
Tier 1 leverage ratio	**8.7%**	8.9%
SLR	**6.2%**	6.2%

In the table above:

- Average total assets represents the average daily assets for the quarter.
- Average 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.

	As of December	
$ in millions	**2019**	2018
Common shareholders' equity	**$ 79,062**	$78,982
Deduction for goodwill	**(3,529)**	(3,097)
Deduction for identifiable intangible assets	**(604)**	(297)
Other adjustments	**(79)**	(2,472)
CET1 capital	**74,850**	73,116
Preferred stock	**11,203**	11,203
Deduction for investments in covered funds	**(610)**	(615)
Other adjustments	**(3)**	(2)
Tier 1 capital	**$ 85,440**	$83,702
Standardized Tier 2 and Total capital		
Tier 1 capital	**$ 85,440**	$83,702
Qualifying subordinated debt	**12,847**	13,147
Junior subordinated debt	**284**	442
Allowance for credit losses	**1,802**	1,353
Other adjustments	**(8)**	(16)
Standardized Tier 2 capital	**14,925**	14,926
Standardized Total capital	**$100,365**	$98,628
Advanced Tier 2 and Total capital		
Tier 1 capital	**$ 85,440**	$83,702
Standardized Tier 2 capital	**14,925**	14,926
Allowance for credit losses	**(1,802)**	(1,353)
Other adjustments	**350**	170
Advanced Tier 2 capital	**13,473**	13,743
Advanced Total capital	**$ 98,913**	$97,445

In the table above:

- Deduction for goodwill was net of deferred tax liabilities of $667 million as of December 2019 and $661 million as of December 2018.
- Deduction for identifiable intangible assets was net of deferred tax liabilities of $37 million as of December 2019 and $27 million as of December 2018.
- Deduction for investments in covered funds represents the firm's aggregate investments in applicable covered funds, excluding investments that are subject to an extended conformance period. See Note 8 for further information about the Volcker Rule.
- Other adjustments within CET1 capital and Tier 1 capital primarily include credit valuation adjustments on derivative liabilities, the overfunded portion of the firm's defined benefit pension plan obligation net of associated deferred tax liabilities, disallowed deferred tax assets, debt valuation adjustments and other required credit risk-based deductions. Other adjustments within Advanced Tier 2 capital include eligible credit reserves.
- Qualifying subordinated debt is subordinated debt issued by Group Inc. 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 14 for further information about the firm's subordinated debt.
- Junior subordinated debt is debt issued to a Trust. As of December 2019, 30% of this debt was included in Tier 2 capital and 70% was phased out of regulatory capital. As of December 2018, 40% of this debt was included in Tier 2 capital and 60% was phased out of regulatory capital. Junior subordinated debt is reduced by the amount of Trust Preferred securities purchased by the firm and will be fully phased out of Tier 2 capital by 2022 at a rate of 10% per year. See Note 14 for further information about the firm's junior subordinated debt and Trust Preferred securities.

The table below presents changes in CET1 capital, Tier 1 capital and Tier 2 capital.

$ in millions	Standardized	Advanced
Year Ended December 2019		
CET1 capital		
Beginning balance	**$ 73,116**	**$73,116**
Change in:		
Common shareholders' equity	**80**	**80**
Deduction for goodwill	**(432)**	**(432)**
Deduction for identifiable intangible assets	**(307)**	**(307)**
Other adjustments	**2,393**	**2,393**
Ending balance	**$ 74,850**	**$74,850**
Tier 1 capital		
Beginning balance	**$ 83,702**	**$83,702**
Change in:		
CET1 capital	**1,734**	**1,734**
Deduction for investments in covered funds	**5**	**5**
Other adjustments	**(1)**	**(1)**
Ending balance	**85,440**	**85,440**
Tier 2 capital		
Beginning balance	**14,926**	**13,743**
Change in:		
Qualifying subordinated debt	**(300)**	**(300)**
Junior subordinated debt	**(158)**	**(158)**
Allowance for credit losses	**449**	**–**
Other adjustments	**8**	**188**
Ending balance	**14,925**	**13,473**
Total capital	**$100,365**	**$98,913**
Year Ended December 2018		
CET1 capital		
Beginning balance	$ 67,110	$67,110
Change in:		
Common shareholders' equity	8,592	8,592
Transitional provisions	(117)	(117)
Deduction for goodwill	(86)	(86)
Deduction for identifiable intangible assets	26	26
Other adjustments	(2,409)	(2,409)
Ending balance	$ 73,116	$73,116
Tier 1 capital		
Beginning balance	$ 78,331	$78,331
Change in:		
CET1 capital	6,006	6,006
Transitional provisions	13	13
Deduction for investments in covered funds	(25)	(25)
Preferred stock	(650)	(650)
Other adjustments	27	27
Ending balance	83,702	83,702
Tier 2 capital		
Beginning balance	14,977	13,899
Change in:		
Qualifying subordinated debt	(213)	(213)
Junior subordinated debt	(125)	(125)
Allowance for credit losses	275	–
Other adjustments	12	182
Ending balance	14,926	13,743
Total capital	$ 98,628	$97,445

RWAs. RWAs are calculated in accordance with both the Standardized and Advanced Capital Rules.

Credit Risk

Credit RWAs are calculated based on measures of exposure, which are then risk weighted under the Standardized and Advanced Capital 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 Advanced Capital Rules, the firm 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.
- For both Standardized and Advanced credit RWAs, the risk-weights for securitizations and equities are based on specific required formulaic approaches.

Market Risk

RWAs for market risk in accordance with the Standardized and Advanced Capital Rules are generally consistent. Market RWAs are calculated based on measures of exposure which include the following:

- Value-at-Risk (VaR) is the potential loss in value of trading assets and liabilities, as well as certain investments, loans, and other financial assets and liabilities accounted for at fair value, 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 firm uses a single VaR model which captures risks including those related to interest rates, equity prices, currency rates and commodity prices. 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. In addition, the daily net revenues used to determine risk management VaR exceptions (i.e., comparing the daily net revenues to the VaR measure calculated as of the end of the prior business day) include intraday activity, whereas the FRB's regulatory capital rules require that intraday activity be excluded from daily net revenues when calculating regulatory VaR exceptions. Intraday activity includes bid/offer net revenues, which are more likely than not to be positive by their nature. As a result, there may be differences in the number of VaR exceptions and the amount of daily net revenues calculated for regulatory VaR compared to the amounts calculated for risk management VaR.

  The firm's positional losses observed on a single day exceeded its 99% one-day regulatory VaR on one occasion during 2019 and exceeded its 99% one-day regulatory VaR on two occasions during 2018. There was no change in the VaR multiplier used to calculate Market RWAs;
- Stressed VaR is the potential loss in value of trading assets and liabilities, as well as certain investments, loans, and other financial assets and liabilities accounted for at fair value, during a period of significant market stress;
- Incremental risk is the potential loss in value of non-securitized 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 firm'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 Advanced Capital Rules. The firm utilizes an internal risk-based model to quantify Operational RWAs.

The table below presents information about RWAs.

$ in millions	Standardized	Advanced
As of December 2019		
Credit RWAs		
Derivatives	**$120,906**	**$ 72,631**
Commitments, guarantees and loans	**179,740**	**134,456**
Securities financing transactions	**65,867**	**13,834**
Equity investments	**56,814**	**61,892**
Other	**75,660**	**78,266**
Total Credit RWAs	**498,987**	**361,079**
Market RWAs		
Regulatory VaR	**8,933**	**8,933**
Stressed VaR	**30,911**	**30,911**
Incremental risk	**4,308**	**4,308**
Comprehensive risk	**1,393**	**1,191**
Specific risk	**19,043**	**19,043**
Total Market RWAs	**64,588**	**64,386**
Total Operational RWAs	**–**	**119,188**
Total RWAs	**$563,575**	**$544,653**
As of December 2018		
Credit RWAs		
Derivatives	$122,511	$ 82,301
Commitments, guarantees and loans	160,305	143,356
Securities financing transactions	66,363	18,259
Equity investments	53,563	55,154
Other	70,596	69,681
Total Credit RWAs	473,338	368,751
Market RWAs		
Regulatory VaR	7,782	7,782
Stressed VaR	27,952	27,952
Incremental risk	10,469	10,469
Comprehensive risk	2,770	2,770
Specific risk	25,599	25,599
Total Market RWAs	74,572	74,572
Total Operational RWAs	–	114,788
Total RWAs	$547,910	$558,111

In the table above:

- Securities financing transactions represents resale and repurchase agreements and securities borrowed and loaned transactions.
- Other includes receivables, certain debt securities, cash and cash equivalents and other assets.

The table below presents changes in RWAs.

$ in millions	Standardized	Advanced
Year Ended December 2019		
RWAs		
Beginning balance	**$547,910**	**$558,111**
Credit RWAs		
Change in:		
Derivatives	**(1,605)**	**(9,670)**
Commitments, guarantees and loans	**19,435**	**(8,900)**
Securities financing transactions	**(496)**	**(4,425)**
Equity investments	**3,251**	**6,738**
Other	**5,064**	**8,585**
Change in Credit RWAs	**25,649**	**(7,672)**
Market RWAs		
Change in:		
Regulatory VaR	**1,151**	**1,151**
Stressed VaR	**2,959**	**2,959**
Incremental risk	**(6,161)**	**(6,161)**
Comprehensive risk	**(1,377)**	**(1,579)**
Specific risk	**(6,556)**	**(6,556)**
Change in Market RWAs	**(9,984)**	**(10,186)**
Change in Operational RWAs	**–**	**4,400**
Ending balance	**$563,575**	**$544,653**
Year Ended December 2018		
RWAs		
Beginning balance	$555,611	$617,646
Credit RWAs		
Change in:		
Transitional provisions	7,766	8,232
Derivatives	(3,565)	(20,685)
Commitments, guarantees and loans	15,201	(20,019)
Securities financing transactions	(11,599)	(1,103)
Equity investments	(2,241)	(4,580)
Other	(454)	(6,411)
Change in Credit RWAs	5,108	(44,566)
Market RWAs		
Change in:		
Regulatory VaR	250	250
Stressed VaR	(4,801)	(4,801)
Incremental risk	2,028	2,028
Comprehensive risk	373	900
Specific risk	(10,659)	(10,659)
Change in Market RWAs	(12,809)	(12,282)
Change in Operational RWAs	–	(2,687)
Ending balance	$547,910	$558,111

RWAs Rollforward Commentary

Year Ended December 2019. Standardized Credit RWAs as of December 2019 increased by $25.65 billion compared with December 2018, primarily reflecting an increase in commitments, guarantees and loans, principally due to an increase in lending activity, and an increase in other credit RWAs, principally due to the recognition of operating lease right-of-use assets upon adoption of ASU No. 2016-02 and an increase in corporate debt exposures. Standardized Market RWAs as of December 2019 decreased by $9.98 billion compared with December 2018, primarily reflecting a decrease in specific risk, principally due to reduced exposures, and a decrease in incremental risk, principally due to reduced exposures and changes in risk measurements.

Advanced Credit RWAs as of December 2019 decreased by $7.67 billion compared with December 2018. Beginning in the fourth quarter of 2019, the firm made changes to the calculation of the loss given default for certain wholesale exposures which resulted in a decrease in credit RWAs, primarily in commitments, guarantees and loans and derivatives. This decrease was partially offset by an increase in other credit RWAs, principally due to the recognition of operating lease right-of-use assets upon adoption of ASU No. 2016-02 and an increase in corporate debt exposures. Advanced Market RWAs as of December 2019 decreased by $10.19 billion compared with December 2018, primarily reflecting a decrease in specific risk, principally due to reduced exposures, and a decrease in incremental risk, principally due to reduced exposures and changes in risk measurements. Advanced Operational RWAs as of December 2019 increased by $4.40 billion compared with December 2018, associated with litigation and regulatory proceedings.

Year Ended December 2018. Standardized Credit RWAs as of December 2018 increased by $5.11 billion compared with December 2017, primarily reflecting an increase in commitments, guarantees and loans, principally due to an increase in lending activity. This increase was partially offset by a decrease in securities financing transactions, principally due to reduced exposures. Standardized Market RWAs as of December 2018 decreased by $12.81 billion compared with December 2017, primarily reflecting a decrease in specific risk on positions for which the firm obtained increased transparency into the underliers and as a result utilized a modeled approach to calculate RWAs.

Advanced Credit RWAs as of December 2018 decreased by $44.57 billion compared with December 2017. Beginning in the fourth quarter of 2018, the firm's default experience was incorporated into the determination of probability of default, which resulted in a decrease in credit RWAs, primarily in commitments, guarantees and loans and derivatives. Advanced Market RWAs as of December 2018 decreased by $12.28 billion compared with December 2017, primarily reflecting a decrease in specific risk on positions for which the firm obtained increased transparency into the underliers and as a result utilized a modeled approach to calculate RWAs.

Bank Subsidiaries

Regulatory Capital Ratios. GS Bank USA, the firm's primary U.S. bank subsidiary, is an FDIC-insured, New York State-chartered bank and a member of the Federal Reserve System, is supervised and regulated by the FRB, the FDIC, the New York State Department of Financial Services and the Consumer Financial Protection Bureau, and is subject to regulatory capital requirements that are calculated in substantially the same manner as those applicable to BHCs. For purposes of assessing the adequacy of its capital, GS Bank USA calculates its risk-based capital and leverage ratios in accordance with the regulatory capital requirements applicable to state member banks. Those requirements are based on the Capital Framework described above. GS Bank USA is an Advanced approach banking organization under the Capital Framework.

Under the regulatory framework for prompt corrective action applicable to GS Bank USA, in order to meet the quantitative requirements for being a "well-capitalized" depository institution, GS Bank USA must also meet the "well-capitalized" requirements in the table below.

GS Bank USA'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 GS Bank USA's regulators.

Similar to the firm, GS Bank USA is required to calculate each of the CET1 capital, Tier 1 capital and Total capital ratios in accordance with both the Standardized and Advanced Capital Rules. The lower of each risk-based capital ratio calculated in accordance with the Standardized and Advanced Capital Rules is the ratio against which GS Bank USA's compliance with its risk-based capital requirements is assessed.

The table below presents GS Bank USA's risk-based capital, leverage and "well-capitalized" requirements.

	As of December		"Well-capitalized"
	2019	2018	**Requirements**
Risk-based capital requirements			
CET1 capital ratio	**7.0%**	6.4%	**6.5%**
Tier 1 capital ratio	**8.5%**	7.9%	**8.0%**
Total capital ratio	**10.5%**	9.9%	**10.0%**
Leverage requirements			
Tier 1 leverage ratio	**4.0%**	4.0%	**5.0%**
SLR	**3.0%**	3.0%	**6.0%**

In the table above:

- As of December 2019, the CET1 capital ratio requirement included a minimum of 4.5%, the Tier 1 capital ratio requirement included a minimum of 6.0%, and the Total capital ratio requirement included a minimum of 8.0%. The requirements also included the capital conservation buffer of 2.5% and the countercyclical capital buffer, which the FRB has set to zero percent.
- As of December 2018, the CET1 capital ratio requirement included a minimum of 4.5%, the Tier 1 capital ratio requirement included a minimum of 6.0%, and the Total capital ratio requirement included a minimum of 8.0%. The requirements also included the 75% phase-in of the capital conservation buffer of 2.5% and the countercyclical capital buffer of zero percent.
- The "well-capitalized" requirements were the binding requirements for risk-based capital ratios as of December 2018 and were the binding requirements for leverage ratios as of both December 2019 and December 2018.

The table below presents information about GS Bank USA's risk-based capital ratios.

$ in millions	Standardized	Advanced
As of December 2019		
CET1 capital	**$ 29,176**	**$ 29,176**
Tier 1 capital	**$ 29,176**	**$ 29,176**
Tier 2 capital	**$ 5,293**	**$ 4,486**
Total capital	**$ 34,469**	**$ 33,662**
RWAs	**$258,541**	**$135,596**
CET1 capital ratio	**11.3%**	**21.5%**
Tier 1 capital ratio	**11.3%**	**21.5%**
Total capital ratio	**13.3%**	**24.8%**
As of December 2018		
CET1 capital	$ 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 capital ratio	11.1%	18.4%
Tier 1 capital ratio	11.1%	18.4%
Total capital ratio	13.1%	21.4%

In the table above:

- In accordance with the Capital Rules, the lower of the Standardized or Advanced ratio is the ratio against which GS Bank USA's compliance with the capital requirements is assessed, and therefore, the Standardized ratios applied to GS Bank USA as of both December 2019 and December 2018.
- Beginning in the fourth quarter of 2019, GS Bank USA made changes to the calculation of the loss given default for certain wholesale exposures. At the date of adoption, the estimated impact of these changes was an increase in GS Bank USA's Advanced CET1 capital ratio of approximately 2.2 percentage points.
- The Standardized risk-based capital ratios increased from December 2018 to December 2019, reflecting an increase in capital, principally due to net earnings, partially offset by an increase in credit RWAs. The Advanced risk-based capital ratios increased from December 2018 to December 2019, reflecting a decrease in credit RWAs, principally due to updates to the loss given default calculation for certain wholesale exposures.

The table below presents information about GS Bank USA's leverage ratios.

	For the Three Months Ended or as of December	
$ in millions	**2019**	2018
Tier 1 capital	**$ 29,176**	$ 27,467
Average adjusted total assets	**$220,974**	$188,606
Total leverage exposure	**$413,852**	$368,062
Tier 1 leverage ratio	**13.2%**	14.6%
SLR	**7.0%**	7.5%

In the table above:

- 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.

The firm's principal non-U.S. bank subsidiary, GSIB, is a wholly-owned credit institution, regulated by the Prudential Regulation Authority and the Financial Conduct Authority and is subject to regulatory capital requirements. As of both December 2019 and December 2018, GSIB was in compliance with its regulatory capital requirements.

Other. The deposits of GS Bank USA are insured by the FDIC to the extent provided by law. The FRB requires that GS Bank USA maintain cash reserves with the Federal Reserve Bank of New York. The amount deposited by GS Bank USA at the Federal Reserve Bank of New York was $50.55 billion as of December 2019 and $29.20 billion as of December 2018, which exceeded required reserve amounts by $50.29 billion as of December 2019 and $29.03 billion as of December 2018.

Restrictions on Payments

Group Inc. may be limited in its ability to access capital held at certain subsidiaries as a result of regulatory, tax or other constraints. These limitations include provisions of applicable law and regulations and other regulatory restrictions that limit the ability of those subsidiaries to declare and pay dividends without prior regulatory approval (e.g., dividends that may be paid by GS Bank USA are limited to the lesser of the amounts calculated under a recent earnings test and an undivided profits test) even if the relevant subsidiary would satisfy the equity capital requirements applicable to it after giving effect to the dividend. For example, the FRB, the FDIC and the New York State Department of Financial Services have authority to prohibit or to limit the payment of dividends by the banking organizations they supervise (including GS Bank USA) if, in the regulator's opinion, payment of a dividend would constitute an unsafe or unsound practice in the light of the financial condition of the banking organization.

In addition, subsidiaries not subject to separate regulatory capital requirements may hold capital to satisfy local tax and legal guidelines, rating agency requirements (for entities with assigned credit ratings) or internal policies, including policies concerning the minimum amount of capital a subsidiary should hold based on its underlying level of risk.

Group Inc.'s equity investment in subsidiaries was $95.68 billion as of December 2019 and $90.22 billion as of December 2018, of which Group Inc. was required to maintain $57.58 billion as of December 2019 and $52.92 billion as of December 2018, of minimum equity capital in its regulated subsidiaries in order to satisfy the regulatory requirements of such subsidiaries.

Group Inc.'s capital invested in certain non-U.S. subsidiaries is exposed to foreign exchange risk, substantially all of which is managed through a combination of derivatives and non-U.S. denominated debt. See Note 7 for information about the firm's net investment hedges used to hedge this risk.

Note 21.

Earnings Per Common Share

Basic earnings per common share (EPS) is calculated by dividing net earnings to common by the weighted average number of common shares outstanding and restricted stock units (RSUs) for which the delivery of the underlying common stock is not subject to satisfaction of future service or performance conditions (collectively, basic shares). Diluted EPS includes the determinants of basic EPS and, in addition, reflects the dilutive effect of the common stock deliverable for stock options and for RSUs for which the delivery of the underlying common stock is subject to satisfaction of future service or performance conditions.

The table below presents information about basic and diluted EPS.

	Year Ended December		
in millions, except per share amounts	**2019**	2018	2017
Net earnings to common	**$7,897**	$9,860	$3,685
Weighted average basic shares	**371.6**	385.4	401.6
Effect of dilutive securities:			
RSUs	**3.9**	3.9	5.3
Stock options	**–**	0.9	2.2
Dilutive securities	**3.9**	4.8	7.5
Weighted average diluted shares	**375.5**	390.2	409.1
Basic EPS	**$21.18**	$25.53	$ 9.12
Diluted EPS	**$21.03**	$25.27	$ 9.01

In the table above:

- Net earnings to common represents net earnings applicable to common shareholders, which is calculated as net earnings less preferred stock dividends.
- Unvested share-based awards that have non-forfeitable rights to dividends or dividend equivalents are treated as a separate class of securities under the two-class method. Distributed earnings allocated to these securities reduce net earnings to common to calculate basic EPS. The impact of applying this methodology was a reduction in basic EPS of $0.07 for 2019, $0.05 for 2018 and $0.06 for 2017.
- Diluted EPS does not include antidilutive RSUs of 0.1 million for 2019, of less than 0.1 million for 2018 and 0.1 million for 2017.

Note 22.

Transactions with Affiliated Funds

The firm has formed nonconsolidated investment funds with third-party investors. As the firm generally acts as the investment manager for these funds, it is entitled to receive management fees and, in certain cases, advisory fees or incentive fees from these funds. Additionally, the firm invests alongside the third-party investors in certain funds.

The tables below present information about affiliated funds.

	Year Ended December		
$ in millions	**2019**	2018	2017
Fees earned from funds	**$2,967**	$3,571	$2,932

	As of December	
$ in millions	**2019**	2018
Fees receivable from funds	**$ 780**	$ 610
Aggregate carrying value of interests in funds	**$5,490**	$4,994

The firm may periodically determine to waive certain management fees on selected money market funds. Management fees waived were $44 million for 2019 and $51 million for 2018 and $98 million for 2017.

The Volcker Rule restricts the firm from providing financial support to covered funds (as defined in the rule) after the expiration of the conformance period. As a general matter, in the ordinary course of business, the firm does not expect to provide additional voluntary financial support to any covered funds, but may choose to do so with respect to funds that are not subject to the Volcker Rule. However, in the event that such support is provided, the amount is not expected to be material.

The firm had an outstanding guarantee, as permitted under the Volcker Rule, on behalf of its funds of $87 million as of December 2019 and $154 million as of December 2018. The firm has voluntarily provided this guarantee in connection with a financing agreement with a third-party lender executed by one of the firm's real estate funds that is not covered by the Volcker Rule. As of both December 2019 and December 2018, except as noted above, the firm has not provided any additional financial support to its affiliated funds.

In addition, in the ordinary course of business, the firm may also engage in other activities with its affiliated funds including, among others, securities lending, trade execution, market-making, custody, and acquisition and bridge financing. See Note 18 for the firm's investment commitments related to these funds.

Note 23.

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	**2019**	2018	2017
Deposits with banks	**$ 1,211**	$ 1,418	$ 819
Collateralized agreements	**4,397**	3,852	1,661
Trading assets	**5,899**	5,157	4,667
Investments	**1,457**	1,215	704
Loans	**5,411**	4,689	3,222
Other interest	**3,363**	3,348	2,040
Total interest income	**21,738**	19,679	13,113
Deposits	**3,568**	2,606	1,380
Collateralized financings	**2,658**	2,051	863
Trading liabilities	**1,213**	1,554	1,388
Short-term borrowings	**668**	695	698
Long-term borrowings	**5,359**	5,555	4,599
Other interest	**3,910**	3,451	1,253
Total interest expense	**17,376**	15,912	10,181
Net interest income	**$ 4,362**	$ 3,767	$ 2,932

In the table above:

- Collateralized agreements includes rebates paid and interest income on securities borrowed.
- Loans excludes interest on loans held for sale that are accounted for at the lower of cost or fair value. Such interest is included within other interest.
- Other interest income includes interest income on customer debit balances, other interest-earning assets and loans held for sale that are accounted for at the lower of cost or fair value.
- Collateralized financings consists of repurchase agreements and securities loaned.
- Short- and long-term borrowings include both secured and unsecured borrowings.
- Other interest expense includes rebates received on other interest-bearing liabilities and interest expense on customer credit balances.

Note 24.

Income Taxes

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 firm reports interest expense related to income tax matters in provision for taxes and income tax penalties in other expenses.

The table below presents information about the provision for taxes.

	Year Ended December		
$ in millions	**2019**	2018	2017
Current taxes			
U.S. federal	**$1,113**	$ 2,986	$ 320
State and local	**388**	379	64
Non-U.S.	**950**	1,302	1,004
Total current tax expense	**2,451**	4,667	1,388
Deferred taxes			
U.S. federal	**(383)**	(2,711)	5,083
State and local	**(20)**	58	157
Non-U.S.	**69**	8	218
Total deferred tax (benefit)/expense	**(334)**	(2,645)	5,458
Provision for taxes	**$2,117**	$ 2,022	$6,846

In the table above:

- State and local current taxes in 2017 includes the impact of settlements of state and local examinations.
- U.S. federal current tax expense and U.S. federal deferred tax expense in 2018 and 2017 includes the impact of Tax Legislation.

The table below presents a reconciliation of the U.S. federal statutory income tax rate to the effective income tax rate.

	Year Ended December		
	2019	2018	2017
U.S. federal statutory income tax rate	**21.0%**	21.0%	35.0%
State and local taxes, net of U.S. federal benefit	**2.9**	2.0	1.5
Settlement of employee share-based awards	**(0.6)**	(2.2)	(6.4)
Non-U.S. operations	**(3.6)**	(0.7)	(6.3)
Tax credits	**(1.8)**	(1.4)	(2.1)
Tax-exempt income, including dividends	**(1.0)**	(0.6)	(0.2)
Tax Legislation	**–**	(3.9)	39.5
Non-deductible legal expenses	**2.1**	1.2	0.5
Other	**1.0**	0.8	–
Effective income tax rate	**20.0%**	16.2%	61.5%

In the table above:

- Non-U.S. operations in 2019 and 2018 include the impact of the Base Erosion and Anti-Abuse Tax and Global Intangible Low Taxed Income (GILTI).
- Non-U.S. operations in 2017 includes the impact of permanently reinvested earnings and excludes the estimated impact of Tax Legislation.
- State and local taxes in 2017, net of U.S. federal income tax effects, includes the impact of settlements of state and local examinations.

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 and primarily relate to the ability to utilize losses in various tax jurisdictions. 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, excluding the impact of netting within tax jurisdictions.

	As of December	
$ in millions	**2019**	2018
Deferred tax assets		
Compensation and benefits	**$1,351**	$1,296
ASC 740 asset related to unrecognized tax benefits	**279**	152
Non-U.S. operations	**472**	264
Net operating losses	**411**	688
Occupancy-related	**178**	71
Other comprehensive income-related	**407**	–
Tax credits carryforward	**59**	62
Operating lease liabilities	**559**	–
Allowance for credit losses	**433**	326
Other, net	**160**	42
Subtotal	**4,309**	2,901
Valuation allowance	**(467)**	(245)
Total deferred tax assets	**$3,842**	$2,656
Deferred tax liabilities		
Depreciation and amortization	**$1,022**	$ 930
Unrealized gains	**1,196**	1,290
Operating lease right-of-use assets	**560**	–
Other comprehensive income-related	**–**	84
Total deferred tax liabilities	**$2,778**	$2,304

The firm has recorded deferred tax assets of $411 million as of December 2019 and $688 million as of December 2018, in connection with U.S. federal, state and local and foreign net operating loss carryforwards. The firm also recorded a valuation allowance of $79 million as of December 2019 and $81 million as of December 2018, related to these net operating loss carryforwards.

As of December 2019, the U.S. federal net operating loss carryforward was $327 million, the state and local net operating loss carryforward was $1.46 billion, and the foreign net operating loss carryforward was $1.24 billion. If not utilized, the U.S. federal net operating loss carryforward will begin to expire in 2025 and the state and local, and foreign net operating loss carryforwards will begin to expire in 2020. If these carryforwards expire, they will not have a material impact on the firm's results of operations. As of December 2019, the firm has recorded deferred tax assets of $5 million in connection with general business credit carryforwards and $29 million in connection with state and local tax credit carryforwards. If not utilized, the general business credit carryforward will begin to expire in 2021 and the state and local tax credit carryforward will begin to expire in 2020. As of December 2019, the firm did not have any foreign tax credit carryforwards.

As of both December 2019 and December 2018, the firm had no U.S. capital loss carryforwards and no related net deferred income tax assets. As of December 2019, the firm had deferred tax assets of $181 million in connection with foreign capital loss carryforwards and a valuation allowance of $181 million related to these capital loss carryforwards.

The valuation allowance increased by $222 million during 2019 and increased by $89 million during 2018. The increases in both 2019 and 2018 were primarily due to an increase in deferred tax assets from which the firm does not expect to realize any benefit.

The firm permanently reinvested eligible earnings of certain foreign subsidiaries. As of both December 2019 and December 2018, all U.S. taxes were accrued on these subsidiaries' distributable earnings, substantially all of which resulted from the Tax Legislation repatriation tax and GILTI.

Unrecognized Tax Benefits

The firm 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.

The accrued liability for interest expense related to income tax matters and income tax penalties was $198 million as of December 2019 and $107 million as of December 2018. The firm recognized interest expense and income tax penalties of $60 million for 2019, $18 million for 2018 and $63 million for 2017. It is reasonably possible that unrecognized tax benefits could change significantly during the twelve months subsequent to December 2019 due to potential audit settlements. However, at this time it is not possible to estimate any potential change.

The table below presents the changes in the liability for unrecognized tax benefits, which is included in other liabilities.

	Year Ended or as of December		
$ in millions	**2019**	2018	2017
Beginning balance	**$1,051**	$ 665	$ 852
Increases based on current year tax positions	**131**	197	94
Increases based on prior years' tax positions	**441**	232	101
Decreases based on prior years' tax positions	**(54)**	(39)	(128)
Decreases related to settlements	**(125)**	(3)	(255)
Exchange rate fluctuations	**1**	(1)	1
Ending balance	**$1,445**	$1,051	$ 665
Related deferred income tax asset	**279**	152	75
Net unrecognized tax benefit	**$1,166**	$ 899	$ 590

Regulatory Tax Examinations

The firm is subject to examination by the U.S. Internal Revenue Service (IRS) and other taxing authorities in jurisdictions where the firm has significant business operations, such as the United Kingdom, Japan, Hong Kong and various states, such as New York. The tax years under examination vary by jurisdiction. The firm does not expect completion of these audits to have a material impact on the firm's financial condition, but it may be material to operating results for a particular period, depending, in part, on the operating results for that period.

The table below presents the earliest tax years that remain subject to examination by major jurisdiction.

Jurisdiction	**As of December 2019**
U.S. Federal	**2011**
New York State and City	**2011**
United Kingdom	**2017**
Japan	**2014**
Hong Kong	**2013**

U.S. Federal examinations of 2011 and 2012 began in 2013. The firm has been accepted into the Compliance Assurance Process program by the IRS for each of the tax years from 2013 through 2019 and submitted an application for 2020. This program allows the firm to work with the IRS to identify and resolve potential U.S. Federal tax issues before the filing of tax returns. The 2013 through 2018 tax years remain subject to post-filing review.

New York State and City examinations (excluding GS Bank USA) of 2011 through 2014 began in 2017. New York State and City examinations for GS Bank USA have been completed through 2014.

All years including and subsequent to the years in the table above remain open to examination by the taxing authorities. The firm believes that the liability for unrecognized tax benefits it has established is adequate in relation to the potential for additional assessments.

Note 25.
Business Segments

The firm reports its activities in the following four business segments: Investment Banking, Global Markets, Asset Management and Consumer & Wealth Management. See Note 1 for information about the firm's business segments.

Compensation and benefits expenses in the firm's segments reflect, among other factors, the overall performance of the firm, as well as the performance of individual businesses. Consequently, pre-tax margins in one segment of the firm's business may be significantly affected by the performance of the firm's other business segments.

The firm allocates assets (including allocations of global core liquid assets and cash, secured client financing and other assets), revenues and expenses among the four business segments. Due to the integrated nature of these segments, estimates and judgments are made in allocating certain assets, revenues and expenses. The allocation process is based on the manner in which management currently views the performance of the segments.

The allocation of common shareholders' equity and preferred stock dividends to each segment is based on the estimated amount of equity required to support the activities of the segment under relevant regulatory capital requirements.

Net earnings for each segment is calculated by applying the firmwide tax rate to each segment's pre-tax earnings.

Management believes that this allocation provides a reasonable representation of each segment's contribution to consolidated net earnings to common, return on average common equity and total assets. Transactions between segments are based on specific criteria or approximate third-party rates.

Segment Results

The table below presents a summary of the firm's segment results.

	Year Ended December		
$ in millions	**2019**	2018	2017
Investment Banking			
Non-interest revenues	**$ 7,079**	$ 7,856	$ 7,158
Net interest income	**520**	322	301
Total net revenues	**7,599**	8,178	7,459
Provision for credit losses	**333**	124	34
Operating expenses	**4,685**	4,473	3,613
Pre-tax earnings	**$ 2,581**	$ 3,581	$ 3,812
Net earnings	**$ 2,065**	$ 3,001	$ 1,468
Net earnings to common	**$ 1,996**	$ 2,924	$ 1,394
Average common equity	**$11,167**	$ 8,737	$ 8,753
Return on average common equity	**17.9%**	33.5%	15.9%
Global Markets			
Non-interest revenues	**$13,109**	$12,831	$10,853
Net interest income	**1,670**	1,607	1,442
Total net revenues	**14,779**	14,438	12,295
Provision for credit losses	**35**	52	178
Operating expenses	**10,851**	10,585	9,981
Pre-tax earnings	**$ 3,893**	$ 3,801	$ 2,136
Net earnings	**$ 3,114**	$ 3,185	$ 823
Net earnings to common	**$ 2,729**	$ 2,796	$ 397
Average common equity	**$40,060**	$41,237	$44,448
Return on average common equity	**6.8%**	6.8%	0.9%
Asset Management			
Non-interest revenues	**$ 8,454**	$ 8,353	$ 8,491
Net interest income	**511**	482	39
Total net revenues	**8,965**	8,835	8,530
Provision for credit losses	**274**	160	322
Operating expenses	**4,817**	4,179	3,773
Pre-tax earnings	**$ 3,874**	$ 4,496	$ 4,435
Net earnings	**$ 3,099**	$ 3,767	$ 1,707
Net earnings to common	**$ 3,013**	$ 3,668	$ 1,639
Average common equity	**$21,575**	$19,061	$16,904
Return on average common equity	**14.0%**	19.2%	9.7%
Consumer & Wealth Management			
Non-interest revenues	**$ 3,542**	$ 3,809	$ 3,296
Net interest income	**1,661**	1,356	1,150
Total net revenues	**5,203**	5,165	4,446
Provision for credit losses	**423**	338	123
Operating expenses	**4,545**	4,224	3,574
Pre-tax earnings	**$ 235**	$ 603	$ 749
Net earnings	**$ 188**	$ 506	$ 288
Net earnings to common	**$ 159**	$ 472	$ 255
Average common equity	**$ 6,292**	$ 4,950	$ 4,616
Return on average common equity	**2.5%**	9.5%	5.5%
Total			
Non-interest revenues	**$32,184**	$32,849	$29,798
Net interest income	**4,362**	3,767	2,932
Total net revenues	**36,546**	36,616	32,730
Provision for credit losses	**1,065**	674	657
Operating expenses	**24,898**	23,461	20,941
Pre-tax earnings	**$10,583**	$12,481	$11,132
Net earnings	**$ 8,466**	$10,459	$ 4,286
Net earnings to common	**$ 7,897**	$ 9,860	$ 3,685
Average common equity	**$79,094**	$73,985	$74,721
Return on average common equity	**10.0%**	13.3%	4.9%

In the table above:

- Revenues and expenses directly associated with each segment are included in determining pre-tax earnings.
- Net revenues in the firm's segments include allocations of interest income and expense to specific positions in relation to the cash generated by, or funding requirements of, such positions. Net interest is included in segment net revenues as it is consistent with how management assesses segment performance.
- Overhead expenses not directly allocable to specific segments are allocated ratably based on direct segment expenses.
- Operating expenses related to corporate charitable contributions, previously not allocated to the segments, have now been allocated. This allocation reflects a change in the manner in which management measures the performance of the firm's segments. As a result of this change, all operating expenses are now allocated to segments. Reclassifications have been made to previously reported segment amounts to conform to the current presentation.
- Total operating expenses included net provisions for litigation and regulatory proceedings of $1.24 billion for 2019, $844 million for 2018 and $188 million for 2017. The net provisions for 2019 and 2018 were primarily reflected in Investment Banking and Global Markets.
- Net earnings included an income tax benefit of $487 million in 2018 and estimated income tax expense of $4.40 billion in 2017 related to Tax Legislation.

The table below presents depreciation and amortization expense by segment.

	Year Ended December		
$ in millions	**2019**	2018	2017
Investment Banking	**$ 139**	$ 114	$ 123
Global Markets	**646**	563	514
Asset Management	**618**	450	365
Consumer & Wealth Management	**301**	201	150
Total	**$1,704**	$1,328	$1,152

Segment Assets

The table below presents assets by segment.

	As of December	
$ in millions	**2019**	2018
Investment Banking	**$ 92,009**	$ 89,451
Global Markets	**725,060**	683,702
Asset Management	**92,102**	85,003
Consumer & Wealth Management	**83,797**	73,640
Total	**$992,968**	$931,796

The table below presents gross loans by segment and loan type.

	As of December	
$ in millions	**2019**	2018
Corporate	**$ 27,035**	$26,375
Investment Banking	**27,035**	26,375
Corporate	**11,852**	11,147
Real estate	**15,671**	14,231
Other	**3,756**	3,636
Global Markets	**31,279**	29,014
Corporate	**7,420**	4,853
Real estate	**9,030**	8,248
Other	**1,036**	1,109
Asset Management	**17,486**	14,210
Wealth Management	**27,940**	24,768
Consumer	**4,747**	4,536
Credit cards	**1,858**	–
Consumer & Wealth Management	**34,545**	29,304
Total	**$110,345**	$98,903

The table below presents the allowance for loan losses by segment.

	As of December	
$ in millions	**2019**	2018
Investment Banking	**$ 470**	$ 355
Global Markets	**168**	138
Asset Management	**385**	254
Consumer & Wealth Management	**418**	319
Total	**$1,441**	$1,066

See Note 9 for further information about loans.

Geographic Information

Due to the highly integrated nature of international financial markets, the firm manages its businesses based on the profitability of the enterprise as a whole. The methodology for allocating profitability to geographic regions is dependent on estimates and management judgment because a significant portion of the firm's activities require cross-border coordination in order to facilitate the needs of the firm's clients. Geographic results are generally allocated as follows:

- Investment Banking: location of the client and investment banking team.
- Global Markets: FICC and Equities intermediation: location of the market-making desk; FICC and Equities financing (excluding prime brokerage financing): location of the desk; prime brokerage financing: location of the primary market for the underlying security.
- Asset Management (excluding Equity investments and lending): location of the sales team; Equity investments: location of the investment; Lending: location of the client.
- Consumer & Wealth Management: Wealth management: location of the sales team; Consumer banking: location of the client.

The table below presents total net revenues, pre-tax earnings and net earnings by geographic region.

$ in millions	**2019**		2018		2017	
Year Ended December						
Americas	**$22,148**	**60%**	$22,339	61%	$19,737	60%
EMEA	**9,745**	**27%**	9,244	25%	8,168	25%
Asia	**4,653**	**13%**	5,033	14%	4,825	15%
Total net revenues	**$36,546**	**100%**	$36,616	100%	$32,730	100%
Americas	**$ 6,623**	**62%**	$ 8,125	65%	$ 7,014	63%
EMEA	**3,349**	**32%**	3,244	26%	2,561	23%
Asia	**611**	**6%**	1,112	9%	1,557	14%
Total pre-tax earnings	**$10,583**	**100%**	$12,481	100%	$11,132	100%
Americas	**$ 5,514**	**65%**	$ 7,092	68%	$ 1,059	25%
EMEA	**2,600**	**31%**	2,522	24%	2,048	48%
Asia	**352**	**4%**	845	8%	1,179	27%
Total net earnings	**$ 8,466**	**100%**	$10,459	100%	$ 4,286	100%

In the table above:

- Americas net earnings included an income tax benefit of $487 million in 2018 and estimated income tax expense of $4.40 billion in 2017 related to Tax Legislation.
- Asia pre-tax earnings and net earnings for 2019 were impacted by net provisions for litigation and regulatory proceedings.
- Charitable contributions, previously not allocated across geographic regions for pre-tax earnings and net earnings, have now been allocated. Reclassifications have been made to previously reported amounts to conform to the current presentation.
- Substantially all of the amounts in Americas were attributable to the U.S.
- Asia includes Australia and New Zealand.

Note 26.

Credit Concentrations

The firm's concentrations of credit risk arise from its market making, client facilitation, investing, underwriting, lending and collateralized transactions, and cash management activities, and may be impacted by changes in economic, industry or political factors. These activities expose the firm to many different industries and counterparties, and may also subject the firm 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 firm seeks to mitigate credit risk by actively monitoring exposures and obtaining collateral from counterparties as deemed appropriate.

The firm measures and monitors its credit exposure based on amounts owed to the firm 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 firm to offset receivables and payables with such counterparties and/or enable the firm to obtain collateral on an upfront or contingent basis.

The table below presents the credit concentrations included in trading cash instruments and investments.

	As of December	
$ in millions	**2019**	2018
U.S. government and agency obligations	**$167,097**	$111,114
Percentage of total assets	**16.8%**	11.9%
Non-U.S. government and agency obligations	**$ 44,875**	$ 43,607
Percentage of total assets	**4.5%**	4.7%

In addition, the firm had $96.97 billion as of December 2019 and $90.47 billion as of December 2018 of cash deposits held at central banks (included in cash and cash equivalents), of which $50.55 billion as of December 2019 and $29.20 billion as of December 2018 was held at the Federal Reserve Bank of New York.

As of both December 2019 and December 2018, the firm did not have credit exposure to any other counterparty that exceeded 2% of total assets.

Collateral obtained by the firm related to derivative assets is principally cash and is held by the firm or a third-party custodian. Collateral obtained by the firm related to resale agreements and securities borrowed transactions is primarily U.S. government and agency obligations and non-U.S. government and agency obligations. See Note 11 for further information about collateralized agreements and financings.

The table below presents U.S. government and agency obligations and non-U.S. government and agency obligations that collateralize resale agreements and securities borrowed transactions.

	As of December	
$ in millions	**2019**	2018
U.S. government and agency obligations	**$49,396**	$78,828
Non-U.S. government and agency obligations	**$55,889**	$76,745

In the table above:

- Non-U.S. government and agency obligations primarily consists of securities issued by the governments of Japan, France, the U.K. and Germany.
- Given that the firm's primary credit exposure on such transactions is to the counterparty to the transaction, the firm would be exposed to the collateral issuer only in the event of counterparty default.

Note 27.

Legal Proceedings

The firm is involved in a number of judicial, regulatory and arbitration proceedings (including those described below) concerning matters arising in connection with the conduct of the firm's businesses. Many of these proceedings are in early stages, and many of these cases seek an indeterminate amount of damages.

Under ASC 450, an event is "reasonably possible" if "the chance of the future event or events occurring is more than remote but less than likely" and an event is "remote" if "the chance of the future event or events occurring is slight." Thus, references to the upper end of the range of reasonably possible loss for cases in which the firm is able to estimate a range of reasonably possible loss mean the upper end of the range of loss for cases for which the firm believes the risk of loss is more than slight.

With respect to matters described below for which management has been able to estimate a range of reasonably possible loss where (i) actual or potential plaintiffs have claimed an amount of money damages, (ii) the firm is being, or threatened to be, sued by purchasers in a securities offering and is not being indemnified by a party that the firm believes will pay the full amount of any judgment, or (iii) the purchasers are demanding that the firm repurchase securities, management has estimated the upper end of the range of reasonably possible loss as being equal to (a) in the case of (i), the amount of money damages claimed, (b) in the case of (ii), the difference between the initial sales price of the securities that the firm sold in such offering and the estimated lowest subsequent price of such securities prior to the action being commenced and (c) in the case of (iii), the price that purchasers paid for the securities less the estimated value, if any, as of December 2019 of the relevant securities, in each of cases (i), (ii) and (iii), taking into account any other factors believed to be relevant to the particular matter or matters of that type. As of the date hereof, the firm has estimated the upper end of the range of reasonably possible aggregate loss for such matters and for any other matters described below where management has been able to estimate a range of reasonably possible aggregate loss to be approximately $3.3 billion in excess of the aggregate reserves for such matters.

Management is generally unable to estimate a range of reasonably possible loss for matters other than those included in the estimate above, 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. For example, the firm's potential liabilities with respect to the investigations and reviews described below in "Regulatory Investigations and Reviews and Related Litigation" generally are not included in management's estimate of reasonably possible loss. However, management does not believe, based on currently available information, that the outcomes of such other matters will have a material adverse effect on the firm's financial condition, though the outcomes could be material to the firm's operating results for any particular period, depending, in part, upon the operating results for such period. See Note 18 for further information about mortgage-related contingencies.

1Malaysia Development Berhad (1MDB)-Related Matters

The firm has received subpoenas and requests for documents and information from various governmental and regulatory bodies and self-regulatory organizations as part of investigations and reviews relating to financing transactions and other matters involving 1MDB, a sovereign wealth fund in Malaysia. Subsidiaries of the firm acted as arrangers or purchasers of approximately $6.5 billion of debt securities of 1MDB.

On November 1, 2018, the U.S. Department of Justice (DOJ) unsealed a criminal information and guilty plea by Tim Leissner, a former participating managing director of the firm, and an indictment against Ng Chong Hwa, a former managing director of the firm, and Low Taek Jho. Leissner pleaded guilty to a two-count criminal information charging him with conspiring to launder money and conspiring to violate the U.S. Foreign Corrupt Practices Act's (FCPA) anti-bribery and internal accounting controls provisions. Low and Ng were charged in a three-count indictment with conspiring to launder money and conspiring to violate the FCPA's anti-bribery provisions. On August 28, 2018, Leissner's guilty plea was accepted by the U.S. District Court for the Eastern District of New York and Leissner was adjudicated guilty on both counts. Ng was also charged in this indictment with conspiring to violate the FCPA's internal accounting controls provisions. The charging documents state, among other things, that Leissner and Ng participated in a conspiracy to misappropriate proceeds of the 1MDB offerings for themselves and to pay bribes to various government officials to obtain and retain 1MDB business for the firm. The plea and charging documents indicate that Leissner and Ng knowingly and willfully circumvented the firm's system of internal accounting controls, in part by repeatedly lying to control personnel and internal committees that reviewed these offerings. The indictment of Ng and Low alleges that the firm's system of internal accounting controls could be easily circumvented and that the firm's business culture, particularly in Southeast Asia, at times prioritized consummation of deals ahead of the proper operation of its compliance functions. On May 6, 2019, Ng pleaded not guilty to the DOJ's criminal charges. On February 4, 2020, the FRB disclosed that Andrea Vella, a former participating managing director whom the DOJ had previously referred to as an unindicted co-conspirator, had agreed, without admitting or denying the FRB's allegations, to a consent order that prohibited him from participating in the banking industry. No other penalties were imposed by the consent order.

On December 17, 2018, the Attorney General of Malaysia filed criminal charges in Malaysia against Goldman Sachs International (GSI), as the arranger of three offerings of debt securities of 1MDB, aggregating approximately $6.5 billion in principal amount, for alleged disclosure deficiencies in the offering documents relating to, among other things, the use of proceeds for the debt securities, as well as against Goldman Sachs (Asia) LLC (GS Asia) and Goldman Sachs (Singapore) PTE (GS Singapore). Criminal charges have also been filed against Leissner, Low, Ng and Jasmine Loo Ai Swan. In a related press release, the Attorney General of Malaysia indicated that prosecutors in Malaysia will seek criminal fines against the accused in excess of $2.7 billion plus the $600 million of fees received in connection with the debt offerings. On August 9, 2019, the Attorney General of Malaysia announced that criminal charges had also been filed against seventeen current and former directors of GSI, GS Asia and GS Singapore.

The Malaysia Securities Commission issued notices to show cause against Goldman Sachs (Malaysia) Sdn Bhd (GS Malaysia) in December 2018 and March 2019 that (i) allege possible violations of Malaysian securities laws and (ii) indicate that the Malaysia Securities Commission is considering whether to revoke GS Malaysia's license to conduct corporate finance and fund management activities in Malaysia.

The firm has received multiple demands, beginning in November 2018, from alleged shareholders under Section 220 of the Delaware General Corporation Law for books and records relating to, among other things, the firm's involvement with 1MDB and the firm's compliance procedures. On December 13, 2019, an alleged shareholder filed a lawsuit in the Court of Chancery of the State of Delaware seeking books and records relating to, among other things, the firm's involvement with 1MDB and the firm's compliance procedures.

On February 19, 2019, a purported shareholder derivative action relating to 1MDB was filed in the U.S. District Court for the Southern District of New York against Group Inc. and the directors at the time and a former chairman and chief executive officer of the firm. The amended complaint filed on July 12, 2019, which seeks unspecified damages, disgorgement and injunctive relief, alleges breaches of fiduciary duties, including in connection with alleged insider trading by certain current and former directors, unjust enrichment and violations of the anti-fraud provisions of the Exchange Act, including in connection with Group Inc.'s common stock repurchases and solicitation of proxies. Defendants moved to dismiss this action on September 12, 2019.

Beginning in March 2019, the firm has also received demands from alleged shareholders to investigate and pursue claims against certain current and former directors and executive officers based on their oversight and public disclosures regarding 1MDB and related internal controls.

On November 21, 2018, a summons with notice was filed in New York Supreme Court, County of New York, by International Petroleum Investment Company, which guaranteed certain debt securities issued by 1MDB, and its subsidiary Aabar Investments PJS. The summons with notice makes unspecified claims relating to 1MDB and seeks unspecified compensatory and punitive damages and other relief against Group Inc., GSI, GS Asia, GS Singapore, GS Malaysia, Leissner, Ng, and Vella, as well as individuals (who are not current or former employees of the firm) previously associated with the plaintiffs.

On December 20, 2018, a putative securities class action lawsuit was filed in the U.S. District Court for the Southern District of New York against Group Inc. and certain former officers of the firm alleging violations of the anti-fraud provisions of the Exchange Act with respect to Group Inc.'s disclosures concerning 1MDB and seeking unspecified damages. The plaintiffs filed the second amended complaint on October 28, 2019, which the defendants moved to dismiss on January 9, 2020.

The firm is cooperating with the DOJ and all other governmental and regulatory investigations relating to 1MDB. The firm is also engaged in discussions with certain governmental and regulatory authorities with respect to potential resolution of their investigations and proceedings. There can be no assurance that the discussions will lead to resolution of any of those matters. Any such resolution, as well as proceedings by the DOJ or other governmental or regulatory authorities, could result in the imposition of significant fines, penalties and other sanctions against the firm, including restrictions on the firm's activities.

Mortgage-Related Matters

Beginning in April 2010, a number of purported securities law class actions were filed in the U.S. District Court for the Southern District of New York challenging the adequacy of Group Inc.'s public disclosure of, among other things, the firm's activities in the collateralized debt obligation market, and the firm's conflict of interest management.

The consolidated amended complaint filed on July 25, 2011, which names as defendants Group Inc. and certain current and former officers and employees of Group Inc. and its affiliates, generally alleges violations of Sections 10(b) and 20(a) of the Exchange Act and seeks unspecified damages. The defendants have moved for summary judgment. On December 11, 2018, the Second Circuit Court of Appeals granted the defendants' petition for interlocutory review of the district court's August 14, 2018 grant of class certification. On January 23, 2019, the district court stayed proceedings pending the appellate court's decision.

Beginning on February 15, 2019, a summons with notice and a complaint were filed against Goldman Sachs Mortgage Company and GS Mortgage Securities Corp. by U.S. Bank National Association, as trustee for two residential mortgage-backed securitization trusts that issued $1.7 billion of securities, and the cases are pending in the U.S. District Court for the Southern District of New York. The summons with notice and complaint generally allege that mortgage loans in the trusts failed to conform to applicable representations and warranties and seek specific performance or, alternatively, compensatory damages and other relief. Defendants moved to dismiss the complaint on September 23, 2019.

The firm continues to receive requests for information, including from certain regulators, relating to mortgage-related activities.

Director Compensation-Related Litigation

On May 9, 2017, Group Inc. and certain of its current and former directors were named as defendants in a purported direct and derivative shareholder action in the Court of Chancery of the State of Delaware (a similar purported derivative action, filed in June 2015, alleging excessive director compensation over the period 2012 to 2014 was voluntarily dismissed without prejudice in December 2016). The complaint alleges that excessive compensation has been paid to the non-employee director defendants since 2015, and that certain disclosures in connection with soliciting shareholder approval of the stock incentive plans were deficient. The complaint asserts claims for breaches of fiduciary duties and seeks, among other things, rescission or in some cases rescissory damages, disgorgement, and shareholder votes on several matters. On October 23, 2018, the court declined to approve the parties' proposed settlement. On May 31, 2019, the court dismissed the disclosure-related claims, but permitted the non-employee director compensation claim to proceed.

Currencies-Related Litigation

GS&Co. and Group Inc. are among the defendants named in putative class actions filed in the U.S. District Court for the Southern District of New York beginning in September 2016 on behalf of putative indirect purchasers of foreign exchange instruments. On August 5, 2019, the plaintiffs filed a third consolidated amended complaint generally alleging a conspiracy to manipulate the foreign currency exchange markets, asserting claims under various state antitrust laws and state consumer protection laws and seeking treble damages in an unspecified amount.

GS&Co. and Group Inc. are among the defendants named in an action filed in the U.S. District Court for the Southern District of New York on November 7, 2018 by certain direct purchasers of foreign exchange instruments that opted out of a class settlement reached with, among others, GS&Co. and Group Inc. The second amended complaint, filed on June 11, 2019, generally alleges that the defendants violated federal antitrust law and state common law in connection with an alleged conspiracy to manipulate the foreign currency exchange markets and seeks declaratory and injunctive relief, as well as unspecified amounts of compensatory, punitive, treble and other damages. Defendants moved to dismiss on July 25, 2019.

Financial Advisory Services

Group Inc. and certain of its affiliates are from time to time parties to various civil litigation and arbitration proceedings and other disputes with clients and third parties relating to the firm's financial advisory activities. These claims generally seek, among other things, compensatory damages and, in some cases, punitive damages, and in certain cases allege that the firm did not appropriately disclose or deal with conflicts of interest.

Underwriting Litigation

Firm affiliates are among the defendants in a number of proceedings in connection with securities offerings. In these proceedings, including those described below, the plaintiffs assert class action or individual claims under federal and state securities laws and in some cases other applicable laws, allege that the offering documents for the securities that they purchased contained material misstatements and omissions, and generally seek compensatory and rescissory damages in unspecified amounts. Certain of these proceedings involve additional allegations.

Adeptus Health Inc. GS&Co. is among the underwriters named as defendants in several putative securities class actions, filed beginning in October 2016 and consolidated in the U.S. District Court for the Eastern District of Texas. In addition to the underwriters, the defendants include certain former directors and officers of Adeptus Health Inc. (Adeptus), as well as Adeptus' sponsor. As to the underwriters, the consolidated complaint, filed on November 21, 2017, relates to the $124 million June 2014 initial public offering, the $154 million May 2015 secondary equity offering, the $411 million July 2015 secondary equity offering, and the $175 million June 2016 secondary equity offering. GS&Co. underwrote 1.69 million shares of common stock in the June 2014 initial public offering representing an aggregate offering price of approximately $37 million, 962,378 shares of common stock in the May 2015 offering representing an aggregate offering price of approximately $61 million, 1.76 million shares of common stock in the July 2015 offering representing an aggregate offering price of approximately $185 million, and all the shares of common stock in the June 2016 offering representing an aggregate offering price of approximately $175 million. On April 19, 2017, Adeptus filed for Chapter 11 bankruptcy. On January 9, 2020, the court preliminarily approved a settlement among the parties. The firm has reserved the full amount of its proposed contribution to the settlement.

SunEdison, Inc. GS&Co. is among the underwriters named as defendants in several putative class actions and individual actions filed beginning in March 2016 relating to the August 2015 public offering of $650 million of SunEdison, Inc. (SunEdison) convertible preferred stock. The defendants also include certain of SunEdison's directors and officers. On April 21, 2016, SunEdison filed for Chapter 11 bankruptcy. The pending cases were transferred to the U.S. District Court for the Southern District of New York and on March 17, 2017, plaintiffs in the putative class action filed a consolidated amended complaint. GS&Co., as underwriter, sold 138,890 shares of SunEdison convertible preferred stock in the offering, representing an aggregate offering price of approximately $139 million. On April 10, 2018 and April 17, 2018, certain plaintiffs in the individual actions filed amended complaints. The defendants have reached a settlement with certain plaintiffs in the individual actions and a settlement of the class action, which the court approved on October 25, 2019. The firm has paid the full amount of its contribution to the settlement. Defendants moved to dismiss the remaining individual actions on December 18, 2019.

Valeant Pharmaceuticals International, Inc. GS&Co. and Goldman Sachs Canada Inc. (GS Canada) are among the underwriters and initial purchasers named as defendants in a putative class action filed on March 2, 2016 in the Superior Court of Quebec, Canada. In addition to the underwriters and initial purchasers, the defendants include Valeant Pharmaceuticals International, Inc. (Valeant), certain directors and officers of Valeant and Valeant's auditor. As to GS&Co. and GS Canada, the complaint relates to the June 2013 public offering of $2.3 billion of common stock, the June 2013 Rule 144A offering of $3.2 billion principal amount of senior notes, and the November 2013 Rule 144A offering of $900 million principal amount of senior notes. The complaint asserts claims under the Quebec Securities Act and the Civil Code of Quebec. On August 29, 2017, the court certified a class that includes only non-U.S. purchasers in the offerings. Defendants' motion for leave to appeal the certification was denied on November 30, 2017.

GS&Co. and GS Canada, as sole underwriters, sold 5,334,897 shares of common stock in the June 2013 offering to non-U.S. purchasers representing an aggregate offering price of approximately $453 million and, as initial purchasers, had a proportional share of sales to non-U.S. purchasers of approximately CAD14.2 million in principal amount of senior notes in the June 2013 and November 2013 Rule 144A offerings.

Snap Inc. GS&Co. is among the underwriters named as defendants in putative securities class actions pending in California Superior Court, County of Los Angeles and the U.S. District Court for the Central District of California beginning in May 2017, relating to Snap Inc.'s $3.91 billion March 2017 initial public offering. In addition to the underwriters, the defendants include Snap Inc. and certain of its officers and directors. GS&Co. underwrote 57,040,000 shares of common stock representing an aggregate offering price of approximately $970 million. The underwriter defendants, including GS&Co., were voluntarily dismissed from the district court action on September 18, 2018. In the district court action, defendants moved for summary judgment on December 19, 2019, following the court's November 20, 2019 order approving plaintiffs' motion for class certification. The state court actions have been stayed. On January 17, 2020, the parties to the federal action reached a settlement in principle, subject to documentation and court approval.

Sea Limited. GS Asia is among the underwriters named as defendants in a putative securities class action filed on November 1, 2018 in New York Supreme Court, County of New York, relating to Sea Limited's $989 million October 2017 initial public offering of American depositary shares. In addition to the underwriters, the defendants include Sea Limited and certain of its officers and directors. GS Asia underwrote 28,026,721 American depositary shares representing an aggregate offering price of approximately $420 million. On January 25, 2019, the plaintiffs filed an amended complaint. Defendants moved to dismiss on March 26, 2019.

Altice USA, Inc. GS&Co. is among the underwriters named as defendants in putative securities class actions pending in New York Supreme Court, County of Queens and the U.S. District Court for the Eastern District of New York beginning in June 2018, relating to Altice USA, Inc.'s (Altice) $2.15 billion June 2017 initial public offering. In addition to the underwriters, the defendants include Altice and certain of its officers and directors. GS&Co. underwrote 12,280,042 shares of common stock representing an aggregate offering price of approximately $368 million. On May 10, 2019, plaintiffs in the district court filed an amended complaint, and on June 27, 2019, plaintiffs in the state court action filed a consolidated amended complaint. On July 23, 2019, defendants moved to dismiss the amended complaint in the state court action. On October 14, 2019, defendants moved to dismiss the complaint in the district court action.

Camping World Holdings, Inc. GS&Co. is among the underwriters named as defendants in several putative securities class actions pending in the U.S. District Court for the Northern District of Illinois, New York Supreme Court, County of New York, and the Circuit Court of Cook County, Illinois, Chancery Division, beginning in December 2018. In addition to the underwriters, the defendants include Camping World Holdings, Inc. (Camping World) and certain of its officers and directors, as well as certain of its stockholders. As to the underwriters, the complaints relate to three offerings of Camping World common stock, a $261 million October 2016 initial public offering, a $303 million May 2017 offering and a $310 million October 2017 offering. GS&Co. underwrote 4,267,214 shares of common stock in the October 2016 initial public offering representing an aggregate offering price of approximately $94 million, 4,557,286 shares of common stock in the May 2017 offering representing an aggregate offering price of approximately $126 million and 3,525,348 shares of common stock in the October 2017 offering representing an aggregate offering price of approximately $143 million. GS&Co. and the other defendants moved to dismiss the New York state court action on February 28, 2019, the Illinois state court action on April 19, 2019 and the Illinois district court action on May 17, 2019. The Illinois state court action has been stayed pending resolution of the motions to dismiss in the Illinois district court action.

Alnylam Pharmaceuticals, Inc. GS&Co. is among the underwriters named as defendants in a putative securities class action filed on September 12, 2019 in New York Supreme Court, County of New York, relating to Alnylam Pharmaceuticals, Inc.'s (Alnylam) $805 million November 2017 public offering of common stock. In addition to the underwriters, the defendants include Alnylam and certain of its officers and directors. GS&Co. underwrote 2,576,000 shares of common stock representing an aggregate offering price of approximately $322 million. On December 20, 2019, defendants moved to dismiss the amended complaint filed on November 7, 2019.

Uber Technologies, Inc. GS&Co. is among the underwriters named as defendants in several putative securities class actions filed beginning in September 2019 in California Superior Court, County of San Francisco and the U.S. District Court for the Northern District of California, relating to Uber Technologies, Inc.'s (Uber) $8.1 billion May 2019 initial public offering. In addition to the underwriters, the defendants include Uber and certain of its officers and directors. GS&Co. underwrote 35,864,408 shares of common stock representing an aggregate offering price of approximately $1.6 billion. On January 30, 2020, plaintiffs in the state court action filed a consolidated amended complaint.

Venator Materials PLC. GS&Co. is among the underwriters named as defendants in putative securities class actions in Texas District Court, Dallas County, and the U.S. District Court for the Southern District of Texas, filed beginning in February 2019, relating to Venator Materials PLC's (Venator) $522 million August 2017 initial public offering and $534 million December 2017 secondary equity offering. In addition to the underwriters, the defendants include Venator, certain of its officers and directors and certain of its shareholders. GS&Co. underwrote 6,351,347 shares of common stock in the August 2017 initial public offering representing an aggregate offering price of approximately $127 million and 5,625,768 shares of common stock in the December 2017 secondary equity offering representing an aggregate offering price of approximately $127 million. On January 21, 2020, the Texas Court of Appeals reversed the Texas District Court and dismissed the claims against the underwriter defendants, including GS&Co., in the state court action for lack of personal jurisdiction. On February 18, 2020, defendants moved to dismiss the consolidated complaint in the federal action.

Investment Management Services

Group Inc. and certain of its affiliates are parties to various civil litigation and arbitration proceedings and other disputes with clients relating to losses allegedly sustained as a result of the firm's investment management services. These claims generally seek, among other things, restitution or other compensatory damages and, in some cases, punitive damages.

Securities Lending Antitrust Litigation

Group Inc. and GS&Co. are among the defendants named in a putative antitrust class action and three individual actions relating to securities lending practices filed in the U.S. District Court for the Southern District of New York beginning in August 2017. The complaints generally assert claims under federal and state antitrust law and state common law in connection with an alleged conspiracy among the defendants to preclude the development of electronic platforms for securities lending transactions. The individual complaints also assert claims for tortious interference with business relations and under state trade practices law and, in the second and third individual actions, unjust enrichment under state common law. The complaints seek declaratory and injunctive relief, as well as unspecified amounts of compensatory, treble, punitive and other damages. Group Inc. was voluntarily dismissed from the putative class action on January 26, 2018. Defendants' motion to dismiss the class action complaint was denied on September 27, 2018. Defendants moved to dismiss the second individual action on December 21, 2018. Defendants' motion to dismiss the first individual action was granted on August 7, 2019.

Interest Rate Swap Antitrust Litigation

Group Inc., GS&Co., GSI, GS Bank USA and Goldman Sachs Financial Markets, L.P. (GSFM) are among the defendants named in a putative antitrust class action relating to the trading of interest rate swaps, filed in November 2015 and consolidated in the U.S. District Court for the Southern District of New York. The same Goldman Sachs entities also are among the defendants named in two antitrust actions relating to the trading of interest rate swaps, commenced in April 2016 and June 2018, respectively, in the U.S. District Court for the Southern District of New York by three operators of swap execution facilities and certain of their affiliates. These actions have been consolidated for pretrial proceedings. The complaints generally assert claims under federal antitrust law and state common law in connection with an alleged conspiracy among the defendants to preclude exchange trading of interest rate swaps. The complaints in the individual actions also assert claims under state antitrust law. The complaints seek declaratory and injunctive relief, as well as treble damages in an unspecified amount. Defendants moved to dismiss the class and the first individual action and the district court dismissed the state common law claims asserted by the plaintiffs in the first individual action and otherwise limited the state common law claim in the putative class action and the antitrust claims in both actions to the period from 2013 to 2016. On November 20, 2018, the court granted in part and denied in part the defendants' motion to dismiss the second individual action, dismissing the state common law claims for unjust enrichment and tortious interference, but denying dismissal of the federal and state antitrust claims. On March 13, 2019, the court denied the plaintiffs' motion in the putative class action to amend their complaint to add allegations related to 2008-2012 conduct, but granted the motion to add limited allegations from 2013-2016, which the plaintiffs added in a fourth consolidated amended complaint filed on March 22, 2019. The plaintiffs in the putative class action moved for class certification on March 7, 2019.

GSE Bonds Antitrust Litigation

GS&Co. is among the dealers named as defendants in numerous putative antitrust class actions relating to debt securities issued by Federal National Mortgage Association, Federal Home Loan Mortgage Corporation, Federal Farm Credit Banks Funding Corporation and Federal Home Loan Banks (collectively, the GSEs), filed beginning in February 2019 and consolidated in the U.S. District Court for the Southern District of New York. The third consolidated amended complaint, filed on September 10, 2019, asserts claims under federal antitrust law in connection with an alleged conspiracy among the defendants to manipulate the secondary market for debt securities issued by the GSEs. The complaint seeks declaratory and injunctive relief, as well as treble damages in unspecified amounts. On December 12, 2019, the court preliminarily approved a settlement between the firm and class plaintiffs. The firm has reserved the full amount of its contribution to the settlement. Beginning in September 2019, the State of Louisiana and the City of Baton Rouge filed complaints in the U.S. District Court for the Middle District of Louisiana against the class defendants and a number of dealers alleging the same claims as in the class action. In January 2020, the State of Louisiana and City of Baton Rouge voluntarily dismissed their actions with prejudice against GS&Co. in favor of participating in the class settlement.

Variable Rate Demand Obligations Antitrust Litigation

GS&Co. is among the defendants named in a putative class action relating to variable rate demand obligations (VRDOs), filed beginning in February 2019 under separate complaints and consolidated in the U.S. District Court for the Southern District of New York. The consolidated amended complaint, filed on May 31, 2019, generally asserts claims under federal antitrust law and state common law in connection with an alleged conspiracy among the defendants to manipulate the market for VRDOs. The complaint seeks declaratory and injunctive relief, as well as unspecified amounts of compensatory, treble and other damages. Defendants moved to dismiss on July 30, 2019.

Commodities-Related Litigation

GSI is among the defendants named in putative class actions relating to trading in platinum and palladium, filed beginning on November 25, 2014 and most recently amended on May 15, 2017, in the U.S. District Court for the Southern District of New York. The amended complaint generally alleges that the defendants violated federal antitrust laws and the Commodity Exchange Act in connection with an alleged conspiracy to manipulate a benchmark for physical platinum and palladium prices and seek declaratory and injunctive relief, as well as treble damages in an unspecified amount. Defendants moved to dismiss the third consolidated amended complaint on July 21, 2017.

GS&Co., GSI, J. Aron & Company and Metro, a previously consolidated subsidiary of Group Inc. that was sold in the fourth quarter of 2014, are among the defendants in a number of putative class and individual actions filed beginning on August 1, 2013 and consolidated in the U.S. District Court for the Southern District of New York. The complaints generally allege violations of federal antitrust laws and state laws in connection with the storage of aluminum and aluminum trading. The complaints seek declaratory, injunctive and other equitable relief, as well as unspecified monetary damages, including treble damages. In December 2016, the district court granted defendants' motions to dismiss as to all remaining claims. Certain plaintiffs subsequently appealed in December 2016. On August 27, 2019, the Second Circuit vacated the district court's dismissals and remanded the case to district court for further proceedings.

U.S. Treasury Securities Litigation

GS&Co. is among the primary dealers named as defendants in several putative class actions relating to the market for U.S. Treasury securities, filed beginning in July 2015 and consolidated in the U.S. District Court for the Southern District of New York. GS&Co. is also among the primary dealers named as defendants in a similar individual action filed in the U.S. District Court for the Southern District of New York on August 25, 2017. The consolidated class action complaint, filed on December 29, 2017, generally alleges that the defendants violated antitrust laws in connection with an alleged conspiracy to manipulate the when-issued market and auctions for U.S. Treasury securities and that certain defendants, including GS&Co., colluded to preclude trading of U.S. Treasury securities on electronic trading platforms in order to impede competition in the bidding process. The individual action alleges a similar conspiracy regarding manipulation of the when-issued market and auctions, as well as related futures and options in violation of the Commodity Exchange Act. The complaints seek declaratory and injunctive relief, treble damages in an unspecified amount and restitution. Defendants moved to dismiss on February 23, 2018.

Employment-Related Matters

On September 15, 2010, a putative class action was filed in the U.S. District Court for the Southern District of New York by three female former employees. The complaint, as subsequently amended, alleges that Group Inc. and GS&Co. have systematically discriminated against female employees in respect of compensation, promotion and performance evaluations. The complaint alleges a class consisting of all female employees employed at specified levels in specified areas by Group Inc. and GS&Co. since July 2002, and asserts claims under federal and New York City discrimination laws. The complaint seeks class action status, injunctive relief and unspecified amounts of compensatory, punitive and other damages.

On March 30, 2018, the district court certified a damages class as to the plaintiffs' disparate impact and treatment claims. On September 4, 2018, the Second Circuit Court of Appeals denied defendants' petition for interlocutory review of the district court's class certification decision and subsequently denied defendants' petition for rehearing. On September 27, 2018, plaintiffs advised the district court that they would not seek to certify a class for injunctive and declaratory relief. On April 12, 2019, Group Inc. and GS&Co. filed a motion to compel arbitration as to certain class members who are parties to agreements with Group Inc. and/or GS&Co. in which they agreed to arbitrate employment-related disputes, and plaintiffs filed a motion challenging the enforceability of arbitration agreements executed after the filing of the class action.

Regulatory Investigations and Reviews and Related Litigation

Group Inc. and certain of its affiliates are subject to a number of other 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 and shareholder requests relating to various matters relating to the firm's businesses and operations, including:

- The public offering process;
- The firm's investment management and financial advisory services;
- Conflicts of interest;
- Research practices, including research independence and interactions between research analysts and other firm personnel, including investment banking personnel, as well as third parties;
- Transactions involving government-related financings and other matters, municipal securities, including wall-cross procedures and conflict of interest disclosure with respect to state and municipal clients, the trading and structuring of municipal derivative instruments in connection with municipal offerings, political contribution rules, municipal advisory services and the possible impact of credit default swap transactions on municipal issuers;
- The offering, auction, sales, trading and clearance of corporate and government securities, currencies, commodities and other financial products and related sales and other communications and activities, as well as the firm's supervision and controls relating to such activities, including compliance with applicable short sale rules, algorithmic, high-frequency and quantitative trading, the firm's U.S. alternative trading system (dark pool), futures trading, options trading, when-issued trading, transaction reporting, technology systems and controls, securities lending practices, trading and clearance of credit derivative instruments and interest rate swaps, commodities activities and metals storage, private placement practices, allocations of and trading in securities, and trading activities and communications in connection with the establishment of benchmark rates, such as currency rates;
- Compliance with the FCPA;
- The firm's hiring and compensation practices;
- The firm's system of risk management and controls; and
- Insider trading, the potential misuse and dissemination of material nonpublic information regarding corporate and governmental developments and the effectiveness of the firm's insider trading controls and information barriers.

The firm is cooperating with all such governmental and regulatory investigations and reviews.

Note 28.

Employee Benefit Plans

The firm sponsors various pension plans and certain other postretirement benefit plans, primarily healthcare and life insurance. The firm also provides certain benefits to former or inactive employees prior to retirement.

Defined Benefit Pension Plans and Postretirement Plans

Employees of certain non-U.S. subsidiaries participate in various defined benefit pension plans. These plans generally provide benefits based on years of credited service and a percentage of eligible compensation. The firm maintains a defined benefit pension plan for certain U.K. employees. As of April 2008, the U.K. defined benefit plan was closed to new participants and frozen for existing participants as of March 31, 2016. The non-U.S. plans do not have a material impact on the firm's consolidated results of operations.

The firm also 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. In addition, the firm maintains unfunded postretirement benefit plans that provide medical and life insurance for eligible retirees and their dependents covered under these programs. These plans do not have a material impact on the firm's consolidated results of operations.

The firm recognizes the funded status of its defined benefit pension and postretirement plans, measured as the difference between the fair value of the plan assets and the benefit obligation, in the consolidated balance sheets. As of December 2019, other assets included $257 million (related to overfunded pension plans) and other liabilities included $415 million, related to these plans. As of December 2018, other assets included $462 million (related to overfunded pension plans) and other liabilities included $344 million, related to these plans.

Defined Contribution Plans

The firm contributes to employer-sponsored U.S. and non-U.S. defined contribution plans. The firm's contribution to these plans was $254 million for 2019, $240 million for 2018 and $257 million for 2017.

Note 29.

Employee Incentive Plans

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. Forfeitures are recorded when they occur.

Cash dividend equivalents paid on RSUs are charged to retained earnings. If RSUs that require future service are forfeited, the related dividend equivalents originally charged to retained earnings are reclassified to compensation expense in the period in which forfeiture occurs.

The firm generally issues new shares of common stock upon delivery of share-based awards. In certain cases, primarily related to conflicted employment (as outlined in the applicable award agreements), the firm may cash settle share-based compensation awards accounted for as equity instruments. For these awards, whose terms allow for cash settlement, additional paid-in capital is adjusted to the extent of the difference between the value of the award at the time of cash settlement and the grant-date value of the award.

Stock Incentive Plan

The firm 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, 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) (2013 SIP).

As of December 2019, 60.6 million shares were available for grant under the 2018 SIP. If any shares of common stock underlying awards granted under the 2018 SIP, 2015 SIP or 2013 SIP are not delivered due to forfeiture, termination or cancellation or are surrendered or withheld, those shares will become available to be delivered under the 2018 SIP. Shares available for grant are also subject to adjustment for certain changes in corporate structure as permitted under the 2018 SIP. The 2018 SIP is scheduled to terminate on the date of the annual meeting of shareholders that occurs in 2022.

Restricted Stock Units

The firm 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 table below presents the 2019 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	3,761,839	13,328,995	$217.85	$187.27
Granted	**4,770,662**	**7,307,148**	**$178.76**	**$176.54**
Forfeited	**(468,754)**	**(265,510)**	**$196.13**	**$184.36**
Delivered	**–**	**(9,222,049)**	**$ –**	**$175.54**
Vested	**(3,550,271)**	**3,550,271**	**$195.09**	**$195.09**
Ending balance	**4,513,476**	**14,698,855**	**$196.69**	**$191.25**

In the table above:

- The weighted average grant-date fair value of RSUs granted was $177.42 during 2019, $218.06 during 2018 and $206.88 during 2017. The fair value of the RSUs granted included a liquidity discount of 10.5% during 2019, 11.9% during 2018 and 10.7% 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 $2.00 billion during 2019, $1.79 billion during 2018 and $2.14 billion during 2017.
- The ending balance included restricted stock subject to future service requirements of 23,068 shares as of December 2019 and 1,649 shares as of December 2018.
- The ending balance included RSUs subject to performance conditions and future service requirements of 224,898 RSUs as of December 2019, and represents the maximum amount of such RSUs that may be earned as of December 2019.
- The ending balance also included RSUs subject to performance conditions but not subject to future service requirements of 268,433 RSUs as of December 2019 and 174,579 RSUs as of December 2018, and the maximum amount of such RSUs that may be earned was 402,650 RSUs as of December 2019 and 261,869 RSUs as of December 2018.

In relation to 2019 year-end, during the first quarter of 2020, the firm granted to its employees 8.3 million RSUs, of which 2.9 million 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 2025. These grants are not included in the table above.

As of December 2019, there was $467 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 1.79 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 2019 and December 2018.

During 2019, no options were exercised. During 2018, 2.10 million options were exercised with a weighted average exercise price of $78.78. The total intrinsic value of options exercised was $288 million during 2018 and $589 million during 2017.

The table below presents the share-based compensation and the related excess tax benefit.

	Year Ended December		
$ in millions	**2019**	2018	2017
Share-based compensation	**$2,120**	$1,850	$1,812
Excess net tax benefit for options exercised	**$ –**	$ 64	$ 139
Excess net tax benefit for share-based awards	**$ 63**	$ 269	$ 719

In the table above, excess net tax benefit for share-based awards includes the net tax benefit on dividend equivalents paid on RSUs and the delivery of common stock underlying share-based awards, as well as the excess net tax benefit for options exercised.

Note 30.

Parent Company

Group Inc. – Condensed Statements of Earnings

	Year Ended December		
$ in millions	**2019**	2018	2017
Revenues			
Dividends from subsidiaries and other affiliates:			
Bank	**$ 63**	$ 102	$ 550
Nonbank	**4,199**	16,368	11,016
Other revenues	**335**	(1,376)	(384)
Total non-interest revenues	**4,597**	15,094	11,182
Interest income	**7,575**	6,617	4,638
Interest expense	**8,545**	8,114	5,978
Net interest loss	**(970)**	(1,497)	(1,340)
Total net revenues	**3,627**	13,597	9,842
Operating expenses			
Compensation and benefits	**331**	299	330
Other expenses	**1,365**	1,192	428
Total operating expenses	**1,696**	1,491	758
Pre-tax earnings	**1,931**	12,106	9,084
Provision/(benefit) for taxes	**(538)**	(1,173)	3,404
Undistributed earnings/(loss) of subsidiaries and other affiliates	**5,997**	(2,820)	(1,394)
Net earnings	**8,466**	10,459	4,286
Preferred stock dividends	**569**	599	601
Net earnings applicable to common shareholders	**$7,897**	$ 9,860	$ 3,685

Supplemental Disclosures:

In the condensed statements of earnings above, revenues and expenses included the following with subsidiaries and other affiliates:

- Dividends from bank subsidiaries included cash dividends of $60 million for 2019, $76 million for 2018 and $525 million for 2017.
- Dividends from nonbank subsidiaries and other affiliates included cash dividends of $4.18 billion for 2019, $10.78 billion for 2018 and $7.98 billion for 2017.
- Other revenues included $1.29 billion for 2019, $(1.69) billion for 2018 and $661 million for 2017.
- Interest income included $7.26 billion for 2019, $6.33 billion for 2018 and $4.65 billion for 2017.
- Interest expense included $3.15 billion for 2019, $2.39 billion for 2018 and $1.05 billion for 2017.
- Other expenses included $138 million for 2019, $159 million for 2018 and $45 million for 2017.

Group Inc.'s other comprehensive income/(loss) was $(2.18) billion for 2019, $2.57 billion for 2018 and $(664) million for 2017.

In February 2020, GS&Co. made a cash dividend distribution of $4.00 billion to Group Inc.

Group Inc. – Condensed Balance Sheets

	As of December	
$ in millions	**2019**	2018
Assets		
Cash and cash equivalents:		
With third-party banks	**$ 33**	$ 103
With subsidiary bank	**7**	–
Loans to and receivables from subsidiaries:		
Bank	**2,398**	1,019
Nonbank (includes **$6,460** and $5,461 at fair value)	**239,241**	225,471
Investments in subsidiaries and other affiliates:		
Bank	**30,376**	28,737
Nonbank	**65,301**	61,481
Trading assets (at fair value)	**691**	717
Investments (includes **$16,930** and $12,824 at fair value)	**20,499**	12,824
Other assets	**4,262**	3,653
Total assets	**$362,808**	$334,005
Liabilities and shareholders' equity		
Payables to subsidiaries	**$ 640**	$ 702
Trading liabilities (at fair value)	**417**	281
Secured borrowings with subsidiary	**42,083**	6,899
Unsecured short-term borrowings:		
With third parties (includes **$4,751** and $2,615 at fair value)	**25,635**	25,060
With subsidiaries	**917**	659
Unsecured long-term borrowings:		
With third parties (includes **$15,611** and $16,395 at fair value)	**168,602**	183,121
With subsidiaries	**28,576**	23,343
Other liabilities	**5,673**	3,755
Total liabilities	**272,543**	243,820
Commitments, contingencies and guarantees		
Shareholders' equity		
Preferred stock	**11,203**	11,203
Common stock	**9**	9
Share-based awards	**3,195**	2,845
Additional paid-in capital	**54,883**	54,005
Retained earnings	**106,465**	100,100
Accumulated other comprehensive income/(loss)	**(1,484)**	693
Stock held in treasury, at cost	**(84,006)**	(78,670)
Total shareholders' equity	**90,265**	90,185
Total liabilities and shareholders' equity	**$362,808**	$334,005

Supplemental Disclosures:

Goldman Sachs Funding LLC (Funding IHC), a wholly-owned, direct subsidiary of Group Inc., has provided Group Inc. with a committed line of credit that allows Group Inc. to draw sufficient funds to meet its cash needs in the ordinary course of business.

Trading assets included derivative contracts with subsidiaries of $584 million for December 2019 and $683 million as of December 2018.

Trading liabilities included derivative contracts with subsidiaries of $365 million as of December 2019 and $280 million as of December 2018.

As of December 2019, unsecured long-term borrowings with subsidiaries by maturity date are $26.87 billion in 2021, $311 million in 2022, $107 million in 2023, $154 million in 2024 and $1.13 billion in 2025-thereafter.

Group Inc. – Condensed Statements of Cash Flows

	Year Ended December		
$ in millions	**2019**	2018	2017
Cash flows from operating activities			
Net earnings	**$ 8,466**	$ 10,459	$ 4,286
Adjustments to reconcile net earnings to net cash provided by operating activities:			
Undistributed (earnings)/loss of subsidiaries and other affiliates	**(5,997)**	2,820	1,394
Depreciation and amortization	**26**	51	56
Deferred income taxes	**(210)**	(2,817)	4,358
Share-based compensation	**118**	105	152
Gain related to extinguishment of unsecured borrowings	**(20)**	(160)	(114)
Changes in operating assets and liabilities:			
Trading assets	**5,145**	(1,431)	(508)
Trading liabilities	**136**	27	(521)
Other, net	**(1,131)**	1,639	(1,154)
Net cash provided by operating activities	**6,533**	10,693	7,949
Cash flows from investing activities			
Purchase of property, leasehold improvements and equipment	**(34)**	(63)	(66)
Repayments/(issuances) of short-term loans to subsidiaries, net	**2,079**	10,829	(14,415)
Issuance of term loans to subsidiaries	**(7,374)**	(30,336)	(42,234)
Repayments of term loans by subsidiaries	**1,894**	25,956	22,039
Purchase of investments	**(16,776)**	(3,141)	(6,491)
Proceeds from sales and paydowns of investments	**9,768**	–	596
Capital distributions from/(contributions to) subsidiaries, net	**(415)**	1,807	388
Net cash provided by/(used for) investing activities	**(10,858)**	5,052	(40,183)
Cash flows from financing activities			
Secured borrowings with subsidiary (short-term), net	**26,398**	(12,853)	16,035
Unsecured short-term borrowings, net:			
With third parties	**(22)**	(1,541)	(424)
With subsidiaries	**4,649**	11,855	7,043
Proceeds from issuance of unsecured long-term borrowings	**8,804**	26,157	43,917
Repayment of unsecured long-term borrowings, including the current portion	**(27,172)**	(32,429)	(27,028)
Purchase of Trust Preferred securities	**(206)**	(35)	(237)
Preferred stock redemption	**(1,100)**	(650)	(850)
Common stock repurchased	**(5,335)**	(3,294)	(6,772)
Settlement of share-based awards in satisfaction of withholding tax requirements	**(745)**	(1,118)	(2,223)
Dividends and dividend equivalents paid on common stock, preferred stock and share-based awards	**(2,104)**	(1,810)	(1,769)
Proceeds from issuance of preferred stock, net of issuance costs	**1,098**	–	1,495
Proceeds from issuance of common stock, including exercise of share-based awards	**–**	38	7
Cash settlement of share-based awards	**–**	–	(3)
Other financing, net	**(3)**	–	–
Net cash provided by/(used for) financing activities	**4,262**	(15,680)	29,191
Net increase/(decrease) in cash and cash equivalents	**(63)**	65	(3,043)
Cash and cash equivalents, beginning balance	**103**	38	3,081
Cash and cash equivalents, ending balance	**$ 40**	$ 103	$ 38

Supplemental Disclosures:

Cash payments for interest, net of capitalized interest, were $9.53 billion for 2019, $9.83 billion for 2018 and $6.31 billion for 2017, and included $3.01 billion for 2019, $3.05 billion for 2018 and $160 million for 2017 of payments to subsidiaries.

Cash payments/(refunds) for income taxes, net, were $272 million for 2019, $(98) million for 2018 and $297 million for 2017.

Cash flows related to common stock repurchased includes common stock repurchased in the prior period for which settlement occurred during the current period and excludes common stock repurchased during the current period for which settlement occurred in the following period.

Non-cash activities during the year ended December 2019:

- Group Inc. acquired $8.50 billion of deposits with GS Bank USA from Funding IHC in exchange for borrowings.
- Group Inc. exchanged $211 million of Trust Preferred securities and common beneficial interests for $231 million of certain of the Group Inc.'s junior subordinated debt.

Non-cash activities during the year ended December 2018:

- Group Inc. restructured funding for Goldman Sachs Group UK Limited and Goldman Sachs International, both wholly-owned subsidiaries of Group Inc., which resulted in a net increase in loans to subsidiaries of $5.71 billion and a decrease in equity interest of $5.71 billion.
- Group Inc. exchanged $150 million of liabilities and $46 million of related deferred tax assets for $104 million of equity interest in GS&Co., a wholly-owned subsidiary of Group Inc.
- Group Inc. exchanged $36 million of Trust Preferred securities and common beneficial interests for $36 million of certain of the Group Inc.'s junior subordinated debt.

Non-cash activities during the year ended December 2017:

- Group Inc. exchanged $84.00 billion of certain loans to and receivables from subsidiaries for an $84.00 billion unsecured subordinated note from Funding IHC (included in loans to and receivables from subsidiaries).
- Group Inc. exchanged $750 million of its equity interest in Goldman Sachs (UK) L.L.C. (GS UK), a wholly-owned subsidiary of Group Inc., for a $750 million loan to GS UK.
- Group Inc. exchanged $243 million of Trust Preferred securities and common beneficial interests for $254 million of Group Inc.'s junior subordinated debt.

Quarterly Results (unaudited)

The tables below present the unaudited quarterly results.

$ in millions, except per share amounts	Three Months Ended December 2019	September 2019	June 2019	March 2019
Non-interest revenues	**$8,890**	**$7,315**	**$8,390**	**$ 7,589**
Interest income	**4,922**	**5,459**	**5,760**	**5,597**
Interest expense	**3,857**	**4,451**	**4,689**	**4,379**
Net interest income	**1,065**	**1,008**	**1,071**	**1,218**
Total net revenues	**9,955**	**8,323**	**9,461**	**8,807**
Provision for credit losses	**336**	**291**	**214**	**224**
Operating expenses	**7,298**	**5,616**	**6,120**	**5,864**
Pre-tax earnings	**2,321**	**2,416**	**3,127**	**2,719**
Provision for taxes	**404**	**539**	**706**	**468**
Net earnings	**1,917**	**1,877**	**2,421**	**2,251**
Preferred stock dividends	**193**	**84**	**223**	**69**
Net earnings to common	**$1,724**	**$1,793**	**$2,198**	**$ 2,182**
Per common share amounts:				
Basic earnings	**$ 4.74**	**$ 4.83**	**$ 5.86**	**$ 5.73**
Diluted earnings	**$ 4.69**	**$ 4.79**	**$ 5.81**	**$ 5.71**
Dividends declared	**$ 1.25**	**$ 1.25**	**$ 0.85**	**$ 0.80**

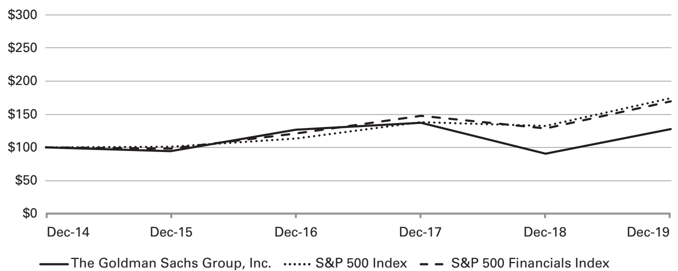
$ in millions, except per share amounts	Three Months Ended December 2018	September 2018	June 2018	March 2018
Non-interest revenues	$7,089	$7,964	$8,634	$ 9,162
Interest income	5,468	5,061	4,920	4,230
Interest expense	4,477	4,205	3,918	3,312
Net interest income	991	856	1,002	918
Total net revenues	8,080	8,820	9,636	10,080
Provision for credit losses	222	174	234	44
Operating expenses	5,150	5,568	6,126	6,617
Pre-tax earnings	2,708	3,078	3,276	3,419
Provision for taxes	170	554	711	587
Net earnings	2,538	2,524	2,565	2,832
Preferred stock dividends	216	71	217	95
Net earnings to common	$2,322	$2,453	$2,348	$ 2,737
Per common share amounts:				
Basic earnings	$ 6.11	$ 6.35	$ 6.04	$ 7.02
Diluted earnings	$ 6.04	$ 6.28	$ 5.98	$ 6.95
Dividends declared	$ 0.80	$ 0.80	$ 0.80	$ 0.75

In the tables above:

- Net earnings to common represents net earnings applicable to common shareholders, which is calculated as net earnings less preferred stock dividends.
- These quarterly results were prepared in accordance with U.S. GAAP and reflect all adjustments that are, in the opinion of management, necessary for a fair statement of the results. These adjustments are of a normal, recurring nature. The timing and magnitude of changes in the firm's discretionary compensation accruals (included in operating expenses) can have a significant effect on results in a given quarter.

Common Stock Performance

The graph and table below compare the performance of an investment in the firm's common stock from December 31, 2014 (the last trading day before the firm's 2015 fiscal year) through December 31, 2019, with the S&P 500 Index (S&P 500) and the S&P 500 Financials Index (S&P 500 Financials).



	As of December 2014	2015	2016	2017	2018	**2019**
Group Inc.	$100.00	$ 94.21	$127.10	$136.94	$ 91.04	**$127.87**
S&P 500	$100.00	$101.37	$113.48	$138.25	$132.18	**$173.79**
S&P 500 Financials	$100.00	$ 98.44	$120.84	$147.59	$128.34	**$169.53**

The graph and table above assume $100 was invested on December 31, 2014 in each of the firm's common stock, the S&P 500 and the S&P 500 Financials, and the dividends were reinvested without payment of any commissions. The performance shown represents past performance and should not be considered an indication of future performance.

Selected Financial Data

	Year Ended or as of December				
	2019	2018	2017	2016	2015
Income statement data *($ in millions)*					
Non-interest revenues	**$ 32,184**	$ 32,849	$ 29,798	$ 28,203	$ 31,045
Interest income	**21,738**	19,679	13,113	9,691	8,452
Interest expense	**17,376**	15,912	10,181	7,104	5,388
Net interest income	**4,362**	3,767	2,932	2,587	3,064
Total net revenues	**36,546**	36,616	32,730	30,790	34,109
Provision for credit losses	**1,065**	674	657	182	289
Operating expenses	**24,898**	23,461	20,941	20,304	25,042
Pre-tax earnings	**$ 10,583**	$ 12,481	$ 11,132	$ 10,304	$ 8,778
Balance sheet data *($ in millions)*					
Total assets	**$992,968**	$931,796	$916,776	$860,165	$861,395
Deposits	**$190,019**	$158,257	$138,604	$124,098	$ 97,519
Other secured financings (long-term)	**$ 11,953**	$ 11,878	$ 9,892	$ 8,405	$ 10,520
Unsecured long-term borrowings	**$207,076**	$224,149	$217,687	$189,086	$175,422
Total liabilities	**$902,703**	$841,611	$834,533	$773,272	$774,667
Total shareholders' equity	**$ 90,265**	$ 90,185	$ 82,243	$ 86,893	$ 86,728
Common share data *(in millions, except per share amounts)*					
Per common share amounts:					
Basic earnings	**$ 21.18**	$ 25.53	$ 9.12	$ 16.53	$ 12.35
Diluted earnings	**$ 21.03**	$ 25.27	$ 9.01	$ 16.29	$ 12.14
Dividends declared	**$ 4.15**	$ 3.15	$ 2.90	$ 2.60	$ 2.55
Book value	**$ 218.52**	$ 207.36	$ 181.00	$ 182.47	$ 171.03
Basic shares	**361.8**	380.9	388.9	414.8	441.6
Average common shares:					
Basic	**371.6**	385.4	401.6	427.4	448.9
Diluted	**375.5**	390.2	409.1	435.1	458.6
Selected data *(unaudited)*					
ROE	**10.0%**	13.3%	4.9%	9.4%	7.4%
Headcount					
Americas	**20,800**	19,700	18,100	17,400	18,000
Non-Americas	**17,500**	16,900	15,500	15,000	16,000
Total headcount	**38,300**	36,600	33,600	32,400	34,000
AUS by asset class *($ in billions)*					
Alternative investments	**$ 185**	$ 167	$ 168	$ 154	$ 148
Equity	**423**	301	321	266	252
Fixed income	**789**	677	660	601	546
Long-term AUS	**1,397**	1,145	1,149	1,021	946
Liquidity products	**462**	397	345	358	306
Total AUS	**$ 1,859**	$ 1,542	$ 1,494	$ 1,379	$ 1,252

In the table above, basic shares represent common shares outstanding and restricted stock units granted to employees with no future service requirements and not subject to performance conditions.

Statistical Disclosures

Distribution of Assets, Liabilities and Shareholders' Equity

The tables below present information about average balances, interest and average interest rates.

	Average Balance for the Year Ended December		
$ in millions	**2019**	2018	2017
Assets			
U.S.	**$ 41,250**	$ 65,888	$ 66,838
Non-U.S.	**49,161**	52,773	42,353
Total deposits with banks	**90,411**	118,661	109,191
U.S.	**156,769**	161,783	159,829
Non-U.S.	**123,069**	140,411	133,156
Total collateralized agreements	**279,838**	302,194	292,985
U.S.	**157,266**	127,771	132,961
Non-U.S.	**118,086**	105,105	99,010
Total trading assets	**275,352**	232,876	231,971
U.S.	**38,419**	32,619	22,605
Non-U.S.	**15,100**	12,729	11,714
Total investments	**53,519**	45,348	34,319
U.S.	**84,416**	77,884	62,040
Non-U.S.	**13,839**	9,246	7,476
Total loans	**98,255**	87,130	69,516
U.S.	**39,961**	41,854	37,353
Non-U.S.	**36,768**	42,292	39,199
Total other interest-earning assets	**76,729**	84,146	76,552
Total interest-earning assets	**874,104**	870,355	814,534
Cash and due from banks	**10,998**	11,380	11,056
Other non-interest-earning assets	**86,137**	85,846	84,014
Total assets	**$971,239**	$967,581	$909,604
Liabilities			
U.S.	**$131,937**	$117,121	$101,109
Non-U.S.	**34,993**	30,071	24,356
Total interest-bearing deposits	**166,930**	147,192	125,465
U.S.	**65,170**	59,129	56,614
Non-U.S.	**31,875**	45,747	39,029
Total collateralized financings	**97,045**	104,876	95,643
U.S.	**29,333**	33,193	34,422
Non-U.S.	**45,816**	49,295	41,507
Total trading liabilities	**75,149**	82,488	75,929
U.S.	**34,284**	40,360	38,615
Non-U.S.	**17,323**	16,909	13,318
Total short-term borrowings	**51,607**	57,269	51,933
U.S.	**205,324**	212,200	199,569
Non-U.S.	**28,079**	24,173	15,000
Total long-term borrowings	**233,403**	236,373	214,569
U.S.	**128,846**	124,657	135,804
Non-U.S.	**55,101**	63,428	60,986
Total other interest-bearing liabilities	**183,947**	188,085	196,790
Total interest-bearing liabilities	**808,081**	816,283	760,329
Non-interest-bearing deposits	**5,503**	4,273	3,630
Other non-interest-bearing liabilities	**67,358**	61,787	59,686
Total liabilities	**880,942**	882,343	823,645
Shareholders' equity			
Preferred stock	**11,203**	11,253	11,238
Common stock	**79,094**	73,985	74,721
Total shareholders' equity	**90,297**	85,238	85,959
Total liabilities and shareholders' equity	**$971,239**	$967,581	$909,604
Percentage of interest-earning assets and interest-bearing liabilities attributable to non-U.S. operations			
Assets	**40.73%**	41.67%	40.88%
Liabilities	**26.38%**	28.13%	25.54%

Supplemental Financial Information

	Interest for the Year Ended December		
$ in millions	**2019**	2018	2017
Assets			
U.S.	**$ 918**	$ 1,247	$ 760
Non-U.S.	**293**	171	59
Total deposits with banks	**1,211**	1,418	819
U.S.	**3,925**	3,340	1,335
Non-U.S.	**472**	512	326
Total collateralized agreements	**4,397**	3,852	1,661
U.S.	**3,622**	3,200	3,094
Non-U.S.	**2,277**	1,957	1,573
Total trading assets	**5,899**	5,157	4,667
U.S.	**972**	807	437
Non-U.S.	**485**	408	267
Total investments	**1,457**	1,215	704
U.S.	**4,655**	4,166	2,817
Non-U.S.	**756**	523	405
Total loans	**5,411**	4,689	3,222
U.S.	**2,313**	2,382	1,519
Non-U.S.	**1,050**	966	521
Total other interest-earning assets	**3,363**	3,348	2,040
Total interest-earning assets	**$21,738**	$19,679	$13,113
Liabilities			
U.S.	**$ 3,099**	$ 2,317	$ 1,205
Non-U.S.	**469**	289	175
Total interest-bearing deposits	**3,568**	2,606	1,380
U.S.	**2,374**	1,760	735
Non-U.S.	**284**	291	128
Total collateralized financings	**2,658**	2,051	863
U.S.	**466**	803	682
Non-U.S.	**747**	751	706
Total trading liabilities	**1,213**	1,554	1,388
U.S.	**642**	672	660
Non-U.S.	**26**	23	38
Total short-term borrowings	**668**	695	698
U.S.	**5,234**	5,474	4,539
Non-U.S.	**125**	81	60
Total long-term borrowings	**5,359**	5,555	4,599
U.S.	**4,048**	3,245	991
Non-U.S.	**(138)**	206	262
Total other interest-bearing liabilities	**3,910**	3,451	1,253
Total interest-bearing liabilities	**$17,376**	$15,912	$10,181
Net interest income			
U.S.	**$ 542**	$ 871	$ 1,150
Non-U.S.	**3,820**	2,896	1,782
Net interest income	**$ 4,362**	$ 3,767	$ 2,932

	Average Rate for the Year Ended December		
	2019	2018	2017
Assets			
U.S.	**2.23%**	1.89%	1.14%
Non-U.S.	**0.60%**	0.32%	0.14%
Total deposits with banks	**1.34%**	1.20%	0.75%
U.S.	**2.50%**	2.06%	0.84%
Non-U.S.	**0.38%**	0.36%	0.24%
Total collateralized agreements	**1.57%**	1.27%	0.57%
U.S.	**2.30%**	2.50%	2.33%
Non-U.S.	**1.93%**	1.86%	1.59%
Total trading assets	**2.14%**	2.21%	2.01%
U.S.	**2.53%**	2.47%	1.93%
Non-U.S.	**3.21%**	3.21%	2.28%
Total investments	**2.72%**	2.68%	2.05%
U.S.	**5.51%**	5.35%	4.54%
Non-U.S.	**5.46%**	5.66%	5.42%
Total loans	**5.51%**	5.38%	4.63%
U.S.	**5.79%**	5.69%	4.07%
Non-U.S.	**2.86%**	2.28%	1.33%
Total other interest-earning assets	**4.38%**	3.98%	2.66%
Total interest-earning assets	**2.49%**	2.26%	1.61%
Liabilities			
U.S.	**2.35%**	1.98%	1.19%
Non-U.S.	**1.34%**	0.96%	0.72%
Total interest-bearing deposits	**2.14%**	1.77%	1.10%
U.S.	**3.64%**	2.98%	1.30%
Non-U.S.	**0.89%**	0.64%	0.33%
Total collateralized financings	**2.74%**	1.96%	0.90%
U.S.	**1.59%**	2.42%	1.98%
Non-U.S.	**1.63%**	1.52%	1.70%
Total trading liabilities	**1.61%**	1.88%	1.83%
U.S.	**1.87%**	1.67%	1.71%
Non-U.S.	**0.15%**	0.14%	0.29%
Total short-term borrowings	**1.29%**	1.21%	1.34%
U.S.	**2.55%**	2.58%	2.27%
Non-U.S.	**0.45%**	0.34%	0.40%
Total long-term borrowings	**2.30%**	2.35%	2.14%
U.S.	**3.14%**	2.60%	0.73%
Non-U.S.	**(0.25)%**	0.32%	0.43%
Total other interest-bearing liabilities	**2.13%**	1.83%	0.64%
Total interest-bearing liabilities	**2.15%**	1.95%	1.34%
Interest rate spread	**0.34%**	0.31%	0.27%
U.S.	**0.10%**	0.17%	0.24%
Non-U.S.	**1.07%**	0.80%	0.54%
Net yield on interest-earning assets	**0.50%**	0.43%	0.36%

In the tables above:

- Assets, liabilities and interest are classified as U.S. and non-U.S. based on the location of the entity in which the assets and liabilities are held.
- Derivative instruments and commodities are included in other non-interest-earning assets and other non-interest-bearing liabilities.
- Total other interest-earning assets primarily consists of certain receivables from customers and counterparties.
- Collateralized financings consists of repurchase agreements and securities loaned.
- Substantially all of the total other interest-bearing liabilities consists of certain payables to customers and counterparties.
- Interest rates for borrowings include the effects of interest rate swaps accounted for as hedges.

- Total loans exclude loans held for sale that are accounted for at the lower of cost or fair value. Such loans are included within other interest-earning assets.
- Total short- and long-term borrowings include both secured and unsecured borrowings.

Changes in Net Interest Income, Volume and Rate Analysis

The tables below present 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 2019 versus December 2018		
	Increase (decrease) due to change in:		
$ in millions	Volume	Rate	Net Change
Interest-earning assets			
U.S.	$(548)	$ 219	$ (329)
Non-U.S.	(22)	144	122
Total deposits with banks	(570)	363	(207)
U.S.	(126)	711	585
Non-U.S.	(67)	27	(40)
Total collateralized agreements	(193)	738	545
U.S.	679	(257)	422
Non-U.S.	250	70	320
Total trading assets	929	(187)	742
U.S.	147	18	165
Non-U.S.	76	1	77
Total investments	223	19	242
U.S.	360	129	489
Non-U.S.	251	(18)	233
Total loans	611	111	722
U.S.	(110)	41	(69)
Non-U.S.	(158)	242	84
Total other interest-earning assets	(268)	283	15
Change in interest income	732	1,327	2,059
Interest-bearing liabilities			
U.S.	348	434	782
Non-U.S.	66	114	180
Total interest-bearing deposits	414	548	962
U.S.	220	394	614
Non-U.S.	(124)	117	(7)
Total collateralized financings	96	511	607
U.S.	(61)	(276)	(337)
Non-U.S.	(57)	53	(4)
Total trading liabilities	(118)	(223)	(341)
U.S.	(114)	84	(30)
Non-U.S.	1	2	3
Total short-term borrowings	(113)	86	(27)
U.S.	(175)	(65)	(240)
Non-U.S.	17	27	44
Total long-term borrowings	(158)	(38)	(196)
U.S.	132	671	803
Non-U.S.	21	(365)	(344)
Total other interest-bearing liabilities	153	306	459
Change in interest expense	274	1,190	1,464
Change in net interest income	$ 458	$ 137	$ 595

	Year Ended December 2018 versus December 2017		
	Increase (decrease) due to change in:		
$ in millions	Volume	Rate	Net Change
Interest-earning assets			
U.S.	$ (18)	$ 505	$ 487
Non-U.S.	34	78	112
Total deposits with banks	16	583	599
U.S.	40	1,965	2,005
Non-U.S.	26	160	186
Total collateralized agreements	66	2,125	2,191
U.S.	(130)	236	106
Non-U.S.	113	271	384
Total trading assets	(17)	507	490
U.S.	248	122	370
Non-U.S.	33	108	141
Total investments	281	230	511
U.S.	847	502	1,349
Non-U.S.	100	18	118
Total loans	947	520	1,467
U.S.	256	607	863
Non-U.S.	71	374	445
Total other interest-earning assets	327	981	1,308
Change in interest income	1,620	4,946	6,566
Interest-bearing liabilities			
U.S.	317	795	1,112
Non-U.S.	55	59	114
Total interest-bearing deposits	372	854	1,226
U.S.	75	950	1,025
Non-U.S.	43	120	163
Total collateralized financings	118	1,070	1,188
U.S.	(30)	151	121
Non-U.S.	119	(74)	45
Total trading liabilities	89	77	166
U.S.	29	(17)	12
Non-U.S.	5	(20)	(15)
Total short-term borrowings	34	(37)	(3)
U.S.	326	609	935
Non-U.S.	31	(10)	21
Total long-term borrowings	357	599	956
U.S.	(290)	2,544	2,254
Non-U.S.	8	(64)	(56)
Total other interest-bearing liabilities	(282)	2,480	2,198
Change in interest expense	688	5,043	5,731
Change in net interest income	$ 932	$ (97)	$ 835

Deposits

The table below presents information about interest-bearing deposits.

$ in millions	Year Ended December 2019	2018	2017
Average balances			
U.S.			
Savings and demand	**$ 86,108**	$ 76,428	$ 68,819
Time	**45,829**	40,693	32,290
Total U.S.	**131,937**	117,121	101,109
Non-U.S.			
Demand	**20,733**	9,579	8,443
Time	**14,260**	20,492	15,913
Total non-U.S.	**34,993**	30,071	24,356
Total	**$166,930**	$147,192	$125,465
Average interest rates			
U.S.			
Savings and demand	**2.23%**	1.85%	0.98%
Time	**2.58%**	2.21%	1.64%
Total U.S.	**2.35%**	1.98%	1.19%
Non-U.S.			
Demand	**1.51%**	1.29%	0.68%
Time	**1.09%**	0.81%	0.75%
Total non-U.S.	**1.34%**	0.96%	0.72%
Total	**2.14%**	1.77%	1.10%

In the table above, deposits are classified as U.S. and non-U.S. based on the location of the entity in which such deposits are held.

As of December 2019, deposits in U.S. offices included $14.39 billion and non-U.S. offices included $8.07 billion of time deposits that were greater than $100,000.

The table below presents maturities of these time deposits held in U.S. offices.

$ in millions	As of December 2019
3 months or less	**$ 2,582**
3 to 6 months	**3,952**
6 to 12 months	**5,460**
Greater than 12 months	**2,399**
Total	**$14,393**

Short-Term and Other Borrowed Funds

The table below presents information about securities loaned and repurchase agreements, and short-term borrowings.

$ in millions	As of December 2019	2018	2017
Securities loaned and securities sold under agreements to repurchase			
Amounts outstanding at year-end	**$132,741**	$ 90,531	$ 99,511
Average outstanding during the year	**$ 97,045**	$104,876	$ 95,643
Maximum month-end outstanding	**$132,741**	$123,805	$103,359
Weighted average interest rate			
During the year	**2.74%**	1.96%	0.90%
At year-end	**1.61%**	3.31%	1.16%
Short-term borrowings			
Amounts outstanding at year-end	**$ 55,611**	$ 50,057	$ 61,818
Average outstanding during the year	**$ 51,607**	$ 57,269	$ 51,933
Maximum month-end outstanding	**$ 57,209**	$ 63,743	$ 61,818
Weighted average interest rate			
During the year	**1.29%**	1.21%	1.34%
At year-end	**1.24%**	1.30%	1.22%

In the table above:

- These borrowings generally mature within one year of the financial statement date and include borrowings that are redeemable at the option of the holder within one year of the financial statement date.
- Amounts outstanding at year-end for short-term borrowings included short-term secured financings of $7.32 billion as of December 2019, $9.56 billion as of December 2018 and $14.90 billion as of December 2017.
- The weighted average interest rates for these borrowings include the effect of hedging activities.

Loan Portfolio

The table below presents information about loans.

$ in millions	As of December 2019	2018	2017	2016	2015
Corporate	**$ 37,161**	$37,518	$32,616	$28,889	$26,523
Wealth management	**24,783**	22,649	21,591	19,225	19,044
Commercial real estate	**12,836**	11,052	8,239	3,604	4,975
Residential real estate	**6,290**	7,820	7,299	4,305	2,890
Consumer	**4,747**	4,536	1,912	208	–
Credit card	**1,858**	–	–	–	–
Other	**4,186**	4,461	5,014	3,428	3,749
Total U.S.	**91,861**	88,036	76,671	59,659	57,181
Corporate	**9,146**	4,857	3,686	2,529	3,243
Wealth management	**3,157**	2,119	2,102	1,442	1,137
Commercial real estate	**4,907**	3,126	3,149	2,805	3,332
Residential real estate	**668**	481	600	556	522
Other	**606**	284	32	21	53
Total non-U.S.	**18,484**	10,867	9,569	7,353	8,287
Total loans, gross	**110,345**	98,903	86,240	67,012	65,468
Allowance for loan losses					
U.S.	**1,146**	848	604	476	381
Non-U.S.	**295**	218	199	33	33
Total allowance for loan losses	**1,441**	1,066	803	509	414
Total loans	**$108,904**	$97,837	$85,437	$66,503	$65,054

In the table above, loans are classified as U.S. and non-U.S. based on the location of the entity in which such loans are held.

Allowance for Loan Losses

The table below presents changes in the allowance for loan losses.

$ in millions	As of December 2019	2018	2017	2016	2015
Allowance for loan losses					
Beginning balance	**$1,066**	$ 803	$ 509	$414	$228
Net charge-offs	**(490)**	(337)	(203)	(8)	(1)
Provision for loan losses	**990**	654	574	138	187
Other	**(125)**	(54)	(77)	(35)	–
Ending balance	**$1,441**	$1,066	$ 803	$509	$414

In the table above:

- Allowance for loan losses as of both 2019 and 2018 primarily related to corporate loans and consumer loans that were held in entities located in the U.S. Allowance for loan losses as of 2017 and earlier primarily related to corporate and wealth management loans that were held in entities located in the U.S.
- Net charge-offs for 2019 were primarily related to consumer loans held in entities located in the U.S. Net charge-offs for 2018 were primarily related to consumer loans held in entities located in the U.S. and commercial real estate PCI loans held in entities located outside of the U.S. Net charge-offs for 2017 and earlier were primarily related to corporate loans held in entities located in the U.S.

Maturities and Sensitivity to Changes in Interest Rates

The table below presents gross loans by tenor and a distribution of such loans between fixed and floating interest rates.

	Maturities and Sensitivity to Changes in Interest Rates as of December 2019			
$ in millions	Less than 1 year	1 - 5 years	Greater than 5 years	Total
Corporate	$ 3,870	$28,402	$ 4,889	$ 37,161
Wealth management	14,069	2,923	7,791	24,783
Commercial real estate	1,596	10,186	1,054	12,836
Residential real estate	1,968	2,251	2,071	6,290
Consumer	84	4,330	333	4,747
Credit card	1,858	–	–	1,858
Other	715	2,961	510	4,186
Total U.S.	24,160	51,053	16,648	91,861
Corporate	1,381	4,808	2,957	9,146
Wealth management	3,120	37	–	3,157
Commercial real estate	824	3,049	1,034	4,907
Residential real estate	34	507	127	668
Other	6	553	47	606
Total non-U.S.	5,365	8,954	4,165	18,484
Total loans, gross	$29,525	$60,007	$20,813	$110,345
Loans at fixed interest rates	$ 424	$ 4,844	$ 8,977	$ 14,245
Loans at variable interest rates	29,101	55,163	11,836	96,100
Total	$29,525	$60,007	$20,813	$110,345

Cross-border Outstandings

Cross-border outstandings are based on the Federal Financial Institutions Examination Council's (FFIEC) guidelines for reporting cross-border information and represent the amounts that the firm may not be able to obtain from a foreign country due to country-specific events, including unfavorable economic and political conditions, economic and social instability, and changes in government policies.

Credit exposure represents the potential for loss due to the default or deterioration in credit quality of a counterparty or an issuer of securities or other instruments and is measured based on the potential loss in an event of non-payment by a counterparty. Credit exposure is reduced through the effect of risk mitigants, such as netting agreements with counterparties that permit the firm to offset receivables and payables with such counterparties or obtaining collateral from counterparties. The table below does not include all the effects of such risk mitigants and does not represent the firm's credit exposure.

The table below presents cross-border outstandings and commitments for each country in which cross-border outstandings exceed 0.75% of consolidated assets in accordance with the FFIEC guidelines.

$ in millions	Banks	Governments	Other	Total	Commitments
As of December 2019					
Cayman Islands	$ 7	$ 2	$35,920	$35,929	$ 5,014
Germany	$1,790	$22,828	$ 7,058	$31,676	$ 6,562
France	$1,311	$ 1,910	$15,146	$18,367	$24,497
Canada	$3,079	$ 192	$14,609	$17,880	$ 1,743
Ireland	$ 733	$ 96	$15,083	$15,912	$ 1,238
Japan	$7,203	$ 132	$ 6,889	$14,224	$13,930
China	$3,103	$ 251	$ 9,834	$13,188	$ 1,059
U.K.	$1,776	$ 18	$ 8,421	$10,215	$14,074
South Korea	$ 150	$ 1,021	$ 8,775	$ 9,946	$ 60
Luxembourg	$ 40	$ 92	$ 7,984	$ 8,116	$ 4,136
As of December 2018					
Germany	$2,028	$43,730	$ 4,755	$50,513	$ 3,834
Cayman Islands	$ 27	$ 2	$47,595	$47,624	$ 4,207
France	$1,193	$ 5,094	$11,549	$17,836	$10,307
Japan	$9,106	$ 1,686	$ 6,146	$16,938	$12,553
Ireland	$ 146	$ 55	$12,390	$12,591	$ 822
Canada	$2,383	$ 470	$ 7,845	$10,698	$ 1,513
Luxembourg	$ 22	$ 41	$ 9,799	$ 9,862	$ 2,838
U.K.	$1,101	$ 77	$ 8,458	$ 9,636	$20,336
China	$1,952	$ 66	$ 6,882	$ 8,900	$ 271
South Korea	$ 162	$ 2,935	$ 3,989	$ 7,086	$ 10
As of December 2017					
Cayman Islands	$ 6	$ –	$34,624	$34,630	$ 4,940
Germany	$4,241	$22,765	$ 6,916	$33,922	$ 7,015
France	$3,569	$ 1,574	$19,048	$24,191	$14,549
Canada	$2,562	$ 311	$17,358	$20,231	$ 2,388
Japan	$8,827	$ 69	$ 7,220	$16,116	$18,079
Ireland	$ 143	$ 65	$11,490	$11,698	$ 895
China	$2,550	$ 687	$ 7,838	$11,075	$ –
Italy	$2,306	$ 3,986	$ 2,586	$ 8,878	$ 1,649
U.K.	$1,300	$ –	$ 7,480	$ 8,780	$14,966
Singapore	$ 372	$ 5,462	$ 1,873	$ 7,707	$ 48
Luxembourg	$ 59	$ 324	$ 7,320	$ 7,703	$ 2,438

In the table above:

- Cross-border outstandings includes cash, receivables, collateralized agreements and cash financial instruments, but exclude derivative instruments.
- Collateralized agreements are presented gross, without reduction for related securities collateral held.
- Margin loans (included in receivables) are presented based on the amount of collateral advanced by the counterparty.
- Substantially all commitments consists of commitments to extend credit and collateralized agreement commitments.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

There were no changes in or disagreements with accountants on accounting and financial disclosure during the last two years.

Item 9A. Controls and Procedures

As of the end of the period covered by this report, an evaluation was carried out by Goldman Sachs management, with the participation of our Chief Executive Officer and Chief Financial Officer, of the effectiveness of our disclosure controls and procedures (as defined in Rule 13a-15(e) under the Exchange Act). Based upon that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that these disclosure controls and procedures were effective as of the end of the period covered by this report. In addition, no change in our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) occurred during the fourth quarter of our year ended December 31, 2019 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Management's Report on Internal Control over Financial Reporting and the Report of Independent Registered Public Accounting Firm are set forth in Part II, Item 8 of this Form 10-K.

Item 9B. Other Information

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Information about our executive officers is included on page 20 of this Form 10-K. Information about our directors, including our audit committee and audit committee financial experts and the procedures by which shareholders can recommend director nominees, and our executive officers will be in our definitive Proxy Statement for our 2020 Annual Meeting of Shareholders, which will be filed within 120 days of the end of 2019 (2020 Proxy Statement) and is incorporated in this Form 10-K by reference. Information about our Code of Business Conduct and Ethics, which applies to our senior financial officers, is included in "Business — Available Information" in Part I, Item 1 of this Form 10-K.

Item 11. Executive Compensation

Information relating to our executive officer and director compensation and the compensation committee of the Board will be in the 2020 Proxy Statement and is incorporated in this Form 10-K by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Information relating to security ownership of certain beneficial owners of our common stock and information relating to the security ownership of our management will be in the 2020 Proxy Statement and is incorporated in this Form 10-K by reference.

The table below presents information as of December 31, 2019 regarding securities to be issued pursuant to outstanding restricted stock units (RSUs) and securities remaining available for issuance under our equity compensation plans that were in effect during 2019.

Plan Category	Securities to be Issued Upon Exercise of Outstanding Options and Rights (a)	Weighted Average Exercise Price of Outstanding Options (b)	Securities Available For Future Issuance Under Equity Compensation Plans (c)
Equity compensation plans approved by security holders	**19,323,480**	**N/A**	**60,558,073**
Equity compensation plans not approved by security holders	–	–	–
Total	**19,323,480**		**60,558,073**

In the table above:

- Securities to be Issued Upon Exercise of Outstanding Options and Rights includes 19,323,480 shares that may be issued pursuant to outstanding RSUs. These awards are subject to vesting and other conditions to the extent set forth in the respective award agreements, and the underlying shares will be delivered net of any required tax withholding. As of December 31, 2019, there were no outstanding options.
- Shares underlying RSUs are deliverable without the payment of any consideration, and therefore these awards have not been taken into account in calculating the weighted average exercise price.
- Securities Available For Future Issuance Under Equity Compensation Plans represents shares remaining to be issued under our current stock incentive plan (SIP), excluding shares reflected in column (a). If any shares of common stock underlying awards granted under our current SIP, our SIP adopted in 2015 or our SIP adopted in 2013 are not delivered due to forfeiture, termination or cancellation or are surrendered or withheld, those shares will again become available to be delivered under our current SIP. Shares available for grant are also subject to adjustment for certain changes in corporate structure as permitted under our current SIP.

Item 13. Certain Relationships and Related Transactions, and Director Independence

Information regarding certain relationships and related transactions and director independence will be in the 2020 Proxy Statement and is incorporated in this Form 10-K by reference.

Item 14. Principal Accounting Fees and Services

Information regarding principal accounting fees and services will be in the 2020 Proxy Statement and is incorporated in this Form 10-K by reference.

PART IV

Item 15. Exhibits, Financial Statement Schedules

(a) Documents filed as part of this Report:

1. Consolidated Financial Statements

The consolidated financial statements required to be filed in this Form 10-K are included in Part II, Item 8 hereof.

2. Exhibits

2.1 Plan of Incorporation (incorporated by reference to Exhibit 2.1 to the Registrant's Registration Statement on Form S-1 (No. 333-74449)).

3.1 Restated Certificate of Incorporation of The Goldman Sachs Group, Inc., amended as of November 25, 2019.

3.2 Certificate of Designations of The Goldman Sachs Group, Inc. relating to the Series S Preferred Stock (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K, filed on January 28, 2020).

3.3 Amended and Restated By-Laws of The Goldman Sachs Group, Inc., amended as of February 18, 2016 (incorporated by reference to Exhibit 3.2 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2015).

4.1 Description of The Goldman Sachs Group, Inc.'s Securities registered pursuant to Section 12 of the Securities Exchange Act of 1934.

4.2 Indenture, dated as of May 19, 1999, between The Goldman Sachs Group, Inc. and The Bank of New York, as trustee (incorporated by reference to Exhibit 6 to the Registrant's Registration Statement on Form 8-A, filed on June 29, 1999).

4.3 Subordinated Debt Indenture, dated as of February 20, 2004, between The Goldman Sachs Group, Inc. and The Bank of New York, as trustee (incorporated by reference to Exhibit 4.2 to the Registrant's Annual Report on Form 10-K for the fiscal year ended November 28, 2003).

4.4 Warrant Indenture, dated as of February 14, 2006, between The Goldman Sachs Group, Inc. and The Bank of New York, as trustee (incorporated by reference to Exhibit 4.34 to the Registrant's Post-Effective Amendment No. 3 to Form S-3, filed on March 1, 2006).

4.5 Senior Debt Indenture, dated as of December 4, 2007, among GS Finance Corp., as issuer, The Goldman Sachs Group, Inc., as guarantor, and The Bank of New York, as trustee (incorporated by reference to Exhibit 4.69 to the Registrant's Post-Effective Amendment No. 10 to Form S-3, filed on December 4, 2007).

4.6 Senior Debt Indenture, dated as of July 16, 2008, between The Goldman Sachs Group, Inc. and The Bank of New York Mellon, as trustee (incorporated by reference to Exhibit 4.82 to the Registrant's Post-Effective Amendment No. 11 to Form S-3 (No. 333-130074), filed on July 17, 2008).

4.7 Fourth Supplemental Indenture, dated as of December 31, 2016, between The Goldman Sachs Group, Inc. and The Bank of New York Mellon, as trustee, with respect to the Senior Debt Indenture, dated as of July 16, 2008 (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K, filed on January 6, 2017).

4.8 Senior Debt Indenture, dated as of October 10, 2008, among GS Finance Corp., as issuer, The Goldman Sachs Group, Inc., as guarantor, and The Bank of New York Mellon, as trustee (incorporated by reference to Exhibit 4.70 to the Registrant's Registration Statement on Form S-3 (No. 333-154173), filed on October 10, 2008).

4.9 First Supplemental Indenture, dated as of February 20, 2015, among GS Finance Corp., as issuer, The Goldman Sachs Group, Inc., as guarantor, and The Bank of New York Mellon, as trustee, with respect to the Senior Debt Indenture, dated as of October 10, 2008 (incorporated by reference to Exhibit 4.7 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2014).

4.10 Fourth Supplemental Indenture, dated as of August 21, 2018, among GS Finance Corp., as issuer, The Goldman Sachs Group, Inc., as guarantor, and The Bank of New York Mellon (incorporated by reference to Exhibit 4.1 to the Registrant's Quarterly Report on Form 10-Q for the period ended September 30, 2018).

4.11 Ninth Supplemental Subordinated Debt Indenture, dated as of May 20, 2015, between The Goldman Sachs Group, Inc. and The Bank of New York Mellon, as trustee, with respect to the Subordinated Debt Indenture, dated as of February 20, 2004 (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K, filed on May 22, 2015).

4.12 Tenth Supplemental Subordinated Debt Indenture, dated as of July 7, 2017, between The Goldman Sachs Group, Inc. and The Bank of New York Mellon, as trustee, with respect to the Subordinated Debt Indenture, dated as of February 20, 2004 (incorporated by reference to Exhibit 4.89 to the Registrant's Registration Statement on Form S-3 (No. 333-219206), filed on July 10, 2017).

Certain instruments defining the rights of holders of long-term debt securities of the Registrant and its subsidiaries are omitted pursuant to Item 601(b)(4)(iii) of Regulation S-K. The Registrant hereby undertakes to furnish to the SEC, upon request, copies of any such instruments.

10.1 The Goldman Sachs Amended and Restated Stock Incentive Plan (2018) (incorporated by reference to Exhibit 10.1 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2018). †

10.2 The Goldman Sachs Partner Compensation Plan (incorporated by reference to Exhibit 10.18 to the Registrant's Registration Statement on Form S-1 (No. 333-74449)). †

10.3 The Goldman Sachs Amended and Restated Restricted Partner Compensation Plan (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q for the period ended February 24, 2006). †

10.4 Form of Employment Agreement for Participating Managing Directors (applicable to executive officers) (incorporated by reference to Exhibit 10.19 to the Registrant's Registration Statement on Form S-1 (No. 333-75213)). †

10.5 Form of Agreement Relating to Noncompetition and Other Covenants (incorporated by reference to Exhibit 10.20 to the Registrant's Registration Statement on Form S-1 (No. 333-75213)). †

10.6 Amended and Restated Shareholders' Agreement, effective as of December 31, 2019, among The Goldman Sachs Group, Inc. and various parties.

10.7 Instrument of Indemnification (incorporated by reference to Exhibit 10.27 to the Registrant's Registration Statement on Form S-1 (No. 333-75213)).

10.8 Form of Indemnification Agreement (incorporated by reference to Exhibit 10.28 to the Registrant's Annual Report on Form 10-K for the fiscal year ended November 26, 1999).

10.9 Form of Indemnification Agreement (incorporated by reference to Exhibit 10.44 to the Registrant's Annual Report on Form 10-K for the fiscal year ended November 26, 1999).

10.10 Form of Indemnification Agreement, dated as of July 5, 2000 (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q for the period ended August 25, 2000).

10.11 Amendment No. 1, dated as of September 5, 2000, to the Tax Indemnification Agreement, dated as of May 7, 1999 (incorporated by reference to Exhibit 10.3 to the Registrant's Quarterly Report on Form 10-Q for the period ended August 25, 2000).

10.12 Form of Amendment, dated November 27, 2004, to Agreement Relating to Noncompetition and Other Covenants, dated May 7, 1999 (incorporated by reference to Exhibit 10.32 to the Registrant's Annual Report on Form 10-K for the fiscal year ended November 26, 2004). †

10.13 The Goldman Sachs Group, Inc. Non-Qualified Deferred Compensation Plan for U.S. Participating Managing Directors (terminated as of December 15, 2008) (incorporated by reference to Exhibit 10.36 to the Registrant's Annual Report on Form 10-K for the fiscal year ended November 30, 2007). †

10.14 Form of Year-End Option Award Agreement (incorporated by reference to Exhibit 10.36 to the Registrant's Annual Report on Form 10-K for the fiscal year ended November 28, 2008). †

10.15 Form of Non-Employee Director Option Award Agreement (incorporated by reference to Exhibit 10.34 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2009). †

10.16 Form of Non-Employee Director RSU Award Agreement (pre-2015) (incorporated by reference to Exhibit 10.21 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2014). †

10.17 Ground Lease, dated August 23, 2005, between Battery Park City Authority d/b/a/ Hugh L. Carey Battery Park City Authority, as Landlord, and Goldman Sachs Headquarters LLC, as Tenant (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on August 26, 2005).

10.18 General Guarantee Agreement, dated January 30, 2006, made by The Goldman Sachs Group, Inc. relating to certain obligations of Goldman Sachs & Co. LLC (incorporated by reference to Exhibit 10.45 to the Registrant's Annual Report on Form 10-K for the fiscal year ended November 25, 2005).

10.19 Goldman Sachs & Co. LLC Executive Life Insurance Policy and Certificate with Metropolitan Life Insurance Company for Participating Managing Directors (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q for the period ended August 25, 2006). †

10.20 Form of Goldman Sachs & Co. LLC Executive Life Insurance Policy with Pacific Life & Annuity Company for Participating Managing Directors, including policy specifications and form of restriction on Policy Owner's Rights (incorporated by reference to Exhibit 10.2 to the Registrant's Quarterly Report on Form 10-Q for the period ended August 25, 2006). †

10.21 Form of Second Amendment, dated November 25, 2006, to Agreement Relating to Noncompetition and Other Covenants, dated May 7, 1999, as amended effective November 27, 2004 (incorporated by reference to Exhibit 10.51 to the Registrant's Annual Report on Form 10-K for the fiscal year ended November 24, 2006). †

10.22 Description of PMD Retiree Medical Program (incorporated by reference to Exhibit 10.25 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2018). †

10.23 Letter, dated June 28, 2008, from The Goldman Sachs Group, Inc. to Mr. Lakshmi N. Mittal (incorporated by reference to Exhibit 99.1 to the Registrant's Current Report on Form 8-K, filed on June 30, 2008). †

10.24 General Guarantee Agreement, dated December 1, 2008, made by The Goldman Sachs Group, Inc. relating to certain obligations of Goldman Sachs Bank USA (incorporated by reference to Exhibit 4.80 to the Registrant's Post-Effective Amendment No. 2 to Form S-3, filed on March 19, 2009).

10.25 Form of One-Time RSU Award Agreement (pre-2015) (incorporated by reference to Exhibit 10.32 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2014). †

10.26 Amendments to Certain Non-Employee Director Equity Award Agreements (incorporated by reference to Exhibit 10.69 to the Registrant's Annual Report on Form 10-K for the fiscal year ended November 28, 2008). †

10.27 Form of Year-End RSU Award Agreement (not fully vested) (pre-2015) (incorporated by reference to Exhibit 10.36 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2014). †

10.28 Form of Year-End RSU Award Agreement (fully vested) (pre-2015) (incorporated by reference to Exhibit 10.37 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2014). †

10.29 Form of Year-End RSU Award Agreement (Base and/or Supplemental) (pre-2015) (incorporated by reference to Exhibit 10.38 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2014). †

10.30 Form of Year-End Restricted Stock Award Agreement (fully vested) (pre-2015) (incorporated by reference to Exhibit 10.41 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2013). †

10.31 Form of Year-End Restricted Stock Award Agreement (Base and/or Supplemental) (pre-2015) (incorporated by reference to Exhibit 10.41 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2014). †

10.32 Form of Fixed Allowance RSU Award Agreement (pre-2015) (incorporated by reference to Exhibit 10.43 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2014). †

10.33 Form of Deed of Gift (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q for the period ended June 30, 2010). †

10.34 The Goldman Sachs Long-Term Performance Incentive Plan, dated December 17, 2010 (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on December 23, 2010). †

10.35 Form of Performance-Based Restricted Stock Unit Award Agreement (pre-2015) (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K, filed on December 23, 2010). †

10.36 Form of Performance-Based Option Award Agreement (incorporated by reference to Exhibit 10.3 to the Registrant's Current Report on Form 8-K, filed on December 23, 2010). †

10.37 Form of Performance-Based Cash Compensation Award Agreement (pre-2015) (incorporated by reference to Exhibit 10.4 to the Registrant's Current Report on Form 8-K, filed on December 23, 2010). †

10.38 Amended and Restated General Guarantee Agreement, dated November 21, 2011, made by The Goldman Sachs Group, Inc. relating to certain obligations of Goldman Sachs Bank USA (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K, filed on November 21, 2011).

10.39 Form of Aircraft Time Sharing Agreement (incorporated by reference to Exhibit 10.61 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2011). †

10.40 Description of Compensation Arrangements with Executive Officer (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q for the period ended June 30, 2012). †

10.41 The Goldman Sachs Group, Inc. Clawback Policy, effective as of January 1, 2015 (incorporated by reference to Exhibit 10.53 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2014).

10.42 Form of Non-Employee Director RSU Award Agreement. †

10.43 Form of One-Time RSU Award Agreement. †

10.44 Form of Year-End RSU Award Agreement (not fully vested). †

10.45 Form of Year-End RSU Award Agreement (fully vested). †

10.46 Form of Year-End RSU Award Agreement (Base (not fully vested) and/or Supplemental). †

10.47 Form of Year-End Short-Term RSU Award Agreement. †

10.48 Form of Year-End Restricted Stock Award Agreement (not fully vested). †

10.49 Form of Year-End Restricted Stock Award Agreement (fully vested) (incorporated by reference to Exhibit 10.53 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2017). †

10.50 Form of Year-End Short-Term Restricted Stock Award Agreement (incorporated by reference to Exhibit 10.57 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2015). †

10.51 Form of Fixed Allowance RSU Award Agreement. †

10.52 Form of Fixed Allowance Restricted Stock Award Agreement. †

10.53 Form of Fixed Allowance Deferred Cash Award Agreement (incorporated by reference to Exhibit 10.59 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2015). †

10.54 Form of Performance-Based Restricted Stock Unit Award Agreement. †

10.55 Form of Performance-Based Restricted Stock Unit Award Agreement (not fully vested). †

10.56 Form of Performance-Based Cash Compensation Award Agreement (incorporated by reference to Exhibit 10.61 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2015). †

10.57 Form of Signature Card for Equity Awards. †

10.58 Amended and Restated General Guarantee Agreement, dated September 28, 2018, made by The Goldman Sachs Group, Inc. relating to certain obligations of Goldman Sachs Bank USA (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K, filed on September 28, 2018).

10.59 Amended and Restated General Guarantee Agreement, dated September 28, 2018, made by The Goldman Sachs Group, Inc. relating to certain obligations of Goldman Sachs & Co. LLC (incorporated by reference to Exhibit 99.1 to the Registrant's Current Report on Form 8-K, filed on September 28, 2018).

10.60 Lease, dated August 17, 2018, between Farringdon Street Partners Limited and Farringdon Street (Nominee) Limited, as Landlord, and Goldman Sachs International, as Tenant (incorporated by reference to Exhibit 10.3 to the Registrant's Quarterly Report on Form 10-Q for the period ended September 30, 2018).

21.1 List of significant subsidiaries of The Goldman Sachs Group, Inc.

23.1 Consent of Independent Registered Public Accounting Firm.

31.1 Rule 13a-14(a) Certifications.

32.1 Section 1350 Certifications (This information is furnished and not filed for purposes of Sections 11 and 12 of the Securities Act of 1933 and Section 18 of the Securities Exchange Act of 1934).

99.1 Report of Independent Registered Public Accounting Firm on Selected Financial Data.

101 Pursuant to Rules 405 and 406 of Regulation S-T, the following information is formatted in iXBRL (Inline eXtensible Business Reporting Language): (i) the Consolidated Statements of Earnings for the years ended December 31, 2019, December 31, 2018 and December 31, 2017, (ii) the Consolidated Statements of Comprehensive Income for the years ended December 31, 2019, December 31, 2018 and December 31, 2017, (iii) the Consolidated Balance Sheets as of December 31, 2019 and December 31, 2018, (iv) the Consolidated Statements of Changes in Shareholders' Equity for the years ended December 31, 2019, December 31, 2018 and December 31, 2017, (v) the Consolidated Statements of Cash Flows for the years ended December 31, 2019, December 31, 2018 and December 31, 2017, (vi) the notes to the Consolidated Financial Statements and (vii) the cover page.

104 Cover Page Interactive Data File (formatted in iXBRL in Exhibit 101).

† This exhibit is a management contract or a compensatory plan or arrangement.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

THE GOLDMAN SACHS GROUP, INC.

By: /s/ Stephen M. Scherr
Name: Stephen M. Scherr
Title: Chief Financial Officer
Date: February 20, 2020

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

By: /s/ David M. Solomon
Name: David M. Solomon
Capacity: Director, Chairman and Chief Executive Officer (Principal Executive Officer)
Date: February 20, 2020

By: /s/ M. Michele Burns
Name: M. Michele Burns
Capacity: Director
Date: February 20, 2020

By: /s/ Drew G. Faust
Name: Drew G. Faust
Capacity: Director
Date: February 20, 2020

By: /s/ Mark A. Flaherty
Name: Mark A. Flaherty
Capacity: Director
Date: February 20, 2020

By: /s/ Ellen J. Kullman
Name: Ellen J. Kullman
Capacity: Director
Date: February 20, 2020

By: /s/ Lakshmi N. Mittal
Name: Lakshmi N. Mittal
Capacity: Director
Date: February 20, 2020

By: /s/ Adebayo O. Ogunlesi
Name: Adebayo O. Ogunlesi
Capacity: Director
Date: February 20, 2020

By: /s/ Peter Oppenheimer
Name: Peter Oppenheimer
Capacity: Director
Date: February 20, 2020

By: /s/ Jan E. Tighe
Name: Jan E. Tighe
Capacity: Director
Date: February 20, 2020

By: /s/ David A. Viniar
Name: David A. Viniar
Capacity: Director
Date: February 20, 2020

By: /s/ Mark O. Winkelman
Name: Mark O. Winkelman
Capacity: Director
Date: February 20, 2020

By: /s/ Stephen M. Scherr
Name: Stephen M. Scherr
Capacity: Chief Financial Officer (Principal Financial Officer)
Date: February 20, 2020

By: /s/ Sheara Fredman
Name: Sheara Fredman
Capacity: Chief Accounting Officer (Principal Accounting Officer)
Date: February 20, 2020

Executive Offices

The Goldman Sachs Group, Inc.
200 West Street
New York, New York 10282
1-212-902-1000
www.goldmansachs.com

Common Stock

The common stock of The Goldman Sachs Group, Inc. is listed on the New York Stock Exchange and trades under the ticker symbol "GS."

Shareholder Inquiries

Information about the firm, including all quarterly earnings releases and financial filings with the U.S. Securities and Exchange Commission, can be accessed via our Web site at www.goldmansachs.com.

Shareholder inquiries can also be directed to Investor Relations via email at gs-investor-relations@gs.com or by calling 1-212-902-0300.

2019 Annual Report on Form 10-K

Copies of the firm's 2019 Annual Report on Form 10-K as filed with the U.S. Securities and Exchange Commission can be accessed via our Web site at www.goldmansachs.com/investor-relations.

Copies can also be obtained by contacting Investor Relations via email at gs-investor-relations@gs.com or by calling 1-212-902-0300.

Transfer Agent and Registrar for Common Stock

Questions from registered shareholders of The Goldman Sachs Group, Inc. regarding lost or stolen stock certificates, dividends, changes of address and other issues related to registered share ownership should be addressed (by regular mail or phone) to:

Computershare
P.O. Box 505000
Louisville, KY 40233-5000
U.S. and Canada: 1-800-419-2595
International: 1-201-680-6541
www.computershare.com

Independent Registered Public Accounting Firm

PricewaterhouseCoopers LLP
300 Madison Avenue
New York, New York 10017

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