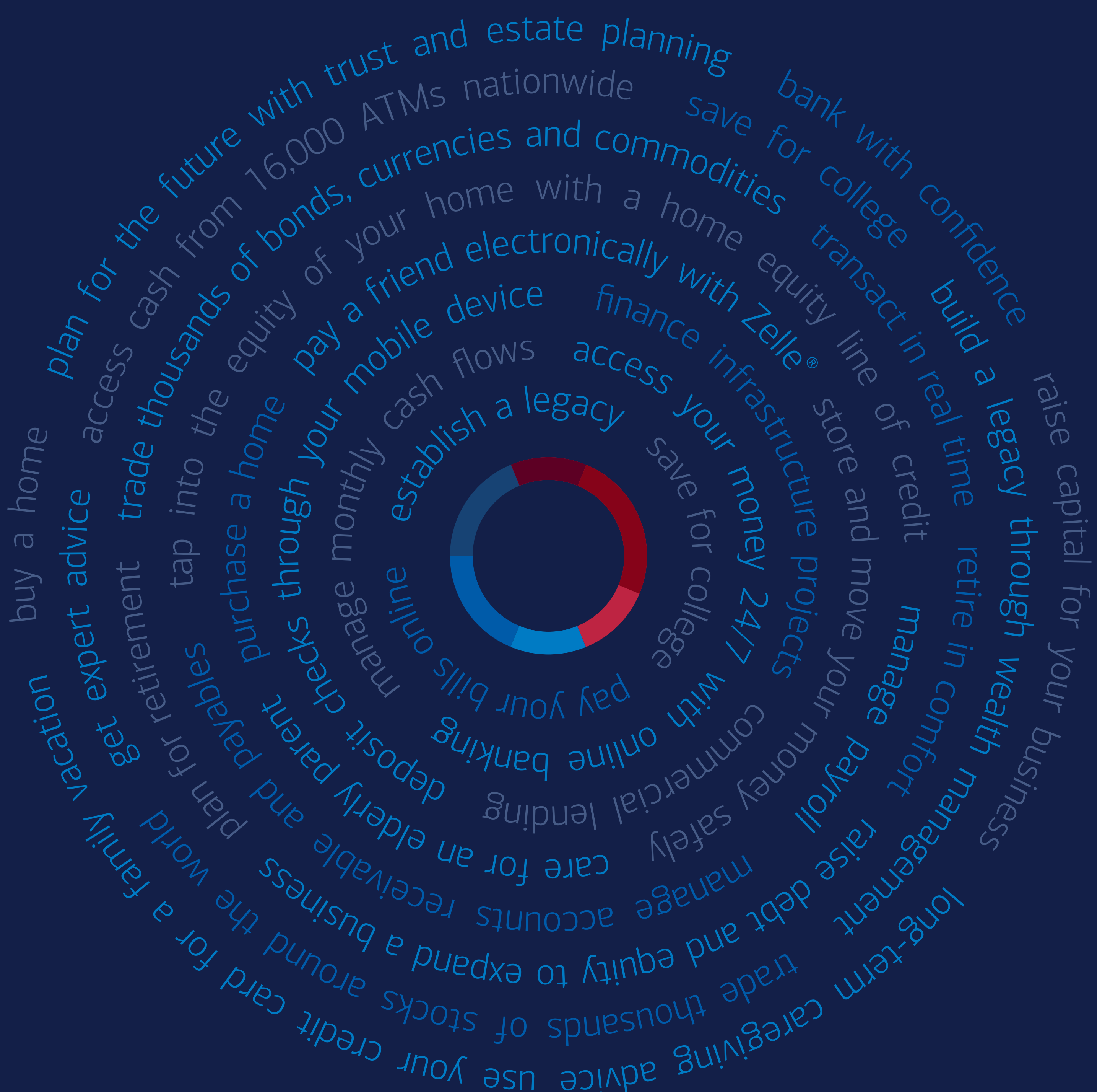
Bank of America

Bank of America Corporation
2017 Annual Report



OUR PURPOSE:
TO HELP MAKE FINANCIAL LIVES BETTER, THROUGH THE POWER OF EVERY CONNECTION

CONTENTS

A LETTER FROM CHAIRMAN AND CEO BRIAN MOYNIHAN

RESPONSIBLE GROWTH: HOW WE RUN OUR COMPANY

Put simply, not every dollar is a good dollar, unless it comes from activities that satisfy a customer need and fit our risk parameters, and that has to be sustainable over time. We are here to live our purpose: To help make financial lives better through the power of every connection.

Responsible Growth has four tenets:

Grow and win in the market, no excuses

Grow with our customer-focused strategy

Grow within our risk framework

Grow in a sustainable manner:
- Be a great place to work for our teammates
- Shared success (all of our ESG commitments)
- Operational excellence

Look for a more detailed discussion of these tenets throughout this report.

Dear shareholders,

We have committed to you that Bank of America will stay true to our course of responsible growth, and our 2017 financial results reflect that in every dimension. We grew revenue by 4 percent to $87 billion, and we increased earnings per share (EPS) by 5 percent to $1.56. Adjusting for the one-time charge from the U.S. Tax Cuts and Jobs Act (the "Tax Act"), revenue was up 5 percent to $88 billion, EPS increased 23 percent to $1.83.

I will discuss in further detail below the overall impact of the Tax Act and how we view the anticipated long-term benefits.

Responsible growth also delivered for you, our shareholders. In 2017, we returned $15.9 billion in capital through common dividends and net share repurchases — nearly 90 percent of net income — up from $6.6 billion in 2016. Total shareholder return was 35.7 percent for 2017 and, as you can see in the chart on page 32, we outperformed major benchmarks. Our market valuation continues to grow, increasing by $82 billion in 2017 and standing near $330 billion as I write this.

Our financial metrics also improved. Adjusted for the impact of the tax legislation mentioned earlier, return on tangible common equity grew 150 basis points to 11 percent, well above our estimated cost of capital of 9 percent, and our return on assets rose 12 basis points to 0.93 percent. Our efficiency ratio further improved to 63 percent. Tangible book value per share, which measures the value we are creating for you, hit $16.96 at the end of 2017. In 2018, we expect continued improvement on all of these metrics.

I am proud of the countless ways our 209,000 teammates delivered in 2017, but what I want to emphasize for you is that we grew the right way — we drove responsible growth. We stuck with our approach and didn't reach beyond our customer and risk frameworks for short-term gains. And we continued to invest in our teammates, our communities, and improving our company through operational excellence, so our growth would be sustainable.

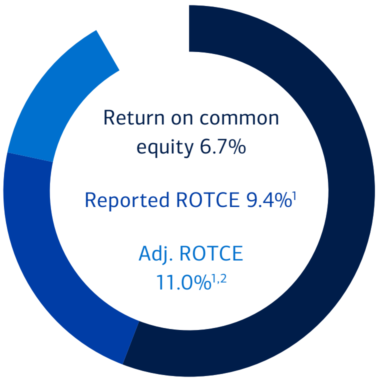
WE REMAIN COMMITTED TO RETURNING CAPITAL

Before I highlight the results from our customer and client businesses, I want to touch on a point I discussed in some detail in last year's letter. As I outlined last year, the number of shares outstanding, on a fully diluted basis, peaked at 11.6 billion, driven by the more than 7 billion common shares we issued for acquisitions and shares we issued to stabilize the company during the Great Recession.

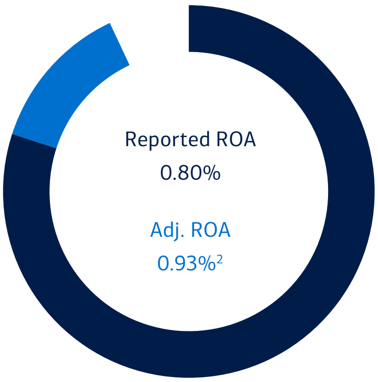
We will continue to bring the share count down as we focus on returning excess capital to you. At the end of 2017, we reduced our fully diluted shares to 10.5 billion shares — a decline of more than 1 billion shares from the peak. Continuing on that path is a priority for us, and we plan to proceed with share buybacks and dividend increases based on our continued progress as measured through the annual Federal Reserve Comprehensive Capital Analysis and Review (CCAR) process.

Returning capital to shareholders does not prevent us from making loans as some suggest. We simply have more capital than we need to meet today's requirements, and we can grow without using more for the foreseeable future. We have plenty of capital to serve our customers and clients' needs.

2017 RETURN ON AVERAGE TANGIBLE COMMON EQUITY



2017 RETURN ON AVERAGE ASSETS



[1] Represents a non-GAAP financial measure
[2] Adjusted to exclude the initial impacts of the Tax Act

DRIVING ECONOMIC GROWTH BY SERVING CUSTOMERS AND CLIENTS

Now, I'd like to highlight how we delivered for our three groups of customers: people, companies, and institutional investors.

In 2017, our **Consumer Banking** business, which serves one in two U.S. households and millions of small business clients, earned $8.2 billion in after-tax net income on revenue of $35 billion, up 14 percent and 9 percent, respectively, from the prior year. Our growth was broad-based; deposits grew by $54 billion, or 9 percent, to $653 billion, and we grew loans by $20 billion, or 8 percent, to $266 billion. And, even though rising interest rates tempered demand for mortgage refinancing, we originated $68 billion in mortgages in 2017.

After years of investment, Bank of America is the digital banking leader, with 35 million digital customers, including 25 million active mobile banking users. In 2017, our mobile banking app became the first to be certified by J.D. Power. Importantly, these customers logged in to our mobile app more than 1.3 billion times in 2017.

We process millions of transactions daily for our customers and clients. One area of significant growth is person-to-person (P2P) payments. We are a leader in payments via Zelle. While some 60 financial institutions are in the Zelle network, a third of all transactions in 2017 were conducted by Bank of America customers. Our P2P transactions more than doubled in 2017. The Zelle capability is integrated into Bank of America's mobile app and allows our customers to make payments easily and securely, and even split payments to different recipients. The rapid adoption of Zelle enhances the customer experience and also helps us reduce the costs and risks associated with paper checks and cash transactions.

Let me take a moment to explain why digital technology is so important to our future.

For years, we have focused on redefining retail banking and improving the customer experience, both in our financial centers and through our digital platforms. We call this approach "high-touch, high-tech," because it describes how we are following customer behavior to combine improvements in our 4,500 financial centers and new digital capabilities to enhance the overall customer experience however customers choose to engage with us. In addition to advances in our digital and mobile capabilities, which have resulted in digital sales comprising 30 percent of total sales, we are investing to refresh those centers and ATMs, and we are opening new financial centers in areas where we are serving customers and clients but have no retail presence, or too few centers.

In the map on page 5, you can see the markets where we have begun adding financial centers, and where we will be doing so in the near future. Last year, we also added more than 800 small business bankers, mortgage specialists, financial advisors, and other experts in our financial centers. Even with these investments, and with customer satisfaction levels at or near all-time highs, the efficiency ratio in our Consumer business — which measures what it costs to generate a dollar in revenue — improved by more than 4 percentage points in 2017 to 52 percent.

Turning to our **Global Wealth and Investment Management** business, we serve affluent and wealthy investor clients through the two leading brands in wealth management: Merrill Lynch and U.S. Trust. This business delivered $3 billion in after-tax net income on $19 billion in revenue in 2017, generating a 27 percent pretax margin. These results reflect years of investment and attention to serving the needs of our clients.

In 2017, we saw assets under management (AUM) flows of nearly $100 billion as clients continued to trust us to manage their investments. It's also worth noting that, in the fourth quarter of 2017, loans to clients in this business grew by $11 billion, or 7 percent, over the fourth quarter of 2016, marking the 31st consecutive quarter of loan growth. The value of the integrated capabilities we offer our clients continues to deliver returns for our shareholders. By enhancing the client experience, and bringing to bear all that our enterprise has to offer to help clients achieve their goals, we're deepening relationships and gaining new ones.

Bank of America has over 4,500 financial centers throughout the United States.

NEW FINANCIAL CENTER MARKETS

- Cincinnati, **Ohio**
- Cleveland, **Ohio**
- Columbus, **Ohio**
- Denver, **Colorado**
- Indianapolis, **Indiana**
- Lexington, **Kentucky**
- Minneapolis, **Minnesota**
- Pittsburgh, **Pennsylvania**
- Salt Lake City, **Utah**

Our **Global Banking** business serves clients from medium-sized businesses to the largest companies in the world. Global Banking set several records in 2017, including revenue of $20 billion and after-tax net income of $7 billion. Full-year earnings were up 21 percent on strong operating leverage, as revenue rose 8 percent, while expenses rose only 1 percent. That is the kind of operating leverage our operational excellence can deliver.

We are investing in this business as well, including technology to improve the client experience and hiring additional bankers. Over the past few years, we have added more than 400 bankers to our Global Banking team in markets across the United States as we continued to deepen local relationships with our commercial clients. This investment paid off for us in many ways in 2017. For example, overall investment banking fees rose 15 percent in 2017 to $6 billion. We were gratified to see a 30 percent growth in fees from middle-market investment banking.

Global Markets serves our corporate clients and the largest institutional investors in the world. We saw solid, stable performance despite a challenging low volatility trading environment. This business generated $16 billion in revenue and $3.3 billion in after-tax net income.

Let me share a few observations about how we operate this business. We serve clients around the world who want to raise capital and hedge risks. When markets are volatile and clients are trying to manage their business, they turn to us for help. When markets are stable and there is less client activity or volatility, our revenues may be lower, as we saw in 2017.

We have positioned this business to deliver steady and sustainable returns in either scenario, while taking less risk. Over the years, our performance bears that out. In 2017, total sales and trading revenue, excluding debit valuation adjustments, was $13.2 billion, down 3 percent from the prior year. However, across the past five years and with all of the volatility in markets and trading activities during that period, Global Markets has delivered sales and trading revenue within a range of $12.9 billion and $13.6 billion. This relative stability reflects our leadership positions across multiple products and our ability to maintain the appropriate business mix during market shifts. Reflecting that stability and solid risk management, Global Markets made money every single trading day in 2017. Over the last five years, we made money in Global Markets on 98 percent of trading days.

RESPONSIBLE GROWTH THAT IS SUSTAINABLE

Looking at our 2017 business results, you can see that we remained true to our responsible growth strategy: We grew by focusing on serving our customers and clients and managing risk well.

We also are focused on achieving growth that is sustainable. Sustainability has three key components: Being the best place to work for our team, sharing our success, and operational excellence. To share success, we focus on our environmental, social, and governance (ESG) activities; responsible corporate governance practices; our $125 billion environmental initiative; our philanthropy; and many other activities.

Our ESG work includes the many ways we share our success by driving growth in the communities we serve. In 2017, we provided $4.5 billion in loans, tax credit equity investments and other real estate development solutions through Community Development Banking. We financed affordable housing, charter schools, health care and economic development across the United States, including 12,000 affordable housing units, nearly 5,000 of which went to seniors, military veterans and the formerly homeless. We deployed capital in many other ways to strengthen our communities, including $200 million in philanthropic giving. Also, our teammates spent 2 million hours supporting and volunteering with local organizations and chapters. It gives me great pride to see what the teams are doing in all our markets.

You can read more about how we are supporting communities throughout this report, including the four-page feature, beginning on page 16.

Sustainability has an element of operational excellence, continuing to improve our company and reinvesting those savings into future capabilities. Through prior initiatives, including our "New BAC" work in 2011 and our ongoing Simplify and Improve (SIM) program, we have simplified our company and made it easier for our teammates to serve customers and clients. We have unlocked savings that we have invested back into the company to innovate and improve our capabilities; an example of this is the addition of specialists in our financial centers, and more commercial and corporate bankers to serve local markets, which I discussed earlier.

As we have continued to invest in operational excellence, we have reduced the amount we spend each year by $26 billion since 2011. In 2016, we set a target of approximately $53 billion in annualized expenses for 2018, which we have reached. At the same time, our customer satisfaction scores are at pre-crisis levels, and improving.

INVESTING IN OUR TEAM TO BE A GREAT PLACE TO WORK

Another component of being sustainable is our commitment to be a great place to work. In 2017, we demonstrated that commitment in several ways.

At the beginning of 2017, we reached the $15 per hour starting compensation level after years of regular increases for U.S. teammates. I'm pleased to see that other companies have followed suit more recently, influenced by the passage of the Tax Act in the United States. We will continue to review and adjust our starting wage as part of our commitment to fair and equitable compensation for all of our teammates.

Please look for additional discussion in this report from Sheri Bronstein, Global Human Resources executive, about our compensation and benefits, including career development and learning, and other initiatives to help our teammates see Bank of America as a great place to work. Sheri's note also describes our industry-leading work on health care and wellness for our team.

SHARING THE BENEFITS OF U.S. TAX REFORM

Earlier, I mentioned that there was a one-time charge to our 2017 earnings from the Tax Act. However, there are many benefits from tax reform that I want to discuss. These benefits impact how we will invest in the future and deliver returns to you.

The backdrop for this discussion is the solid economic growth our experts expect in 2018. As I write this letter, our economists expect about 2.7 percent growth in the U.S. economy, with the unemployment rate hovering at 4 percent or perhaps even lower. The driver continues to be the consumer, and so far in 2018, we see healthy consumer activity, with Bank of America credit and debit card spending up strongly so far this year. Our business clients are showing confidence in a more stable and predictable regulatory environment than in recent years.

When I think about the impact of the Tax Act, it starts with the broader benefits to the U.S. economy. By lowering the corporate rate to 21 percent from 35 percent, and by creating a territorial tax system where corporate earnings are taxed at the rate of the jurisdiction in which they are earned, the Tax Act allows companies to make business decisions less dependent on the tax considerations necessitated by the prior imbalance in rates between the United States and the rest of the world. This levels the playing field for U.S. companies and impacts their decisions.

In discussions with clients who are CEOs of companies headquartered abroad, I've been struck by a common theme. The United States is an attractive market for them, with solid consumer demand, highly skilled workers, stable rule of law, plentiful and predictable energy availability, and other factors. Even so, prior to the Tax Act reforms, these clients had no choice but to base investment decisions on the tax effects of different rates around the world. With the U.S. corporate rate better aligned with that of other countries, these CEOs now are considering how to invest in manufacturing and production in the U.S., where the final demand for their products remains so strong because the U.S. consumer economy is so healthy.

We're seeing other economic benefits from tax reform as well. Hundreds of U.S. companies have provided bonuses, wage increases, and increased matches to retirement savings plans to millions of American workers. At Bank of America, more than 90 percent of employees have received a one-time payment as a direct result of U.S. tax reform, impacting about 180,000 teammates in the U.S. and overseas. In addition, we will continue to invest in our company in a balanced way that focuses on improving our connection with customers, while increasing our competitiveness and sustainability. We are expanding our financial center presence, as I discussed earlier. We are investing in new technology and innovation across all our businesses.

A MESSAGE FROM LEAD INDEPENDENT DIRECTOR JACK BOVENDER

Dear shareholders,

Thank you for your investment in Bank of America. Our CEO, the management team, and I, on behalf of the independent directors of your company, are pleased to report that our approach to responsible growth produced solid returns for investors in 2017. Bank of America earned $18 billion, and given our solid capital position, we were able to return almost all of those profits to you through common stock dividends and share repurchases. We thank you for the faith and confidence you have entrusted in us. The Board of Directors remains focused on enhancing the company's position to deliver long-term value to our shareholders. To do this, the independent directors engage regularly with Brian and the company's management team, business leaders and functional support executives (risk, human resources, audit and finance) about the issues the company faces and the environment in which we operate. These discussions assist our ability to assess the company's performance and to highlight areas of focus as part of our Board meetings and annual strategic planning process. Each fall, the Board and the senior management team meet for an intensive planning session to review progress, discuss our business opportunities and challenges, and approve the long-term strategic plan. The directors also meet regularly throughout the year with shareholders to solicit their views and input on a variety of topics, including the company's financial performance; corporate governance and Board practices; environmental, social and governance (ESG) priorities; executive compensation; and other areas of investor focus. In the past year, we engaged with shareholders representing more than 30 percent of our outstanding shares, which gave us a broad understanding of shareholder priorities and concerns. I look forward to continuing these discussions in 2018. On behalf of the Board and the management team, I thank you for choosing to invest in Bank of America.

Sincerely,

Jack O. Bovender, Jr.

Jack Bovender

All these investments create jobs, too. We will look to these and other areas as we continue to grow and the benefits of tax reform play out. As these benefits are realized, it is also important that we retain our long-term focus on addressing the federal debt and ensuring the U.S. remains a fiscally strong, competitive global leader.

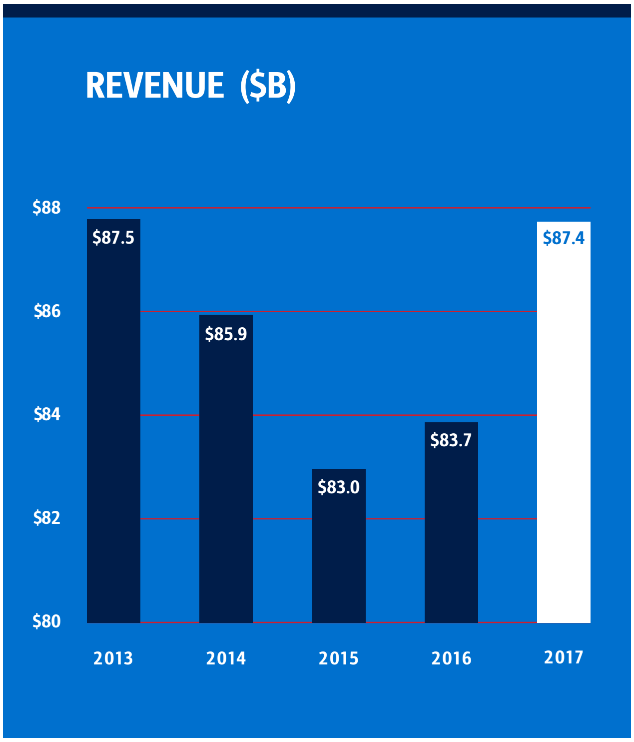
COMMITTED TO STRONG CORPORATE GOVERNANCE

Let me conclude by discussing how the management team and the Board of Directors work together to advance your investment in Bank of America. Effective corporate governance is a tenet for sustaining responsible growth. You are represented by a strong independent Board. Our Lead Independent Director, Jack Bovender, and the other directors meet regularly with management, regulators, and shareholders to review how we are implementing responsible growth and executing our strategy of serving three groups of clients with our integrated financial services capabilities.

Throughout the year, the Board meets with management to oversee risk management and governance, and carry out other important duties directly and through Board committees that have strong, experienced chairs and members. In addition, the management team and the Board meet to review in detail ongoing results and issues needing deeper discussion. The Board and committees also give regular input to us about topics of interest which require additional conversation. In late fall, we hold an extended session over several days to review the three-year strategic plan and make adjustments based on the operating environment, markets, and other opportunities. See Jack's note for his discussion about the Board's role in strategic planning.

We are proud of the work our directors have done to increase diversity on our Board; we are one of only five companies in the S&P 100 to have five or more female board members. Our director recruiting process focuses on diversity of talent and perspective to ensure invigorating discourse among Board members and management. In 2017, we were pleased that Dr. Maria Zuber, the vice president for research at Massachusetts Institute of Technology, joined our Board. Dr. Zuber brings diverse

“In 2017, we saw responsible growth at work for shareholders, customers and clients, the communities we serve, and our teammates.”



perspectives in several areas, including technology and risk management. In the short time she has been with us, we have already benefited from her unique talents and experience.

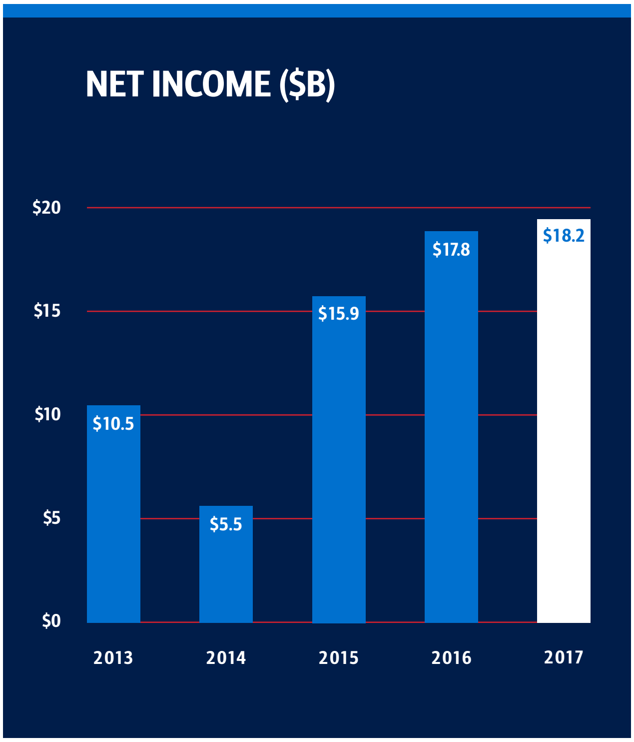
I encourage you to read more about our corporate governance activities in our 2018 Proxy Statement.

LIVING OUR PURPOSE

In 2017, we saw responsible growth at work for shareholders, customers and clients, the communities we serve, and our teammates. We discuss this in greater detail in the following pages, where you’ll see many examples of how we are living our purpose: to help make financial lives better through the power of every connection.

Thank you for your support and your investment in Bank of America. I look forward to another strong year for our company.

Brian Moynihan
March 12, 2018



SIMPLY SOUTHERN: INVESTING IN A DREAM AND HELPING OTHERS DREAM, TOO

When Ginger Aydogdu decided to pursue her lifelong dream of selling specialty clothing, she was excited — and a little anxious.

"My first production facility was very, very small," Ginger said. "We had one manual machine. I didn't have enough employees. It was very scary, and I wasn't sure we would survive." Like many small businesses, Simply Southern started slowly. Ginger made $30 on the first day and $40 the next day. At that rate, there was no way she was going to make enough to pay the rent. But she stuck with it, and soon, she was fielding dozens of calls a day from retailers interested in selling her Southern-styled shirts and apparel. "It was a lot of hard work and determination, and all of a sudden, it finally paid off," she said. "Retailers started to say, 'oh yeah, this is a product we can sell and we can sell a lot of it.'" And so, a relationship that started with a small business loan from Bank of America turned into a multimillion dollar enterprise. A fledgling business in Greensboro, North Carolina, selling vibrant-colored T-shirts at trade shows became a global enterprise selling an array of products through 4,000 stores around the world. Before long, Simply Southern had outgrown its small business roots and turned to Bank of America Merrill Lynch for help.

"We came into Ginger's life at a time when her company was experiencing tremendous growth," said Katherine Lockhart, Bank of America Merrill Lynch Business Banking executive. "We discussed how we could help her with her payables and receivables, financing buildings, and expanding into new markets. The company was doing very well and needed additional capabilities, not just for Ginger's business needs but also for the personal side." "Ginger is a very philanthropic person," said James Walsh, private client advisor at U.S. Trust, Private Wealth Management. "With many business owners, so much of their concentration is in one area — their business. We're able to come in and provide a strategy to diversify their holdings and establish a legacy to help not only this generation, but successive generations as well." James sat down with Ginger and mapped out a strategy to manage her personal investing goals and ensure that she could fulfill another lifelong dream: working with children. Today, with Bank of America's help, Ginger can focus on her business, her employees, and giving back to the community. And Simply Southern's future is simply amazing.

The world's largest steel mill once operated on a 3,000-plus acre riverside point in southeast Baltimore, north of the United States Naval Academy and Chesapeake Bay. At its peak, the Bethlehem Steel mill employed tens of thousands of workers to meet global demand and serve an evolving American landscape. Its products can be found within the Golden Gate Bridge's girders, the George Washington Bridge's cabling, and armaments for U.S. forces from both world wars. The rise of imported steel and increased use of alternative materials led the mill to be shuttered in 2012. But today a partnership entitled Tradepoint Atlantic is redeveloping the project into the country's largest multichanneled transportation and logistics hub, where brands such as FedEx, Under Armour, and Amazon will ship products by port, rail, and highway. Bank of America provided financing for the site. Independent analysis forecasts the creation of 17,000 jobs and a $3 billion economic impact for Baltimore and the state of Maryland. "We have been partners with Bank of America Merrill Lynch since the inception of our company," said Kerry Doyle, Tradepoint Atlantic's chief commercial officer. "They provided us construction financing for our two marquee buildings and have been integral in establishing the legitimacy of the project. Our relationship with Bank of America not only helped us reach the point where we proved the concept and developed more than 2 million square feet, it has us poised to continue that process, secure new business, and achieve the site's potential." "We believe in Tradepoint Atlantic's vision," said Bank of America's Paul Deschamps, senior relationship manager in the Global Banking and Markets real estate division. "From their innovative business plan to their commitments to the community and environmental sustainability, we are fully aligned with their interests and look forward to continued collaboration." For three decades, a star of Bethlehem, hand-crafted by steelworkers and affixed to the mill's blast furnace, was lit during the holidays. Today, the star is purposely reflected in the intersecting lines of Tradepoint Atlantic's corporate logo, and the actual reclaimed star has assumed a place of prominence within the development. "The Bethlehem Steel mill impacted this entire region," said Bank of America Greater Maryland Market President Sabina Kelly, a Baltimore native. "Now, Tradepoint Atlantic is creating the next chapter, and we are proud to assist them as they do so."

INNOVATIONS SHAPE THE FUTURE OF BANKING

A conversation with Michelle Moore

Q: ***Digital banking used to be about convenience, now it's about mobility. How did we get here?***

A: Our clients and their actions brought us to this inflection point. There are more customers who bank with us through mobile only than through desktop, and they are logging in at a rate of over 100 million sign-ins per week.

Q: ***Are clients able to do everything on a smartphone that they can do in a financial center?***

A: With the exception of dealing with cash, clients can do everything including make payments, deposit checks, and open accounts right from their mobile phone. In addition, there are many value-added features available to clients in mobile, including the ability to check FICO scores, lock and unlock debit cards, and set up an appointment to meet with one of our specialists, to name a few.

Q: ***Where is Mobile Banking headed?***

A: We are living in a world dominated by voice interactions and the need for a paperless, cashless environment. Zelle® is a great example of helping our customers move to a cashless society; it's a new person-to-person (P2P) payment service in our Mobile Banking app that we introduced in mid-2017. Zelle makes it easy, safe and fast for clients to send, receive and request money from almost anyone, with a bank account in the U.S. We saw total Zelle transactions hit nearly 68 million, and in the fourth quarter alone we processed more than 23 million transactions, totaling nearly $7 billion. We currently have 3 million active monthly users of Zelle, and we continue to add thousands of new users every day.

Q: ***Who is Erica?***

A: Erica is our virtual financial assistant, leveraging artificial intelligence and data to better help clients live their best financial lives. Clients can interact with Erica through voice and text, and she will help with their banking needs, like transferring money, finding key account information such as routing numbers, and locking and unlocking debit cards. More importantly, Erica will provide proactive insights to clients about trends in balances and notifications of upcoming bills. She has the ability to track transaction information such as how much customers spent on groceries last month, a subscription monitor to help them stay ahead of recurring subscriptions, card controls to proactively let them know where their card is being used for payments, and valuable insights on how to meet savings goals.

MEET EDITH CUNNINGHAM, FREQUENT ATM USER AT 101

Edith Cunningham became a customer of Bank of America when she worked on a military base in San Francisco during World War II. Fast forward to today, and a lot has changed. Customers can access their cash 24 hours a day through the ATM and even pay bills on their smart phones. Edith is learning about the new technology available and is a frequent ATM customer. The one thing that hasn't changed is her financial philosophy, never spend more than you make!

MINNESOTA — HIGH-TOUCH, HIGH-TECH IS THE FOUNDATION FOR GROWTH IN THE NORTH

It's all about relationships here in the Twin Cities.

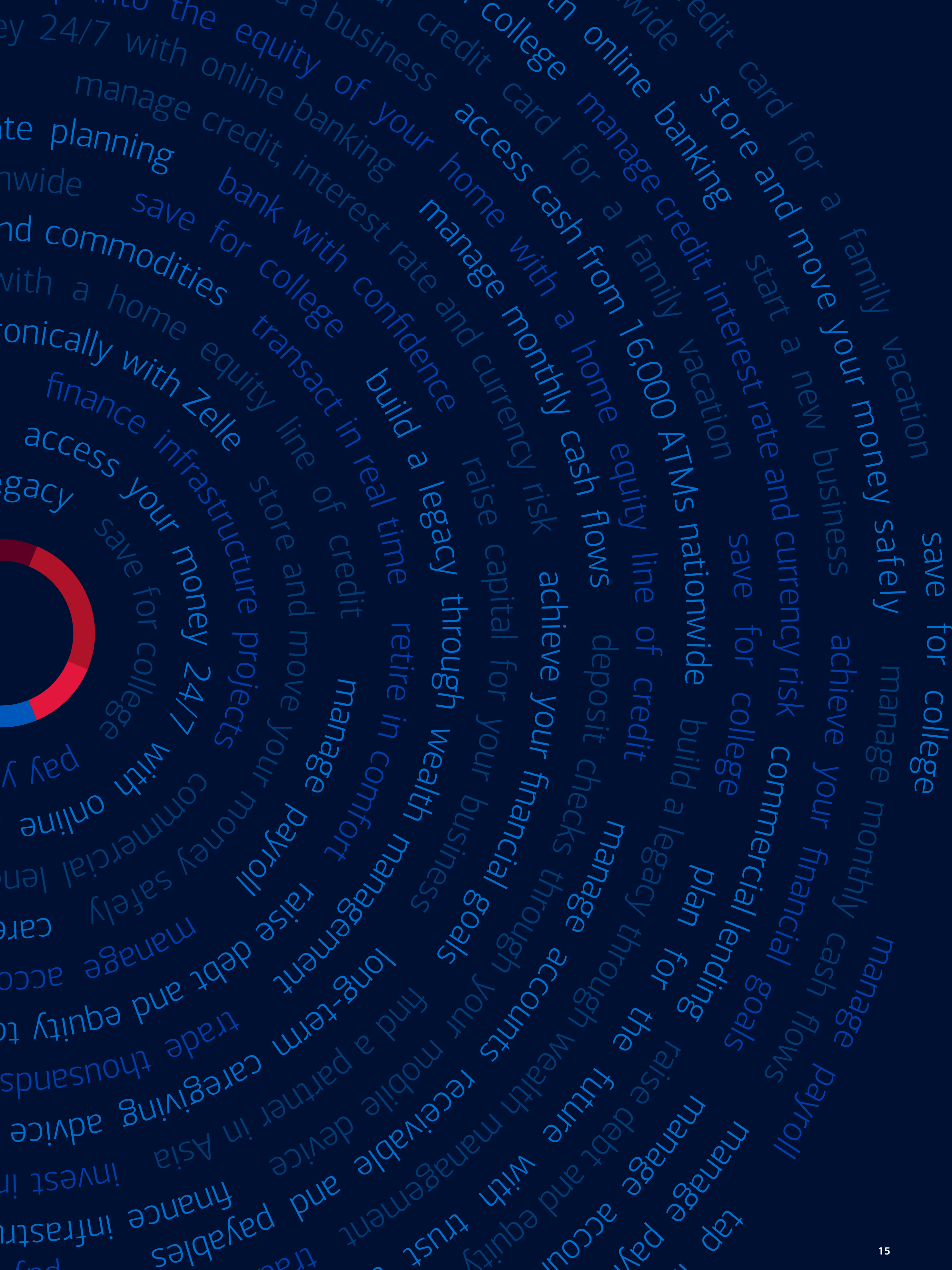
Business can still get done on a handshake, and people like to work with people they know. That's why our high-touch, high-tech approach works so well here — no matter how clients choose to bank, we're delivering great client care through every channel and in person, in a way that builds trust. And our high-tech platforms are simply best-in-class — whether through our mobile access, ATM and Advanced Centers, or online, our clients are able to get their business done quickly, securely, and easily. When they need more than transactions, though, like a question answered, a problem solved, a new idea on how to optimize their assets — that's where my team and I come in for the high-touch experience. Our new financial center feels more like a living room than a typical bank branch. It's a comfortable and inviting place where we bring our clients together with the people who have the right expertise, and offer products and services that can be combined into a unique solution just for them. Clients can get advice from an expert on all aspects of their financial life: homebuying, their small business, or investments to fund a robust retirement or plan for college for their kids. High-touch, high-tech is how we provide personalized and sustainable coverage for our local community. It means that our clients can trust that we are here for them for the long term, that we care about the individual relationship we have with them, and that they can always reach someone they know to get the financial advice that they need.

Catherine Simpson
Bank of America Market President
Minneapolis/St. Paul

PARTNERING TO MAKE HOMEOWNERSHIP A REALITY

Santos Vanegas Villatoro, a single father of three, had always dreamed of owning his own home, but he wasn't sure he could afford it.

"I had saved enough for the down payment, but I wasn't sure it would be enough to keep my mortgage payments the same as my monthly rent," Santos said. "Plus, I wasn't very familiar with the whole process of buying a home." Through an innovative partnership between Bank of America and the Neighborhood Assistance Corporation of America (NACA), Santos was able to buy a home in Charlotte and keep his payments affordable. Bank of America's Consumer Lending team is proud to help clients like Santos realize their dream of owning a home. It's part of how we are investing in our communities and helping families and neighborhoods create prosperity.


save for college
save and move your money safely
store and move your money safely
bank with online banking
manage credit, interest rate and currency risk
access cash from 16,000 ATMs nationwide
manage monthly cash flows
build a legacy through wealth management
achieve your financial goals
commercial lending
plan for the future
save for college
finance infrastructure projects
access your money 24/7 with online banking
transact in real time
retire in comfort
raise capital for your business
manage payroll
raise debt and equity to fund
long-term caregiving advice
manage receivables and payables
trust with wealth management
find a partner in Asia
bank with confidence
build a legacy
pay with Zelle

LEGACY WEST: BRINGING THE NEW URBANISM TO NORTH TEXAS

In 1978, Fehmi Karahan arrived in New York City from Istanbul, Turkey as a graduate student with less than $100 in his pocket. After moving to Texas and completing his MBA, he joined a small commercial real estate development company. Today, Fehmi is president and CEO of The Karahan Companies, an integrated real estate development, property management and investment group. "Growing up in Istanbul, a city that is some 3,000 years old, and being able to travel around Europe and see pedestrian-friendly streets, outdoor cafes, and gathering places gave me the insight into how these communities work and what people like," Fehmi says. As 2017 came to a close, Fehmi had just completed one of the largest, most successful commercial developments in Texas: Legacy West, a 240-acre mixed-use project, in the Dallas suburb of Plano. The $3 billion project, which became home to several *Fortune* 100 companies, features retail, restaurants, apartments, and corporate office space. Fehmi widely credits his team, including Bank of America, for his success. "When Fehmi approached us, it was an opportunity to deepen our relationship further and provide financing for yet another unique project," said Yelda Tuz, Bank of America Senior Credit Products manager with Global Banking and Markets. "Fehmi is a visionary who has an extraordinary gift for developing landmark projects like Legacy West, which has turned into one of the most successful projects in the state."

MARK HOGAN: SUPPORT SERVICES TEAMMATE AND D&I AWARD WINNER

Mark Hogan is a Support Services employee based in Dallas, Texas who embraces our culture of giving back to his community. Our Support Services team is an in-house marketing and fulfillment operation comprising 300 employees with intellectual disabilities who support every major line of business. For over 25 years, this department has given individuals facing barriers to employment the opportunity to achieve financial stability and become successful members of their communities. In 2017, Mark was named a Diversity & Inclusion Award winner for his commitment to community service. He led his department to donate 104 boxes of food to the North Texas Food Bank, filled 131 backpacks with school supplies for local children, raised more than $2,100 to support the American Heart Association's Heart Walk, and generously donated his time to the "Night to Shine Prom," which hosts an unforgettable prom experience for people 16 years and older with special needs.

DALLAS

360° VIEW OF HOW BANK OF AMERICA SUPPORTS LOCAL ECONOMIES

THE STAR: DALLAS COWBOYS NEW HEADQUARTERS

Earlier in 2017, more than 200 employees from Merrill Lynch, U.S. Trust and Bank of America moved into new office space at The Star, a 91-acre campus in Frisco, Texas which is also the Dallas Cowboys world headquarters. Bank of America not only relocated to the headquarters, but also served as a finance partner in the overall project. The Bank of America team and its local customers are now benefiting from having three separate locations consolidated into one destination.

PEOPLEFUND: SUPPORTING LOCAL SMALL BUSINESSES

PeopleFund, one of over 260 community development financial institutions (CDFIs) that Bank of America supports, is a community lender in Texas. PeopleFund lends to small businesses, including women entrepreneurs, through the Tory Burch Foundation Capital Program — funded by Bank of America — that connects women business owners to affordable loans to help grow their businesses. Andrea Thomas, owner of ScratchMeNot Flip Mittens, used her loan to increase manufacturing, grow her business, and help her product impact the lives of thousands of children.

THE GATEHOUSE: DALLAS NEIGHBORHOOD BUILDER

The Gatehouse is a supportive living community where women and children in crisis receive a hand-up to end cycles of abuse and poverty, and build new lives. Through Neighborhood Builders®, Bank of America equips nonprofits and their leaders with the funds and training to improve their community services and build stronger, more vibrant organizations. "We recognize the critical role that nonprofit organizations and their leaders play to build pathways to economic progress in the North Texas community," said Mike Pavell, Bank of America Fort Worth market president. "Through this program, we connect outstanding nonprofits, like The Gatehouse, to the resources they need to scale their impact and help our community thrive." Now in its third year, the 61-acre Gatehouse community has 95 apartments where women and their children work through a program at their own pace to become self-supportive. Families can stay for up to 2½ years while receiving assistance, including food, clothes, transportation, child care, medical/dental care, legal aid, financial literacy training, career development guidance, professional counseling, and higher education. "We believe in giving a hand-up, not a handout, for permanent change," says Lisa Rose, founder and president of The Gatehouse. "The funding and leadership development training provided by Bank of America gave our volunteers opportunities we couldn't have otherwise offered."

In the Dallas/Fort Worth market, as in all of our local markets, we are focused on delivering the full breadth of our capabilities to customers and clients, building our reputation as a trusted financial partner, while leading environmental, social and governance efforts, and contributing to the community. Led by seasoned local leadership, Bank of America is recognized as an employer of choice in the Dallas/Fort Worth market. We employ approximately 15,000 people in the community, making it one of the largest local concentrations of Bank of America employees in the world. Throughout their daily interactions with business leaders and community stakeholders, our team is advancing the Bank of America brand values through local projects and initiatives, such as financing Legacy West in Plano and moving teams together in new offices at The Star and in downtown Fort Worth. We are also assisting entrepreneurs in the community through our support of the Gatehouse in North Texas and PeopleFund. And, our employees continue to give back to the community in many ways, as highlighted by the actions of Mark Hogan, above, and Sonia Moss, at right. Our efforts in Dallas/Fort Worth are an outstanding example of how Bank of America is helping make the financial lives of our customers better every day through the power of every connection.

SONIA MOSS: 50 YEARS WITH U.S. TRUST

In 1965, Sonia Moss started a temporary job at the front desk of a U.S. Trust location in Dallas. She intended to stay six months, and then find something more permanent. More than five decades later, she's still here and finds something exciting about her job every day. In the beginning, she helped the team by manually using a 10-digit calculator and processing transactions coming off the teller line. Today, she enjoys each day as it comes and has stopped looking for that more permanent position.

HARNESSING CAPITAL MARKETS TO DO GOOD

A conversation with
Vice Chairman Anne Finucane

Q: ***How does Bank of America approach ESG?***

A: For our company, we see this as good business — running a company that people feel is a good investment, creating sustainable growth in our business, and finding innovative ways we can deploy our capital to address global challenges. Our focus on good environmental, social, and governance policies creates jobs, transforms communities, fosters economic mobility, and seeks solutions and opportunities to help families, businesses, and communities prosper and thrive. Over the last three years, we've strengthened our ESG focus across the company. We put in place a management-level ESG Committee that looks at all of our businesses and our practices and identifies the ESG risks and opportunities. We've embedded this approach through all of our eight lines of business, ensuring we are identifying opportunities that will have positive environmental and social impact, while being diligent in managing our risk in these areas. And we hold our teams accountable. Every member of the executive management team has ESG metrics on their performance scorecard.

Q: ***What does it mean to be sustainable today?***

A: "Sustainable" has become such a ubiquitous term, people often make assumptions about what it means. "Sustainability" is often associated narrowly with environmentalism, or the "E" in ESG — but today, there is a much broader definition. At the center are fundamental questions about basic principles of capitalism and what responsibilities businesses have as corporate citizens. We know that much of a company's market value comes from or is affected by factors never reported on a balance sheet, including its social and environmental impact. These nonfinancial factors are equally important, and perhaps a better, more telling measure of the degree to which companies approach business in support of returns that are more reliably sustainable. Yet companies create value across multiple dimensions, and our prosperity is linked inextricably to the communities we serve and the challenges they face. The value we create must also be shared to be sustainable longterm.

Q: ***What's the connection between social and environmental benefit and the bottom line?***

A: As seen in two reports released by Bank of America Merrill Lynch's Global Research team — "ESG: Good Companies Can Make Good Stocks" in 2016 and "ESG Part II: A Deeper Dive" in 2017 — not only is a company's ESG performance a reliable indicator of its future stock performance, but progressive ESG practices make companies less likely to suffer large price declines. They signal significantly better returns on equity than their counterparts, and suggest a greater chance of long-term success.

We have provided over

$4 BILLION

in loans, tax credit equity investments and other real estate development solutions to create housing for families, veterans, seniors, and previously homeless individuals across the United States.

Since 2013, we have delivered nearly

$66 BILLION

towards our 2025 goal of providing

$125 BILLION

for low-carbon and sustainable business through lending, investing, capital raising, advisory services, and developing financing solutions for clients around the world.

We connected people and local communities to affordable loans by investing more than

$1.5 BILLION IN 260+ CDFIs

to help finance small businesses, affordable housing, and other economic revitalization projects, primarily within low- and moderate-income communities. As an example, through the Tory Burch Foundation Capital Program, we have deployed more than $35 million in affordable loans to more than 1,700 women entrepreneurs to grow their businesses across the U.S.

Q: ***Where do you see the biggest potential impact?***

A: The biggest impact we make is through deploying capital to address major global societal issues such as climate change, clean water, affordable housing and others. Because increased financing is exactly what is needed to move the needle on these major challenges, we are excited that we are exploring innovative ways to get the whole financial community — government agencies, nonprofits, private equity and major investors such as pension funds and insurance companies — to think about addressing these issues with capital that has a competitive rate of return. If we can continue to build partnerships that embrace these new financial structures, we can have a meaningful impact on our global challenges while ensuring good value for our clients and shareholders.

ESG RATINGS & INDICES

- CDP Climate A-List
- Dow Jones Sustainability World Index for three consecutive years
- Dow Jones Sustainability North America Index for five consecutive years
- Sustainalytics – 81 Percentile
- U.S. Environmental Protection Agency EPA Green Power Rank – No.5
- MSCI – BB

A TIME TO CARE

A conversation with Lorna Sabbia, head of Retirement and Personal Wealth Solutions at Bank of America Merrill Lynch

Q: ***Why is Merrill Lynch interested in the topic of caregiving?***

A: Caregiving is a life stage that nearly all of our clients and colleagues will experience, as a caregiver, care recipient or both. It has impacted my family, and I'm not alone. Today, 40 million Americans are providing unpaid care to a family member.[1] Beyond the emotional and physical demands of caregiving, the financial toll can be significant, as well. Our research found that 92 percent[2] of caregivers are also financial caregivers. They not only provide funds, which can strain families' finances, but also handle bills, taxes, insurance and more. It can be a daunting responsibility that is often unexpected.

Q: ***What research has Merrill Lynch conducted to understand this issue, and what were the findings?***

A: Merrill Lynch recently surveyed more than 2,000 nonprofessional caregivers nationwide, conducted numerous focus groups, and interviewed internal and external experts in partnership with Age Wave. The result was a report called "The Journey of Caregiving: Honor, Responsibility and Financial Complexity." The research found that caregiving is both rewarding and challenging. Nearly three-quarters of caregivers report making sacrifices. On average, a caregiver spends $7,000 annually on a loved one, impacting their own expenses and savings. Additionally, two in five caregivers have made sacrifices at work, including reducing hours and even leaving the workforce. While caregiving responsibility among millennials is more equitable, the bulk of caregiving today still falls to women. Women are twice as likely as men to provide care to a loved one. Given the income and savings inequalities that already exist, the need to address the impacts of caregiving is most acutely felt among women.

Q: ***What is Merrill Lynch doing to address this need among clients?***

A: The best time to have a conversation about caregiving is before a situation arises. Using the insights from our extensive research and understanding of the issue, Merrill Lynch financial advisors are prepared with tools and resources to guide clients through planning and saving for the eventuality of caregiving. With more than 5 million plan participants in our institutional retirement business, Bank of America Merrill Lynch is also helping employers understand this critical issue and demonstrating its importance through the company's own industry-leading employee caregiving benefits.[3]

[1] U.S. Census Bureau, 2016.
[2] Merrill Lynch and Age Wave, "The Journey of Caregiving: Honor, Responsibility and Financial Complexity," 2017.
[3] AARP and ReACT, "Supporting Working Caregiving: Case Studies of Promising Practices," 2017.

IMPACT INVESTING

When Dr. Ruth Shaber started her career as an obstetrician and gynecologist in San Francisco, impact investing was virtually unknown. Today, it's hard to imagine an investment conversation that doesn't begin and end with how to use capital to drive both social and financial returns. For Ruth, the journey toward impact investing began in 2014 when she founded the Tara Health Foundation, which focuses on identifying and supporting solutions that improve the health and well-being of women and girls through an investment model called "integrated capital". In this model, different forms of financial and nonfinancial resources are coordinated to support enterprises that are working to solve complex social and environmental problems. Ruth explained, "Before we make an investment, we ask: 'What is the problem we are trying to solve?' We then deploy the appropriate form of capital to address that problem. We may deploy multiple forms of capital, such as grants and debt refinancing, at various times to any given partner in order to support their diverse needs." Ruth turned to her Merrill Lynch Wealth Management advisors, Mary Foust and Alena Meeker, for help in designing a diverse investment portfolio that is 100 percent aligned with her values and goals. Included in her impact strategy is a U.S. Trust portfolio called the Women and Girls Equality Strategy (WGES). This portfolio goes beyond a numerical analysis of female executives to examine how companies are taking specific steps to empower women and support gender equality. "U.S. Trust is a pioneer in gender lens investing," Ruth said. "WGES has developed a comprehensive list of criteria that support a broad set of outcomes for women and girls, spanning wage parity, career advancement, family leave policies, and human rights policies related to global supply chains. In addition to its mission alignment, WGES has outperformed major market indexes."

COMMITTED TO ENVIRONMENTAL BUSINESS

Since 2013, we have invested $66 billion in clean energy, energy efficiency, water conservation, sustainable transportation, and other environmentally supportive activities.

Recognizing the power of our financial capital to make a positive environmental impact, we have committed to deploy $125 billion in financing by 2025 to accelerate the transition to a low-carbon, sustainable economy through lending, investing, raising capital, and developing financing solutions for clients around the world. Since 2013, we have invested $66 billion in clean energy, energy efficiency, water conservation, sustainable transportation, and other environmentally supportive activities. One example of that financing is a $200 million tax-exempt master equipment lease/purchase agreement that Bank of America Merrill Lynch's Global Leasing Energy Services team provided for the New York City Housing Authority (NYCHA) to finance energy conservation measures under guaranteed energy savings performance contracts. NYCHA is the largest public housing authority in North America, and owns and manages approximately 176,636 public housing apartments in 2,417 buildings in 325 developments throughout the five boroughs of New York City. The first two schedules under the master agreement total $103.1 million and fund two Energy Performance Contracting (EPC) projects, providing much-needed energy and water conservation upgrades in 41 housing developments. The first project, Brooklyn-Queens Demand Management ("BQDM EPC"), targets 23 large developments in an electric supply-constrained Con Edison service area in Brooklyn. The second ("Sandy-A EPC") targets 18 of the 33 NYCHA developments damaged by the 2012 Superstorm Sandy. The primary goal of both projects is to modernize NYCHA's mid-century heating systems to deliver more consistent and comfortable heat. Projected energy savings for these projects over the term of the financing total $105.8 million for BQDM and $78.7 million for Sandy.

ATTRACTING MAJOR INVESTORS TO CLEAN ENERGY

Financing the world's movement into cleaner forms of energy is a job too big for one company alone. When Bank of America launched the Catalytic Finance Initiative (CFI) in 2014, a primary goal of the partnership was to increase flows of capital into renewable energy opportunities, such as wind and solar, by using innovative structures that reduce investment risks and attract broader pools of capital from institutional investors. To date, CFI partners have completed more than 20 deals in both developed and emerging markets and have helped to mobilize more than $9 billion in investments. Highlights of Bank of America Merrill Lynch's CFI activity include structuring a BBB-rated, 18-year, $203 million institutional loan to Vivint Solar Inc., backed by 30,000 residential solar installations in the U.S. In emerging markets, we arranged green project bonds in India and Peru, attracting foreign investment to these rapidly growing markets for clean energy. Our philanthropic dollars are also supporting high-impact technologies like micro-grids in 14 villages in India.

TRANSITIONING TO A LOW-CARBON ECONOMY

Since 2013, when we co-authored "A Framework for Green Bonds," the blueprint for the Green Bond Principles, Bank of America has been a thought-leader in shaping this entirely new asset class. Our efforts have helped create a market that had not existed before. Last year, we coordinated the first international issuance of green bonds by a Brazilian development bank, BNDES ($1 billion) and led offerings for clients including the German development bank KfW ($1 billion), the Australian Bank Westpac (€500 million), and the Canadian Province of Ontario (C$800 million). In addition to green bond underwriting, we are driving growth in the renewable energy market by making significant tax equity investments through Bank of America Merrill Lynch's Global Leasing Renewable Energy Finance team. Last year, the team facilitated the repowering of seven Texas wind farms with a $413.1 million tax equity investment with NextEra Energy Resources, the largest owner and operator of wind farms in the U.S. Repowering consists of replacing the majority of the wind turbine with new components, such as blades, hubs and gearboxes, but primarily leaves the foundation and tower unchanged. Benefits include a more efficient wind farm capable of producing incremental electricity from wind, a renewable, carbon-free source of energy.

INVESTING IN CLEAN WATER AND SANITATION

To ensure access to safe water and sanitation for all, it is vital to close the gap between the level of finance needed and the amount currently being invested. Water.org is working toward this ambitious goal, and we have been one of its earliest financing partners, with more than $1 million in grants since 2011 from the Bank of America Charitable Foundation to build the base of organizations offering affordable water and sanitation loans for the poor in India. In 2017, Water.org founded WaterEquity, the first impact investment manager dedicated to ending the global water crisis in our lifetime. WaterEquity builds the market between impact investors and water and sanitation businesses reaching underserved communities, unlocking the level of capital needed to match the scale of this crisis. Bank of America has committed to provide WaterEquity's $50 million fund with a $5 million zero-interest loan. By investing in water and sanitation businesses in India, Indonesia, Cambodia, and the Philippines, this WaterEquity fund targets a 3.5 percent return for investors and aims to reach 4.6 million people with safe water and/or sanitation over a seven-year period. Deploying our capital to help people served by Water.org — this is the essence of partnering for impact.

Image provided by Water.org

HELPING COMMUNITIES THRIVE

Our efforts in local communities are helping to drive economic development and job creation. In addition to providing capital to help small businesses and affordable housing through CDFIs and Community Development Banking, last year, Bank of America delivered nearly $200 million in philanthropic investments, and our employees volunteered nearly 2 million hours in their communities. Our support helps nonprofit organizations advance economic mobility for individuals and families, solve tough challenges, and connect more deeply with people in their community. We are supporting women's economic empowerment through partnerships with Vital Voices in the Global Ambassadors Program, Cherie Blair Foundation, and Kiva to help bring mentoring, training, and funding to women around the world. Our partnerships with these organizations have allowed us to help 7,000 women from 80+ countries grow their businesses in their communities. Through all of these efforts, we're helping to create more sustainable economies and a better future for us all.

ADVANCING ECONOMIC MOBILITY

In every community we serve, there are people living on the margins, hoping to find good jobs and affordable housing to create a better life for themselves and their families. That's why our economic mobility efforts address issues of workforce development and education, basic needs, and community development. We partner with nonprofit organizations that remove barriers to economic success for vulnerable populations, including youth, working families, and the formerly incarcerated. By partnering with nonprofit Year Up®—a national organization focused on providing urban young adults the skills, experience, and support they need to reach their full potential through professional careers and higher education—we have been able to welcome hundreds of Year Up interns to six-month, full-time internships and have hired more than 150 to full-time positions. Through this partnership, we are able to create a pipeline of motivated, hard-working young adults who are able to build their professional and business skills, while also delivering value to their teams and our customers.

SUPPORTING COMMUNITIES IMPACTED BY DISASTER

We have a long-standing commitment to community aid and response during times of disaster, humanitarian crises, and civil strife. In 2017, our company and employees contributed nearly $5 million in relief funding to support communities impacted by disasters, including Hurricanes Harvey, Irma and Maria; California wildfires; and the earthquakes and Hurricane Katia in Mexico. Additionally, we deployed mobile financial centers and mobile ATMs to the greater Houston area to help our local financial centers impacted by Hurricane Harvey. Our Global Transaction Services team worked with the American Red Cross to offer Bank of America Merrill Lynch's payments solution, Digital Disbursements, to send emergency funds to people impacted by Hurricane Harvey. We also support resilience planning in communities to lessen the impact of future natural events. Our $1 million grant to The Nature Conservancy (TNC) has supported its work to expand nature-based solutions to protect coastlines from rising sea levels and extreme weather. Additionally, with our support, the GivePower Foundation brought solar power to several Puerto Rico fire stations following Hurricane Maria.

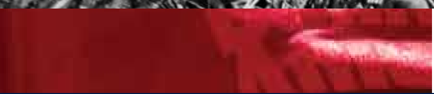
EMPOWERING PEOPLE FOR BETTER FINANCIAL OUTCOMES

One way we deliver on our commitment to making financial lives better is through our free financial education platform, Better Money Habits.®

By simplifying complex personal finance topics through easy-to-understand information, tools and videos, Better Money Habits empowers users to understand their financial choices and make confident decisions about their personal finances. In 2017, we extended the reach of Better Money Habits by rolling out content in Spanish. The site will continue to be fully translated over the course of 2018. This complements our online and mobile banking app, which have been available in Spanish since 2015. Better Money Habits is available for customers and noncustomers alike. For customers, the platform is embedded in our online and mobile offerings, like our Spending and Budgeting tool, which puts timely information at clients' fingertips to help them improve their financial outcomes. And we see evidence that it is helping. Our engaged Better Money Habits users are growing their savings, growing their checking balances and reducing debt. This is particularly important for anyone looking to improve their financial footing, such as young adults just starting out and those who live in low- and moderate-income (LMI) communities where approximately 30 percent of our financial centers are located. That is why Better Money Habits is part of our broader community-centered approach to provide clients and small businesses financial expertise, tools, and products tailored to help them achieve their specific financial goals. We help foster economic mobility in these neighborhoods by bolstering partnerships, providing relevant products and language resources, creating access through WiFi in our financial centers and supporting career paths for our associates.

WITH PERSPECTIVE COMES UNDERSTANDING

Through our Courageous Conversations program, we encourage our employees, clients, and community partners to have an open dialogue on important, societal topics as a way to foster deeper learning and understanding. For example, in support of the landmark documentary film, "The Vietnam War," we brought together diverse perspectives to discuss the Vietnam War era, a divisive time in U.S. history. Additionally, we hosted the National Community Advisory Council (NCAC) Opening Night at the U.S. Holocaust Memorial Museum, where we facilitated a discussion on the vital role public institutions play in protecting democracy. From Los Angeles to Charlottesville, London to Kansas City, our employees continue to plan and participate in courageous conversations about issues that are important to them.



A GREAT PLACE TO WORK: TRACY DANIELS

Recognized as Bank of America's 2017 Working Mother of the Year, Tracy Daniels has enjoyed more than 10 years at the company, and knows the value of its benefits.

Tracy is a business executive for Global Banking and Markets Operations, and is a passionate leader in our diversity efforts and programs, including our Employee Networks. At home, she is mom-in-chief, with three children. Tracy used the company's benefits to help grow her family with fertility treatments and extended parental leave with the birth of her daughter, Leah. Born premature and with spina bifida, Leah spent a total of eight weeks in the hospital and had two major surgeries in her first year of life. Tracy leveraged significant medical benefits to work with as many as six specialists per year. Tracy's ability to balance her personal life and career means she's able to continue to deliver in her role, which has earned her promotions since she returned from leave, with wider responsibilities and accountability for larger teams. She is also passionately involved in our diversity efforts, serving as co-chair of the Leadership, Education, Advocacy and Development for Women Employee Network, and on the Black Professional Group Executive Leadership Council. "From the benefits that support creating a family, to the policies that help manage a family, all while supporting women as we strive for professional development and personal growth, working at Bank of America is truly extraordinary as a working mom," said Tracy.

LIFE EVENT SERVICES SPOTLIGHT

"I'm in a happy place now because Bank of America saved my life." For Katia, the past two years brought hardship and change. She ended a physically abusive relationship and relocated to a new state, lost power and food during Hurricane Irma, and suffered a severe lung condition.

Through it all, the U.S. Life Event Services team was there to support her and her family, connecting her with bank resources to help. For that, she says, "I don't know where I'd be without this company. It feels like a family in how it cares for its people."

BEING A GREAT PLACE TO WORK: CORE TO RESPONSIBLE GROWTH

It is the daily commitment to our purpose by all 209,000 of our teammates that allowed us to deliver our 2017 results. A pillar of responsible growth is that it must be sustainable. One way we achieve responsible growth is by being a great place to work. Our commitment to our employees is as strong as the bond they share with our customers and our communities. We demonstrate that in several ways, starting with fair and equitable compensation. We offer affordable health care and related programs that make it easier for employees to look after themselves and their families. And, we have many programs and opportunities that reinforce our belief in a diverse, inclusive team, and other benefits and services that help employees balance their work and personal lives. First, let me highlight our pay-for-performance culture. Since 2010, the average annual compensation increases for our U.S. employees have outpaced the average U.S. wage growth. From the starting compensation level to our highest earners, whether a teammate joined last year or has been with us since 2010, compensation for all but the highest 10 percent has grown at least twice the rate of the U.S. national average. We also provide 401(k) contributions of up to 5 percent of eligible pay, starting after one year of service, including an additional 2 to 3 percent automatic annual company contribution, and free, personalized retirement and benefits guidance. Turning to health and wellness benefits; we have kept related cost increases for our employees below the national average and below other companies' rates for many years. We have taken a long-term approach to managing health benefits. More than 70 percent of employees have seen either no cost increase, or an increase that is well below the increase of the cost to the company since 2010. The average cost of health care coverage for an employee's family of four is just over $23,000. On average, we subsidize 75 percent of the costs across our population, giving each employee an average benefit value of about $17,000. While the benefits are the same, regardless of compensation level, we take a progressive approach to employee paid premiums. Employees earning less than the median U.S. household pay an average annual premium of about $2,600, meaning we subsidize about 90 percent of their total coverage costs. This gradually decreases as compensation increases, with the highest compensated employees paying more than 60 percent of the cost through premiums. Also, in 2011, we reduced annual family coverage medical premiums by 50 percent for U.S. employees below the median household income level — and we have kept those premiums flat for six consecutive years. For employees earning between the median income and $100,000 per year, we reduced premiums by 15 percent, and have limited premium growth to about one-third of the national trend. Our wellness program contributes to our success in slowing health care cost increases. The program includes an annual premium credit to encourage employees to get annual health screenings (about 85 percent of employees respond) and our voluntary "Get Active" physical fitness campaign, in which nearly 70,000 teammates (about 30 percent) participated last year. We want to provide great health care benefits to teammates. For those who need additional support, we provide access to the tools and resources they need for a healthy lifestyle. Being the best place to work extends beyond compensation and health benefits to include tuition assistance, career development and learning, and childcare programs. We offer up to 16 weeks of paid parental leave — maternity, paternity, and adoption. Our bereavement policy provides up to 20 days of paid time away for the loss of a spouse/partner or child. Through several man-made and natural disasters in 2017, our Life Events Services team did a great job providing counseling and resources to teammates. The diversity of our employees — in thought, style, sexual orientation, gender identity, race, ethnicity, culture, and experience — makes us stronger, and is essential to our ability to serve our clients, fulfill our purpose, and drive responsible growth. We encourage employees to engage in what we call "Courageous Conversations" about sensitive topics. More than 60,000 teammates have discussed race, gender dynamics, social justice, LGBT equality, and the Vietnam War. Taken together, our pay-for-performance programs, health and wellness programs, and other benefits and support helped contribute to record-low employee turnover in 2017. Our shareholders benefit from this due to lower costs to train and find experienced employees. Our work in these areas also is recognized by others; Bank of America was ranked in *Fortune* magazine among the 100 Best Workplaces for Diversity and the 50 Best Workplaces for Parents. We also were pleased to be ranked by *Forbes* and JUST Capital as the best in our industry in the second annual list of America's Most JUST Companies.

Sheri Bronstein
Global Human Resources Executive

Euromoney magazine's

WORLD'S BEST BANK

for Corporate Social Responsibility
and for Advisory Services

Every year since its inception, included as one of the leading companies in the Bloomberg

GENDER-EQUALITY INDEX

Recognized as the

INDUSTRY LEADER

in the "Banks" industry category among *JUST Capital's America's Most JUST Companies*

Bank of America Merrill Lynch named

BEST ESG BANK

in Asia by *The Asset* magazine for the second year in a row

Based on work conducted by consulting firm EY, we examined the

ECONOMIC IMPACTS OF A $12.6 BILLION

subset of our company's $125 billion environmental business commitment.

Focusing on U.S. projects financed between 2013–2016, this subset:

Supported an annual **average of 39,728 jobs**

Realized a cumulative **$29.9 billion in economic output**

Contributed a cumulative **$14.8 billion to GDP**

Bank of America supports more than

2,000 ART ORGANIZATIONS WORLDWIDE

Bank of America Art Conservation Project: Provided **grants to projects in 30 countries** to conserve historically significant works of art

Museums on Us®: 2017 **marked the 20th anniversary** of providing access to a variety of museums across the U.S.

Art in Our Communities®: More than **120 exhibitions have been loaned** to help generate revenue for art institutions

In 2014, Bank of America became the first and remains the only financial services institution to gain membership into the Billion Dollar Roundtable, a nationally recognized organization that celebrates corporations that spend at least

$1 BILLION

directly with minority- and women-owned businesses

One of the nation's top small business lenders, with

$34 BILLION

in small business loan balances (commercial loans under $1 million), according to the FDIC, and approximately 40% of the small businesses we serve at Bank of America are women-owned

Delivered nearly

$200 MILLION

in philanthropic investments, including $44 million to connect individuals to jobs and skills that will build long-term financial security

Connected employees to meaningful volunteer opportunities through initiatives like our fourth annual Habitat for Humanity Global Build, which engaged more than

2,500 EMPLOYEE VOLUNTEERS

in 90 communities across six countries to build affordable housing and revitalize communities

There's a general correlation between clients who engaged with

BETTER MONEY HABITS AND THE SPENDING AND BUDGETING TOOL

and a variety of improved financial outcomes:

About one in four grew savings by 20 percent or more

About one in three grew their checking balance by 20 percent or more

About one in seven reduced their credit balance by 20 percent or more

About one in five decreased their overdraft fees

BY THE NUMBERS

Better Money Habits was viewed more than **12.3 million times** across the website and our Mobile Banking app in 2017

4.5 million people are actively using the Spending and Budgeting tool (as of December 2017)

24 million people are using Bank of America's Mobile Banking app, including more than **1 million** Spanish-language users (as of December 2017)

Bank of America Corporation — Financial Highlights

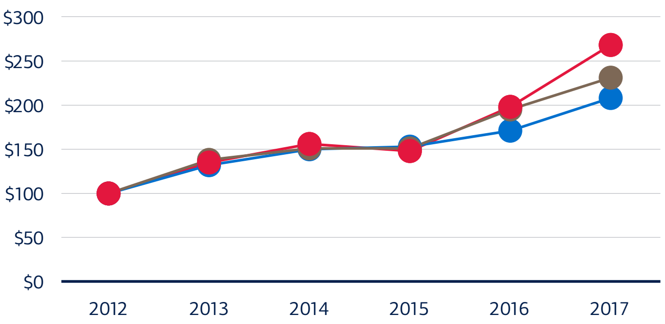
Bank of America Corporation (NYSE: BAC) is headquartered in Charlotte, North Carolina. As of December 31, 2017, we operated in all 50 states, the District of Columbia, the U.S. Virgin Islands, Puerto Rico and more than 35 countries. Through our banking and various nonbank subsidiaries throughout the United States and in international markets, we provide a diversified range of banking and nonbank financial services and products through four business segments: Consumer Banking, Global Wealth and Investment Management, Global Banking, and Global Markets.

Financial Highlights (in millions, except per share information)

For the year	2017	2016	2015
Revenue, net of interest expense	**$ 87,352**	$ 83,701	$ 82,965
Net income	**18,232**	17,822	15,910
Earnings per common share	**1.63**	1.57	1.38
Diluted earnings per common share	**1.56**	1.49	1.31
Dividends paid per common share	**$ 0.39**	$ 0.25	$ 0.20
Return on average assets	**0.80%**	0.81%	0.74%
Return on average tangible common shareholders' equity[1]	**9.41**	9.51	9.16
Efficiency ratio	**62.67**	65.81	69.45
Average diluted common shares issued and outstanding	**10,778**	11,047	11,236
At year-end	**2017**	**2016**	**2015**
Total loans and leases	**$ 936,749**	$ 906,683	$ 896,983
Total assets	**2,281,234**	2,188,067	2,144,606
Total deposits	**1,309,545**	1,260,934	1,197,259
Total shareholders' equity	**267,146**	266,195	255,615
Book value per common share	**23.80**	23.97	22.48
Tangible book value per common share[1]	**16.96**	16.89	15.56
Market price per common share	**$ 29.52**	$ 22.10	$ 16.83
Common shares issued and outstanding	**10,287**	10,053	10,380
Tangible common equity ratio[1]	**7.9%**	8.0%	7.8%

[1]Represents a non-GAAP financial measure. For more information on these measures and ratios, and a corresponding reconciliation to GAAP financial measures, see Supplemental Financial Data on page 43 and Non-GAAP Reconciliations on page 104 of the 2017 Financial Review section.

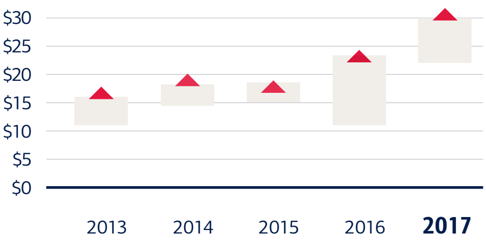
Total Cumulative Shareholder Return[2]



December 31	2012	2013	2014	2015	2016	**2017**
Bank of America Corporation	$100	$135	$156	$148	$198	**$268**
KBW Bank Sector Index	100	138	151	151	195	**231**
S&P 500	100	132	150	153	171	**208**

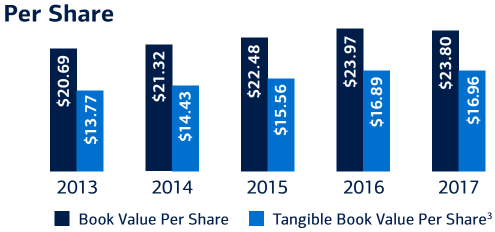
[2]This graph compares the yearly change in the Corporation's total cumulative shareholder return on its common stock with (i) the Standard & Poor's 500 Index and (ii) the KBW Bank Index for the years ended December 31, 2012 through 2017. The graph assumes an initial investment of $100 at the end of 2012 and the reinvestment of all dividends during the years indicated.

BAC Five-Year Stock Performance



	2013	2014	2015	2016	**2017**
HIGH	$15.88	$18.13	$18.45	$23.16	**$29.88**
LOW	11.03	14.51	15.15	11.16	**22.05**
CLOSE	15.57	17.89	16.83	22.10	**29.52**

Book Value Per Share/Tangible Book Value Per Share



[3]Tangible book value per share is a non-GAAP financial measure.

Bank of America

Financial Review

2017

Financial Review
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Management's Discussion and Analysis of Financial Condition and Results of Operations

Bank of America Corporation (the "Corporation") and its management may make certain statements that constitute "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. These statements can be identified by the fact that they do not relate strictly to historical or current facts. Forward-looking statements often use words such as "anticipates," "targets," "expects," "hopes," "estimates," "intends," "plans," "goals," "believes," "continue" and other similar expressions or future or conditional verbs such as "will," "may," "might," "should," "would" and "could". Forward-looking statements represent the Corporation's current expectations, plans or forecasts of its future results, revenues, expenses, efficiency ratio, capital measures, strategy and future business and economic conditions more generally, and other future matters. These statements are not guarantees of future results or performance and involve certain known and unknown risks, uncertainties and assumptions that are difficult to predict and are often beyond the Corporation's control. Actual outcomes and results may differ materially from those expressed in, or implied by, any of these forward-looking statements.

You should not place undue reliance on any forward-looking statement and should consider the following uncertainties and risks, as well as the risks and uncertainties more fully discussed under Item 1A. Risk Factors of our 2017 Annual Report on Form 10-K: the Corporation's potential claims, damages, penalties, fines and reputational damage resulting from pending or future litigation, regulatory proceedings and enforcement actions, including inquiries into our retail sales practices, and the possibility that amounts may be in excess of the Corporation's recorded liability and estimated range of possible loss for litigation exposures; the possibility that the Corporation could face increased servicing, securities, fraud, indemnity, contribution or other claims from one or more counterparties, including trustees, purchasers of loans, underwriters, issuers, other parties involved in securitizations, monolines or private-label and other investors; the possibility that future representations and warranties losses may occur in excess of the Corporation's recorded liability and estimated range of possible loss for its representations and warranties exposures; the Corporation's ability to resolve representations and warranties repurchase and related claims, including claims brought by investors or trustees seeking to avoid the statute of limitations for repurchase claims; uncertainties about the financial stability and growth rates of non-U.S. jurisdictions, the risk that those jurisdictions may face difficulties servicing their sovereign debt, and related stresses on financial markets, currencies and trade, and the Corporation's exposures to such risks, including direct, indirect and operational; the impact of U.S. and global interest rates, currency exchange rates, economic conditions, and potential geopolitical instability; the impact on the Corporation's business, financial condition and results of operations of a potential higher interest rate environment; the possibility that future credit losses may be higher than currently expected due to changes in economic assumptions, customer behavior, adverse developments with respect to U.S. or global economic conditions and other uncertainties; the Corporation's ability to achieve its expense targets, net interest income expectations, or other projections; adverse changes to the Corporation's credit ratings from the major credit rating agencies; estimates of the fair value of certain of the Corporation's assets and liabilities; uncertainty regarding the content, timing and impact of regulatory capital and liquidity requirements; the potential impact of total loss-absorbing capacity requirements; potential adverse changes to our global systemically important bank surcharge; the potential impact of Federal Reserve actions on the Corporation's capital plans; the possible impact of the Corporation's failure to remediate a shortcoming identified by banking regulators in the Corporation's Resolution Plan; the effect of regulations, other guidance or additional information on our estimated impact of the Tax Act; the impact of implementation and compliance with U.S. and international laws, regulations and regulatory interpretations, including, but not limited to, recovery and resolution planning requirements, Federal Deposit Insurance Corporation (FDIC) assessments, the Volcker Rule, fiduciary standards and derivatives regulations; a failure in or breach of the Corporation's operational or security systems or infrastructure, or those of third parties, including as a result of cyber attacks; the impact on the Corporation's business, financial condition and results of operations from the planned exit of the United Kingdom from the European Union; and other similar matters.

Forward-looking statements speak only as of the date they are made, and the Corporation undertakes no obligation to update any forward-looking statement to reflect the impact of circumstances or events that arise after the date the forward-looking statement was made.

Notes to the Consolidated Financial Statements referred to in the Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) are incorporated by reference into the MD&A. Certain prior-year amounts have been reclassified to conform to current-year presentation. Throughout the MD&A, the Corporation uses certain acronyms and abbreviations which are defined in the Glossary.

Executive Summary

Business Overview

The Corporation is a Delaware corporation, a bank holding company (BHC) and a financial holding company. When used in this report, "the Corporation" may refer to Bank of America Corporation individually, Bank of America Corporation and its subsidiaries, or certain of Bank of America Corporation's subsidiaries or affiliates. Our principal executive offices are located in Charlotte, North Carolina. Through our banking and various nonbank subsidiaries throughout the U.S. and in international markets, we provide a diversified range of banking and nonbank financial services and products through four business segments: *Consumer Banking*, *Global Wealth & Investment Management (GWIM)*, *Global Banking* and *Global Markets*, with the remaining operations recorded in *All Other*. We operate our banking activities primarily under the Bank of America, National Association (Bank of America, N.A. or BANA) charter. At December 31, 2017, the Corporation had approximately $2.3 trillion in assets and a headcount of approximately 209,000 employees. Headcount remained relatively unchanged since December 31, 2016.

As of December 31, 2017, we operated in all 50 states, the District of Columbia, the U.S. Virgin Islands, Puerto Rico and more than 35 countries. Our retail banking footprint covers approximately 85 percent of the U.S. population, and we serve approximately 47 million consumer and small business relationships with approximately 4,500 retail financial centers, approximately 16,000 ATMs, and leading digital banking platforms (www.bankofamerica.com) with approximately 35 million active users, including approximately 24 million mobile active users. We offer industry-leading support to approximately three million small business owners. Our wealth management businesses, with client balances of nearly $2.8 trillion, provide tailored solutions to meet client needs through a full set of investment management, brokerage, banking, trust and retirement products. We are a global leader in corporate and investment banking and trading across a broad range of asset classes serving corporations, governments, institutions and individuals around the world.

2017 Economic and Business Environment

The U.S. economy gained momentum in 2017, as it grew for the eighth consecutive year. Following a soft start, partly driven by sharp inventory liquidation and adverse weather effects, GDP growth accelerated over the remainder of the year. Economic growth was supported by a noticeable pickup in business investment in high-tech equipment, a recovery in oil exploration and solid consumer demand growth. A revitalization in U.S. export growth, on the back of a weakening dollar and stronger global growth, also had beneficial impacts. GDP growth was limited by a mid-year softening in residential investment and a flat period for government consumption and investment. The housing market finished the year strongly. A lean supply of unsold inventory and solid demand was supportive of steady home price appreciation through much of the year.

The labor market continued to tighten as job creation exceeded the growth in the labor force. The unemployment rate fell to a 17-year low. Wage growth, however, remained relatively muted.

Inflation also remained low. The headline rate edged somewhat higher on recovering energy prices. But core inflation, excluding volatile food and energy components, slowed unexpectedly over much of the year, as goods' prices and health care inflation softened, and the acceleration in rents leveled off. Core inflation once again finished the year below the Federal Reserve's two percent target level.

Equity markets advanced strongly in 2017, with the S&P 500 increasing by approximately 20 percent. The anticipation of corporate tax reform and strong global earnings growth appeared to fuel the stock market's strong performance. Following a mid-year decline, long-term Treasury yields recovered towards the end of 2017, but finished little changed from the start of the year. With short-end rates rising over the course of the year, the yield curve flattened considerably. After a brief surge following the 2016 election, the trade-weighted dollar declined over most of 2017.

The Federal Open Market Committee (FOMC) raised its target range for the Federal funds rate three times in 2017, bringing the total rise in the funds rate during the current cycle to 125 basis points (bps). The Federal Reserve also began allowing a small portion of its Treasury and mortgage-backed securities (MBS) to roll off as monetary policy normalization continued. Current Federal Reserve baseline forecasts suggest gradual rate increases will continue into 2018 against a backdrop of solid economic expansion and a tightening labor market.

The improved economic momentum in 2017 was not confined to the U.S. The eurozone posted its strongest GDP growth in 10 years, despite heightened political uncertainty and fragmentation. In this context, the European Central Bank decided to taper its quantitative easing program even if domestic inflationary pressures remained historically weak. The impact of the 2016 U.K. referendum vote in favor of leaving the European Union (EU) started to materialize within the U.K. economy which, despite the robust global momentum, showed its weakest GDP growth in five years.

Supported by a very accommodative monetary policy stance and sustained growth in external demand, the Japanese economy expanded at the strongest pace since 2010 with headline inflation remaining positive throughout the year. Across emerging nations, economic activity was supported by China's continued transition towards a more consumption-based growth model, as well as by the recovery in Brazil and Russia following the 2016 recession.

Recent Events

Capital Management

During 2017, we repurchased approximately $12.8 billion of common stock pursuant to the Board's repurchase authorizations under our 2017 and 2016 Comprehensive Capital Analysis and Review (CCAR) capital plans, including repurchases to offset equity-based compensation awards, and pursuant to an additional $5 billion share repurchase authorization approved by the Board and the Federal Reserve in December 2017. For more information, see Capital Management on page 61.

Change in Tax Law

On December 22, 2017, the President signed into law the Tax Cuts and Jobs Act (the Tax Act) which made significant changes to federal income tax law including, among other things, reducing the statutory corporate income tax rate to 21 percent from 35 percent and changing the taxation of our non-U.S. business activities. Results for 2017 included an estimated reduction in net income of $2.9 billion due to the Tax Act, driven largely by a lower valuation of certain U.S. deferred tax assets and liabilities. We have accounted for the effects of the Tax Act using reasonable estimates based on currently available information and our interpretations thereof. This accounting may change due to, among other things, changes in interpretations we have made and the issuance of new tax or accounting guidance.

Long-term Debt Exchange

In December 2017, pursuant to a private offering, we exchanged $11.0 billion of outstanding long-term debt for new fixed/floating-rate senior notes, subject to certain terms and conditions. The impact on our results of operations related to this exchange was not significant. For more information on this exchange, see Liquidity Risk on page 65.

Selected Financial Data

Table 1 provides selected consolidated financial data for 2017 and 2016.

Table 1 Selected Financial Data

(Dollars in millions, except per share information)	2017	2016
Income statement		
Revenue, net of interest expense	**$ 87,352**	$ 83,701
Net income	**18,232**	17,822
Diluted earnings per common share	**1.56**	1.49
Dividends paid per common share	**0.39**	0.25
Performance ratios		
Return on average assets	**0.80%**	0.81%
Return on average common shareholders' equity	**6.72**	6.69
Return on average tangible common shareholders' equity [(1)]	**9.41**	9.51
Efficiency ratio	**62.67**	65.81
Balance sheet at year end		
Total loans and leases	**$ 936,749**	$ 906,683
Total assets	**2,281,234**	2,188,067
Total deposits	**1,309,545**	1,260,934
Total common shareholders' equity	**244,823**	240,975
Total shareholders' equity	**267,146**	266,195

(1) Return on average tangible common shareholders' equity is a non-GAAP financial measure. For more information and a corresponding reconciliation to accounting principles generally accepted in the United States of America (GAAP) financial measures, see Non-GAAP Reconciliations on page 104.

Financial Highlights

Net income was $18.2 billion, or $1.56 per diluted share in 2017 compared to $17.8 billion, or $1.49 per diluted share in 2016. The results for 2017 include an estimated charge of $2.9 billion related to the Tax Act. The pre-tax results for 2017 compared to 2016 were driven by higher revenue, largely the result of an increase in net interest income, lower provision for credit losses and a decline in noninterest expense.

Effective October 1, 2017, we changed our accounting method for determining when certain stock-based compensation awards granted to retirement-eligible employees are deemed authorized, changing from the grant date to the beginning of the year preceding the grant date when the incentive award plans are generally approved. As a result, the estimated value of the awards is now expensed ratably over the year preceding the grant date. All prior periods presented herein have been restated for this change in accounting method. The change affected consolidated financial information and *All Other*; it did not affect the business segments. Under the applicable bank regulatory rules, we are not required to and, accordingly, did not restate previously-filed capital metrics and ratios. The cumulative impact of the change in accounting method resulted in an insignificant pro forma change to our capital metrics and ratios. For more information, see *Note 1 - Summary of Significant Accounting Principles* to the Consolidated Financial Statements.

Table 2 Summary Income Statement

(Dollars in millions)	2017	2016
Net interest income	**$ 44,667**	$ 41,096
Noninterest income	**42,685**	42,605
Total revenue, net of interest expense	**87,352**	83,701
Provision for credit losses	**3,396**	3,597
Noninterest expense	**54,743**	55,083
Income before income taxes	**29,213**	25,021
Income tax expense	**10,981**	7,199
Net income	**18,232**	17,822
Preferred stock dividends	**1,614**	1,682
Net income applicable to common shareholders	**$ 16,618**	$ 16,140
Per common share information		
Earnings	**$ 1.63**	$ 1.57
Diluted earnings	**1.56**	1.49

Net Interest Income

Net interest income increased $3.6 billion to $44.7 billion in 2017 compared to 2016. The net interest yield increased 11 bps to 2.32 percent for 2017. These increases were primarily driven by the benefits from higher interest rates and loan and deposit growth, partially offset by the sale of the non-U.S. consumer credit card business in the second quarter of 2017. For more information regarding interest rate risk management, see Interest Rate Risk Management for the Banking Book on page 97.

Noninterest Income

Table 3 Noninterest Income

(Dollars in millions)	2017	2016
Card income	$ 5,902	$ 5,851
Service charges	7,818	7,638
Investment and brokerage services	13,281	12,745
Investment banking income	6,011	5,241
Trading account profits	7,277	6,902
Mortgage banking income	224	1,853
Gains on sales of debt securities	255	490
Other income	1,917	1,885
Total noninterest income	$ 42,685	$ 42,605

Noninterest income increased $80 million to $42.7 billion for 2017 compared to 2016. The following highlights the significant changes.

- Service charges increased $180 million primarily driven by the impact of pricing strategies and higher treasury services-related revenue.
- Investment and brokerage services income increased $536 million primarily driven by the impact of assets under management (AUM) flows and higher market valuations, partially offset by the impact of changing market dynamics on transactional revenue and AUM pricing.
- Investment banking income increased $770 million primarily due to higher advisory fees and higher debt and equity issuance fees.
- Trading account profits increased $375 million primarily due to increased client financing activity in equities, partially offset by weaker performance across most fixed-income products.
- Mortgage banking income decreased $1.6 billion primarily driven by lower net servicing income due to lower net mortgage servicing rights (MSR) results, and lower production income primarily due to lower volume.
- Gains on sales of debt securities decreased $235 million primarily driven by lower activity.
- Other income remained relatively unchanged. Included was a $793 million pre-tax gain recognized in connection with the sale of the non-U.S. consumer credit card business and a downward valuation adjustment of $946 million on tax-advantaged energy investments in connection with the Tax Act.

Provision for Credit Losses

The provision for credit losses decreased $201 million to $3.4 billion for 2017 compared to 2016 primarily due to reductions in energy exposures in the commercial portfolio and credit quality improvements in the consumer real estate portfolio. This was partially offset by portfolio seasoning and loan growth in the U.S. credit card portfolio and a single-name non-U.S. commercial charge-off. For more information on the provision for credit losses, see Provision for Credit Losses on page 88.

Noninterest Expense

Table 4 Noninterest Expense

(Dollars in millions)	2017	2016
Personnel	$ 31,642	$ 31,748
Occupancy	4,009	4,038
Equipment	1,692	1,804
Marketing	1,746	1,703
Professional fees	1,888	1,971
Data processing	3,139	3,007
Telecommunications	699	746
Other general operating	9,928	10,066
Total noninterest expense	$ 54,743	$ 55,083

Noninterest expense decreased $340 million to $54.7 billion for 2017 compared to 2016. The decrease was primarily due to lower operating costs, a reduction from the sale of the non-U.S. consumer credit card business and lower litigation expense, partially offset by a $316 million impairment charge related to certain data centers in the process of being sold and $145 million for the shared success discretionary year-end bonus awarded to certain employees.

Income Tax Expense

Table 5 Income Tax Expense

(Dollars in millions)	2017	2016
Income before income taxes	$ 29,213	$ 25,021
Income tax expense	10,981	7,199
Effective tax rate	37.6%	28.8%

Tax expense for 2017 included a charge of $1.9 billion reflecting the impact of the Tax Act discussed below. Included in the tax charge was $2.3 billion related primarily to a lower valuation of certain deferred tax assets and liabilities and a $347 million tax benefit on the pre-tax loss from the lower valuation of our tax-advantaged energy investments. Other than the impact of the Tax Act, the effective tax rate for 2017 was driven by our recurring tax preference benefits as well as an expense recognized in connection with the sale of the non-U.S. consumer credit card business, largely offset by benefits related to the adoption of the new accounting standard for the tax impact associated with share-based compensation and the restructuring of certain subsidiaries. The effective tax rate for 2016 was driven by our recurring tax preferences and net tax benefits related to various tax audit matters, partially offset by a charge for the impact of U.K. tax law changes enacted in 2016.

On December 22, 2017, the President signed into law the Tax Act which made significant changes to federal income tax law including, among other things, reducing the statutory corporate income tax rate to 21 percent from 35 percent and changing the taxation of our non-U.S. business activities. Results for 2017 included an estimated reduction in net income of $2.9 billion due to the Tax Act, driven largely by a lower valuation of certain U.S. deferred tax assets and liabilities. Additionally, the change in the corporate income tax rate impacted our tax-advantaged energy investments, resulting in a downward valuation adjustment of $946 million recorded in other income that was fully offset by tax benefits arising from lower deferred tax liabilities on these investments. We have accounted for the effects of the Tax Act using reasonable estimates based on currently available information and our interpretations thereof. This accounting may change due to, among other things, changes in interpretations we have made and the issuance of new tax or accounting guidance.

We expect the effective tax rate for 2018 to be approximately 20 percent, absent unusual items.

Our U.K. deferred tax assets, which consist primarily of net operating losses, are expected to be realized by certain subsidiaries over a number of years. Significant changes to management's earnings forecasts for those subsidiaries, changes in applicable laws, further changes in tax laws or changes in the ability of our U.K. subsidiaries to conduct business in the EU, could lead management to reassess our ability to realize the U.K. deferred tax assets.

Balance Sheet Overview

Table 6 Selected Balance Sheet Data

	December 31		
(Dollars in millions)	**2017**	2016	% Change
Assets			
Cash and cash equivalents	**$ 157,434**	$ 147,738	7%
Federal funds sold and securities borrowed or purchased under agreements to resell	**212,747**	198,224	7
Trading account assets	**209,358**	180,209	16
Debt securities	**440,130**	430,731	2
Loans and leases	**936,749**	906,683	3
Allowance for loan and lease losses	**(10,393)**	(11,237)	(8)
All other assets	**335,209**	335,719	—
Total assets	**$ 2,281,234**	$ 2,188,067	4
Liabilities			
Deposits	**$ 1,309,545**	$ 1,260,934	4
Federal funds purchased and securities loaned or sold under agreements to repurchase	**176,865**	170,291	4
Trading account liabilities	**81,187**	63,031	29
Short-term borrowings	**32,666**	23,944	36
Long-term debt	**227,402**	216,823	5
All other liabilities	**186,423**	186,849	—
Total liabilities	**2,014,088**	1,921,872	5
Shareholders' equity	**267,146**	266,195	—
Total liabilities and shareholders' equity	**$ 2,281,234**	$ 2,188,067	4

Assets

At December 31, 2017, total assets were approximately $2.3 trillion, up $93.2 billion from December 31, 2016. The increase in assets was primarily due to higher loans and leases driven by client demand for commercial loans, higher trading assets and securities borrowed or purchased under agreements to resell due to increased customer activity, and higher cash and cash equivalents and debt securities driven by the deployment of deposit inflows.

Cash and Cash Equivalents

Cash and cash equivalents increased $9.7 billion primarily driven by deposit growth and net debt issuances, partially offset by loan growth and net securities purchases.

Federal Funds Sold and Securities Borrowed or Purchased Under Agreements to Resell

Federal funds transactions involve lending reserve balances on a short-term basis. Securities borrowed or purchased under agreements to resell are collateralized lending transactions utilized to accommodate customer transactions, earn interest rate spreads, and obtain securities for settlement and for collateral. Federal funds sold and securities borrowed or purchased under agreements to resell increased $14.5 billion due to a higher level of customer financing activity.

Trading Account Assets

Trading account assets consist primarily of long positions in equity and fixed-income securities including U.S. government and agency securities, corporate securities and non-U.S. sovereign debt. Trading account assets increased $29.1 billion primarily driven by additional inventory in fixed-income, currencies and commodities (FICC) to meet expected client demand and increased client financing activities in equities within *Global Markets*.

Debt Securities

Debt securities primarily include U.S. Treasury and agency securities, MBS, principally agency MBS, non-U.S. bonds, corporate bonds and municipal debt. We use the debt securities portfolio primarily to manage interest rate and liquidity risk and to take advantage of market conditions that create economically attractive returns on these investments. Debt securities increased $9.4 billion primarily driven by the deployment of deposit inflows. For more information on debt securities, see *Note 3 – Securities* to the Consolidated Financial Statements.

Loans and Leases

Loans and leases increased $30.1 billion compared to December 31, 2016. The increase was primarily due to net loan growth driven by strong client demand for commercial loans and increases in residential mortgage. For more information on the loan portfolio, see Credit Risk Management on page 70.

Allowance for Loan and Lease Losses

The allowance for loan and lease losses decreased $844 million primarily due to the impact of improvements in credit quality from a stronger economy. For more information, see Allowance for Credit Losses on page 88.

Liabilities

At December 31, 2017, total liabilities were approximately $2.0 trillion, up $92.2 billion from December 31, 2016, primarily due to an increase in deposits, higher trading account liabilities due to an increase in short positions, and higher long-term debt due to net issuances.

Deposits

Deposits increased $48.6 billion primarily due to an increase in retail deposits.

Federal Funds Purchased and Securities Loaned or Sold Under Agreements to Repurchase

Federal funds transactions involve borrowing reserve balances on a short-term basis. Securities loaned or sold under agreements to repurchase are collateralized borrowing transactions utilized to accommodate customer transactions, earn interest rate spreads and finance assets on the balance sheet. Federal funds purchased and securities loaned or sold under agreements to repurchase increased $6.6 billion primarily due to an increase in repurchase agreements.

Trading Account Liabilities

Trading account liabilities consist primarily of short positions in equity and fixed-income securities including U.S. Treasury and agency securities, corporate securities and non-U.S. sovereign debt. Trading account liabilities increased $18.2 billion primarily due to higher equity short positions and higher levels of short government bonds driven by expected client demand within *Global Markets*.

Short-term Borrowings

Short-term borrowings provide an additional funding source and primarily consist of Federal Home Loan Bank (FHLB) short-term borrowings, notes payable and various other borrowings that generally have maturities of one year or less. Short-term borrowings increased $8.7 billion primarily due to an increase in short-term bank notes and short-term FHLB Advances. For more information on short-term borrowings, see *Note 10 – Federal Funds Sold or Purchased, Securities Financing Agreements and Short-term Borrowings* to the Consolidated Financial Statements.

Long-term Debt

Long-term debt increased $10.6 billion primarily driven by issuances outpacing maturities and redemptions. For more information on long-term debt, see *Note 11 – Long-term Debt* to the Consolidated Financial Statements.

Shareholders' Equity

Shareholders' equity increased $1.0 billion driven by earnings, largely offset by returns of capital to shareholders of $18.4 billion through common and preferred stock dividends and share repurchases.

Cash Flows Overview

The Corporation's operating assets and liabilities support our global markets and lending activities. We believe that cash flows from operations, available cash balances and our ability to generate cash through short- and long-term debt are sufficient to fund our operating liquidity needs. Our investing activities primarily include the debt securities portfolio and loans and leases. Our financing activities reflect cash flows primarily related to customer deposits, securities financing agreements and long-term debt. For more information on liquidity, see Liquidity Risk on page 65.

Table 7 Five-year Summary of Selected Financial Data

(In millions, except per share information)	**2017**	2016	2015	2014	2013
Income statement					
Net interest income	**$ 44,667**	$ 41,096	$ 38,958	$ 40,779	$ 40,719
Noninterest income	**42,685**	42,605	44,007	45,115	46,783
Total revenue, net of interest expense	**87,352**	83,701	82,965	85,894	87,502
Provision for credit losses	**3,396**	3,597	3,161	2,275	3,556
Noninterest expense	**54,743**	55,083	57,617	75,656	69,213
Income before income taxes	**29,213**	25,021	22,187	7,963	14,733
Income tax expense	**10,981**	7,199	6,277	2,443	4,194
Net income	**18,232**	17,822	15,910	5,520	10,539
Net income applicable to common shareholders	**16,618**	16,140	14,427	4,476	9,190
Average common shares issued and outstanding	**10,196**	10,284	10,462	10,528	10,731
Average diluted common shares issued and outstanding	**10,778**	11,047	11,236	10,585	11,491
Performance ratios					
Return on average assets	**0.80%**	0.81%	0.74%	0.26%	0.49%
Return on average common shareholders' equity	**6.72**	6.69	6.28	2.01	4.21
Return on average tangible common shareholders' equity [1]	**9.41**	9.51	9.16	2.98	6.35
Return on average shareholders' equity	**6.72**	6.70	6.33	2.32	4.51
Return on average tangible shareholders' equity [1]	**9.08**	9.17	8.88	3.34	6.58
Total ending equity to total ending assets	**11.71**	12.17	11.92	11.57	11.06
Total average equity to total average assets	**11.96**	12.14	11.64	11.11	10.81
Dividend payout	**24.24**	15.94	14.49	28.20	4.66
Per common share data					
Earnings	**$ 1.63**	$ 1.57	$ 1.38	$ 0.43	$ 0.86
Diluted earnings	**1.56**	1.49	1.31	0.42	0.83
Dividends paid	**0.39**	0.25	0.20	0.12	0.04
Book value	**23.80**	23.97	22.48	21.32	20.69
Tangible book value [1]	**16.96**	16.89	15.56	14.43	13.77
Market price per share of common stock					
Closing	**$ 29.52**	$ 22.10	$ 16.83	$ 17.89	$ 15.57
High closing	**29.88**	23.16	18.45	18.13	15.88
Low closing	**22.05**	11.16	15.15	14.51	11.03
Market capitalization	**$ 303,681**	$ 222,163	$ 174,700	$ 188,141	$ 164,914
Average balance sheet					
Total loans and leases	**$ 918,731**	$ 900,433	$ 876,787	$ 898,703	$ 918,641
Total assets	**2,268,633**	2,190,218	2,160,536	2,145,393	2,163,296
Total deposits	**1,269,796**	1,222,561	1,155,860	1,124,207	1,089,735
Long-term debt	**225,133**	228,617	240,059	253,607	263,417
Common shareholders' equity	**247,101**	241,187	229,576	222,907	218,340
Total shareholders' equity	**271,289**	265,843	251,384	238,317	233,819
Asset quality [2]					
Allowance for credit losses [3]	**$ 11,170**	$ 11,999	$ 12,880	$ 14,947	$ 17,912
Nonperforming loans, leases and foreclosed properties [4]	**6,758**	8,084	9,836	12,629	17,772
Allowance for loan and lease losses as a percentage of total loans and leases outstanding [4, 5]	**1.12%**	1.26%	1.37%	1.66%	1.90%
Allowance for loan and lease losses as a percentage of total nonperforming loans and leases [4, 5]	**161**	149	130	121	102
Allowance for loan and lease losses as a percentage of total nonperforming loans and leases, excluding the PCI loan portfolio [4, 5]	**156**	144	122	107	87
Net charge-offs [6, 7]	**$ 3,979**	$ 3,821	$ 4,338	$ 4,383	$ 7,897
Net charge-offs as a percentage of average loans and leases outstanding [4, 6]	**0.44%**	0.43%	0.50%	0.49%	0.87%
Net charge-offs as a percentage of average loans and leases outstanding, excluding the PCI loan portfolio [4]	**0.44**	0.44	0.51	0.50	0.90
Capital ratios at year end [8]					
Common equity tier 1 capital	**11.8%**	11.0%	10.2%	12.3%	n/a
Tier 1 common capital	**n/a**	n/a	n/a	n/a	10.9%
Tier 1 capital	**13.2**	12.4	11.3	13.4	12.2
Total capital	**15.1**	14.3	13.2	16.5	15.1
Tier 1 leverage	**8.6**	8.9	8.6	8.2	7.7
Tangible equity [1]	**8.9**	9.2	8.9	8.4	7.8
Tangible common equity [1]	**7.9**	8.0	7.8	7.5	7.2

(1) Tangible equity ratios and tangible book value per share of common stock are non-GAAP financial measures. For more information on these ratios, see Supplemental Financial Data on page 43, and for corresponding reconciliations to GAAP financial measures, see Non-GAAP Reconciliations on page 104.

(2) For more information on the impact of the purchased credit-impaired (PCI) loan portfolio on asset quality, see Consumer Portfolio Credit Risk Management on page 70.

(3) Includes the allowance for loan and lease losses and the reserve for unfunded lending commitments.

(4) Balances and ratios do not include loans accounted for under the fair value option. For additional exclusions from nonperforming loans, leases and foreclosed properties, see Consumer Portfolio Credit Risk Management – Nonperforming Consumer Loans, Leases and Foreclosed Properties Activity on page 78 and corresponding Table 31, and Commercial Portfolio Credit Risk Management – Nonperforming Commercial Loans, Leases and Foreclosed Properties Activity on page 83 and corresponding Table 38.

(5) Asset quality metrics for 2016 include $243 million of non-U.S. credit card allowance for loan and lease losses and $9.2 billion of non-U.S. credit card loans, which were included in assets of business held for sale on the Consolidated Balance Sheet at December 31, 2016. In 2017, the Corporation sold its non-U.S. consumer credit card business.

(6) Net charge-offs exclude $207 million, $340 million, $808 million, $810 million and $2.3 billion of write-offs in the PCI loan portfolio for 2017, 2016, 2015, 2014 and 2013, respectively. For more information on PCI write-offs, see Consumer Portfolio Credit Risk Management – Purchased Credit-impaired Loan Portfolio on page 76.

(7) Includes net charge-offs of $75 million and $175 million on non-U.S. credit card loans in 2017 and 2016, which were included in assets of business held for sale on the Consolidated Balance Sheet at December 31, 2016.

(8) Risk-based capital ratios are reported under Basel 3 Advanced - Transition at December 31, 2017, 2016 and 2015. We reported risk-based capital ratios under Basel 3 Standardized - Transition at December 31, 2014 and under the general risk-based approach at December 31, 2013. For more information, see Capital Management on page 61.

n/a = not applicable

Table 8 Selected Quarterly Financial Data

	2017 Quarters				2016 Quarters			
(In millions, except per share information)	**Fourth**	Third	Second	First	Fourth	Third	Second	First
Income statement								
Net interest income	**$ 11,462**	$ 11,161	$ 10,986	$ 11,058	$ 10,292	$ 10,201	$ 10,118	$ 10,485
Noninterest income [(1)]	**8,974**	10,678	11,843	11,190	9,698	11,434	11,168	10,305
Total revenue, net of interest expense	**20,436**	21,839	22,829	22,248	19,990	21,635	21,286	20,790
Provision for credit losses	**1,001**	834	726	835	774	850	976	997
Noninterest expense	**13,274**	13,394	13,982	14,093	13,413	13,734	13,746	14,190
Income before income taxes	**6,161**	7,611	8,121	7,320	5,803	7,051	6,564	5,603
Income tax expense [(1)]	**3,796**	2,187	3,015	1,983	1,268	2,257	1,943	1,731
Net income [(1)]	**2,365**	5,424	5,106	5,337	4,535	4,794	4,621	3,872
Net income applicable to common shareholders	**2,079**	4,959	4,745	4,835	4,174	4,291	4,260	3,415
Average common shares issued and outstanding	**10,471**	10,198	10,014	10,100	10,170	10,250	10,328	10,370
Average diluted common shares issued and outstanding	**10,622**	10,747	10,835	10,920	10,992	11,034	11,086	11,108
Performance ratios								
Return on average assets	**0.41%**	0.95%	0.90%	0.97%	0.82%	0.87%	0.85%	0.72%
Four quarter trailing return on average assets [(2)]	**0.80**	0.91	0.89	0.88	0.81	0.76	0.75	0.76
Return on average common shareholders' equity	**3.29**	7.89	7.75	8.09	6.79	7.02	7.14	5.80
Return on average tangible common shareholders' equity [(3)]	**4.56**	10.98	10.87	11.44	9.58	9.94	10.17	8.32
Return on average shareholders' equity	**3.43**	7.88	7.56	8.09	6.69	7.10	7.01	5.99
Return on average tangible shareholders' equity [(3)]	**4.62**	10.59	10.23	11.01	9.09	9.68	9.61	8.27
Total ending equity to total ending assets	**11.71**	11.91	12.00	11.92	12.17	12.28	12.21	12.02
Total average equity to total average assets	**11.87**	12.03	11.94	12.00	12.21	12.26	12.11	11.96
Dividend payout	**60.35**	25.59	15.78	15.64	18.37	17.97	12.17	15.12
Per common share data								
Earnings	**$ 0.20**	$ 0.49	$ 0.47	$ 0.48	$ 0.41	$ 0.42	$ 0.41	$ 0.33
Diluted earnings	**0.20**	0.46	0.44	0.45	0.39	0.40	0.39	0.31
Dividends paid	**0.12**	0.12	0.075	0.075	0.075	0.075	0.05	0.05
Book value	**23.80**	23.87	24.85	24.34	23.97	24.14	23.68	23.13
Tangible book value [(3)]	**16.96**	17.18	17.75	17.22	16.89	17.09	16.68	16.18
Market price per share of common stock								
Closing	**$ 29.52**	$ 25.34	$ 24.26	$ 23.59	$ 22.10	$ 15.65	$ 13.27	$ 13.52
High closing	**29.88**	25.45	24.32	25.50	23.16	16.19	15.11	16.43
Low closing	**25.45**	22.89	22.23	22.05	15.63	12.74	12.18	11.16
Market capitalization	**$ 303,681**	$ 264,992	$ 239,643	$ 235,291	$ 222,163	$ 158,438	$ 135,577	$ 139,427
Average balance sheet								
Total loans and leases	**$ 927,790**	$ 918,129	$ 914,717	$ 914,144	$ 908,396	$ 900,594	$ 899,670	$ 892,984
Total assets	**2,301,687**	2,271,104	2,269,293	2,231,649	2,208,391	2,189,750	2,188,410	2,174,126
Total deposits	**1,293,572**	1,271,711	1,256,838	1,256,632	1,250,948	1,227,186	1,213,291	1,198,455
Long-term debt	**227,644**	227,309	224,019	221,468	220,587	227,269	233,061	233,654
Common shareholders' equity	**250,838**	249,214	245,756	242,480	244,519	243,220	240,078	236,871
Total shareholders' equity	**273,162**	273,238	270,977	267,700	269,739	268,440	265,056	260,065
Asset quality [(4)]								
Allowance for credit losses [(5)]	**$ 11,170**	$ 11,455	$ 11,632	$ 11,869	$ 11,999	$ 12,459	$ 12,587	$ 12,696
Nonperforming loans, leases and foreclosed properties [(6)]	**6,758**	6,869	7,127	7,637	8,084	8,737	8,799	9,281
Allowance for loan and lease losses as a percentage of total loans and leases outstanding [(6, 7)]	**1.12%**	1.16%	1.20%	1.25%	1.26%	1.30%	1.32%	1.35%
Allowance for loan and lease losses as a percentage of total nonperforming loans and leases [(6, 7)]	**161**	163	160	156	149	140	142	136
Allowance for loan and lease losses as a percentage of total nonperforming loans and leases, excluding the PCI loan portfolio [(6, 7)]	**156**	158	154	150	144	135	135	129
Net charge-offs [(8, 9)]	**$ 1,237**	$ 900	$ 908	$ 934	$ 880	$ 888	$ 985	$ 1,068
Annualized net charge-offs as a percentage of average loans and leases outstanding [(6, 8)]	**0.53%**	0.39%	0.40%	0.42%	0.39%	0.40%	0.44%	0.48%
Annualized net charge-offs as a percentage of average loans and leases outstanding, excluding the PCI loan portfolio [(6)]	**0.54**	0.40	0.41	0.42	0.39	0.40	0.45	0.49
Capital ratios at period end [(10)]								
Common equity tier 1 capital	**11.8%**	11.9%	11.6%	11.0%	11.0%	11.0%	10.6%	10.3%
Tier 1 capital	**13.2**	13.3	13.2	12.5	12.4	12.4	12.0	11.5
Total capital	**15.1**	15.1	15.1	14.4	14.3	14.2	13.9	13.4
Tier 1 leverage	**8.6**	9.0	8.9	8.8	8.9	9.1	8.9	8.7
Tangible equity [(3)]	**8.9**	9.1	9.2	9.0	9.2	9.3	9.2	9.0
Tangible common equity [(3)]	**7.9**	8.1	8.0	7.9	8.0	8.1	8.1	7.9

(1) Net income for the fourth quarter of 2017 included an estimated charge of $2.9 billion from enactment of the Tax Act which consisted of $946 million in noninterest income and $1.9 billion in income tax expense. For more information on Tax Act impacts, see Income Tax Expense on page 38.
(2) Calculated as total net income for four consecutive quarters divided by annualized average assets for four consecutive quarters.
(3) Tangible equity ratios and tangible book value per share of common stock are non-GAAP financial measures. For more information on these ratios, see Supplemental Financial Data on page 43, and for corresponding reconciliations to GAAP financial measures, see Non-GAAP Reconciliations on page 104.
(4) For more information on the impact of the PCI loan portfolio on asset quality, see Consumer Portfolio Credit Risk Management on page 70.
(5) Includes the allowance for loan and lease losses and the reserve for unfunded lending commitments.
(6) Balances and ratios do not include loans accounted for under the fair value option. For additional exclusions from nonperforming loans, leases and foreclosed properties, see Consumer Portfolio Credit Risk Management – Nonperforming Consumer Loans, Leases and Foreclosed Properties Activity on page 78 and corresponding Table 31, and Commercial Portfolio Credit Risk Management – Nonperforming Commercial Loans, Leases and Foreclosed Properties Activity on page 83 and corresponding Table 38.
(7) Asset quality metrics for the first quarter of 2017 and the fourth quarter of 2016 include $242 million and $243 million of non-U.S. credit card allowance for loan and lease losses and $9.5 billion and $9.2 billion of non-U.S. credit card loans, which were included in assets of business held for sale on the Consolidated Balance Sheet at March 31, 2017 and December 31, 2016. In 2017, the Corporation sold its non-U.S. consumer credit card business.
(8) Net charge-offs exclude $46 million, $73 million, $55 million and $33 million of write-offs in the PCI loan portfolio in the fourth, third, second and first quarters of 2017, respectively, and $70 million, $83 million, $82 million and $105 million in the fourth, third, second and first quarters of 2016, respectively. For more information on PCI write-offs, see Consumer Portfolio Credit Risk Management – Purchased Credit-impaired Loan Portfolio on page 76.
(9) Includes net charge-offs of $31 million, $44 million and $41 million on non-U.S. credit card loans in the second and first quarters of 2017, and in the fourth quarter of 2016, which were included in assets of business held for sale on the Consolidated Balance Sheet at March 31, 2017 and December 31, 2016.
(10) Risk-based capital ratios are reported under Basel 3 Advanced - Transition. For more information, see Capital Management on page 61.

Supplemental Financial Data

In this Form 10-K, we present certain non-GAAP financial measures. Non-GAAP financial measures exclude certain items or otherwise include components that differ from the most directly comparable measures calculated in accordance with GAAP. Non-GAAP financial measures are provided as additional useful information to assess our financial condition, results of operations (including period-to-period operating performance) or compliance with prospective regulatory requirements. These non-GAAP financial measures are not intended as a substitute for GAAP financial measures and may not be defined or calculated the same way as non-GAAP financial measures used by other companies.

We view net interest income and related ratios and analyses on a fully taxable-equivalent (FTE) basis, which when presented on a consolidated basis, are non-GAAP financial measures. To derive the FTE basis, net interest income is adjusted to reflect tax-exempt income on an equivalent before-tax basis with a corresponding increase in income tax expense. For purposes of this calculation, we use the federal statutory tax rate of 35 percent and a representative state tax rate. In addition, certain performance measures including the efficiency ratio and net interest yield utilize net interest income (and thus total revenue) on an FTE basis. The efficiency ratio measures the costs expended to generate a dollar of revenue, and net interest yield measures the bps we earn over the cost of funds. We believe that presentation of these items on an FTE basis allows for comparison of amounts from both taxable and tax-exempt sources and is consistent with industry practices.

We may present certain key performance indicators and ratios excluding certain items (e.g., debit valuation adjustment (DVA)) which result in non-GAAP financial measures. We believe that the presentation of measures that exclude these items are useful because they provide additional information to assess the underlying operational performance and trends of our businesses and to allow better comparison of period-to-period operating performance.

We also evaluate our business based on certain ratios that utilize tangible equity, a non-GAAP financial measure. Tangible equity represents an adjusted shareholders' equity or common shareholders' equity amount which has been reduced by goodwill and certain acquired intangible assets (excluding MSRs), net of related deferred tax liabilities. These measures are used to evaluate our use of equity. In addition, profitability, relationship and investment models use both return on average tangible common shareholders' equity and return on average tangible shareholders' equity as key measures to support our overall growth goals. These ratios are as follows:

- Return on average tangible common shareholders' equity measures our earnings contribution as a percentage of adjusted common shareholders' equity. The tangible common equity ratio represents adjusted ending common shareholders' equity divided by total assets less goodwill and certain acquired intangible assets (excluding MSRs), net of related deferred tax liabilities.
- Return on average tangible shareholders' equity measures our earnings contribution as a percentage of adjusted average total shareholders' equity. The tangible equity ratio represents adjusted ending shareholders' equity divided by total assets less goodwill and certain acquired intangible assets (excluding MSRs), net of related deferred tax liabilities.
- Tangible book value per common share represents adjusted ending common shareholders' equity divided by ending common shares outstanding.

We believe that the use of ratios that utilize tangible equity provides additional useful information because they present measures of those assets that can generate income. Tangible book value per share provides additional useful information about the level of tangible assets in relation to outstanding shares of common stock.

The aforementioned supplemental data and performance measures are presented in Tables 7 and 8.

For more information on the reconciliation of these non-GAAP financial measures to GAAP financial measures, see Non-GAAP Reconciliations on page 104.

Table 9 Average Balances and Interest Rates - FTE Basis

(Dollars in millions)	2017 Average Balance	2017 Interest Income/ Expense	2017 Yield/ Rate	2016 Average Balance	2016 Interest Income/ Expense	2016 Yield/ Rate	2015 Average Balance	2015 Interest Income/ Expense	2015 Yield/ Rate
Earning assets									
Interest-bearing deposits with the Federal Reserve, non-U.S. central banks and other banks	$ 127,431	$ 1,122	0.88%	$ 133,374	$ 605	0.45%	$ 136,391	$ 369	0.27%
Time deposits placed and other short-term investments	12,112	241	1.99	9,026	140	1.55	9,556	146	1.53
Federal funds sold and securities borrowed or purchased under agreements to resell	222,818	2,390	1.07	216,161	1,118	0.52	211,471	988	0.47
Trading account assets	129,007	4,618	3.58	129,766	4,563	3.52	137,837	4,547	3.30
Debt securities	435,005	10,626	2.44	418,289	9,263	2.23	390,849	9,233	2.38
Loans and leases (1):									
Residential mortgage	197,766	6,831	3.45	188,250	6,488	3.45	201,366	6,967	3.46
Home equity	62,260	2,608	4.19	71,760	2,713	3.78	81,070	2,984	3.68
U.S. credit card	91,068	8,791	9.65	87,905	8,170	9.29	88,244	8,085	9.16
Non-U.S. credit card (2)	3,929	358	9.12	9,527	926	9.72	10,104	1,051	10.40
Direct/Indirect consumer (3)	93,374	2,622	2.81	91,853	2,296	2.50	84,585	2,040	2.41
Other consumer (4)	2,628	112	4.23	2,295	75	3.26	1,938	56	2.86
Total consumer	451,025	21,322	4.73	451,590	20,668	4.58	467,307	21,183	4.53
U.S. commercial	292,452	9,765	3.34	276,887	8,101	2.93	248,354	6,883	2.77
Commercial real estate (5)	58,502	2,116	3.62	57,547	1,773	3.08	52,136	1,521	2.92
Commercial lease financing	21,747	706	3.25	21,146	627	2.97	19,802	628	3.17
Non-U.S. commercial	95,005	2,566	2.70	93,263	2,337	2.51	89,188	2,008	2.25
Total commercial	467,706	15,153	3.24	448,843	12,838	2.86	409,480	11,040	2.70
Total loans and leases (2)	918,731	36,475	3.97	900,433	33,506	3.72	876,787	32,223	3.68
Other earning assets	76,957	3,032	3.94	59,775	2,762	4.62	62,040	2,890	4.66
Total earning assets (6)	1,922,061	58,504	3.04	1,866,824	51,957	2.78	1,824,931	50,396	2.76
Cash and due from banks	27,995			27,893			28,921		
Other assets, less allowance for loan and lease losses	318,577			295,501			306,684		
Total assets	$ 2,268,633			$ 2,190,218			$ 2,160,536		
Interest-bearing liabilities									
U.S. interest-bearing deposits:									
Savings	$ 53,783	$ 5	0.01%	$ 49,495	$ 5	0.01%	$ 46,498	$ 7	0.01%
NOW and money market deposit accounts	628,647	873	0.14	589,737	294	0.05	543,133	273	0.05
Consumer CDs and IRAs	44,794	121	0.27	48,594	133	0.27	54,679	162	0.30
Negotiable CDs, public funds and other deposits	36,782	354	0.96	32,889	160	0.49	29,976	95	0.32
Total U.S. interest-bearing deposits	764,006	1,353	0.18	720,715	592	0.08	674,286	537	0.08
Non-U.S. interest-bearing deposits:									
Banks located in non-U.S. countries	2,442	21	0.85	3,891	32	0.82	4,473	31	0.70
Governments and official institutions	1,006	10	0.95	1,437	9	0.64	1,492	5	0.33
Time, savings and other	62,386	547	0.88	59,183	382	0.65	54,767	288	0.53
Total non-U.S. interest-bearing deposits	65,834	578	0.88	64,511	423	0.66	60,732	324	0.53
Total interest-bearing deposits	829,840	1,931	0.23	785,226	1,015	0.13	735,018	861	0.12
Federal funds purchased, securities loaned or sold under agreements to repurchase, short-term borrowings and other interest-bearing liabilities	273,097	3,538	1.30	251,236	2,350	0.94	275,785	2,387	0.87
Trading account liabilities	45,518	1,204	2.64	37,897	1,018	2.69	46,206	1,343	2.91
Long-term debt	225,133	6,239	2.77	228,617	5,578	2.44	240,059	5,958	2.48
Total interest-bearing liabilities (6)	1,373,588	12,912	0.94	1,302,976	9,961	0.76	1,297,068	10,549	0.81
Noninterest-bearing sources:									
Noninterest-bearing deposits	439,956			437,335			420,842		
Other liabilities	183,800			184,064			191,242		
Shareholders' equity	271,289			265,843			251,384		
Total liabilities and shareholders' equity	$ 2,268,633			$ 2,190,218			$ 2,160,536		
Net interest spread			2.10%			2.02%			1.95%
Impact of noninterest-bearing sources			0.27			0.23			0.24
Net interest income/yield on earning assets		$ 45,592	2.37%		$ 41,996	2.25%		$ 39,847	2.19%

(1) Nonperforming loans are included in the respective average loan balances. Income on these nonperforming loans is generally recognized on a cost recovery basis. PCI loans are recorded at fair value upon acquisition and accrete interest income over the estimated life of the loan.
(2) Includes assets of the Corporation's non-U.S. consumer credit card business, which was sold during the second quarter of 2017.
(3) Includes non-U.S. consumer loans of $2.9 billion, $3.4 billion and $4.0 billion in 2017, 2016 and 2015, respectively.
(4) Includes consumer finance loans of $321 million, $514 million and $619 million; consumer leases of $2.1 billion, $1.6 billion and $1.2 billion, and consumer overdrafts of $179 million, $173 million and $156 million in 2017, 2016 and 2015, respectively.
(5) Includes U.S. commercial real estate loans of $55.0 billion, $54.2 billion and $49.0 billion, and non-U.S. commercial real estate loans of $3.5 billion, $3.4 billion and $3.1 billion in 2017, 2016 and 2015, respectively.
(6) Interest income includes the impact of interest rate risk management contracts, which decreased interest income on the underlying assets by $44 million, $176 million and $59 million in 2017, 2016 and 2015, respectively. Interest expense includes the impact of interest rate risk management contracts, which decreased interest expense on the underlying liabilities by $1.4 billion, $2.1 billion and $2.4 billion in 2017, 2016 and 2015, respectively. For more information, see Interest Rate Risk Management for the Banking Book on page 97.

Table 10 Analysis of Changes in Net Interest Income - FTE Basis

(Dollars in millions)	Due to Change in [1] Volume	Due to Change in [1] Rate	Net Change	Due to Change in [1] Volume	Due to Change in [1] Rate	Net Change
	From 2016 to 2017			From 2015 to 2016		
Increase (decrease) in interest income						
Interest-bearing deposits with the Federal Reserve, non-U.S. central banks and other banks	$ (32)	$ 549	$ 517	$ (9)	$ 245	$ 236
Time deposits placed and other short-term investments	48	53	101	(8)	2	(6)
Federal funds sold and securities borrowed or purchased under agreements to resell	41	1,231	1,272	28	102	130
Trading account assets	(22)	77	55	(265)	281	16
Debt securities	438	925	1,363	722	(692)	30
Loans and leases:						
Residential mortgage	335	8	343	(454)	(25)	(479)
Home equity	(360)	255	(105)	(343)	72	(271)
U.S. credit card	290	331	621	(33)	118	85
Non-U.S. credit card	(544)	(24)	(568)	(60)	(65)	(125)
Direct/Indirect consumer	38	288	326	174	82	256
Other consumer	11	26	37	10	9	19
Total consumer			654			(515)
U.S. commercial	468	1,196	1,664	787	431	1,218
Commercial real estate	29	314	343	159	93	252
Commercial lease financing	19	60	79	42	(43)	(1)
Non-U.S. commercial	48	181	229	90	239	329
Total commercial			2,315			1,798
Total loans and leases			2,969			1,283
Other earning assets	793	(523)	270	(104)	(24)	(128)
Total interest income			$ 6,547			$ 1,561
Increase (decrease) in interest expense						
U.S. interest-bearing deposits:						
Savings	$ —	$ —	$ —	$ (2)	$ —	$ (2)
NOW and money market deposit accounts	20	559	579	22	(1)	21
Consumer CDs and IRAs	(12)	—	(12)	(16)	(13)	(29)
Negotiable CDs, public funds and other deposits	20	174	194	10	55	65
Total U.S. interest-bearing deposits			761			55
Non-U.S. interest-bearing deposits:						
Banks located in non-U.S. countries	(12)	1	(11)	(4)	5	1
Governments and official institutions	(3)	4	1	—	4	4
Time, savings and other	24	141	165	26	68	94
Total non-U.S. interest-bearing deposits			155			99
Total interest-bearing deposits			916			154
Federal funds purchased, securities loaned or sold under agreements to repurchase, short-term borrowings and other interest-bearing liabilities	217	971	1,188	(201)	164	(37)
Trading account liabilities	206	(20)	186	(240)	(85)	(325)
Long-term debt	(85)	746	661	(288)	(92)	(380)
Total interest expense			2,951			(588)
Net increase in net interest income			$ 3,596			$ 2,149

(1) The changes for each category of interest income and expense are divided between the portion of change attributable to the variance in volume and the portion of change attributable to the variance in rate for that category. The unallocated change in rate or volume variance is allocated between the rate and volume variances.

Business Segment Operations

Segment Description and Basis of Presentation

We report our results of operations through the following four business segments: *Consumer Banking*, *GWIM*, *Global Banking* and *Global Markets*, with the remaining operations recorded in *All Other*. The primary activities, products and businesses of the business segments and *All Other* are shown below.

Bank of America Corporation

Consumer Banking

Deposits
- Consumer Deposits
- Merrill Edge
- Small Business Client Management

Consumer Lending
- Consumer and Small Business Credit Card
- Debit Card
- Core Consumer Real Estate Loans
- Consumer Vehicle Lending

Global Wealth & Investment Management
- Merrill Lynch Global Wealth Management
- U.S. Trust, Bank of America Private Wealth Management

Global Banking
- Investment Banking
- Global Corporate Banking
- Global Commercial Banking
- Business Banking

Global Markets
- Fixed Income Markets
- Equity Markets

All Other
- ALM Activities
- Non-Core Mortgage Loans
- MSR Valuations
- Liquidating Businesses
- Equity Investments
- Corporate Activities and Residual Expense Allocations
- Accounting Reclassifications and Eliminations
- Initial Impact of Tax Act

We periodically review capital allocated to our businesses and allocate capital annually during the strategic and capital planning processes. We utilize a methodology that considers the effect of regulatory capital requirements in addition to internal risk-based capital models. Our internal risk-based capital models use a risk-adjusted methodology incorporating each segment's credit, market, interest rate, business and operational risk components. For more information on the nature of these risks, see Managing Risk on page 57. The capital allocated to the business segments is referred to as allocated capital. Allocated equity in the reporting units is comprised of allocated capital plus capital for the portion of goodwill and intangibles specifically assigned to the reporting unit. For more information, see *Note 8 – Goodwill and Intangible Assets* to the Consolidated Financial Statements.

For more information on the basis of presentation for business segments and reconciliations to consolidated total revenue, net income and year-end total assets, see *Note 23 – Business Segment Information* to the Consolidated Financial Statements.

Consumer Banking

(Dollars in millions)	Deposits 2017	Deposits 2016	Consumer Lending 2017	Consumer Lending 2016	Total Consumer Banking 2017	Total Consumer Banking 2016	% Change
Net interest income (FTE basis)	**$ 13,353**	$ 10,701	**$ 10,954**	$ 10,589	**$ 24,307**	$ 21,290	14%
Noninterest income:							
Card income	**8**	9	**5,062**	4,926	**5,070**	4,935	3
Service charges	**4,265**	4,141	**1**	1	**4,266**	4,142	3
Mortgage banking income [1]	**—**	—	**481**	960	**481**	960	(50)
All other income	**391**	403	**6**	1	**397**	404	(2)
Total noninterest income	**4,664**	4,553	**5,550**	5,888	**10,214**	10,441	(2)
Total revenue, net of interest expense (FTE basis)	**18,017**	15,254	**16,504**	16,477	**34,521**	31,731	9
Provision for credit losses	**201**	174	**3,324**	2,541	**3,525**	2,715	30
Noninterest expense	**10,380**	9,677	**7,407**	7,977	**17,787**	17,654	1
Income before income taxes (FTE basis)	**7,436**	5,403	**5,773**	5,959	**13,209**	11,362	16
Income tax expense (FTE basis)	**2,816**	1,993	**2,186**	2,197	**5,002**	4,190	19
Net income	**$ 4,620**	$ 3,410	**$ 3,587**	$ 3,762	**$ 8,207**	$ 7,172	14
Net interest yield (FTE basis)	**2.05%**	1.79%	**4.18%**	4.37%	**3.54%**	3.38%	
Return on average allocated capital	**39**	28	**14**	17	**22**	21	
Efficiency ratio (FTE basis)	**57.61**	63.44	**44.88**	48.41	**51.53**	55.64	
Balance Sheet							
Average							
Total loans and leases	**$ 5,084**	$ 4,809	**$ 260,974**	$ 240,999	**$ 266,058**	$ 245,808	8%
Total earning assets [2]	**651,963**	598,043	**261,802**	242,445	**686,612**	629,984	9
Total assets [2]	**679,306**	624,592	**273,253**	254,287	**725,406**	668,375	9
Total deposits	**646,930**	592,417	**6,390**	7,234	**653,320**	599,651	9
Allocated capital	**12,000**	12,000	**25,000**	22,000	**37,000**	34,000	9
Year end							
Total loans and leases	**$ 5,143**	$ 4,938	**$ 275,330**	$ 254,053	**$ 280,473**	$ 258,991	8%
Total earning assets [2]	**675,485**	631,172	**275,742**	255,511	**709,832**	662,698	7
Total assets [2]	**703,330**	658,316	**287,390**	268,002	**749,325**	702,333	7
Total deposits	**670,802**	625,727	**5,728**	7,059	**676,530**	632,786	7

(1) Total consolidated mortgage banking income of $224 million for 2017 was recorded primarily in Consumer Lending and *All Other* compared to $1.9 billion for 2016.
(2) In segments and businesses where the total of liabilities and equity exceeds assets, we allocate assets from *All Other* to match the segments' and businesses' liabilities and allocated shareholders' equity. As a result, total earning assets and total assets of the businesses may not equal total *Consumer Banking*.

Consumer Banking, which is comprised of Deposits and Consumer Lending, offers a diversified range of credit, banking and investment products and services to consumers and small businesses. Our customers and clients have access to a coast to coast network including financial centers in 34 states and the District of Columbia. Our network includes approximately 4,500 financial centers, 16,000 ATMs, nationwide call centers, and leading digital banking platforms with approximately 35 million active users, including approximately 24 million mobile active users.

Consumer Banking Results

Net income for *Consumer Banking* increased $1.0 billion to $8.2 billion in 2017 compared to 2016 primarily driven by higher net interest income, partially offset by higher provision for credit losses and lower mortgage banking income. Net interest income increased $3.0 billion to $24.3 billion primarily due to the beneficial impact of an increase in investable assets as a result of higher deposits, as well as pricing discipline and loan growth. Noninterest income decreased $227 million to $10.2 billion driven by lower mortgage banking income, partially offset by higher card income and service charges.

The provision for credit losses increased $810 million to $3.5 billion due to portfolio seasoning and loan growth in the U.S. credit card portfolio. Noninterest expense increased $133 million to $17.8 billion driven by higher personnel expense, including the shared success discretionary year-end bonus, and increased FDIC expense, as well as investments in digital capabilities and business growth, including increased primary sales professionals, combined with investments in new financial centers and renovations. These increases were partially offset by improved operating efficiencies.

The return on average allocated capital was 22 percent, up from 21 percent, as higher net income was partially offset by an increased capital allocation. For more information on capital allocations, see Business Segment Operations on page 46.

Deposits

Deposits includes the results of consumer deposit activities which consist of a comprehensive range of products provided to consumers and small businesses. Our deposit products include traditional savings accounts, money market savings accounts, CDs and IRAs, noninterest- and interest-bearing checking accounts, as well as investment accounts and products. Net interest income is allocated to the deposit products using our funds transfer pricing process that matches assets and liabilities with similar interest rate sensitivity and maturity characteristics. Deposits generates fees such as account service fees, non-sufficient funds fees, overdraft charges and ATM fees, as well as investment and brokerage fees from Merrill Edge accounts. Merrill Edge is an integrated investing and banking service targeted at customers with less than $250,000 in investable assets. Merrill Edge provides investment advice and guidance, client brokerage asset services, a self-directed online investing platform and key banking capabilities including access to the Corporation's network of financial centers and ATMs.

Deposits includes the net impact of migrating customers and their related deposit and brokerage asset balances between Deposits and *GWIM* as well as other client-managed businesses. For more information on the migration of customer balances to or from *GWIM*, see *GWIM* – Net Migration Summary on page 51.

Net income for Deposits increased $1.2 billion to $4.6 billion in 2017 driven by higher revenue, partially offset by higher noninterest expense. Net interest income increased $2.7 billion to $13.4 billion primarily due to the beneficial impact of an increase in investable assets as a result of higher deposits, and pricing discipline. Noninterest income increased $111 million to $4.7 billion driven by higher service charges.

The provision for credit losses increased $27 million to $201 million in 2017. Noninterest expense increased $703 million to $10.4 billion primarily driven by investments in digital capabilities and business growth, including increased primary sales professionals, combined with investments in new financial centers and renovations, higher personnel expense, including the shared success discretionary year-end bonus, and increased FDIC expense.

Average deposits increased $54.5 billion to $646.9 billion in 2017 driven by strong organic growth. Growth in checking, money market savings and traditional savings of $57.9 billion was partially offset by a decline in time deposits of $3.5 billion.

Key Statistics – Deposits

	2017	2016
Total deposit spreads (excludes noninterest costs) (1)	1.84%	1.65%
Year end		
Client brokerage assets (in millions)	$ 177,045	$144,696
Digital banking active users (units in thousands) (2)	34,855	32,942
Mobile banking active users (units in thousands)	24,238	21,648
Financial centers	4,470	4,579
ATMs	16,039	15,928

(1) Includes deposits held in Consumer Lending.
(2) Digital users represents mobile and/or online users across consumer businesses; historical information has been reclassified primarily due to the sale of the Corporation's non-U.S. consumer credit card business in 2017.

Client brokerage assets increased $32.3 billion driven by strong client flows and market performance. Mobile banking active users increased 2.6 million reflecting continuing changes in our customers' banking preferences. The number of financial centers declined 109 driven by changes in customer preferences to self-service options as we continue to optimize our consumer banking network and improve our cost-to-serve.

Consumer Lending

Consumer Lending offers products to consumers and small businesses across the U.S. The products offered include credit and debit cards, residential mortgages and home equity loans, and direct and indirect loans such as automotive, recreational vehicle and consumer personal loans. In addition to earning net interest spread revenue on its lending activities, Consumer Lending generates interchange revenue from credit and debit card transactions, late fees, cash advance fees, annual credit card fees, mortgage banking fee income and other miscellaneous fees. Consumer Lending products are available to our customers through our retail network, direct telephone, and online and mobile channels. Consumer Lending results also include the impact of servicing residential mortgages and home equity loans in the core portfolio, including loans held on the balance sheet of Consumer Lending and loans serviced for others.

We classify consumer real estate loans as core or non-core based on loan and customer characteristics such as origination date, product type, loan-to-value (LTV), Fair Isaac Corporation (FICO) score and delinquency status. For more information on the core and non-core portfolios, see Consumer Portfolio Credit Risk Management on page 70. Total owned loans in the core portfolio held in Consumer Lending increased $14.7 billion to $115.9 billion in 2017, primarily driven by higher residential mortgage balances, partially offset by a decline in home equity balances.

Consumer Lending includes the net impact of migrating customers and their related loan balances between Consumer Lending and *GWIM*. For more information on the migration of customer balances to or from *GWIM*, see *GWIM* – Net Migration Summary on page 51.

Net income for Consumer Lending decreased $175 million to $3.6 billion in 2017 driven by higher provision for credit losses and lower noninterest income, partially offset by lower noninterest expense and higher net interest income. Net interest income increased $365 million to $11.0 billion primarily driven by the impact of an increase in loan balances. Noninterest income decreased $338 million to $5.6 billion driven by lower mortgage banking income, partially offset by higher card income.

The provision for credit losses increased $783 million to $3.3 billion in 2017 due to portfolio seasoning and loan growth in the U.S. credit card portfolio. Noninterest expense decreased $570 million to $7.4 billion primarily driven by improved operating efficiencies.

Average loans increased $20.0 billion to $261.0 billion in 2017 driven by increases in residential mortgages as well as consumer vehicle and U.S credit card loans, partially offset by lower home equity loan balances.

Key Statistics – Consumer Lending

(Dollars in millions)	2017	2016
Total U.S. credit card (1)		
Gross interest yield	9.65%	9.29%
Risk-adjusted margin	8.67	9.04
New accounts (in thousands)	4,939	4,979
Purchase volumes	$ 244,753	$226,432
Debit card purchase volumes	$ 298,641	$285,612

(1) In addition to the U.S. credit card portfolio in *Consumer Banking*, the remaining U.S. credit card portfolio is in *GWIM*.

During 2017, the total U.S. credit card risk-adjusted margin decreased 37 bps compared to 2016, primarily driven by compressed margins, increased net charge-offs and higher credit card rewards costs. Total U.S. credit card purchase volumes increased $18.3 billion to $244.8 billion, and debit card purchase volumes increased $13.0 billion to $298.6 billion, reflecting higher levels of consumer spending.

Mortgage Banking Income

Mortgage banking income in *Consumer Banking* includes production income and net servicing income. Production income is comprised primarily of revenue from the fair value gains and losses recognized on our interest rate lock commitments (IRLCs) and loans held-for-sale (LHFS), the related secondary market execution, and costs related to representations and warranties made in the sales transactions along with other obligations incurred in the sales of mortgage loans. Production income decreased $461 million to $202 million in 2017 due to a decision to retain a higher percentage of residential mortgage production in *Consumer Banking*, as well as the impact of a higher interest rate environment driving lower refinances.

Net servicing income within *Consumer Banking* includes income earned in connection with servicing activities and MSR valuation adjustments for the core portfolio, net of results from risk management activities used to hedge certain market risks of the MSRs. Net servicing income decreased $18 million to $279 million in 2017 reflecting the decline in the size of the servicing portfolio.

Mortgage Servicing Rights

At December 31, 2017, the core MSR portfolio, held within Consumer Lending, was $1.7 billion compared to $2.1 billion at December 31, 2016. The decrease was primarily driven by the amortization of expected cash flows, which exceeded additions to the MSR portfolio, partially offset by the impact of changes in fair value from rising interest rates. For more information on MSRs, see *Note 20 – Fair Value Measurements* to the Consolidated Financial Statements.

Key Statistics - Mortgage Banking

(Dollars in millions)	2017	2016
Loan production [1]**:**		
Total [2]:		
First mortgage	**$ 50,581**	$ 64,153
Home equity	**16,924**	15,214
Consumer Banking:		
First mortgage	**$ 34,065**	$ 44,510
Home equity	**15,199**	13,675

(1) The loan production amounts represent the unpaid principal balance of loans and in the case of home equity, the principal amount of the total line of credit.

(2) In addition to loan production in *Consumer Banking*, there is also first mortgage and home equity loan production in *GWIM*.

First mortgage loan originations in *Consumer Banking* and for the total Corporation decreased $10.4 billion and $13.6 billion in 2017, primarily driven by a higher interest rate environment driving lower first-lien mortgage refinances.

Home equity production in *Consumer Banking* and for the total Corporation increased $1.5 billion and $1.7 billion in 2017 due to a higher demand based on improving housing trends, and improved engagement with customers.

Global Wealth & Investment Management

(Dollars in millions)	2017	2016	% Change
Net interest income (FTE basis)	**$ 6,173**	$ 5,759	7%
Noninterest income:			
Investment and brokerage services	**10,883**	10,316	5
All other income	**1,534**	1,575	(3)
Total noninterest income	**12,417**	11,891	4
Total revenue, net of interest expense (FTE basis)	**18,590**	17,650	5
Provision for credit losses	**56**	68	(18)
Noninterest expense	**13,564**	13,175	3
Income before income taxes (FTE basis)	**4,970**	4,407	13
Income tax expense (FTE basis)	**1,882**	1,632	15
Net income	**$ 3,088**	$ 2,775	11
Net interest yield (FTE basis)	**2.32%**	2.09%	
Return on average allocated capital	**22**	21	
Efficiency ratio (FTE basis)	**72.96**	74.65	
Balance Sheet			
Average			
Total loans and leases	**$ 152,682**	$ 142,429	7%
Total earning assets	**265,670**	275,799	(4)
Total assets	**281,517**	291,478	(3)
Total deposits	**245,559**	256,425	(4)
Allocated capital	**14,000**	13,000	8
Year end			
Total loans and leases	**$ 159,378**	$ 148,179	8%
Total earning assets	**267,026**	283,151	(6)
Total assets	**284,321**	298,931	(5)
Total deposits	**246,994**	262,530	(6)

GWIM consists of two primary businesses: Merrill Lynch Global Wealth Management (MLGWM) and U.S. Trust, Bank of America Private Wealth Management (U.S. Trust).

MLGWM's advisory business provides a high-touch client experience through a network of financial advisors focused on clients with over $250,000 in total investable assets. MLGWM provides tailored solutions to meet our clients' needs through a full set of investment management, brokerage, banking and retirement products.

U.S. Trust, together with MLGWM's Private Banking & Investments Group, provides comprehensive wealth management solutions targeted to high net worth and ultra high net worth clients, as well as customized solutions to meet clients' wealth structuring, investment management, trust and banking needs, including specialty asset management services.

Net income for *GWIM* increased $313 million to $3.1 billion in 2017 compared to 2016 due to higher revenue, partially offset by an increase in noninterest expense. The operating margin was 27 percent compared to 25 percent a year ago.

Net interest income increased $414 million to $6.2 billion driven by higher short-term interest rates. Noninterest income, which primarily includes investment and brokerage services income, increased $526 million to $12.4 billion. The increase in noninterest income was driven by the impact of AUM flows and higher market valuations, partially offset by the impact of changing market dynamics on transactional revenue and AUM pricing. Noninterest expense increased $389 million to $13.6 billion primarily driven by higher revenue-related incentive costs.

Return on average allocated capital was 22 percent in 2017, up from 21 percent a year ago, as higher net income was partially offset by an increased capital allocation.

Revenue from MLGWM of $15.3 billion increased six percent in 2017 compared to 2016 due to higher net interest income and asset management fees driven by AUM flows and higher market valuations, partially offset by lower transactional revenue and AUM pricing. U.S. Trust revenue of $3.3 billion increased seven percent in 2017 compared to 2016 reflecting higher net interest income and asset management fees driven by higher market valuations and AUM flows.

Key Indicators and Metrics

(Dollars in millions, except as noted)	2017	2016
Revenue by Business		
Merrill Lynch Global Wealth Management	$ 15,288	$ 14,486
U.S. Trust	3,295	3,075
Other [1]	7	89
Total revenue, net of interest expense (FTE basis)	$ 18,590	$ 17,650
Client Balances by Business, at year end		
Merrill Lynch Global Wealth Management	$ 2,305,664	$ 2,102,175
U.S. Trust	446,199	406,392
Total client balances	$ 2,751,863	$ 2,508,567
Client Balances by Type, at year end		
Assets under management	$ 1,080,747	$ 886,148
Brokerage assets	1,125,282	1,085,826
Assets in custody	136,708	123,066
Deposits	246,994	262,530
Loans and leases [2]	162,132	150,997
Total client balances	$ 2,751,863	$ 2,508,567
Assets Under Management Rollforward		
Assets under management, beginning of year	$ 886,148	$ 900,863
Net client flows [3]	95,707	30,582
Market valuation/other [1]	98,892	(45,297)
Total assets under management, end of year	$ 1,080,747	$ 886,148
Associates, at year end [4, 5]		
Number of financial advisors	17,355	16,820
Total wealth advisors, including financial advisors	19,238	18,678
Total primary sales professionals, including financial advisors and wealth advisors	20,341	19,629
Merrill Lynch Global Wealth Management Metric [5]		
Financial advisor productivity [6] (in thousands)	$ 1,005	$ 974
U.S. Trust Metric, at year end [5]		
Primary sales professionals	1,714	1,677

(1) Amounts for 2016 include the results of BofA Global Capital Management, the cash management division of Bank of America, and certain administrative items. Amounts also reflect the sale to a third party of approximately $80 billion of BofA Global Capital Management's AUM in 2016.
(2) Includes margin receivables which are classified in customer and other receivables on the Consolidated Balance Sheet.
(3) For 2016, net client flows included $8.0 billion of net outflows related to BofA Global Capital Management's AUM that were sold in 2016.
(4) Includes financial advisors in the *Consumer Banking* segment of 2,402 and 2,200 at December 31, 2017 and 2016.
(5) Associate computation is based on headcount.
(6) Financial advisor productivity is defined as MLGWM total revenue, excluding the allocation of certain asset and liability management (ALM) activities, divided by the total average number of financial advisors (excluding financial advisors in the *Consumer Banking* segment).

Client Balances

Client balances managed under advisory and/or discretion of *GWIM* are AUM and are typically held in diversified portfolios. Fees earned on AUM are calculated as a percentage of clients' AUM balances. The asset management fees charged to clients per year depend on various factors, but are commonly driven by the breadth of the client's relationship and generally range from 50 to 150 bps on their total AUM. The net client AUM flows represent the net change in clients' AUM balances over a specified period of time, excluding market appreciation/depreciation and other adjustments.

Client balances increased $243.3 billion, or 10 percent, in 2017 to nearly $2.8 trillion at December 31, 2017, primarily due to AUM which increased $194.6 billion, or 22 percent, due to positive net flows and higher market valuations.

Net Migration Summary

GWIM results are impacted by the net migration of clients and their corresponding deposit, loan and brokerage balances primarily from *Consumer Banking,* as presented in the table below. Migrations result from the movement of clients between business segments to better align with client needs.

Net Migration Summary [(1)]

(Dollars in millions)	2017	2016
Total deposits, net – from *GWIM*	$ 356	$ 1,319
Total loans, net – from *GWIM*	154	7
Total brokerage, net – from *GWIM*	266	1,972

(1) Migration occurs primarily between *GWIM* and *Consumer Banking*.

Global Banking

(Dollars in millions)	2017	2016	% Change
Net interest income (FTE basis)	$ 10,504	$ 9,471	11%
Noninterest income:			
Service charges	3,125	3,094	1
Investment banking fees	3,471	2,884	20
All other income	2,899	2,996	(3)
Total noninterest income	9,495	8,974	6
Total revenue, net of interest expense (FTE basis)	19,999	18,445	8
Provision for credit losses	212	883	(76)
Noninterest expense	8,596	8,486	1
Income before income taxes (FTE basis)	11,191	9,076	23
Income tax expense (FTE basis)	4,238	3,347	27
Net income	$ 6,953	$ 5,729	21
Net interest yield (FTE basis)	2.93%	2.76%	
Return on average allocated capital	17	15	
Efficiency ratio (FTE basis)	42.98	46.01	
Balance Sheet			
Average			
Total loans and leases	$ 346,089	$ 333,820	4%
Total earning assets	358,302	342,859	5
Total assets	416,038	396,737	5
Total deposits	312,859	304,741	3
Allocated capital	40,000	37,000	8
Year end			
Total loans and leases	$ 350,668	$ 339,271	3%
Total earning assets	365,560	350,110	4
Total assets	424,533	408,330	4
Total deposits	329,273	307,630	7

Global Banking, which includes Global Corporate Banking, Global Commercial Banking, Business Banking and Global Investment Banking, provides a wide range of lending-related products and services, integrated working capital management and treasury solutions, and underwriting and advisory services through our network of offices and client relationship teams. Our lending products and services include commercial loans, leases, commitment facilities, trade finance, commercial real estate lending and asset-based lending. Our treasury solutions business includes treasury management, foreign exchange and short-term investing options. We also provide investment banking products to our clients such as debt and equity underwriting and distribution, and merger-related and other advisory services. Underwriting debt and equity issuances, fixed-income and equity research, and certain market-based activities are executed through our global broker-dealer affiliates, which are our primary dealers in several countries. Within *Global Banking,* Global Commercial Banking clients generally include middle-market companies, commercial real estate firms and not-for-profit companies. Global Corporate Banking clients generally include large global corporations, financial institutions and leasing clients. Business Banking clients include mid-sized U.S.-based businesses requiring customized and integrated financial advice and solutions.

Net income for *Global Banking* increased $1.2 billion to $7.0 billion in 2017 compared to 2016 driven by higher revenue and lower provision for credit losses.

Revenue increased $1.6 billion to $20.0 billion in 2017 compared to 2016 driven by higher net interest income and noninterest income. Net interest income increased $1.0 billion to $10.5 billion due to loan and deposit-related growth, higher short-term rates on an increased deposit base and the impact of the allocation of ALM activities, partially offset by credit spread compression. Noninterest income increased $521 million to $9.5 billion largely due to higher investment banking fees.

The provision for credit losses decreased $671 million to $212 million in 2017 primarily driven by reductions in energy exposures and continued portfolio improvement, partially offset by *Global Banking's* portion of a single-name non-U.S. commercial charge-off. Noninterest expense increased $110 million to $8.6 billion in 2017 primarily driven by higher investments in technology and higher deposit insurance, partially offset by lower litigation costs.

The return on average allocated capital was 17 percent, up from 15 percent, as higher net income was partially offset by an increased capital allocation. For more information on capital allocated to the business segments, see Business Segment Operations on page 46.

Global Corporate, Global Commercial and Business Banking

Global Corporate, Global Commercial and Business Banking each include Business Lending and Global Transaction Services activities. Business Lending includes various lending-related products and services, and related hedging activities, including commercial loans, leases, commitment facilities, trade finance, real estate lending and asset-based lending. Global Transaction Services includes deposits, treasury management, credit card, foreign exchange and short-term investment products.

The table below and following discussion present a summary of the results, which exclude certain investment banking activities in *Global Banking*.

Global Corporate, Global Commercial and Business Banking

	Global Corporate Banking		Global Commercial Banking		Business Banking		Total	
(Dollars in millions)	**2017**	2016	**2017**	2016	**2017**	2016	**2017**	2016
Revenue								
Business Lending	**$ 4,387**	$ 4,285	**$ 4,280**	$ 4,139	**$ 404**	$ 376	**$ 9,071**	$ 8,800
Global Transaction Services	**3,322**	2,996	**3,017**	2,718	**849**	740	**7,188**	6,454
Total revenue, net of interest expense	**$ 7,709**	$ 7,281	**$ 7,297**	$ 6,857	**$ 1,253**	$ 1,116	**$ 16,259**	$ 15,254
Balance Sheet								
Average								
Total loans and leases	**$ 158,292**	$152,944	**$ 170,101**	$163,309	**$ 17,682**	$ 17,537	**$ 346,075**	$333,790
Total deposits	**148,704**	143,233	**127,720**	126,253	**36,435**	35,256	**312,859**	304,742
Year end								
Total loans and leases	**$ 163,184**	$152,589	**$ 169,997**	$168,828	**$ 17,500**	$ 17,882	**$ 350,681**	$339,299
Total deposits	**155,614**	144,016	**137,538**	128,210	**36,120**	35,409	**329,272**	307,635

Business Lending revenue increased $271 million in 2017 compared to 2016 driven by the impact of loan and lease-related growth and the allocation of ALM activities, partially offset by credit spread compression.

Global Transaction Services revenue increased $734 million in 2017 compared to 2016 driven by the impact of higher short-term rates on an increased deposit base, as well as the allocation of ALM activities.

Average loans and leases increased four percent in 2017 compared to 2016 driven by growth in the commercial and industrial, and leasing portfolios. Average deposits increased three percent due to growth with new and existing clients.

Global Investment Banking

Client teams and product specialists underwrite and distribute debt, equity and loan products, and provide advisory services and tailored risk management solutions. The economics of certain investment banking and underwriting activities are shared primarily between *Global Banking* and *Global Markets* under an internal revenue-sharing arrangement. To provide a complete discussion of our consolidated investment banking fees, the following table presents total Corporation investment banking fees and the portion attributable to *Global Banking*.

Investment Banking Fees

	Global Banking		Total Corporation	
(Dollars in millions)	**2017**	2016	**2017**	2016
Products				
Advisory	**$ 1,557**	$ 1,156	**$ 1,691**	$ 1,269
Debt issuance	**1,506**	1,407	**3,635**	3,276
Equity issuance	**408**	321	**940**	864
Gross investment banking fees	**3,471**	2,884	**6,266**	5,409
Self-led deals	**(113)**	(49)	**(255)**	(168)
Total investment banking fees	**$ 3,358**	$ 2,835	**$ 6,011**	$ 5,241

Total Corporation investment banking fees, excluding self-led deals, of $6.0 billion, which are primarily included within *Global Banking* and *Global Markets,* increased 15 percent in 2017 compared to 2016 driven by higher advisory fees and higher debt and equity issuance fees due to an increase in overall client activity and market fee pools.

Global Markets

(Dollars in millions)	2017	2016	% Change
Net interest income (FTE basis)	$ 3,744	$ 4,558	(18)%
Noninterest income:			
Investment and brokerage services	2,049	2,102	(3)
Investment banking fees	2,476	2,296	8
Trading account profits	6,710	6,550	2
All other income	972	584	66
Total noninterest income	12,207	11,532	6
Total revenue, net of interest expense (FTE basis)	15,951	16,090	(1)
Provision for credit losses	164	31	n/m
Noninterest expense	10,731	10,169	6
Income before income taxes (FTE basis)	5,056	5,890	(14)
Income tax expense (FTE basis)	1,763	2,072	(15)
Net income	$ 3,293	$ 3,818	(14)
Return on average allocated capital	9%	10%	
Efficiency ratio (FTE basis)	67.28	63.21	
Balance Sheet			
Average			
Trading-related assets:			
Trading account securities	$ 216,996	$ 185,135	17 %
Reverse repurchases	101,795	89,715	13
Securities borrowed	82,210	87,286	(6)
Derivative assets	40,811	50,769	(20)
Total trading-related assets [(1)]	441,812	412,905	7
Total loans and leases	71,413	69,641	3
Total earning assets [(1)]	449,441	423,579	6
Total assets	638,674	585,341	9
Total deposits	32,864	34,250	(4)
Allocated capital	35,000	37,000	(5)
Year end			
Total trading-related assets [(1)]	$ 419,375	$ 380,562	10 %
Total loans and leases	76,778	72,743	6
Total earning assets [(1)]	449,314	397,022	13
Total assets	629,007	566,060	11
Total deposits	34,029	34,927	(3)

(1) Trading-related assets include derivative assets, which are considered non-earning assets.
n/m = not meaningful

Global Markets offers sales and trading services, including research, to institutional clients across fixed-income, credit, currency, commodity and equity businesses. *Global Markets* product coverage includes securities and derivative products in both the primary and secondary markets. *Global Markets* provides market-making, financing, securities clearing, settlement and custody services globally to our institutional investor clients in support of their investing and trading activities. We also work with our commercial and corporate clients to provide risk management products using interest rate, equity, credit, currency and commodity derivatives, foreign exchange, fixed-income and mortgage-related products. As a result of our market-making activities in these products, we may be required to manage risk in a broad range of financial products including government securities, equity and equity-linked securities, high-grade and high-yield corporate debt securities, syndicated loans, MBS, commodities and asset-backed securities. The economics of certain investment banking and underwriting activities are shared primarily between *Global Markets* and *Global Banking* under an internal revenue-sharing arrangement. *Global Banking* originates certain deal-related transactions with our corporate and commercial clients that are executed and distributed by *Global Markets*. For information on investment banking fees on a consolidated basis, see page 52.

Net income for *Global Markets* decreased $525 million to $3.3 billion in 2017 compared to 2016. Net DVA losses were $428 million compared to losses of $238 million in 2016. Excluding net DVA, net income decreased $408 million to $3.6 billion primarily driven by higher noninterest expense, lower sales and trading revenue and an increase in the provision for credit losses, partially offset by higher investment banking fees.

Sales and trading revenue, excluding net DVA, decreased $423 million primarily due to weaker performance in rates products and emerging markets. The provision for credit losses increased $133 million to $164 million, reflecting *Global Markets'* portion of a single-name non-U.S. commercial charge-off. Noninterest expense increased $562 million to $10.7 billion primarily due to higher litigation expense and continued investments in technology.

Average trading-related assets increased $28.9 billion to $441.8 billion in 2017 primarily driven by targeted growth in client financing activities in the global equities business. Year-end trading-related assets increased $38.8 billion to $419.4 billion at December 31, 2017 driven by additional inventory in FICC to meet expected client demand as well as targeted growth in client financing activities in the global equities business.

The return on average allocated capital decreased to nine percent, reflecting lower net income, partially offset by a decrease in average allocated capital.

Sales and Trading Revenue

Sales and trading revenue includes unrealized and realized gains and losses on trading and other assets, net interest income, and fees primarily from commissions on equity securities. Sales and trading revenue is segregated into fixed-income (government debt obligations, investment and non-investment grade corporate debt obligations, commercial MBS, residential mortgage-backed securities, collateralized loan obligations, interest rate and credit derivative contracts), currencies (interest rate and foreign exchange contracts), commodities (primarily futures, forwards, swaps and options) and equities (equity-linked derivatives and cash equity activity). The following table and related discussion present sales and trading revenue, substantially all of which is in *Global Markets,* with the remainder in *Global Banking*. In addition, the following table and related discussion present sales and trading revenue excluding the impact of net DVA, which is a non-GAAP financial measure. We believe the use of this non-GAAP financial measure provides additional useful information to assess the underlying performance of these businesses and to allow better comparison of year-over-year operating performance.

Sales and Trading Revenue (1, 2)

(Dollars in millions)		2017		2016
Sales and trading revenue				
Fixed-income, currencies and commodities	$	**8,665**	$	9,373
Equities		**4,112**		4,017
Total sales and trading revenue	**$**	**12,777**	$	13,390
Sales and trading revenue, excluding net DVA (3)				
Fixed-income, currencies and commodities	$	**9,059**	$	9,611
Equities		**4,146**		4,017
Total sales and trading revenue, excluding net	**$**	**13,205**	$	13,628

(1) Includes FTE adjustments of $236 million and $186 million for 2017 and 2016. For more information on sales and trading revenue, see *Note 2 – Derivatives* to the Consolidated Financial Statements.

(2) Includes *Global Banking* sales and trading revenue of $236 million and $406 million for 2017 and 2016.

(3) FICC and Equities sales and trading revenue, excluding net DVA, is a non-GAAP financial measure. FICC net DVA losses were $394 million and $238 million for 2017 and 2016. Equities net DVA losses were $34 million and $0 for 2017 and 2016.

The following explanations for year-over-year changes in sales and trading, FICC and Equities revenue, would be the same if net DVA was included. FICC revenue, excluding net DVA, decreased $552 million from 2016 primarily due to lower revenue in rates products and emerging markets as lower volatility led to reduced client flow. The decline in FICC revenue was also impacted by higher funding costs which were driven by increases in market interest rates. Equities revenue, excluding net DVA, increased $129 million from 2016 due to higher revenue from the growth in client financing activities which was partially offset by lower revenue in cash and derivative trading due to lower levels of volatility and client activity.

All Other

(Dollars in millions)		2017		2016	% Change
Net interest income (FTE basis)	$	**864**	$	918	(6)%
Noninterest income:					
Card income		**69**		189	(63)
Mortgage banking income (loss)		**(263)**		889	(130)
Gains on sales of debt securities		**255**		490	(48)
All other loss		**(1,709)**		(1,801)	(5)
Total noninterest income (loss)		**(1,648)**		(233)	n/m
Total revenue, net of interest expense (FTE basis)		**(784)**		685	n/m
Provision for credit losses		**(561)**		(100)	n/m
Noninterest expense		**4,065**		5,599	(27)
Loss before income taxes (FTE basis)		**(4,288)**		(4,814)	(11)
Income tax expense (benefit) (FTE basis)		**(979)**		(3,142)	(69)
Net loss	**$**	**(3,309)**	$	(1,672)	98
Balance Sheet (1)					
Average					
Total loans and leases	$	**82,489**	$	108,735	(24)%
Total assets (1)		**206,998**		248,287	(17)
Total deposits		**25,194**		27,494	(8)
Year end					
Total loans and leases (2)	$	**69,452**	$	96,713	(28)%
Total assets (1)		**194,048**		212,413	(9)
Total deposits		**22,719**		23,061	(1)

(1) In segments where the total of liabilities and equity exceeds assets, which are generally deposit-taking segments, we allocate assets from *All Other* to those segments to match liabilities (i.e., deposits) and allocated shareholders' equity. Allocated assets were $515.6 billion and $500.0 billion for 2017 and 2016, and $520.4 billion and $518.7 billion at December 31, 2017 and 2016.

(2) Included $9.2 billion of non-U.S. credit card loans at December 31, 2016, which were included in assets of business held for sale on the Consolidated Balance Sheet. In 2017, the Corporation sold its non-U.S. consumer credit card business.

n/m = not meaningful

All Other consists of ALM activities, equity investments, non-core mortgage loans and servicing activities, the net impact of periodic revisions to the MSR valuation model for both core and non-core MSRs and the related economic hedge results and ineffectiveness, liquidating businesses, and residual expense allocations. ALM activities encompass certain residential mortgages, debt securities, interest rate and foreign currency risk management activities, the impact of certain allocation methodologies and accounting hedge ineffectiveness. The results of certain ALM activities are allocated to our business segments. For more information on our ALM activities, see *Note 23 – Business Segment Information* to the Consolidated Financial Statements. Equity investments include our merchant services joint venture as well as Global Principal Investments which is comprised of a portfolio of equity, real estate and other alternative investments. For more information on our merchant services joint venture, see *Note 12 – Commitments and Contingencies* to the Consolidated Financial Statements. Income tax is generally recorded in the business segments at the statutory rate; the initial impact of the Tax Act was recorded in *All Other*.

In 2017, the Corporation sold its non-U.S. consumer credit card business. For more information on the sale, see *Note 1 – Summary of Significant Accounting Principles* to the Consolidated Financial Statements.

The Corporation classifies consumer real estate loans as core or non-core based on loan and customer characteristics such as origination date, product type, LTV, FICO score and delinquency status. For more information on the core and non-core portfolios, see Consumer Portfolio Credit Risk Management on page 70. Residential mortgage loans that are held for ALM purposes, including interest rate or liquidity risk management, are classified as core and are presented on the balance sheet of *All Other*. For more information on our interest rate and liquidity risk management activities, see Liquidity Risk on page 65 and Interest Rate Risk Management for the Banking Book on page 97. During 2017, residential mortgage loans held for ALM activities decreased $6.1 billion to $28.5 billion at December 31, 2017 primarily as a result of payoffs and paydowns outpacing new originations. Non-core residential mortgage and home equity loans, which are principally run-off portfolios, including certain loans accounted for under the fair value option and MSRs pertaining to non-core loans serviced for others, are also held in *All Other*. During 2017, total non-core loans decreased $11.8 billion to $41.3 billion at December 31, 2017 due primarily to payoffs and paydowns, as well as loan sales.

The net loss for *All Other* increased $1.6 billion to a net loss of $3.3 billion, driven by an estimated charge of $2.9 billion due to enactment of the Tax Act. For more information, see Financial Highlights on page 37. The pre-tax loss for 2017 compared to 2016 decreased $526 million reflecting lower noninterest expense and a larger benefit in the provision for credit losses, partially offset by a decline in revenue.

Revenue declined $1.5 billion primarily due to lower mortgage banking income. Mortgage banking income declined $1.2 billion primarily due to less favorable valuations on MSRs, net of related hedges, and an increase in the provision for representations and warranties. All other noninterest loss decreased marginally and included a pre-tax gain of $793 million on the sale of the non-U.S. credit card business and a downward valuation adjustment of $946 million on tax-advantaged energy investments in connection with the Tax Act. Gains on sales of loans included in all other loss, including nonperforming and other delinquent loans, were $134 million compared to gains of $232 million in the same period in 2016.

The benefit in the provision for credit losses increased $461 million to a benefit of $561 million primarily driven by continued runoff of the non-core portfolio, loan sale recoveries and the sale of the non-U.S. consumer credit card business.

Noninterest expense decreased $1.5 billion to $4.1 billion driven by lower litigation expense, lower personnel expense and a decline in non-core mortgage servicing costs, partially offset by a $316 million impairment charge related to certain data centers in the process of being sold.

The income tax benefit was $1.0 billion in 2017 compared to a benefit of $3.1 billion in 2016. The decrease in the tax benefit was driven by the impacts of the Tax Act, including an estimated income tax expense of $1.9 billion related primarily to a lower valuation of certain deferred tax assets and liabilities. Both periods include income tax benefit adjustments to eliminate the FTE treatment of certain tax credits recorded in *Global Banking*.

Off-Balance Sheet Arrangements and Contractual Obligations

We have contractual obligations to make future payments on debt and lease agreements. Additionally, in the normal course of business, we enter into contractual arrangements whereby we commit to future purchases of products or services from unaffiliated parties. Purchase obligations are defined as obligations that are legally binding agreements whereby we agree to purchase products or services with a specific minimum quantity at a fixed, minimum or variable price over a specified period of time. Included in purchase obligations are vendor contracts, the most significant of which include communication services, processing services and software contracts. Debt, lease and other obligations are more fully discussed in *Note 11 – Long-term Debt* and *Note 12 – Commitments and Contingencies* to the Consolidated Financial Statements.

Other long-term liabilities include our contractual funding obligations related to the Qualified Pension Plan, Non-U.S. Pension Plans, Nonqualified and Other Pension Plans, and Postretirement Health and Life Plans (collectively, the Plans). Obligations to the Plans are based on the current and projected obligations of the Plans, performance of the Plans' assets, and any participant contributions, if applicable. During 2017 and 2016, we contributed $514 million and $256 million to the Plans, and we expect to make $128 million of contributions during 2018. The Plans are more fully discussed in *Note 17 – Employee Benefit Plans* to the Consolidated Financial Statements.

We enter into commitments to extend credit such as loan commitments, standby letters of credit (SBLCs) and commercial letters of credit to meet the financing needs of our customers. For a summary of the total unfunded, or off-balance sheet, credit extension commitment amounts by expiration date, see Credit Extension Commitments in *Note 12 – Commitments and Contingencies* to the Consolidated Financial Statements.

Table 11 includes certain contractual obligations at December 31, 2017 and 2016.

Table 11 Contractual Obligations

	December 31, 2017					December 31 2016
(Dollars in millions)	Due in One Year or Less	Due After One Year Through Three Years	Due After Three Years Through Five Years	Due After Five Years	Total	Total
Long-term debt	$ 42,057	$ 42,145	$ 30,879	$ 112,321	**$ 227,402**	$ 216,823
Operating lease obligations	2,256	4,072	3,023	5,169	**14,520**	13,620
Purchase obligations	1,317	1,426	458	1,018	**4,219**	5,742
Time deposits	61,038	4,990	1,543	273	**67,844**	74,944
Other long-term liabilities	1,681	1,234	862	1,195	**4,972**	4,567
Estimated interest expense on long-term debt and time deposits (1)	5,590	8,796	6,909	27,828	**49,123**	39,447
Total contractual obligations	$ 113,939	$ 62,663	$ 43,674	$ 147,804	**$ 368,080**	$ 355,143

(1) Represents forecasted net interest expense on long-term debt and time deposits based on interest rates at December 31, 2017. Forecasts are based on the contractual maturity dates of each liability, and are net of derivative hedges, where applicable.

Representations and Warranties

For background information on representations and warranties, see *Note 7 – Representations and Warranties Obligations and Corporate Guarantees* to the Consolidated Financial Statements. Breaches of representations and warranties made in connection with the sale of mortgage loans have resulted in and may continue to result in the requirement to repurchase mortgage loans or to otherwise make whole or provide other remedies to investors, securitization trusts, guarantors, insurers or other parties (collectively, repurchases).

At December 31, 2017 and 2016, we had $17.6 billion and $18.3 billion of unresolved repurchase claims, predominately related to subprime and pay option first-lien loans and home equity loans originated primarily between 2004 and 2008.

In addition to unresolved repurchase claims, we have received notifications indicating that we may have indemnity obligations with respect to specific loans for which we have not received a repurchase request. These notifications were received prior to 2015, and totaled $1.3 billion at both December 31, 2017 and 2016. During 2017, we reached agreements with certain parties requesting indemnity. One such agreement is subject to acceptance by a securitization trustee. The impact of these agreements is included in the provision and reserve for representations and warranties.

The reserve for representations and warranties and corporate guarantees is included in accrued expenses and other liabilities on the Consolidated Balance Sheet and the related provision is included in mortgage banking income. At December 31, 2017 and 2016, the reserve for representations and warranties was $1.9 billion and $2.3 billion. The representations and warranties provision was $393 million for 2017 compared to $106 million for 2016 with the increase resulting from settlements or advanced negotiations with certain counterparties where we believe we will reach settlements on several outstanding legacy matters.

In addition, we currently estimate that the range of possible loss for representations and warranties exposures could be up to $1 billion over existing accruals at December 31, 2017. This estimate is lower than the estimate at December 31, 2016 due to recent reductions in risk as we reach settlements with counterparties. The estimated range of possible loss represents a reasonably possible loss, but does not represent a probable loss, and is based on currently available information, significant judgment and a number of assumptions that are subject to change.

Future provisions and/or ranges of possible loss associated with obligations under representations and warranties may be significantly impacted if future experiences are different from historical experience or our understandings, interpretations or assumptions. Adverse developments with respect to one or more of the assumptions underlying the reserve for representations and warranties and the corresponding estimated range of possible loss, such as counterparties successfully challenging or avoiding the application of the relevant statute of limitations, could result in significant increases to future provisions and/or the estimated range of possible loss. For more information on representations and warranties, see *Note 7 – Representations and Warranties Obligations and Corporate Guarantees* to the Consolidated Financial Statements and, for more information related to the sensitivity of the assumptions used to estimate our liability for representations and warranties, see Complex Accounting Estimates – Representations and Warranties Liability on page 102.

Other Mortgage-related Matters

We continue to be subject to mortgage-related litigation and disputes, as well as governmental and regulatory scrutiny and investigations, related to our past and current origination, servicing, transfer of servicing and servicing rights, servicing compliance obligations, foreclosure activities, indemnification obligations, and mortgage insurance and captive reinsurance practices with mortgage insurers. The ongoing environment of regulatory scrutiny, heightened regulatory compliance obligations, and enhanced regulatory enforcement, combined with ongoing uncertainty related to the continuing evolution of the regulatory environment, has resulted in increased operational and compliance costs and may limit our ability to continue providing certain products and services. For more information on management's estimate of the aggregate range of possible loss for certain litigation matters and on regulatory investigations, see *Note 12 – Commitments and Contingencies* to the Consolidated Financial Statements.

Managing Risk

Overview

Risk is inherent in all our business activities. Sound risk management enables us to serve our customers and deliver for our shareholders. If not managed well, risks can result in financial loss, regulatory sanctions and penalties, and damage to our reputation, each of which may adversely impact our ability to execute our business strategies. We take a comprehensive approach to risk management with a defined Risk Framework and an articulated Risk Appetite Statement which are approved annually by the Enterprise Risk Committee (ERC) and the Board.

The seven key types of risk faced by the Corporation are strategic, credit, market, liquidity, compliance, operational and reputational risks.

- Strategic risk is the risk resulting from incorrect assumptions about external or internal factors, inappropriate business plans, ineffective business strategy execution, or failure to respond in a timely manner to changes in the regulatory, macroeconomic or competitive environments in the geographic locations in which we operate.
- Credit risk is the risk of loss arising from the inability or failure of a borrower or counterparty to meet its obligations.
- Market risk is the risk that changes in market conditions may adversely impact the value of assets or liabilities, or otherwise negatively impact earnings.
- Liquidity risk is the inability to meet expected or unexpected cash flow and collateral needs while continuing to support our businesses and customers under a range of economic conditions.
- Compliance risk is the risk of legal or regulatory sanctions, material financial loss or damage to the reputation of the Corporation arising from the failure of the Corporation to comply with the requirements of applicable laws, rules, regulations and related self-regulatory organizations' standards and codes of conduct.
- Operational risk is the risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events.
- Reputational risk is the risk that negative perceptions of the Corporation's conduct or business practices may adversely impact its profitability or operations.

The following sections address in more detail the specific procedures, measures and analyses of the major categories of risk. This discussion of managing risk focuses on the current Risk Framework that, as part of its annual review process, was approved by the ERC and the Board.

As set forth in our Risk Framework, a culture of managing risk well is fundamental to our values and operating principles. It requires us to focus on risk in all activities and encourages the necessary mindset and behavior to enable effective risk management, and promotes sound risk-taking within our risk appetite. Sustaining a culture of managing risk well throughout the organization is critical to our success and is a clear expectation of our executive management team and the Board.

Our Risk Framework serves as the foundation for the consistent and effective management of risks facing the Corporation. The Risk Framework sets forth clear roles, responsibilities and accountability for the management of risk and provides a blueprint for how the Board, through delegation of authority to committees and executive officers, establishes risk appetite and associated limits for our activities.

Executive management assesses, with Board oversight, the risk-adjusted returns of each business. Management reviews and approves the strategic and financial operating plans, as well as the capital plan and Risk Appetite Statement, and recommends them annually to the Board for approval. Our strategic plan takes into consideration return objectives and financial resources, which must align with risk capacity and risk appetite. Management sets financial objectives for each business by allocating capital and setting a target for return on capital for each business. Capital allocations and operating limits are regularly evaluated as part of our overall governance processes as the businesses and the economic environment in which we operate continue to evolve. For more information regarding capital allocations, see Business Segment Operations on page 46.

The Corporation's risk appetite indicates the amount of capital, earnings or liquidity we are willing to put at risk to achieve our strategic objectives and business plans, consistent with applicable regulatory requirements. Our risk appetite provides a common and comparable set of measures for senior management and the Board to clearly indicate our aggregate level of risk and to monitor whether the Corporation's risk profile remains in alignment with our strategic and capital plans. Our risk appetite is formally articulated in the Risk Appetite Statement, which includes both qualitative components and quantitative limits.

For a more detailed discussion of our risk management activities, see the discussion below and pages 60 through 100.

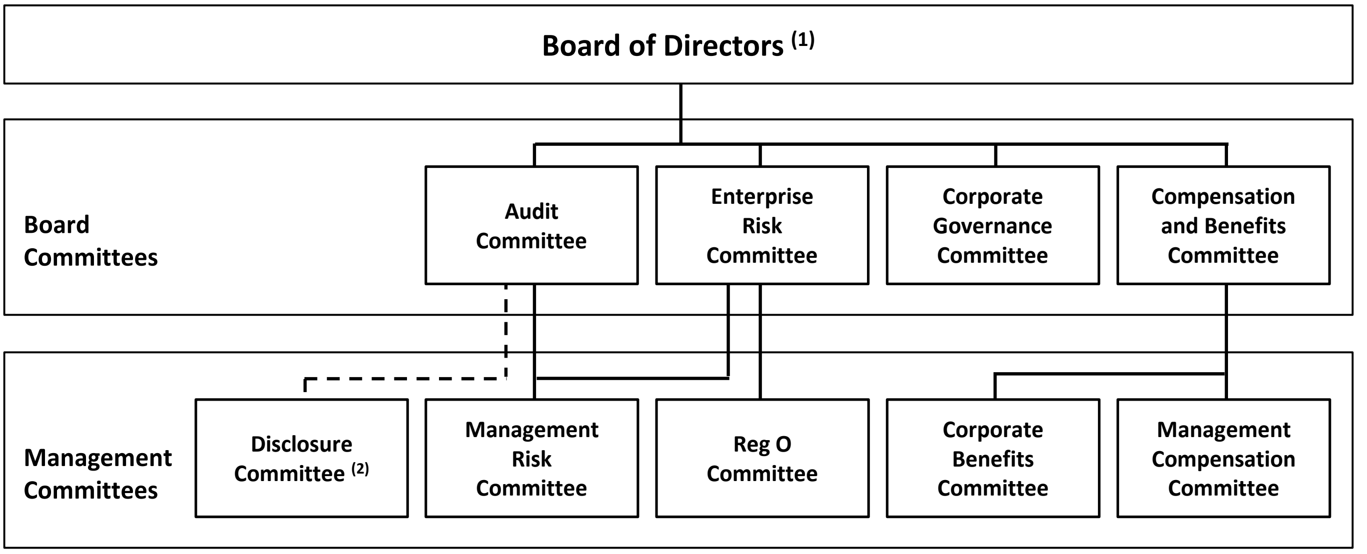
Our overall capacity to take risk is limited; therefore, we prioritize the risks we take in order to maintain a strong and flexible financial position so we can withstand challenging economic conditions and take advantage of organic growth opportunities. Therefore, we set objectives and targets for capital and liquidity that are intended to permit us to continue to operate in a safe and sound manner, including during periods of stress.

Our lines of business operate with risk limits (which may include credit, market and/or operational limits, as applicable) that are based on the amount of capital, earnings or liquidity we are willing to put at risk to achieve our strategic objectives and business plans. Executive management is responsible for tracking and reporting performance measurements as well as any exceptions to guidelines or limits. The Board, and its committees when appropriate, oversees financial performance, execution of the strategic and financial operating plans, adherence to risk appetite limits and the adequacy of internal controls.

Risk Management Governance

The Risk Framework describes delegations of authority whereby the Board and its committees may delegate authority to management-level committees or executive officers. Such delegations may authorize certain decision-making and approval functions, which may be evidenced in, for example, committee charters, job descriptions, meeting minutes and resolutions.

The chart below illustrates the inter-relationship among the Board, Board committees and management committees that have the majority of risk oversight responsibilities for the Corporation.



(1) This presentation does not include committees for other legal entities.
(2) Reports to the CEO and CFO with oversight by the Audit Committee.

Board of Directors and Board Committees

The Board is comprised of 15 directors, all but one of whom are independent. The Board authorizes management to maintain an effective Risk Framework, and oversees compliance with safe and sound banking practices. In addition, the Board or its committees conduct inquiries of, and receive reports from management on risk-related matters to assess scope or resource limitations that could impede the ability of independent risk management (IRM) and/or Corporate Audit to execute its responsibilities. The Board committees discussed below have the principal responsibility for enterprise-wide oversight of our risk management activities. Through these activities, the Board and applicable committees are provided with information on our risk profile, and oversee executive management addressing key risks we face. Other Board committees as described below provide additional oversight of specific risks.

Each of the committees shown on the above chart regularly reports to the Board on risk-related matters within the committee's responsibilities, which is intended to collectively provide the Board with integrated insight about our management of enterprise-wide risks.

Audit Committee

The Audit Committee oversees the qualifications, performance and independence of the Independent Registered Public Accounting Firm, the performance of our corporate audit function, the integrity of our consolidated financial statements, our compliance with legal and regulatory requirements, and makes inquiries of management or the Corporate General Auditor (CGA) to determine whether there are scope or resource limitations that impede the ability of Corporate Audit to execute its responsibilities. The Audit Committee is also responsible for overseeing compliance risk pursuant to the New York Stock Exchange listing standards.

Enterprise Risk Committee

The ERC has primary responsibility for oversight of the Risk Framework and key risks we face. It approves the Risk Framework and the Risk Appetite Statement and further recommends these documents to the Board for approval. The ERC oversees senior management's responsibilities for the identification, measurement, monitoring and control of key risks we face. The ERC may consult with other Board committees on risk-related matters.

Other Board Committees

Our Corporate Governance Committee oversees our Board's governance processes, identifies and reviews the qualifications of potential Board members, recommends nominees for election to our Board, recommends committee appointments for Board approval and reviews our Environmental, Social and Government (ESG) and stockholder engagement activities.

Our Compensation and Benefits Committee oversees establishing, maintaining and administering our compensation programs and employee benefit plans, including approving and recommending our Chief Executive Officer's (CEO) compensation to our Board for further approval by all independent directors, and reviewing and approving all of our executive officers' compensation, as well as compensation for non-management directors.

Management Committees

Management committees may receive their authority from the Board, a Board committee, another management committee or from one or more executive officers. Our primary management-level risk committee is the Management Risk Committee (MRC). Subject to Board oversight, the MRC is responsible for management oversight of key risks facing the Corporation. The MRC provides management oversight of our compliance and operational risk programs, balance sheet and capital management, funding activities and other liquidity activities, stress testing, trading activities, recovery and resolution planning, model risk, subsidiary governance, and activities between member banks and their nonbank affiliates pursuant to Federal Reserve rules and regulations, among other things.

Lines of Defense

We have clear ownership and accountability across three lines of defense: Front Line Units (FLUs), IRM and Corporate Audit. We also have control functions outside of FLUs and IRM (e.g., Legal and Global Human Resources). The three lines of defense are integrated into our management-level governance structure. Each of these functional roles is described in more detail below.

Executive Officers

Executive officers lead various functions representing the functional roles. Authority for functional roles may be delegated to executive officers from the Board, Board committees or management-level committees. Executive officers, in turn, may further delegate responsibilities, as appropriate, to management-level committees, management routines or individuals. Executive officers review our activities for consistency with our Risk Framework, Risk Appetite Statement and applicable strategic, capital and financial operating plans, as well as applicable policies, standards, procedures and processes. Executive officers and other employees make decisions individually on a day-to-day basis, consistent with the authority they have been delegated. Executive officers and other employees may also serve on committees and participate in committee decisions.

Front Line Units

FLUs include the lines of business as well as the Global Technology and Operations Group, and are responsible for appropriately assessing and effectively managing all of the risks associated with their activities.

Three organizational units that include FLU activities and control function activities, but are not part of IRM are the Chief Financial Officer (CFO) Group, Global Marketing and Corporate Affairs (GM&CA) and the Chief Administrative Officer (CAO) Group.

Independent Risk Management

IRM is part of our control functions and includes Global Risk Management and Global Compliance. We have other control functions that are not part of IRM (other control functions may also provide oversight to FLU activities), including Legal, Global Human Resources and certain activities within the CAO Group, CFO Group and GM&CA. IRM, led by the Chief Risk Officer (CRO), is responsible for independently assessing and overseeing risks within FLUs and other control functions. IRM establishes written enterprise policies and procedures that include concentration risk limits, where appropriate. Such policies and procedures outline how aggregate risks are identified, measured, monitored and controlled.

The CRO has the stature, authority and independence to develop and implement a meaningful risk management framework. The CRO has unrestricted access to the Board and reports directly to both the ERC and to the CEO. Global Risk Management is organized into horizontal risk teams, FLU risk teams and control function risk teams that work collaboratively in executing their respective duties.

Within IRM, Global Compliance independently assesses compliance risk, and evaluates adherence to applicable laws, rules and regulations, including identifying compliance issues and risks, performing monitoring and testing, and reporting on the state of compliance activities across the Corporation. Additionally, Global Compliance works with FLUs and control functions so that day-to-day activities operate in a compliant manner.

Corporate Audit

Corporate Audit and the CGA maintain their independence from the FLUs, IRM and other control functions by reporting directly to the Audit Committee or the Board. The CGA administratively reports to the CEO. Corporate Audit provides independent assessment and validation through testing of key processes and controls across the Corporation. Corporate Audit includes Credit Review which periodically tests and examines credit portfolios and processes.

Risk Management Processes

The Risk Framework requires that strong risk management practices are integrated in key strategic, capital and financial planning processes and in day-to-day business processes across the Corporation, with a goal of ensuring risks are appropriately considered, evaluated and responded to in a timely manner.

We employ a risk management process, referred to as Identify, Measure, Monitor and Control, as part of our daily activities.

Identify – To be effectively managed, risks must be clearly defined and proactively identified. Proper risk identification focuses on recognizing and understanding key risks inherent in our business activities or key risks that may arise from external factors. Each employee is expected to identify and escalate risks promptly. Risk identification is an ongoing process, incorporating input from FLUs and control functions, designed to be forward looking and capture relevant risk factors across all of our lines of business.

Measure – Once a risk is identified, it must be prioritized and accurately measured through a systematic risk quantification process including quantitative and qualitative components. Risk is measured at various levels including, but not limited to, risk type, FLU, legal entity and on an aggregate basis. This risk quantification process helps to capture changes in our risk profile due to changes in strategic direction, concentrations, portfolio quality and the overall economic environment. Senior management considers how risk exposures might evolve under a variety of stress scenarios.

Monitor – We monitor risk levels regularly to track adherence to risk appetite, policies, standards, procedures and processes. We also regularly update risk assessments and review risk exposures. Through our monitoring, we can determine our level of risk relative to limits and can take action in a timely manner. We also can determine when risk limits are breached and have processes to appropriately report and escalate exceptions. This includes requests for approval to managers and alerts to executive management, management-level committees or the Board (directly or through an appropriate committee).

Control – We establish and communicate risk limits and controls through policies, standards, procedures and processes that define the responsibilities and authority for risk-taking. The limits and controls can be adjusted by the Board or management when conditions or risk tolerances warrant. These limits may be absolute (e.g., loan amount, trading volume) or relative (e.g., percentage of loan book in higher-risk categories). Our lines of business are held accountable to perform within the established limits.

The formal processes used to manage risk represent a part of our overall risk management process. We instill a strong and comprehensive culture of managing risk well through communications, training, policies, procedures and organizational roles and responsibilities. Establishing a culture reflective of our purpose to help make our customers' financial lives better and delivering our responsible growth strategy are also critical to effective risk management. We understand that improper actions, behaviors or practices that are illegal, unethical or contrary to our core values could result in harm to the Corporation, our shareholders or our customers, damage the integrity of the financial markets, or negatively impact our reputation, and have established protocols and structures so that such conduct risk is governed and reported across the Corporation. Specifically, our Code of Conduct provides a framework for all of our employees to conduct themselves with the highest integrity. Additionally, we continue to strengthen the link between the employee performance management process and individual compensation to encourage employees to work toward enterprise-wide risk goals.

Corporation-wide Stress Testing

Integral to our Capital Planning, Financial Planning and Strategic Planning processes, we conduct capital scenario management and stress forecasting on a periodic basis to better understand balance sheet, earnings and capital sensitivities to certain economic and business scenarios, including economic and market conditions that are more severe than anticipated. These stress forecasts provide an understanding of the potential impacts from our risk profile on the balance sheet, earnings and capital, and serve as a key component of our capital and risk management practices. The intent of stress testing is to develop a comprehensive understanding of potential impacts of on- and off-balance sheet risks at the Corporation and how they impact financial resiliency, which provides confidence to management, regulators and our investors.

Contingency Planning

We have developed and maintain contingency plans that are designed to prepare us in advance to respond in the event of potential adverse economic, financial or market stress. These contingency plans include our Capital Contingency Plan, Contingency Funding Plan and Recovery Plan, which provide monitoring, escalation, actions and routines designed to enable us to increase capital, access funding sources and reduce risk through consideration of potential options that include asset sales, business sales, capital or debt issuances, or other de-risking strategies. We also maintain a Resolution Plan to limit adverse systemic impacts that could be associated with a potential resolution of Bank of America.

Strategic Risk Management

Strategic risk is embedded in every business and is one of the major risk categories along with credit, market, liquidity, compliance, operational and reputational risks. This risk results from incorrect assumptions about external or internal factors, inappropriate business plans, ineffective business strategy execution, or failure to respond in a timely manner to changes in the regulatory, macroeconomic or competitive environments, in the geographic locations in which we operate, such as competitor actions, changing customer preferences, product obsolescence and technology developments. Our strategic plan is consistent with our risk appetite, capital plan and liquidity requirements, and specifically addresses strategic risks.

On an annual basis, the Board reviews and approves the strategic plan, capital plan, financial operating plan and Risk Appetite Statement. With oversight by the Board, executive management directs the lines of business to execute our strategic plan consistent with our core operating principles and risk appetite. The executive management team monitors business performance throughout the year and provides the Board with regular progress reports on whether strategic objectives and timelines are being met, including reports on strategic risks and if additional or alternative actions need to be considered or implemented. The regular executive reviews focus on assessing forecasted earnings and returns on capital, the current risk profile, current capital and liquidity requirements, staffing levels and changes required to support the strategic plan, stress testing results, and other qualitative factors such as market growth rates and peer analysis.

Significant strategic actions, such as capital actions, material acquisitions or divestitures, and resolution plans are reviewed and approved by the Board. At the business level, processes are in place to discuss the strategic risk implications of new, expanded or modified businesses, products or services and other strategic initiatives, and to provide formal review and approval where required. With oversight by the Board and the ERC, executive management performs similar analyses throughout the year, and evaluates changes to the financial forecast or the risk, capital or liquidity positions as deemed appropriate to balance and optimize achieving the targeted risk appetite, shareholder returns and maintaining the targeted financial strength. Proprietary models are used to measure the capital requirements for credit, country, market, operational and strategic risks. The allocated capital assigned to each business is based on its unique risk profile. With oversight by the Board, executive management assesses the risk-adjusted returns of each business in approving strategic and financial operating plans. The businesses use allocated capital to define business strategies, and price products and transactions.

Capital Management

The Corporation manages its capital position so its capital is more than adequate to support its business activities and to maintain capital, risk and risk appetite commensurate with one another. Additionally, we seek to maintain safety and soundness at all times, even under adverse scenarios, take advantage of organic growth opportunities, meet obligations to creditors and counterparties, maintain ready access to financial markets, continue to serve as a credit intermediary, remain a source of strength for our subsidiaries, and satisfy current and future regulatory capital requirements. Capital management is integrated into our risk and governance processes, as capital is a key consideration in the development of our strategic plan, risk appetite and risk limits.

We conduct an Internal Capital Adequacy Assessment Process (ICAAP) on a periodic basis. The ICAAP is a forward-looking assessment of our projected capital needs and resources, incorporating earnings, balance sheet and risk forecasts under baseline and adverse economic and market conditions. We utilize periodic stress tests to assess the potential impacts to our balance sheet, earnings, regulatory capital and liquidity under a variety of stress scenarios. We perform qualitative risk assessments to identify and assess material risks not fully captured in our forecasts or stress tests. We assess the potential capital impacts of proposed changes to regulatory capital requirements. Management assesses ICAAP results and provides documented quarterly assessments of the adequacy of our capital guidelines and capital position to the Board or its committees.

We periodically review capital allocated to our businesses and allocate capital annually during the strategic and capital planning processes. For more information, see Business Segment Operations on page 46.

CCAR and Capital Planning

The Federal Reserve requires BHCs to submit a capital plan and requests for capital actions on an annual basis, consistent with the rules governing the CCAR capital plan.

On June 28, 2017, following the Federal Reserve's non-objection to our 2017 CCAR capital plan, the Board authorized the repurchase of $12.0 billion in common stock from July 1, 2017 through June 30, 2018, plus repurchases expected to be approximately $900 million to offset the effect of equity-based compensation plans during the same period. On December 5, 2017, following approval by the Federal Reserve, the Board authorized the repurchase of an additional $5.0 billion of common stock through June 30, 2018. The common stock repurchase authorizations include both common stock and warrants. During 2017, pursuant to the Board's authorizations, including those related to our 2016 CCAR capital plan that expired June 30, 2017, we repurchased $12.8 billion of common stock, which includes common stock repurchases to offset equity-based compensation awards. At December 31, 2017, our remaining stock repurchase authorization was $10.1 billion.

The timing and amount of common stock repurchases will be subject to various factors, including the Corporation's capital position, liquidity, financial performance and alternative uses of capital, stock trading price, and general market conditions, and may be suspended at any time. The common stock repurchases may be effected through open market purchases or privately negotiated transactions, including repurchase plans that satisfy the conditions of Rule 10b5-1 of the Securities Exchange Act of 1934. As a "well-capitalized" BHC, we may notify the Federal Reserve of our intention to make additional capital distributions not to exceed 0.25 percent of Tier 1 capital, and which were not contemplated in our capital plan, subject to the Federal Reserve's non-objection.

Regulatory Capital

As a financial services holding company, we are subject to regulatory capital rules issued by U.S. banking regulators including Basel 3, which includes certain transition provisions through January 1, 2019. The Corporation and its primary affiliated banking entity, BANA, are Basel 3 Advanced approaches institutions.

Basel 3 Overview

Basel 3 updated the composition of capital and established a Common equity tier 1 capital ratio. Common equity tier 1 capital primarily includes common stock, retained earnings and accumulated other comprehensive income (OCI), net of deductions and adjustments primarily related to goodwill, deferred tax assets, intangibles and defined benefit pension assets. Under the Basel 3 regulatory capital transition provisions, certain deductions and adjustments to Common equity tier 1 capital were phased in through January 1, 2018. In 2017, under the transition provisions, 80 percent of these deductions and adjustments was recognized. Basel 3 also revised minimum capital ratios and buffer requirements, added a supplementary leverage ratio (SLR), and addressed the adequately capitalized minimum requirements under the Prompt Corrective Action (PCA) framework. Finally, Basel 3 established two methods of calculating risk-weighted assets, the Standardized approach and the Advanced approaches. The Standardized approach relies primarily on supervisory risk weights based on exposure type, and the Advanced approaches determine risk weights based on internal models. During the fourth quarter of 2017, we obtained approval from U.S. banking regulators to use our Internal Models Methodology (IMM) to calculate counterparty credit risk-weighted assets for derivatives under the Advanced approaches.

As an Advanced approaches institution, we are required to report regulatory risk-based capital ratios and risk-weighted assets under both the Standardized and Advanced approaches. The approach that yields the lower ratio is used to assess capital adequacy including under the PCA framework.

Minimum Capital Requirements

Minimum capital requirements and related buffers are being phased in from January 1, 2014 through January 1, 2019. The PCA framework establishes categories of capitalization including "well capitalized," based on the Basel 3 regulatory ratio requirements. U.S. banking regulators are required to take certain mandatory actions depending on the category of capitalization, with no mandatory actions required for "well-capitalized" banking organizations, which included BANA at December 31, 2017.

We are subject to a capital conservation buffer, a countercyclical capital buffer and a global systemically important bank (G-SIB) surcharge that are being phased in over a three-year period ending January 1, 2019. Once fully phased in, the Corporation's risk-based capital ratio requirements will include a capital conservation buffer greater than 2.5 percent, plus any applicable countercyclical capital buffer and a G-SIB surcharge in order to avoid restrictions on capital distributions and discretionary bonus payments. The buffers and surcharge must be comprised solely of Common equity tier 1 capital. Under the phase-in provisions, we were required to maintain a capital conservation buffer greater than 1.25 percent plus a G-SIB surcharge of 1.5 percent in 2017. The countercyclical capital buffer is currently set at zero. We estimate that our fully phased-in G-SIB surcharge will be 2.5 percent. The G-SIB surcharge may differ from this estimate over time. For more information on the Corporation's transition and fully phased-in capital ratios and regulatory requirements, see Table 12.

Supplementary Leverage Ratio

Basel 3 requires Advanced approaches institutions to disclose an SLR. The numerator of the SLR is quarter-end Basel 3 Tier 1 capital. The denominator is total leverage exposure based on the daily average of the sum of on-balance sheet exposures less permitted Tier 1 deductions, as well as the simple average of certain off-balance sheet exposures, as of the end of each month in a quarter. Effective January 1, 2018, the Corporation will be required to maintain a minimum SLR of 3.0 percent, plus a leverage buffer of 2.0 percent in order to avoid certain restrictions on capital distributions and discretionary bonus payments. Insured depository institution subsidiaries of BHCs will be required to maintain a minimum 6.0 percent SLR to be considered "well capitalized" under the PCA framework.

Capital Composition and Ratios

Table 12 presents Bank of America Corporation's transition and fully phased-in capital ratios and related information in accordance with Basel 3 Standardized and Advanced approaches as measured at December 31, 2017 and 2016. Fully phased-in estimates are non-GAAP financial measures that the Corporation considers to be useful measures in evaluating compliance with new regulatory capital requirements that are not yet effective. For reconciliations to GAAP financial measures, see Table 15. As of December 31, 2017 and 2016, the Corporation met the definition of "well capitalized" under current regulatory requirements.

Table 12 Bank of America Corporation Regulatory Capital under Basel 3 (1, 2)

	Transition			Fully Phased-in		
(Dollars in millions, except as noted)	Standardized Approach	Advanced Approaches (3)	Regulatory Minimum (4)	Standardized Approach	Advanced Approaches (3)	Regulatory Minimum (5)
	December 31, 2017					
Risk-based capital metrics:						
Common equity tier 1 capital	**$ 171,063**	**$ 171,063**		**$ 168,461**	**$ 168,461**	
Tier 1 capital	**191,496**	**191,496**		**190,189**	**190,189**	
Total capital (6)	**227,427**	**218,529**		**224,209**	**215,311**	
Risk-weighted assets (in billions)	**1,434**	**1,449**		**1,443**	**1,459**	
Common equity tier 1 capital ratio	**11.9%**	**11.8%**	**7.25%**	**11.7%**	**11.5%**	**9.5%**
Tier 1 capital ratio	**13.4**	**13.2**	**8.75**	**13.2**	**13.0**	**11.0**
Total capital ratio	**15.9**	**15.1**	**10.75**	**15.5**	**14.8**	**13.0**
Leverage-based metrics:						
Adjusted quarterly average assets (in billions) (7)	**$ 2,224**	**$ 2,224**		**$ 2,223**	**$ 2,223**	
Tier 1 leverage ratio	**8.6%**	**8.6%**	**4.0**	**8.6%**	**8.6%**	**4.0**
SLR leverage exposure (in billions)					**$ 2,756**	
SLR					**6.9%**	**5.0**
	December 31, 2016					
Risk-based capital metrics:						
Common equity tier 1 capital	$ 168,866	$ 168,866		$ 162,729	$ 162,729	
Tier 1 capital	190,315	190,315		187,559	187,559	
Total capital (6)	228,187	218,981		223,130	213,924	
Risk-weighted assets (in billions)	1,399	1,530		1,417	1,512	
Common equity tier 1 capital ratio	12.1%	11.0%	5.875%	11.5%	10.8%	9.5%
Tier 1 capital ratio	13.6	12.4	7.375	13.2	12.4	11.0
Total capital ratio	16.3	14.3	9.375	15.8	14.2	13.0
Leverage-based metrics:						
Adjusted quarterly average assets (in billions) (7)	$ 2,131	$ 2,131		$ 2,131	$ 2,131	
Tier 1 leverage ratio	8.9%	8.9%	4.0	8.8%	8.8%	4.0
SLR leverage exposure (in billions)					$ 2,702	
SLR					6.9%	5.0

(1) As an Advanced approaches institution, we are required to report regulatory capital risk-weighted assets and ratios under both the Standardized and Advanced approaches. The approach that yields the lower ratio is to be used to assess capital adequacy and was the Advanced approaches method at December 31, 2017 and 2016.
(2) Under the applicable bank regulatory rules, we are not required to and, accordingly, will not restate previously-filed regulatory capital metrics and ratios in connection with the change in accounting method under GAAP for stock-based compensation awards granted to retirement-eligible employees. Therefore, the December 31, 2016 amounts in the table are as originally reported. The cumulative impact of the change in accounting method resulted in an insignificant pro forma change to our capital metrics and ratios. For more information, see *Note 1 – Summary of Significant Accounting Principles* to the Consolidated Financial Statements.
(3) During the fourth quarter of 2017, we obtained approval from U.S. banking regulators to use our IMM to calculate counterparty credit risk-weighted assets for derivatives under the Advanced approaches. Fully phased-in estimates for prior periods assumed approval.
(4) The December 31, 2017 and 2016 amounts include a transition capital conservation buffer of 1.25 percent and 0.625 percent and a transition G-SIB surcharge of 1.5 percent and 0.75 percent. The countercyclical capital buffer for both periods is zero.
(5) Fully phased-in regulatory minimums assume a capital conservation buffer of 2.5 percent and estimated G-SIB surcharge of 2.5 percent. The estimated fully phased-in countercyclical capital buffer is zero. We will be subject to fully phased-in regulatory minimums on January 1, 2019. The fully phased-in SLR minimum assumes a leverage buffer of 2.0 percent and is applicable on January 1, 2018.
(6) Total capital under the Advanced approaches differs from the Standardized approach due to differences in the amount permitted in Tier 2 capital related to the qualifying allowance for credit losses.
(7) Reflects adjusted average total assets for the three months ended December 31, 2017 and 2016.

Common equity tier 1 capital under Basel 3 Advanced – Transition was $171.1 billion at December 31, 2017, an increase of $2.2 billion compared to December 31, 2016 driven by earnings and the exercise of warrants associated with the Series T preferred stock, partially offset by common stock repurchases, dividends and the phase-in under Basel 3 transition provisions of deductions, primarily related to deferred tax assets. During 2017, total capital decreased $452 million primarily driven by common stock repurchases, dividends, lower eligible credit reserves and tier 2 capital instruments, in addition to the phase-in of Basel 3 transition provisions, partially offset by earnings.

Risk-weighted assets decreased $81 billion during 2017 to $1,449 billion primarily due to the implementation of Internal Models Methodology (IMM) for derivatives, improvements in credit risk capital models, the sale of the non-U.S. consumer credit card business and continued run-off of non-core assets.

Table 13 shows the capital composition as measured under Basel 3 – Transition at December 31, 2017 and 2016.

Table 13 Capital Composition under Basel 3 – Transition (1, 2)

(Dollars in millions)	December 31 2017	December 31 2016
Total common shareholders' equity	$ 244,823	$ 241,620
Goodwill	(68,576)	(69,191)
Deferred tax assets arising from net operating loss and tax credit carryforwards	(5,244)	(4,976)
Adjustments for amounts recorded in accumulated OCI attributed to AFS Securities and defined benefit postretirement plans	879	1,899
Adjustments for amounts recorded in accumulated OCI attributed to certain cash flow hedges	831	895
Intangibles, other than mortgage servicing rights and goodwill	(1,395)	(1,198)
Defined benefit pension fund assets	(910)	(512)
DVA related to liabilities and derivatives	957	413
Other	(302)	(84)
Common equity tier 1 capital	171,063	168,866
Qualifying preferred stock, net of issuance cost	22,323	25,220
Deferred tax assets arising from net operating loss and tax credit carryforwards	(1,311)	(3,318)
Defined benefit pension fund assets	(228)	(341)
DVA related to liabilities and derivatives under transition	239	276
Other	(590)	(388)
Total Tier 1 capital	191,496	190,315
Long-term debt qualifying as Tier 2 capital	22,938	23,365
Eligible credit reserves included in Tier 2 capital	2,272	3,035
Nonqualifying capital instruments subject to phase out from Tier 2 capital	1,893	2,271
Other	(70)	(5)
Total Basel 3 Capital	$ 218,529	$ 218,981

(1) See Table 12, footnotes 1 and 2.

(2) Deductions from and adjustments to regulatory capital subject to transition provisions under Basel 3 are generally recognized in 20 percent annual increments, and are fully recognized as of January 1, 2018. Any assets that are a direct deduction from the computation of capital are excluded from risk-weighted assets and adjusted average total assets.

Table 14 shows the components of risk-weighted assets as measured under Basel 3 – Transition at December 31, 2017 and 2016.

Table 14 Risk-weighted Assets under Basel 3 – Transition

	Standardized Approach	Advanced Approaches	Standardized Approach	Advanced Approaches
	December 31			
(Dollars in billions)	2017		2016	
Credit risk	$ 1,375	$ 857	$ 1,334	$ 903
Market risk	59	58	65	63
Operational risk	n/a	500	n/a	500
Risks related to CVA	n/a	34	n/a	64
Total risk-weighted assets	$ 1,434	$ 1,449	$ 1,399	$ 1,530

n/a = not applicable

Table 15 presents a reconciliation of regulatory capital in accordance with Basel 3 Standardized – Transition to the Basel 3 Standardized approach fully phased-in estimates and Basel 3 Advanced approaches fully phased-in estimates at December 31, 2017 and 2016.

Table 15 Regulatory Capital Reconciliations between Basel 3 Transition to Fully Phased-in [1]

(Dollars in millions)	December 31 2017	December 31 2016
Common equity tier 1 capital (transition)	**$ 171,063**	$ 168,866
Deferred tax assets arising from net operating loss and tax credit carryforwards phased in during transition	**(1,311)**	(3,318)
Accumulated OCI phased in during transition	**(879)**	(1,899)
Intangibles phased in during transition	**(348)**	(798)
Defined benefit pension fund assets phased in during transition	**(228)**	(341)
DVA related to liabilities and derivatives phased in during transition	**239**	276
Other adjustments and deductions phased in during transition	**(75)**	(57)
Common equity tier 1 capital (fully phased-in)	**168,461**	162,729
Additional Tier 1 capital (transition)	**20,433**	21,449
Deferred tax assets arising from net operating loss and tax credit carryforwards phased out during transition	**1,311**	3,318
Defined benefit pension fund assets phased out during transition	**228**	341
DVA related to liabilities and derivatives phased out during transition	**(239)**	(276)
Other transition adjustments to additional Tier 1 capital	**(5)**	(2)
Additional Tier 1 capital (fully phased-in)	**21,728**	24,830
Tier 1 capital (fully phased-in)	**190,189**	187,559
Tier 2 capital (transition)	**27,033**	28,666
Nonqualifying capital instruments phased out during transition	**(1,893)**	(2,271)
Other adjustments to Tier 2 capital	**8,880**	9,176
Tier 2 capital (fully phased-in)	**34,020**	35,571
Basel 3 Standardized approach Total capital (fully phased-in)	**224,209**	223,130
Change in Tier 2 qualifying allowance for credit losses	**(8,898)**	(9,206)
Basel 3 Advanced approaches Total capital (fully phased-in)	**$ 215,311**	$ 213,924
Risk-weighted assets – As reported to Basel 3 (fully phased-in)		
Basel 3 Standardized approach risk-weighted assets as reported	**$ 1,433,517**	$ 1,399,477
Changes in risk-weighted assets from reported to fully phased-in	**9,204**	17,638
Basel 3 Standardized approach risk-weighted assets (fully phased-in)	**$ 1,442,721**	$ 1,417,115
Basel 3 Advanced approaches risk-weighted assets as reported	**$ 1,449,222**	$ 1,529,903
Changes in risk-weighted assets from reported to fully phased-in	**9,757**	(18,113)
Basel 3 Advanced approaches risk-weighted assets (fully phased-in)	**$ 1,458,979**	$ 1,511,790

(1) See Table 12, footnotes 1, 2 and 4.

Bank of America, N.A. Regulatory Capital

Table 16 presents transition regulatory capital information for BANA in accordance with Basel 3 Standardized and Advanced approaches as measured at December 31, 2017 and 2016. As of December 31, 2017, BANA met the definition of "well capitalized" under the PCA framework.

Table 16 Bank of America, N.A. Regulatory Capital under Basel 3

(Dollars in millions)	Standardized Approach Ratio	Standardized Approach Amount	Standardized Approach Minimum Required [1]	Advanced Approaches Ratio	Advanced Approaches Amount	Advanced Approaches Minimum Required [1]
			December 31, 2017			
Common equity tier 1 capital	**12.5%**	**$ 150,552**	**6.5%**	**14.9%**	**$ 150,552**	**6.5%**
Tier 1 capital	**12.5**	**150,552**	**8.0**	**14.9**	**150,552**	**8.0**
Total capital	**13.6**	**163,243**	**10.0**	**15.4**	**154,675**	**10.0**
Tier 1 leverage	**9.0**	**150,552**	**5.0**	**9.0**	**150,552**	**5.0**
			December 31, 2016			
Common equity tier 1 capital	12.7%	$ 149,755	6.5%	14.3%	$ 149,755	6.5%
Tier 1 capital	12.7	149,755	8.0	14.3	149,755	8.0
Total capital	13.9	163,471	10.0	14.8	154,697	10.0
Tier 1 leverage	9.3	149,755	5.0	9.3	149,755	5.0

(1) Percent required to meet guidelines to be considered "well capitalized" under the PCA framework.

Regulatory Developments

Minimum Total Loss-Absorbing Capacity

The Federal Reserve has established a final rule effective January 1, 2019, which includes minimum external total loss-absorbing capacity (TLAC) requirements to improve the resolvability and resiliency of large, interconnected BHCs. We estimate our minimum required external TLAC would be the greater of 22.5 percent of risk-weighted assets or 9.5 percent of SLR leverage exposure. In addition, U.S. G-SIBs must meet a minimum long-term debt requirement. Our minimum required long-term debt is estimated to be the greater of 8.5 percent of risk-weighted assets or 4.5 percent of SLR leverage exposure. As of December 31, 2017, the Corporation's TLAC and long-term debt exceeded our estimated 2019 minimum requirements.

Revisions to Approaches for Measuring Risk-weighted Assets

On December 7, 2017, the Basel Committee on Banking Supervision (Basel Committee) finalized several key methodologies for measuring risk-weighted assets. The revisions include a standardized approach for credit risk, standardized approach for operational risk, revisions to the credit valuation adjustment (CVA) risk framework and constraints on the use of internal models. The Basel Committee had also previously finalized a revised standardized model for counterparty credit risk, revisions to the securitization framework and its fundamental review of the trading book, which updates both modeled and standardized approaches for market risk measurement. The revisions also include a capital floor set at 72.5 percent of total risk-weighted assets based on the revised standardized approaches to limit the extent to which banks can reduce risk-weighted asset levels through the use of internal models. U.S. banking regulators may update the U.S. Basel 3 rules to incorporate the Basel Committee revisions.

Revisions to the G-SIB Assessment Framework

On March 30, 2017, the Basel Committee issued a consultative document with proposed revisions to the G-SIB surcharge assessment framework. The proposed revisions would include removing the cap on the substitutability category, expanding the scope of consolidation to include insurance subsidiaries in three categories (size, interconnectedness and complexity) and modifying the substitutability category weights with the introduction of a new trading volume indicator. The Basel Committee has also requested feedback on a new short-term wholesale funding indicator, which would be included in the interconnectedness category. The U.S. banking regulators may update the U.S. G-SIB surcharge rule to incorporate the Basel Committee revisions.

Broker-dealer Regulatory Capital and Securities Regulation

The Corporation's principal U.S. broker-dealer subsidiaries are Merrill Lynch, Pierce, Fenner & Smith Incorporated (MLPF&S) and Merrill Lynch Professional Clearing Corp (MLPCC). MLPCC is a fully-guaranteed subsidiary of MLPF&S and provides clearing and settlement services. Both entities are subject to the net capital requirements of Securities and Exchange Commission (SEC) Rule 15c3-1. Both entities are also registered as futures commission merchants and are subject to the Commodity Futures Trading Commission Regulation 1.17.

MLPF&S has elected to compute the minimum capital requirement in accordance with the Alternative Net Capital Requirement as permitted by SEC Rule 15c3-1. At December 31, 2017, MLPF&S's regulatory net capital as defined by Rule 15c3-1 was $12.4 billion and exceeded the minimum requirement of $1.7 billion by $10.7 billion. MLPCC's net capital of $3.4 billion exceeded the minimum requirement of $543 million by $2.9 billion.

In accordance with the Alternative Net Capital Requirements, MLPF&S is required to maintain tentative net capital in excess of $1.0 billion, net capital in excess of $500 million and notify the SEC in the event its tentative net capital is less than $5.0 billion. At December 31, 2017, MLPF&S had tentative net capital and net capital in excess of the minimum and notification requirements.

Merrill Lynch International (MLI), a U.K. investment firm, is regulated by the Prudential Regulation Authority and the Financial Conduct Authority, and is subject to certain regulatory capital requirements. At December 31, 2017, MLI's capital resources were $35.1 billion which exceeded the minimum Pillar 1 requirement of $16.5 billion.

Liquidity Risk

Funding and Liquidity Risk Management

Our primary liquidity risk management objective is to meet expected or unexpected cash flow and collateral needs while continuing to support our businesses and customers under a range of economic conditions. To achieve that objective, we analyze and monitor our liquidity risk under expected and stressed conditions, maintain liquidity and access to diverse funding sources, including our stable deposit base, and seek to align liquidity-related incentives and risks.

We define liquidity as readily available assets, limited to cash and high-quality, liquid, unencumbered securities that we can use to meet our contractual and contingent financial obligations as those obligations arise. We manage our liquidity position through line of business and ALM activities, as well as through our legal entity funding strategy, on both a forward and current (including intraday) basis under both expected and stressed conditions. We believe that a centralized approach to funding and liquidity management enhances our ability to monitor liquidity requirements, maximizes access to funding sources, minimizes borrowing costs and facilitates timely responses to liquidity events.

The Board approves our liquidity policy and the ERC approves the contingency funding plan, including establishing liquidity risk tolerance levels. The MRC monitors our liquidity position and reviews the impact of strategic decisions on our liquidity. The MRC is responsible for overseeing liquidity risks and directing management to maintain exposures within the established tolerance levels. The MRC reviews and monitors our liquidity position, stress testing scenarios and results, and reviews and approves certain liquidity risk limits. For more information, see Managing Risk on page 57. Under this governance framework, we have developed certain funding and liquidity risk management practices which include: maintaining liquidity at the parent company and selected subsidiaries, including our bank subsidiaries and other regulated entities; determining what amounts of liquidity are appropriate for these entities based on analysis of debt maturities and other potential cash outflows, including those that we may experience during stressed market conditions; diversifying funding sources, considering our asset profile and legal entity structure; and performing contingency planning.

NB Holdings Corporation

In 2016, we entered into intercompany arrangements with certain key subsidiaries under which we transferred certain of our parent company assets, and agreed to transfer certain additional parent company assets not needed to satisfy anticipated near-term expenditures, to NB Holdings Corporation, a wholly-owned holding company subsidiary (NB Holdings). The parent company is expected to continue to have access to the same flow of dividends, interest and other amounts of cash necessary to service its debt, pay dividends and perform other obligations as it would have had if it had not entered into these arrangements and transferred any assets.

In consideration for the transfer of assets, NB Holdings issued a subordinated note to the parent company in a principal amount equal to the value of the transferred assets. The aggregate principal amount of the note will increase by the amount of any future asset transfers. NB Holdings also provided the parent company with a committed line of credit that allows the parent company to draw funds necessary to service near-term cash needs. These arrangements support our preferred single point of entry resolution strategy, under which only the parent company would be resolved under the U.S. Bankruptcy Code. These arrangements include provisions to terminate the line of credit, forgive the subordinated note and require the parent company to transfer its remaining financial assets to NB Holdings if our projected liquidity resources deteriorate so severely that resolution of the parent company becomes imminent.

Global Liquidity Sources and Other Unencumbered Assets

We maintain liquidity available to the Corporation, including the parent company and selected subsidiaries, in the form of cash and high-quality, liquid, unencumbered securities. Our liquidity buffer, referred to as Global Liquidity Sources (GLS), is comprised of assets that are readily available to the parent company and selected subsidiaries, including holding company, bank and broker-dealer subsidiaries, even during stressed market conditions. Our cash is primarily on deposit with the Federal Reserve and, to a lesser extent, central banks outside of the U.S. We limit the composition of high-quality, liquid, unencumbered securities to U.S. government securities, U.S. agency securities, U.S. agency MBS and a select group of non-U.S. government securities. We can quickly obtain cash for these securities, even in stressed conditions, through repurchase agreements or outright sales. We hold our GLS in legal entities that allow us to meet the liquidity requirements of our global businesses, and we consider the impact of potential regulatory, tax, legal and other restrictions that could limit the transferability of funds among entities.

For the three months ended December 31, 2017 and 2016, our average GLS were $522 billion and $515 billion, as shown in Table 17.

Table 17 Average Global Liquidity Sources

	Three Months Ended December 31	
(Dollars in billions)	**2017**	2016
Parent company and NB Holdings	**$ 79**	$ 77
Bank subsidiaries	**394**	389
Other regulated entities	**49**	49
Total Average Global Liquidity Sources	**$ 522**	$ 515

Parent company and NB Holdings average liquidity was $79 billion and $77 billion for the three months ended December 31, 2017 and 2016. The increase in parent company and NB Holdings average liquidity was primarily due to debt issuances outpacing maturities. Typically, parent company and NB Holdings liquidity is in the form of cash deposited with BANA.

Average liquidity held at our bank subsidiaries was $394 billion and $389 billion for the three months ended December 31, 2017 and 2016. Our bank subsidiaries' liquidity is primarily driven by deposit and lending activity, as well as securities valuation and net debt activity. Liquidity at bank subsidiaries excludes the cash deposited by the parent company and NB Holdings. Our bank subsidiaries can also generate incremental liquidity by pledging a range of unencumbered loans and securities to certain FHLBs and the Federal Reserve Discount Window. The cash we could have obtained by borrowing against this pool of specifically-identified eligible assets was $308 billion and $310 billion at December 31, 2017 and 2016, with the decrease due to FHLB borrowings, which reduced available borrowing capacity, and adjustments to our valuation model. We have established operational procedures to enable us to borrow against these assets, including regularly monitoring our total pool of eligible loans and securities collateral. Eligibility is defined in guidelines from the FHLBs and the Federal Reserve and is subject to change at their discretion. Due to regulatory restrictions, liquidity generated by the bank subsidiaries can generally be used only to fund obligations within the bank subsidiaries, and transfers to the parent company or nonbank subsidiaries may be subject to prior regulatory approval.

Average liquidity held at our other regulated entities, comprised primarily of broker-dealer subsidiaries, was $49 billion for both the three months ended December 31, 2017 and 2016. Our other regulated entities also held unencumbered investment-grade securities and equities that we believe could be used to generate additional liquidity. Liquidity held in an other regulated entity is primarily available to meet the obligations of that entity and transfers to the parent company or to any other subsidiary may be subject to prior regulatory approval due to regulatory restrictions and minimum requirements.

Table 18 presents the composition of average GLS for the three months ended December 31, 2017 and 2016.

Table 18 Average Global Liquidity Sources Composition

	Three Months Ended December 31	
(Dollars in billions)	2017	2016
Cash on deposit	$ 118	$ 118
U.S. Treasury securities	62	58
U.S. agency securities and mortgage-backed securities	330	322
Non-U.S. government securities	12	17
Total Average Global Liquidity Sources	$ 522	$ 515

Our GLS are substantially the same in composition to what qualifies as High Quality Liquid Assets (HQLA) under the final U.S. Liquidity Coverage Ratio (LCR) rules. However, HQLA for purposes of calculating LCR is not reported at market value, but at a lower value that incorporates regulatory deductions and the exclusion of excess liquidity held at certain subsidiaries. The LCR is calculated as the amount of a financial institution's unencumbered HQLA relative to the estimated net cash outflows the institution could encounter over a 30-day period of significant liquidity stress, expressed as a percentage. For the three months ended December 31, 2017, our average consolidated HQLA, on a net basis, was $439 billion and the average consolidated LCR was 125 percent. Our LCR will fluctuate due to normal business flows from customer activity.

Liquidity Stress Analysis and Time-to-required Funding

We utilize liquidity stress analysis to assist us in determining the appropriate amounts of liquidity to maintain at the parent company and our subsidiaries. The liquidity stress testing process is an integral part of analyzing our potential contractual and contingent cash outflows. We evaluate the liquidity requirements under a range of scenarios with varying levels of severity and time horizons. The scenarios we consider and utilize incorporate market-wide and Corporation-specific events, including potential credit rating downgrades for the parent company and our subsidiaries, and more severe events including potential resolution scenarios. The scenarios are based on our historical experience, experience of distressed and failed financial institutions, regulatory guidance, and both expected and unexpected future events.

The types of potential contractual and contingent cash outflows we consider in our scenarios may include, but are not limited to, upcoming contractual maturities of unsecured debt and reductions in new debt issuance; diminished access to secured financing markets; potential deposit withdrawals; increased draws on loan commitments, liquidity facilities and letters of credit; additional collateral that counterparties could call if our credit ratings were downgraded; collateral and margin requirements arising from market value changes; and potential liquidity required to maintain businesses and finance customer activities. Changes in certain market factors, including, but not limited to, credit rating downgrades, could negatively impact potential contractual and contingent outflows and the related financial instruments, and in some cases these impacts could be material to our financial results.

We consider all sources of funds that we could access during each stress scenario and focus particularly on matching available sources with corresponding liquidity requirements by legal entity. We also use the stress modeling results to manage our asset and liability profile and establish limits and guidelines on certain funding sources and businesses.

We use a variety of metrics to determine the appropriate amounts of liquidity to maintain at the parent company and our subsidiaries. One metric we use to evaluate the appropriate level of liquidity at the parent company and NB Holdings is "time-to-required funding" (TTF). This debt coverage measure indicates the number of months the parent company can continue to meet its unsecured contractual obligations as they come due using only the parent company and NB Holdings' liquidity sources without issuing any new debt or accessing any additional liquidity sources. We define unsecured contractual obligations for purposes of this metric as maturities of senior or subordinated debt issued or guaranteed by Bank of America Corporation. These include certain unsecured debt instruments, primarily structured liabilities, which we may be required to settle for cash prior to maturity. TTF was 49 months at December 31, 2017 compared to 35 months at December 31, 2016. The increase in TTF was driven by debt issuances outpacing maturities.

Net Stable Funding Ratio

U.S. banking regulators issued a proposal for a Net Stable Funding Ratio (NSFR) requirement applicable to U.S. financial institutions following the Basel Committee's final standard. The proposed U.S. NSFR would apply to the Corporation on a consolidated basis and to our insured depository institutions. While the final requirement remains pending and is subject to change, if finalized as proposed, we expect to be in compliance within the regulatory timeline. The standard is intended to reduce funding risk over a longer time horizon. The NSFR is designed to provide an appropriate amount of stable funding, generally capital and liabilities maturing beyond one year, given the mix of assets and off-balance sheet items.

Diversified Funding Sources

We fund our assets primarily with a mix of deposits and secured and unsecured liabilities through a centralized, globally coordinated funding approach diversified across products, programs, markets, currencies and investor groups.

The primary benefits of our centralized funding approach include greater control, reduced funding costs, wider name recognition by investors and greater flexibility to meet the variable funding requirements of subsidiaries. Where regulations, time zone differences or other business considerations make parent company funding impractical, certain other subsidiaries may issue their own debt.

We fund a substantial portion of our lending activities through our deposits, which were $1.31 trillion and $1.26 trillion at December 31, 2017 and 2016. Deposits are primarily generated by our *Consumer Banking*, *GWIM* and *Global Banking* segments. These deposits are diversified by clients, product type and geography, and the majority of our U.S. deposits are insured by the FDIC. We consider a substantial portion of our deposits to be a stable, low-cost and consistent source of funding. We believe this deposit funding is generally less sensitive to interest rate changes, market volatility or changes in our credit ratings than wholesale funding sources. Our lending activities may also be financed through secured borrowings, including credit card securitizations and securitizations with government-sponsored enterprises, the Federal Housing Administration (FHA) and private-label investors, as well as FHLB loans.

Our trading activities in other regulated entities are primarily funded on a secured basis through securities lending and repurchase agreements and these amounts will vary based on customer activity and market conditions. We believe funding these activities in the secured financing markets is more cost-efficient and less sensitive to changes in our credit ratings than unsecured financing. Repurchase agreements are generally short-term and often overnight. Disruptions in secured financing markets for financial institutions have occurred in prior market cycles which resulted in adverse changes in terms or significant reductions in the availability of such financing. We manage the liquidity risks arising from secured funding by sourcing funding globally from a diverse group of counterparties, providing a range of securities collateral and pursuing longer durations, when appropriate. For more information on secured financing agreements, see *Note 10 – Federal Funds Sold or Purchased, Securities Financing Agreements and Short-term Borrowings* to the Consolidated Financial Statements.

We issue long-term unsecured debt in a variety of maturities and currencies to achieve cost-efficient funding and to maintain an appropriate maturity profile. While the cost and availability of unsecured funding may be negatively impacted by general market conditions or by matters specific to the financial services industry or the Corporation, we seek to mitigate refinancing risk by actively managing the amount of our borrowings that we anticipate will mature within any month or quarter.

During 2017, we issued $53.3 billion of long-term debt consisting of $37.7 billion for Bank of America Corporation, substantially all of which was TLAC compliant, $8.2 billion for Bank of America, N.A. and $7.4 billion of other debt.

In December 2017, pursuant to a private offering, we exchanged $11.0 billion of outstanding long-term debt for new fixed/floating-rate senior notes, subject to certain terms and conditions, to extend maturities and improve the structure of this debt for TLAC purposes. Based on the attributes of the exchange transactions, the newly issued securities are not considered substantially different, for accounting purposes, from the exchanged securities. Therefore, there was no impact to our results of operations as any amounts paid to debt holders were capitalized, and the premiums or discounts on the outstanding long-term debt were carried over to the new securities and will be amortized over their contractual lives using a revised effective interest rate.

Table 19 presents our long-term debt by major currency at December 31, 2017 and 2016.

Table 19 Long-term Debt by Major Currency

	December 31	
(Dollars in millions)	2017	2016
U.S. dollar	$ 175,623	$ 172,082
Euro	35,481	28,236
British pound	7,016	6,588
Australian dollar	3,046	2,900
Japanese yen	2,993	3,919
Canadian dollar	1,966	1,049
Other	1,277	2,049
Total long-term debt	$ 227,402	$ 216,823

Total long-term debt increased $10.6 billion, or five percent, in 2017, primarily due to issuances outpacing maturities. We may, from time to time, purchase outstanding debt instruments in various transactions, depending on prevailing market conditions, liquidity and other factors. In addition, our other regulated entities may make markets in our debt instruments to provide liquidity for investors.

We use derivative transactions to manage the duration, interest rate and currency risks of our borrowings, considering the characteristics of the assets they are funding. For more information on our ALM activities, see Interest Rate Risk Management for the Banking Book on page 97.

We may also issue unsecured debt in the form of structured notes for client purposes, certain of which qualify as TLAC eligible debt. During 2017, we issued $5.4 billion of structured notes, which are debt obligations that pay investors returns linked to other debt or equity securities, indices, currencies or commodities. We typically hedge the returns we are obligated to pay on these liabilities with derivatives and/or investments in the underlying instruments, so that from a funding perspective, the cost is similar to our other unsecured long-term debt. We could be required to settle certain structured note obligations for cash or other securities prior to maturity under certain circumstances, which we consider for liquidity planning purposes. We believe, however, that a portion of such borrowings will remain outstanding beyond the earliest put or redemption date.

Substantially all of our senior and subordinated debt obligations contain no provisions that could trigger a requirement for an early repayment, require additional collateral support, result in changes to terms, accelerate maturity or create additional financial obligations upon an adverse change in our credit ratings, financial ratios, earnings, cash flows or stock price. For more information on long-term debt funding, see *Note 11 – Long-term Debt* to the Consolidated Financial Statements.

Contingency Planning

We maintain contingency funding plans that outline our potential responses to liquidity stress events at various levels of severity. These policies and plans are based on stress scenarios and include potential funding strategies and communication and notification procedures that we would implement in the event we experienced stressed liquidity conditions. We periodically review and test the contingency funding plans to validate efficacy and assess readiness.

Our U.S. bank subsidiaries can access contingency funding through the Federal Reserve Discount Window. Certain non-U.S. subsidiaries have access to central bank facilities in the jurisdictions in which they operate. While we do not rely on these sources in our liquidity modeling, we maintain the policies, procedures and governance processes that would enable us to access these sources if necessary.

Credit Ratings

Our borrowing costs and ability to raise funds are impacted by our credit ratings. In addition, credit ratings may be important to customers or counterparties when we compete in certain markets and when we seek to engage in certain transactions, including over-the-counter (OTC) derivatives. Thus, it is our objective to maintain high-quality credit ratings, and management maintains an active dialogue with the major rating agencies.

Credit ratings and outlooks are opinions expressed by rating agencies on our creditworthiness and that of our obligations or securities, including long-term debt, short-term borrowings, preferred stock and other securities, including asset securitizations. Our credit ratings are subject to ongoing review by the rating agencies, and they consider a number of factors, including our own financial strength, performance, prospects and operations as well as factors not under our control. The rating agencies could make adjustments to our ratings at any time, and they provide no assurances that they will maintain our ratings at current levels.

Other factors that influence our credit ratings include changes to the rating agencies' methodologies for our industry or certain security types; the rating agencies' assessment of the general operating environment for financial services companies; our relative positions in the markets in which we compete; our various risk exposures and risk management policies and activities; pending litigation and other contingencies or potential tail risks; our reputation; our liquidity position, diversity of funding sources and funding costs; the current and expected level and volatility of our earnings; our capital position and capital management practices; our corporate governance; the sovereign credit ratings of the U.S. government; current or future regulatory and legislative initiatives; and the agencies' views on whether the U.S. government would provide meaningful support to the Corporation or its subsidiaries in a crisis.

On December 6, 2017, Moody's Investors Services, Inc. (Moody's) upgraded the long-term ratings of Bank of America Corporation and certain subsidiaries, including BANA, by one notch, moving their senior debt ratings to A3 and Aa3, respectively. The upgrade was based on the agency's expectations for continued improvement in the Corporation's profitability and management's continued commitment to a conservative risk profile. At the same time, Moody's affirmed all the short-term ratings for Bank of America Corporation and its rated subsidiaries. Moody's concurrently moved the outlook on the ratings to stable. This action concluded the review for upgrade that Moody's initiated on September 12, 2017.

On November 22, 2017, Standard & Poor's Global Ratings (S&P) upgraded Bank of America Corporation's long-term senior debt rating to A- from BBB+ following the agency's periodic review of our ratings. S&P cited the improvement in the Corporation's risk profile, while continuing to improve profitability metrics, as the driver for the upgrade, including tightening underwriting standards, reducing exposure to market risk, growing conservatively, and resolving legacy legal issues. S&P concurrently affirmed the ratings of the Corporation's rated core operating subsidiaries, including BANA, MLPF&S, MLI and Bank of America Merrill Lynch International Limited. Those entities were affirmed rather than upgraded since their ratings had reached an inflection point under S&P's methodology where the one notch S&P added to its assessment of our intrinsic creditworthiness (called an Unsupported Group Credit Profile, or UGCP) resulted in the subsidiaries receiving one less notch of support uplift under the agency's Additional Loss Absorbing Capacity framework, thus leaving those entities' ratings unchanged. S&P retained a stable outlook on the ratings of Bank of America Corporation and its core operating subsidiaries following the upgrade.

On September 28, 2017, Fitch Ratings (Fitch) completed its latest review of 12 large, complex securities trading and universal banks, including Bank of America. The agency affirmed the long-term and short-term senior debt ratings of Bank of America Corporation and its rated subsidiaries, including BANA, and maintained its stable outlook on those ratings.

Table 20 presents the Corporation's current long-term/short-term senior debt ratings and outlooks expressed by the rating agencies.

Table 20 Senior Debt Ratings

	Moody's Investors Service			Standard & Poor's Global Ratings			Fitch Ratings		
	Long-term	Short-term	Outlook	Long-term	Short-term	Outlook	Long-term	Short-term	Outlook
Bank of America Corporation	A3	P-2	Stable	A-	A-2	Stable	A	F1	Stable
Bank of America, N.A.	Aa3	P-1	Stable	A+	A-1	Stable	A+	F1	Stable
Merrill Lynch, Pierce, Fenner & Smith Incorporated	NR	NR	NR	A+	A-1	Stable	A+	F1	Stable
Merrill Lynch International	NR	NR	NR	A+	A-1	Stable	A	F1	Stable

NR = not rated

A reduction in certain of our credit ratings or the ratings of certain asset-backed securitizations may have a material adverse effect on our liquidity, potential loss of access to credit markets, the related cost of funds, our businesses and on certain trading revenues, particularly in those businesses where counterparty creditworthiness is critical. In addition, under the terms of certain OTC derivative contracts and other trading agreements, in the event of downgrades of our or our rated subsidiaries' credit ratings, the counterparties to those agreements may require us to provide additional collateral, or to terminate these contracts or agreements, which could cause us to sustain losses and/or adversely impact our liquidity. If the short-term credit ratings of our parent company, bank or broker-dealer subsidiaries were downgraded by one or more levels, the potential loss of access to short-term funding sources such as repo financing and the effect on our incremental cost of funds could be material.

While certain potential impacts are contractual and quantifiable, the full scope of the consequences of a credit rating downgrade to a financial institution is inherently uncertain, as it depends upon numerous dynamic, complex and inter-related factors and assumptions, including whether any downgrade of a company's long-term credit ratings precipitates downgrades to its short-term credit ratings, and assumptions about the potential behaviors of various customers, investors and counterparties. For more information on potential impacts of credit rating downgrades, see Liquidity Risk – Time-to-required Funding and Liquidity Stress Analysis on page 67.

For more information on the additional collateral and termination payments that could be required in connection with certain OTC derivative contracts and other trading agreements as a result of such a credit rating downgrade, see *Note 2 – Derivatives* to the Consolidated Financial Statements.

Common Stock Dividends

For a summary of our declared quarterly cash dividends on common stock during 2017 and through February 22, 2018, see *Note 13 – Shareholders' Equity* to the Consolidated Financial Statements.

Credit Risk Management

Credit risk is the risk of loss arising from the inability or failure of a borrower or counterparty to meet its obligations. Credit risk can also arise from operational failures that result in an erroneous advance, commitment or investment of funds. We define the credit exposure to a borrower or counterparty as the loss potential arising from all product classifications including loans and leases, deposit overdrafts, derivatives, assets held-for-sale and unfunded lending commitments which include loan commitments, letters of credit and financial guarantees. Derivative positions are recorded at fair value and assets held-for-sale are recorded at either fair value or the lower of cost or fair value. Certain loans and unfunded commitments are accounted for under the fair value option. Credit risk for categories of assets carried at fair value is not accounted for as part of the allowance for credit losses but as part of the fair value adjustments recorded in earnings. For derivative positions, our credit risk is measured as the net cost in the event the counterparties with contracts in which we are in a gain position fail to perform under the terms of those contracts. We use the current fair value to represent credit exposure without giving consideration to future mark-to-market changes. The credit risk amounts take into consideration the effects of legally enforceable master netting agreements and cash collateral. Our consumer and commercial credit extension and review procedures encompass funded and unfunded credit exposures. For more information on derivatives and credit extension commitments, see *Note 2 – Derivatives* and *Note 12 – Commitments and Contingencies* to the Consolidated Financial Statements.

We manage credit risk based on the risk profile of the borrower or counterparty, repayment sources, the nature of underlying collateral, and other support given current events, conditions and expectations. We classify our portfolios as either consumer or commercial and monitor credit risk in each as discussed below.

We refine our underwriting and credit risk management practices as well as credit standards to meet the changing economic environment. To mitigate losses and enhance customer support in our consumer businesses, we have in place collection programs and loan modification and customer assistance infrastructures. We utilize a number of actions to mitigate losses in the commercial businesses including increasing the frequency and intensity of portfolio monitoring, hedging activity and our practice of transferring management of deteriorating commercial exposures to independent special asset officers as credits enter criticized categories.

For more information on our credit risk management activities, see Consumer Portfolio Credit Risk Management below, Commercial Portfolio Credit Risk Management on page 79, Non-U.S. Portfolio on page 86, Provision for Credit Losses on page 88, Allowance for Credit Losses on page 88, and *Note 4 – Outstanding Loans and Leases* and *Note 5 – Allowance for Credit Losses* to the Consolidated Financial Statements.

During the third quarter of 2017, hurricanes impacted the southern United States and the Caribbean, bringing widespread flooding and wind damage to communities across the region. In the weeks after these storms, we supported our customers and clients in these communities by providing mobile financial centers and ATMs. In addition, we provided support for the recovery efforts including proactive fee refunds in affected areas, as well as home loan and other credit assistance, including payment deferrals, for impacted individuals and businesses. We do not believe that these storms will have a material financial impact on the Corporation.

Consumer Portfolio Credit Risk Management

Credit risk management for the consumer portfolio begins with initial underwriting and continues throughout a borrower's credit cycle. Statistical techniques in conjunction with experiential judgment are used in all aspects of portfolio management including underwriting, product pricing, risk appetite, setting credit limits, and establishing operating processes and metrics to quantify and balance risks and returns. Statistical models are built using detailed behavioral information from external sources such as credit bureaus and/or internal historical experience and are a component of our consumer credit risk management process. These models are used in part to assist in making both new and ongoing credit decisions, as well as portfolio management strategies, including authorizations and line management, collection practices and strategies, and determination of the allowance for loan and lease losses and allocated capital for credit risk.

Consumer Credit Portfolio

Improvement in the U.S. unemployment rate and home prices continued during 2017 resulting in improved credit quality and lower credit losses in the consumer real estate portfolio, partially offset by seasoning and loan growth in the U.S. credit card portfolio compared to 2016.

Improved credit quality, the sale of the non-U.S. consumer credit card business in 2017, continued loan balance run-off and sales in the consumer real estate portfolio drove a $839 million decrease in the consumer allowance for loan and lease losses in 2017 to $5.4 billion at December 31, 2017. For more information, see Allowance for Credit Losses on page 88.

For more information on our accounting policies regarding delinquencies, nonperforming status, charge-offs and troubled debt restructurings (TDRs) for the consumer portfolio, including those related to bankruptcy and repossession, see *Note 1 – Summary of Significant Accounting Principles* to the Consolidated Financial Statements.

Table 21 presents our outstanding consumer loans and leases, consumer nonperforming loans and accruing consumer loans past due 90 days or more. Nonperforming loans do not include past due consumer credit card loans, other unsecured loans and in general, consumer loans not secured by real estate (bankruptcy loans are included) as these loans are typically charged off no later than the end of the month in which the loan becomes 180 days past due. Real estate-secured past due consumer loans that are insured by the FHA or individually insured under long-term standby agreements with Fannie Mae (FNMA) and Freddie Mac (FHLMC) (collectively, the fully-insured loan portfolio) are reported as accruing as opposed to nonperforming since the principal repayment is insured. Fully-insured loans included in accruing past due 90 days or more are primarily from our repurchases of delinquent FHA loans pursuant to our servicing agreements with the Government National Mortgage Association (GNMA). Additionally, nonperforming loans and accruing balances past due 90 days or more do not include the PCI loan portfolio or loans accounted for under the fair value option even though the customer may be contractually past due.

For more information on PCI loans, see Consumer Portfolio Credit Risk Management – Purchased Credit-impaired Loan Portfolio on page 76 and *Note 4 – Outstanding Loans and Leases* to the Consolidated Financial Statements.

Table 21 Consumer Credit Quality

(Dollars in millions)	Outstandings		Nonperforming		Accruing Past Due 90 Days or More	
	December 31					
	2017	2016	**2017**	2016	**2017**	2016
Residential mortgage [1]	**$ 203,811**	$ 191,797	**$ 2,476**	$ 3,056	**$ 3,230**	$ 4,793
Home equity	**57,744**	66,443	**2,644**	2,918	**—**	—
U.S. credit card	**96,285**	92,278	**n/a**	n/a	**900**	782
Non-U.S. credit card	**—**	9,214	**n/a**	n/a	**—**	66
Direct/Indirect consumer [2]	**93,830**	94,089	**46**	28	**40**	34
Other consumer [3]	**2,678**	2,499	**—**	2	**—**	4
Consumer loans excluding loans accounted for under the fair value option	**$ 454,348**	$ 456,320	**$ 5,166**	$ 6,004	**$ 4,170**	$ 5,679
Loans accounted for under the fair value option [4]	**928**	1,051				
Total consumer loans and leases [5]	**$ 455,276**	$ 457,371				
Percentage of outstanding consumer loans and leases [6]	**n/a**	n/a	**1.14%**	1.32%	**0.92%**	1.24%
Percentage of outstanding consumer loans and leases, excluding PCI and fully-insured loan portfolios [6]	**n/a**	n/a	**1.23**	1.45	**0.22**	0.21

(1) Residential mortgage loans accruing past due 90 days or more are fully-insured loans. At December 31, 2017 and 2016, residential mortgage includes $2.2 billion and $3.0 billion of loans on which interest had been curtailed by the FHA, and therefore were no longer accruing interest, although principal was still insured, and $1.0 billion and $1.8 billion of loans on which interest was still accruing.
(2) Outstandings include auto and specialty lending loans of $49.9 billion and $48.9 billion, unsecured consumer lending loans of $469 million and $585 million, U.S. securities-based lending loans of $39.8 billion and $40.1 billion, non-U.S. consumer loans of $3.0 billion for both periods, student loans of $0 and $497 million and other consumer loans of $684 million and $1.1 billion at December 31, 2017 and 2016.
(3) Outstandings include consumer leases of $2.5 billion and $1.9 billion, consumer overdrafts of $163 million and $157 million and consumer finance loans of $0 and $465 million at December 31, 2017 and 2016.
(4) Consumer loans accounted for under the fair value option include residential mortgage loans of $567 million and $710 million and home equity loans of $361 million and $341 million at December 31, 2017 and 2016. For more information on the fair value option, see *Note 21 – Fair Value Option* to the Consolidated Financial Statements.
(5) Includes $9.2 billion of non-U.S. credit card loans, which were included in assets of business held for sale on the Consolidated Balance Sheet at December 31, 2016. In 2017, the Corporation sold its non-U.S. consumer credit card business.
(6) Balances exclude consumer loans accounted for under the fair value option. At December 31, 2017 and 2016, $26 million and $48 million of loans accounted for under the fair value option were past due 90 days or more and not accruing interest.
n/a = not applicable

Table 22 presents net charge-offs and related ratios for consumer loans and leases.

Table 22 Consumer Net Charge-offs and Related Ratios

(Dollars in millions)	Net Charge-offs [1]		Net Charge-off Ratios [1, 2]	
	2017	2016	**2017**	2016
Residential mortgage	**$ (100)**	$ 131	**(0.05)%**	0.07%
Home equity	**213**	405	**0.34**	0.57
U.S. credit card	**2,513**	2,269	**2.76**	2.58
Non-U.S. credit card	**75**	175	**1.91**	1.83
Direct/Indirect consumer	**211**	134	**0.23**	0.15
Other consumer	**166**	205	**6.35**	8.95
Total	**$ 3,078**	$ 3,319	**0.68**	0.74

(1) Net charge-offs exclude write-offs in the PCI loan portfolio. For more information, see Consumer Portfolio Credit Risk Management – Purchased Credit-impaired Loan Portfolio on page 76.
(2) Net charge-off ratios are calculated as net charge-offs divided by average outstanding loans and leases excluding loans accounted for under the fair value option.

Net charge-offs, as shown in Tables 22 and 23, exclude write-offs in the PCI loan portfolio of $131 million and $144 million in residential mortgage and $76 million and $196 million in home equity for 2017 and 2016. Net charge-off ratios including the PCI write-offs were 0.02 percent and 0.15 percent for residential mortgage and 0.47 percent and 0.84 percent for home equity in 2017 and 2016. For more information on PCI write-offs, see Consumer Portfolio Credit Risk Management – Purchased Credit-impaired Loan Portfolio on page 76.

Table 23 presents outstandings, nonperforming balances, net charge-offs, allowance for loan and lease losses and provision for loan and lease losses for the core and non-core portfolios within the consumer real estate portfolio. We categorize consumer real estate loans as core and non-core based on loan and customer characteristics such as origination date, product type, LTV, FICO score and delinquency status consistent with our current consumer and mortgage servicing strategy. Generally, loans that were originated after January 1, 2010, qualified under government-sponsored enterprise underwriting guidelines, or otherwise met our underwriting guidelines in place in 2015 are characterized as core loans. All other loans are generally characterized as non-core loans and represent run-off portfolios. Core loans as reported in Table 23 include loans held in the *Consumer Banking* and *GWIM* segments, as well as loans held for ALM activities in *All Other*. For more information, see *Note 4 – Outstanding Loans and Leases* to the Consolidated Financial Statements.

As shown in Table 23, outstanding core consumer real estate loans increased $15.0 billion during 2017 driven by an increase of $20.1 billion in residential mortgage, partially offset by a $5.1 billion decrease in home equity.

Table 23 Consumer Real Estate Portfolio [1]

	Outstandings		Nonperforming		Net Charge-offs [2]	
	December 31					
(Dollars in millions)	2017	2016	2017	2016	2017	2016
Core portfolio						
Residential mortgage	$ 176,618	$ 156,497	$ 1,087	$ 1,274	$ (45)	$ (29)
Home equity	44,245	49,373	1,079	969	100	113
Total core portfolio	220,863	205,870	2,166	2,243	55	84
Non-core portfolio						
Residential mortgage	27,193	35,300	1,389	1,782	(55)	160
Home equity	13,499	17,070	1,565	1,949	113	292
Total non-core portfolio	40,692	52,370	2,954	3,731	58	452
Consumer real estate portfolio						
Residential mortgage	203,811	191,797	2,476	3,056	(100)	131
Home equity	57,744	66,443	2,644	2,918	213	405
Total consumer real estate portfolio	$ 261,555	$ 258,240	$ 5,120	$ 5,974	$ 113	$ 536

	Allowance for Loan and Lease Losses		Provision for Loan and Lease Losses	
	December 31			
	2017	2016	2017	2016
Core portfolio				
Residential mortgage	$ 218	$ 252	$ (79)	$ (98)
Home equity	367	560	(91)	10
Total core portfolio	585	812	(170)	(88)
Non-core portfolio				
Residential mortgage	483	760	(201)	(86)
Home equity	652	1,178	(339)	(84)
Total non-core portfolio	1,135	1,938	(540)	(170)
Consumer real estate portfolio				
Residential mortgage	701	1,012	(280)	(184)
Home equity	1,019	1,738	(430)	(74)
Total consumer real estate portfolio	$ 1,720	$ 2,750	$ (710)	$ (258)

(1) Outstandings and nonperforming loans exclude loans accounted for under the fair value option. Consumer loans accounted for under the fair value option included residential mortgage loans of $567 million and $710 million and home equity loans of $361 million and $341 million at December 31, 2017 and 2016. For more information, see *Note 21 – Fair Value Option* to the Consolidated Financial Statements.

(2) Net charge-offs exclude write-offs in the PCI loan portfolio. For more information, see Consumer Portfolio Credit Risk Management – Purchased Credit-impaired Loan Portfolio on page 76.

We believe that the presentation of information adjusted to exclude the impact of the PCI loan portfolio, the fully-insured loan portfolio and loans accounted for under the fair value option is more representative of the ongoing operations and credit quality of the business. As a result, in the following discussions of the residential mortgage and home equity portfolios, we provide information that excludes the impact of the PCI loan portfolio, the fully-insured loan portfolio and loans accounted for under the fair value option in certain credit quality statistics. We separately disclose information on the PCI loan portfolio on page 76.

Residential Mortgage

The residential mortgage portfolio makes up the largest percentage of our consumer loan portfolio at 45 percent of consumer loans and leases at December 31, 2017. Approximately 37 percent of the residential mortgage portfolio is in *Consumer Banking* and approximately 35 percent is in *GWIM*. The remaining portion is in *All Other* and is comprised of originated loans, purchased loans used in our overall ALM activities, delinquent FHA loans repurchased pursuant to our servicing agreements with GNMA as well as loans repurchased related to our representations and warranties.

Outstanding balances in the residential mortgage portfolio, excluding loans accounted for under the fair value option, increased $12.0 billion in 2017 as retention of new originations was partially offset by loan sales of $3.9 billion, and run-off.

At December 31, 2017 and 2016, the residential mortgage portfolio included $23.7 billion and $28.7 billion of outstanding fully-insured loans. On this portion of the residential mortgage portfolio, we are protected against principal loss as a result of either FHA insurance or long-term standby agreements that provide for the transfer of credit risk to FNMA and FHLMC. At December 31, 2017 and 2016, $17.4 billion and $22.3 billion had FHA insurance with the remainder protected by long-term standby agreements. At December 31, 2017 and 2016, $5.2 billion and $7.4 billion of the FHA-insured loan population were repurchases of delinquent FHA loans pursuant to our servicing agreements with GNMA.

Table 24 presents certain residential mortgage key credit statistics on both a reported basis excluding loans accounted for under the fair value option, and excluding the PCI loan portfolio, the fully-insured loan portfolio and loans accounted for under the fair value option. Additionally, in the "Reported Basis" columns in the following table, accruing balances past due and nonperforming loans do not include the PCI loan portfolio, in accordance with our accounting policies, even though the customer may be contractually past due. As such, the following discussion presents the residential mortgage portfolio excluding the PCI loan portfolio, the fully-insured loan portfolio and loans accounted for under the fair value option. For more information on the PCI loan portfolio, see page 76.

Table 24 Residential Mortgage – Key Credit Statistics

(Dollars in millions)	Reported Basis (1) 2017	Reported Basis (1) 2016	Excluding Purchased Credit-impaired and Fully-insured Loans 2017	Excluding Purchased Credit-impaired and Fully-insured Loans 2016
	December 31			
Outstandings	$ 203,811	$ 191,797	$ 172,069	$ 152,941
Accruing past due 30 days or more	5,987	8,232	1,521	1,835
Accruing past due 90 days or more	3,230	4,793	—	—
Nonperforming loans	2,476	3,056	2,476	3,056
Percent of portfolio				
Refreshed LTV greater than 90 but less than or equal to 100	3 %	5%	2 %	3%
Refreshed LTV greater than 100	2	4	1	3
Refreshed FICO below 620	6	9	3	4
2006 and 2007 vintages (2)	10	13	8	12
	2017	2016	**2017**	2016
Net charge-off ratio (3)	(0.05)%	0.07%	(0.06)%	0.09%

(1) Outstandings, accruing past due, nonperforming loans and percentages of portfolio exclude loans accounted for under the fair value option.
(2) These vintages of loans accounted for $825 million, or 33 percent, and $931 million, or 31 percent, of nonperforming residential mortgage loans at December 31, 2017 and 2016.
(3) Net charge-off ratios are calculated as net charge-offs divided by average outstanding loans excluding loans accounted for under the fair value option.

Nonperforming residential mortgage loans decreased $580 million in 2017 as outflows, including sales of $460 million and net transfers to held-for-sale of $132 million, outpaced new inflows which included the addition of $140 million of nonperforming loans as a result of clarifying regulatory guidance related to bankruptcy loans. Of the nonperforming residential mortgage loans at December 31, 2017, $860 million, or 35 percent, were current on contractual payments. Loans accruing past due 30 days or more decreased $314 million due in part to the timing impact of a consumer real estate servicer conversion that occurred during the fourth quarter of 2016.

Net charge-offs decreased $231 million to $100 million of net recoveries in 2017 compared to $131 million of net charge-offs in 2016. This decrease in net charge-offs was primarily driven by net recoveries of $105 million related to loan sales in 2017, compared to loan sale-related net charge-offs of $26 million in 2016. Additionally, net charge-offs declined due to favorable portfolio trends and decreased write-downs on loans greater than 180 days past due driven by improvement in home prices and the U.S. economy.

Loans with a refreshed LTV greater than 100 percent represented one percent and three percent of the residential mortgage loan portfolio at December 31, 2017 and 2016. Of the loans with a refreshed LTV greater than 100 percent, 98 percent were performing at both December 31, 2017 and 2016. Loans with a refreshed LTV greater than 100 percent reflect loans where the outstanding carrying value of the loan is greater than the most recent valuation of the property securing the loan. The majority of these loans have a refreshed LTV greater than 100 percent primarily due to home price deterioration since 2006, partially offset by subsequent appreciation.

Of the $172.1 billion in total residential mortgage loans outstanding at December 31, 2017, as shown in Table 25, 33 percent were originated as interest-only loans. The outstanding balance of interest-only residential mortgage loans that have entered the amortization period was $10.4 billion, or 18 percent, at December 31, 2017. Residential mortgage loans that have entered the amortization period generally have experienced a higher rate of early stage delinquencies and nonperforming status compared to the residential mortgage portfolio as a whole. At December 31, 2017, $283 million, or three percent of outstanding interest-only residential mortgages that had entered the amortization period were accruing past due 30 days or more compared to $1.5 billion, or one percent for the entire residential mortgage portfolio. In addition, at December 31, 2017, $509 million, or five percent of outstanding interest-only residential mortgage loans that had entered the amortization period were nonperforming, of which $253 million were contractually current, compared to $2.5 billion, or one percent for the entire residential mortgage portfolio, of which $860 million were contractually current. Loans that have yet to enter the amortization period in our interest-only residential mortgage portfolio are primarily well-collateralized loans to our wealth management clients and have an interest-only period of three to ten years. More than 80 percent of these loans that have yet to enter the amortization period will not be required to make a fully-amortizing payment until 2020 or later.

Table 25 presents outstandings, nonperforming loans and net charge-offs by certain state concentrations for the residential mortgage portfolio. The Los Angeles-Long Beach-Santa Ana Metropolitan Statistical Area (MSA) within California represented 16 percent and 15 percent of outstandings at December 31, 2017 and 2016. In the New York area, the New York-Northern New Jersey-Long Island MSA made up 13 percent and 12 percent of outstandings at December 31, 2017 and 2016.

Table 25 Residential Mortgage State Concentrations

	Outstandings (1)		Nonperforming (1)		Net Charge-offs (2)	
	December 31					
(Dollars in millions)	**2017**	2016	**2017**	2016	**2017**	2016
California	**$ 68,455**	$ 58,295	**$ 433**	$ 554	**$ (103)**	$ (70)
New York (3)	**17,239**	14,476	**227**	290	**(2)**	18
Florida (3)	**10,880**	10,213	**280**	322	**(13)**	20
Texas	**7,237**	6,607	**126**	132	**1**	9
New Jersey (3)	**6,099**	5,307	**130**	174	**—**	25
Other U.S./Non-U.S.	**62,159**	58,043	**1,280**	1,584	**17**	129
Residential mortgage loans (4)	**$ 172,069**	$ 152,941	**$ 2,476**	$ 3,056	**$ (100)**	$ 131
Fully-insured loan portfolio	**23,741**	28,729				
Purchased credit-impaired residential mortgage loan portfolio (5)	**8,001**	10,127				
Total residential mortgage loan portfolio	**$ 203,811**	$ 191,797				

(1) Outstandings and nonperforming loans exclude loans accounted for under the fair value option.
(2) Net charge-offs excluded $131 million and $144 million of write-offs in the residential mortgage PCI loan portfolio in 2017 and 2016. For more information on PCI write-offs, see Consumer Portfolio Credit Risk Management – Purchased Credit-impaired Loan Portfolio on page 76.
(3) In these states, foreclosure requires a court order following a legal proceeding (judicial states).
(4) Amounts exclude the PCI residential mortgage and fully-insured loan portfolios.
(5) At December 31, 2017 and 2016, 47 percent and 48 percent of PCI residential mortgage loans were in California. There were no other significant single state concentrations.

Home Equity

At December 31, 2017, the home equity portfolio made up 13 percent of the consumer portfolio and is comprised of home equity lines of credit (HELOCs), home equity loans and reverse mortgages.

At December 31, 2017, our HELOC portfolio had an outstanding balance of $51.2 billion, or 89 percent of the total home equity portfolio compared to $58.6 billion, or 88 percent, at December 31, 2016. HELOCs generally have an initial draw period of 10 years and after the initial draw period ends, the loans generally convert to 15-year amortizing loans.

At December 31, 2017, our home equity loan portfolio had an outstanding balance of $4.4 billion, or seven percent of the total home equity portfolio compared to $5.9 billion, or nine percent, at December 31, 2016. Home equity loans are almost all fixed-rate loans with amortizing payment terms of 10 to 30 years and of the $4.4 billion at December 31, 2017, 57 percent have 25- to 30-year terms. At December 31, 2017, our reverse mortgage portfolio had an outstanding balance, excluding loans accounted for under the fair value option, of $2.1 billion, or four percent of the total home equity portfolio compared to $1.9 billion, or three percent, at December 31, 2016. We no longer originate reverse mortgages.

At December 31, 2017, approximately 69 percent of the home equity portfolio was in *Consumer Banking*, 23 percent was in *All Other* and the remainder of the portfolio was primarily in *GWIM*. Outstanding balances in the home equity portfolio, excluding loans accounted for under the fair value option, decreased $8.7 billion in 2017 primarily due to paydowns and charge-offs outpacing new originations and draws on existing lines. Of the total home equity portfolio at December 31, 2017 and 2016, $18.7 billion and $19.6 billion, or 32 percent and 29 percent, were in first-lien positions (34 percent and 31 percent excluding the PCI home equity portfolio). At December 31, 2017, outstanding balances in the home equity portfolio that were in a second-lien or more junior-lien position and where we also held the first-lien loan totaled $9.4 billion, or 17 percent of our total home equity portfolio excluding the PCI loan portfolio.

Unused HELOCs totaled $44.2 billion and $47.2 billion at December 31, 2017 and 2016. The decrease was primarily due to accounts reaching the end of their draw period, which automatically eliminates open line exposure, and customers choosing to close accounts. Both of these more than offset the impact of new production. The HELOC utilization rate was 54 percent and 55 percent at December 31, 2017 and 2016.

Table 26 presents certain home equity portfolio key credit statistics on both a reported basis excluding loans accounted for under the fair value option, and excluding the PCI loan portfolio and loans accounted for under the fair value option. Additionally, in the "Reported Basis" columns in the following table, accruing balances past due 30 days or more and nonperforming loans do not include the PCI loan portfolio, in accordance with our accounting policies, even though the customer may be contractually past due. As such, the following discussion presents the home equity portfolio excluding the PCI loan portfolio and loans accounted for under the fair value option. For more information on the PCI loan portfolio, see page 76.

Table 26 Home Equity – Key Credit Statistics

(Dollars in millions)	Reported Basis (1)		Excluding Purchased Credit-impaired Loans	
	December 31			
	2017	2016	**2017**	2016
Outstandings	**$ 57,744**	$ 66,443	**$ 55,028**	$ 62,832
Accruing past due 30 days or more (2)	**502**	566	**502**	566
Nonperforming loans (2)	**2,644**	2,918	**2,644**	2,918
Percent of portfolio				
Refreshed CLTV greater than 90 but less than or equal to 100	**3%**	5%	**3%**	4%
Refreshed CLTV greater than 100	**5**	8	**4**	7
Refreshed FICO below 620	**6**	7	**6**	6
2006 and 2007 vintages (3)	**29**	37	**27**	34
	2017	2016	**2017**	2016
Net charge-off ratio (4)	**0.34%**	0.57%	**0.36%**	0.60%

(1) Outstandings, accruing past due, nonperforming loans and percentages of the portfolio exclude loans accounted for under the fair value option.

(2) Accruing past due 30 days or more included $67 million and $81 million and nonperforming loans included $344 million and $340 million of loans where we serviced the underlying first-lien at December 31, 2017 and 2016.

(3) These vintages of loans have higher refreshed combined loan-to-value (CLTV) ratios and accounted for 52 percent and 50 percent of nonperforming home equity loans at December 31, 2017 and 2016, and 91 percent and 54 percent of net charge-offs in 2017 and 2016.

(4) Net charge-off ratios are calculated as net charge-offs divided by average outstanding loans excluding loans accounted for under the fair value option.

Nonperforming outstanding balances in the home equity portfolio decreased $274 million in 2017 as outflows, including $66 million of net transfers to held-for-sale and $51 million of sales, outpaced new inflows, which included the addition of $135 million of nonperforming loans as a result of clarifying regulatory guidance related to bankruptcy loans. Of the nonperforming home equity portfolio at December 31, 2017, $1.4 billion, or 54 percent, were current on contractual payments. Nonperforming loans that are contractually current primarily consist of collateral-dependent TDRs, including those that have been discharged in Chapter 7 bankruptcy, junior-lien loans where the underlying first-lien is 90 days or more past due, as well as loans that have not yet demonstrated a sustained period of payment performance following a TDR. In addition, $693 million, or 26 percent, of nonperforming home equity loans were 180 days or more past due and had been written down to the estimated fair value of the collateral, less costs to sell. Accruing loans that were 30 days or more past due decreased $64 million in 2017.

In some cases, the junior-lien home equity outstanding balance that we hold is performing, but the underlying first-lien is not. For outstanding balances in the home equity portfolio on which we service the first-lien loan, we are able to track whether the first-lien loan is in default. For loans where the first-lien is serviced by a third party, we utilize credit bureau data to estimate the delinquency status of the first-lien. Given that the credit bureau database we use does not include a property address for the mortgages, we are unable to identify with certainty whether a reported delinquent first-lien mortgage pertains to the same property for which we hold a junior-lien loan. For certain loans, we utilize a third-party vendor to combine credit bureau and public record data to better link a junior-lien loan with the underlying first-lien mortgage. At December 31, 2017, we estimate that $814 million of current and $141 million of 30 to 89 days past due junior-lien loans were behind a delinquent first-lien loan. We service the first-lien loans on $184 million of these combined amounts, with the remaining $771 million serviced by third parties. Of the $955 million of current to 89 days past due junior-lien loans, based on available credit bureau data and our own internal servicing data, we estimate that approximately $330 million had first-lien loans that were 90 days or more past due.

Net charge-offs decreased $192 million to $213 million in 2017 compared to $405 million in 2016 driven by favorable portfolio trends due in part to improvement in home prices and the U.S. economy, partially offset by $32 million of charge-offs as a result of clarifying regulatory guidance related to bankruptcy loans.

Outstanding balances with a refreshed CLTV greater than 100 percent comprised four percent and seven percent of the home equity portfolio at December 31, 2017 and 2016. Outstanding balances with a refreshed CLTV greater than 100 percent reflect loans where our loan and available line of credit combined with any outstanding senior liens against the property are equal to or greater than the most recent valuation of the property securing the loan. Depending on the value of the property, there may be collateral in excess of the first-lien that is available to reduce the severity of loss on the second-lien. Of those outstanding balances with a refreshed CLTV greater than 100 percent, 95 percent of the customers were current on their home equity loan and 91 percent of second-lien loans with a refreshed CLTV greater than 100 percent were current on both their second-lien and underlying first-lien loans at December 31, 2017.

Of the $55.0 billion in total home equity portfolio outstandings at December 31, 2017, as shown in Table 27, 30 percent require interest-only payments. The outstanding balance of HELOCs that have reached the end of their draw period and have entered the amortization period was $18.4 billion at December 31, 2017. The HELOCs that have entered the amortization period have experienced a higher percentage of early stage delinquencies and nonperforming status when compared to the HELOC portfolio as a whole. At December 31, 2017, $343 million, or two percent, of outstanding HELOCs that had entered the amortization period were accruing past due 30 days or more. In addition, at December 31, 2017, $2.1 billion, or 11 percent, of outstanding HELOCs that had entered the amortization period were nonperforming, of which $1.1 billion were contractually current. Loans in our HELOC portfolio generally have an initial draw period of 10 years and 10 percent of these loans will enter the amortization period during 2018 and will be required to make fully-amortizing payments. We communicate to contractually current customers more than a year prior to the end of their draw period to inform them of the potential change to the payment structure before entering the amortization period, and provide payment options to customers prior to the end of the draw period.

Although we do not actively track how many of our home equity customers pay only the minimum amount due on their home equity loans and lines, we can infer some of this information through a review of our HELOC portfolio that we service and that is still in its revolving period (i.e., customers may draw on and repay their line of credit, but are generally only required to pay interest on a monthly basis). During 2017, approximately 19 percent of these customers with an outstanding balance did not pay any principal on their HELOCs.

Table 27 presents outstandings, nonperforming balances and net charge-offs by certain state concentrations for the home equity portfolio. In the New York area, the New York-Northern New Jersey-Long Island MSA made up 13 percent of the outstanding home equity portfolio at both December 31, 2017 and 2016. Loans within this MSA contributed 27 percent and 17 percent of net charge-offs in 2017 and 2016 within the home equity portfolio. The Los Angeles-Long Beach-Santa Ana MSA within California made up 11 percent of the outstanding home equity portfolio at both December 31, 2017 and 2016. Loans within this MSA contributed net recoveries of $20 million and $2 million within the home equity portfolio in 2017 and 2016.

Table 27 Home Equity State Concentrations

	Outstandings [1]		Nonperforming [1]		Net Charge-offs [2]	
	December 31					
(Dollars in millions)	2017	2016	2017	2016	2017	2016
California	$ 15,145	$ 17,563	$ 766	$ 829	$ (37)	$ 7
Florida [3]	6,308	7,319	411	442	38	76
New Jersey [3]	4,546	5,102	191	201	44	50
New York [3]	4,195	4,720	252	271	35	45
Massachusetts	2,751	3,078	92	100	9	12
Other U.S./Non-U.S.	22,083	25,050	932	1,075	124	215
Home equity loans [4]	$ 55,028	$ 62,832	$ 2,644	$ 2,918	$ 213	$ 405
Purchased credit-impaired home equity portfolio [5]	2,716	3,611				
Total home equity loan portfolio	$ 57,744	$ 66,443				

(1) Outstandings and nonperforming loans exclude loans accounted for under the fair value option.
(2) Net charge-offs excluded $76 million and $196 million of write-offs in the home equity PCI loan portfolio in 2017 and 2016. For more information on PCI write-offs, see Consumer Portfolio Credit Risk Management – Purchased Credit-impaired Loan Portfolio.
(3) In these states, foreclosure requires a court order following a legal proceeding (judicial states).
(4) Amount excludes the PCI home equity portfolio.
(5) At December 31, 2017 and 2016, 28 percent and 29 percent of PCI home equity loans were in California. There were no other significant single state concentrations.

Purchased Credit-impaired Loan Portfolio

Loans acquired with evidence of credit quality deterioration since origination and for which it is probable at purchase that we will be unable to collect all contractually required payments are accounted for under the accounting standards for PCI loans. For more information, see *Note 1 – Summary of Significant Accounting Principles* and *Note 4 – Outstanding Loans and Leases* to the Consolidated Financial Statements.

Table 28 presents the unpaid principal balance, carrying value, related valuation allowance and the net carrying value as a percentage of the unpaid principal balance for the PCI loan portfolio.

Table 28 Purchased Credit-impaired Loan Portfolio

(Dollars in millions)	Unpaid Principal Balance	Gross Carrying Value	Related Valuation Allowance	Carrying Value Net of Valuation Allowance	Percent of Unpaid Principal Balance
	December 31, 2017				
Residential mortgage [1]	$ 8,117	$ 8,001	$ 117	$ 7,884	97.13%
Home equity	2,787	2,716	172	2,544	91.28
Total purchased credit-impaired loan portfolio	$ 10,904	$ 10,717	$ 289	$ 10,428	95.63
	December 31, 2016				
Residential mortgage [1]	$ 10,330	$ 10,127	$ 169	$ 9,958	96.40%
Home equity	3,689	3,611	250	3,361	91.11
Total purchased credit-impaired loan portfolio	$ 14,019	$ 13,738	$ 419	$ 13,319	95.01

(1) At December 31, 2017 and 2016, pay option loans had an unpaid principal balance of $1.4 billion and $1.9 billion and a carrying value of $1.4 billion and $1.8 billion. This includes $1.2 billion and $1.6 billion of loans that were credit-impaired upon acquisition and $141 million and $226 million of loans that were 90 days or more past due at December 31, 2017 and 2016. The total unpaid principal balance of pay option loans with accumulated negative amortization was $160 million and $303 million, including $9 million and $16 million of negative amortization at December 31, 2017 and 2016.

The total PCI unpaid principal balance decreased $3.1 billion, or 22 percent, in 2017 primarily driven by payoffs, paydowns, write-offs and PCI loan sales with a carrying value of $803 million compared to $549 million in 2016.

Of the unpaid principal balance of $10.9 billion at December 31, 2017, $9.6 billion, or 88 percent, was current based on the contractual terms, $752 million, or seven percent, was in early stage delinquency, and $364 million was 180 days or more past due, including $302 million of first-lien mortgages and $62 million of home equity loans.

The PCI residential mortgage loan and home equity portfolios represented 75 percent and 25 percent of the total PCI loan portfolio at December 31, 2017. Those loans to borrowers with a refreshed FICO score below 620 represented 24 percent and 17 percent of the PCI residential mortgage loan and home equity portfolios at December 31, 2017. Residential mortgage and home equity loans with a refreshed LTV or CLTV greater than 90 percent, after consideration of purchase accounting adjustments and the related valuation allowance, represented 14 percent and 34 percent of their respective PCI loan portfolios and 16 percent and 37 percent based on the unpaid principal balance at December 31, 2017.

U.S. Credit Card

At December 31, 2017, 97 percent of the U.S. credit card portfolio was managed in *Consumer Banking* with the remainder in *GWIM*. Outstandings in the U.S. credit card portfolio increased $4.0 billion to $96.3 billion in 2017 as retail volumes outpaced payments. Net charge-offs increased $244 million to $2.5 billion in 2017 due to portfolio seasoning and loan growth. U.S. credit card loans 30 days or more past due and still accruing interest increased $252 million and loans 90 days or more past due and still accruing interest increased $118 million in 2017, driven by portfolio seasoning and loan growth.

Unused lines of credit for U.S. credit card totaled $326.3 billion and $321.6 billion at December 31, 2017 and 2016. The increase was driven by account growth and lines of credit increases.

Table 29 presents certain state concentrations for the U.S. credit card portfolio.

Table 29 U.S. Credit Card State Concentrations

	Outstandings		Accruing Past Due 90 Days or More		Net Charge-offs	
	December 31					
(Dollars in millions)	2017	2016	2017	2016	2017	2016
California	$ 15,254	$ 14,251	$ 136	$ 115	$ 412	$ 360
Florida	8,359	7,864	94	85	259	245
Texas	7,451	7,037	76	65	194	164
New York	5,977	5,683	91	60	218	161
Washington	4,350	4,128	20	18	56	56
Other U.S.	54,894	53,315	483	439	1,374	1,283
Total U.S. credit card portfolio	$ 96,285	$ 92,278	$ 900	$ 782	$ 2,513	$ 2,269

Direct/Indirect and Other Consumer

At December 31, 2017, approximately 54 percent of the direct/indirect portfolio was included in *Consumer Banking* (consumer auto and specialty lending – automotive, marine, aircraft, recreational vehicle loans and consumer personal loans) and 46 percent was included in *GWIM* (principally securities-based lending loans). At December 31, 2017, approximately 94 percent of the $2.7 billion other consumer portfolio was consumer auto leases included in *Consumer Banking.*

Outstandings in the direct/indirect portfolio remained relatively unchanged at $93.8 billion at December 31, 2017. Net charge-offs increased $77 million to $211 million in 2017 due largely to portfolio seasoning and clarifying regulatory guidance related to bankruptcy and repossession.

Table 30 presents certain state concentrations for the direct/indirect consumer loan portfolio.

Table 30 Direct/Indirect State Concentrations

	Outstandings		Accruing Past Due 90 Days or More		Net Charge-offs	
	December 31					
(Dollars in millions)	2017	2016	2017	2016	2017	2016
California	$ 11,165	$ 11,300	$ 3	$ 3	$ 21	$ 13
Florida	10,946	9,418	5	3	42	29
Texas	10,623	9,406	5	5	38	21
New York	6,058	5,253	2	1	6	3
Georgia	3,502	3,255	4	4	15	9
Other U.S./Non-U.S.	51,536	55,457	21	18	89	59
Total direct/indirect loan portfolio	$ 93,830	$ 94,089	$ 40	$ 34	$ 211	$ 134

Nonperforming Consumer Loans, Leases and Foreclosed Properties Activity

Table 31 presents nonperforming consumer loans, leases and foreclosed properties activity during 2017 and 2016. For more information on nonperforming loans, see *Note 1 – Summary of Significant Accounting Principles* and *Note 4 – Outstanding Loans and Leases* to the Consolidated Financial Statements. During 2017, nonperforming consumer loans declined $838 million to $5.2 billion driven in part by loan sales of $511 million and net transfers of loans to held-for-sale of $198 million. Additionally, nonperforming loans declined as outflows outpaced new inflows, which included the addition of $295 million of nonperforming loans as a result of clarifying regulatory guidance related to bankruptcy loans.

At December 31, 2017, $1.9 billion, or 34 percent of nonperforming consumer real estate loans and foreclosed properties had been written down to their estimated property value less costs to sell, including $1.6 billion of nonperforming loans 180 days or more past due and $236 million of foreclosed properties. In addition, at December 31, 2017, $2.3 billion, or 45 percent of nonperforming consumer loans were modified and are now current after successful trial periods, or are current loans classified as nonperforming loans in accordance with applicable policies.

Foreclosed properties decreased $127 million in 2017 as liquidations outpaced additions. PCI loans are excluded from nonperforming loans as these loans were written down to fair value at the acquisition date; however, once we acquire the underlying real estate upon foreclosure of the delinquent PCI loan, it is included in foreclosed properties. Not included in foreclosed properties at December 31, 2017 was $801 million of real estate that was acquired upon foreclosure of certain delinquent government-guaranteed loans (principally FHA-insured loans). We exclude these amounts from our nonperforming loans and foreclosed properties activity as we expect we will be reimbursed once the property is conveyed to the guarantor for principal and, up to certain limits, costs incurred during the foreclosure process and interest accrued during the holding period.

We classify junior-lien home equity loans as nonperforming when the first-lien loan becomes 90 days past due even if the junior-lien loan is performing. At December 31, 2017 and 2016, $330 million and $428 million of such junior-lien home equity loans were included in nonperforming loans and leases.

Nonperforming loans also include certain loans that have been modified in TDRs where economic concessions have been granted to borrowers experiencing financial difficulties. Nonperforming TDRs, excluding those modified loans in the PCI loan portfolio, are included in Table 31.

Table 31 Nonperforming Consumer Loans, Leases and Foreclosed Properties Activity [1]

(Dollars in millions)	2017	2016
Nonperforming loans and leases, January 1	**$ 6,004**	$ 8,165
Additions	**3,254**	3,492
Reductions:		
Paydowns and payoffs	**(1,052)**	(1,044)
Sales	**(511)**	(1,604)
Returns to performing status [2]	**(1,438)**	(1,628)
Charge-offs	**(676)**	(1,028)
Transfers to foreclosed properties	**(217)**	(294)
Transfers to loans held-for-sale	**(198)**	(55)
Total net reductions to nonperforming loans and leases	**(838)**	(2,161)
Total nonperforming loans and leases, December 31 [3]	**5,166**	6,004
Total foreclosed properties, December 31 [4]	**236**	363
Nonperforming consumer loans, leases and foreclosed properties, December 31	**$ 5,402**	$ 6,367
Nonperforming consumer loans and leases as a percentage of outstanding consumer loans and leases [5]	**1.14%**	1.32%
Nonperforming consumer loans, leases and foreclosed properties as a percentage of outstanding consumer loans, leases and foreclosed properties [5]	**1.19**	1.39

(1) Balances do not include nonperforming LHFS of $2 million and $69 million and nonaccruing TDRs removed from the PCI loan portfolio prior to January 1, 2010 of $26 million and $27 million at December 31, 2017 and 2016 as well as loans accruing past due 90 days or more as presented in Table 21 and *Note 4 – Outstanding Loans and Leases* to the Consolidated Financial Statements.

(2) Consumer loans may be returned to performing status when all principal and interest is current and full repayment of the remaining contractual principal and interest is expected, or when the loan otherwise becomes well-secured and is in the process of collection.

(3) At December 31, 2017, 31 percent of nonperforming loans were 180 days or more past due.

(4) Foreclosed property balances do not include properties insured by certain government-guaranteed loans, principally FHA-insured, of $801 million and $1.2 billion at December 31, 2017 and 2016.

(5) Outstanding consumer loans and leases exclude loans accounted for under the fair value option.

Table 32 presents TDRs for the consumer real estate portfolio. Performing TDR balances are excluded from nonperforming loans and leases in Table 31.

Table 32 Consumer Real Estate Troubled Debt Restructurings

	December 31, 2017			December 31, 2016		
(Dollars in millions)	Nonperforming	Performing	Total	Nonperforming	Performing	Total
Residential mortgage [1, 2]	$ 1,535	$ 8,163	$ 9,698	$ 1,992	$ 10,639	$ 12,631
Home equity [3]	1,457	1,399	2,856	1,566	1,211	2,777
Total consumer real estate troubled debt restructurings	$ 2,992	$ 9,562	$ 12,554	$ 3,558	$ 11,850	$ 15,408

(1) At December 31, 2017 and 2016, residential mortgage TDRs deemed collateral dependent totaled $2.8 billion and $3.5 billion, and included $1.2 billion and $1.6 billion of loans classified as nonperforming and $1.6 billion and $1.9 billion of loans classified as performing.

(2) Residential mortgage performing TDRs included $3.7 billion and $5.3 billion of loans that were fully-insured at December 31, 2017 and 2016.

(3) Home equity TDRs deemed collateral dependent totaled $1.6 billion for both periods and included $1.2 billion and $1.3 billion of loans classified as nonperforming, and $388 million and $301 million of loans classified as performing at December 31, 2017 and 2016.

In addition to modifying consumer real estate loans, we work with customers who are experiencing financial difficulty by modifying credit card and other consumer loans. Credit card and other consumer loan modifications generally involve a reduction in the customer's interest rate on the account and placing the customer on a fixed payment plan not exceeding 60 months, all of which are considered TDRs (the renegotiated TDR portfolio).

Modifications of credit card and other consumer loans are made through renegotiation programs utilizing direct customer contact, but may also utilize external renegotiation programs. The renegotiated TDR portfolio is excluded in large part from Table 31 as substantially all of the loans remain on accrual status until either charged off or paid in full. At December 31, 2017 and 2016, our renegotiated TDR portfolio was $490 million and $610 million, of which $426 million and $493 million were current or less than 30 days past due under the modified terms. The decline in the renegotiated TDR portfolio was primarily driven by paydowns and charge-offs as well as lower program enrollments. For more information on the renegotiated TDR portfolio, see *Note 4 – Outstanding Loans and Leases* to the Consolidated Financial Statements.

Commercial Portfolio Credit Risk Management

Credit risk management for the commercial portfolio begins with an assessment of the credit risk profile of the borrower or counterparty based on an analysis of its financial position. As part of the overall credit risk assessment, our commercial credit exposures are assigned a risk rating and are subject to approval based on defined credit approval standards. Subsequent to loan origination, risk ratings are monitored on an ongoing basis, and if necessary, adjusted to reflect changes in the financial condition, cash flow, risk profile or outlook of a borrower or counterparty. In making credit decisions, we consider risk rating, collateral, country, industry and single-name concentration limits while also balancing these considerations with the total borrower or counterparty relationship. We use a variety of tools to continuously monitor the ability of a borrower or counterparty to perform under its obligations. We use risk rating aggregations to measure and evaluate concentrations within portfolios. In addition, risk ratings are a factor in determining the level of allocated capital and the allowance for credit losses.

As part of our ongoing risk mitigation initiatives, we attempt to work with clients experiencing financial difficulty to modify their loans to terms that better align with their current ability to pay. In situations where an economic concession has been granted to a borrower experiencing financial difficulty, we identify these loans as TDRs. For more information on our accounting policies regarding delinquencies, nonperforming status and net charge-offs for the commercial portfolio, see *Note 1 – Summary of Significant Accounting Principles* to the Consolidated Financial Statements.

Management of Commercial Credit Risk Concentrations

Commercial credit risk is evaluated and managed with the goal that concentrations of credit exposure do not result in undesirable levels of risk. We review, measure and manage concentrations of credit exposure by industry, product, geography, customer relationship and loan size. We also review, measure and manage commercial real estate loans by geographic location and property type. In addition, within our non-U.S. portfolio, we evaluate exposures by region and by country. Tables 37, 40, 45 and 46 summarize our concentrations. We also utilize syndications of exposure to third parties, loan sales, hedging and other risk mitigation techniques to manage the size and risk profile of the commercial credit portfolio. For more information on our industry concentrations, including our utilized exposure to the energy sector which was three percent of total commercial utilized exposure at both December 31, 2017 and 2016, see Commercial Portfolio Credit Risk Management – Industry Concentrations on page 83 and Table 40.

We account for certain large corporate loans and loan commitments, including issued but unfunded letters of credit which are considered utilized for credit risk management purposes, that exceed our single-name credit risk concentration guidelines under the fair value option. Lending commitments, both funded and unfunded, are actively managed and monitored, and as appropriate, credit risk for these lending relationships may be mitigated through the use of credit derivatives, with our credit view and market perspectives determining the size and timing of the hedging activity. In addition, we purchase credit protection to cover the funded portion as well as the unfunded portion of certain other credit exposures. To lessen the cost of obtaining our desired credit protection levels, credit exposure may be added within an industry, borrower or counterparty group by selling protection. These credit derivatives do not meet the requirements for treatment as accounting hedges. They are carried at fair value with changes in fair value recorded in other income.

In addition, we are a member of various securities and derivative exchanges and clearinghouses, both in the U.S. and other countries. As a member, we may be required to pay a pro-rata share of the losses incurred by some of these organizations as a result of another member default and under other loss scenarios. For more information, see *Note 12 – Commitments and Contingencies* to the Consolidated Financial Statements.

Commercial Credit Portfolio

During 2017, credit quality among large corporate borrowers was strong, other than in the higher risk energy sub-sectors, where we saw improvement in 2017. Credit quality of commercial real estate borrowers continued to be strong with conservative LTV ratios, stable market rents in most sectors and vacancy rates remaining low.

Total commercial utilized credit exposure increased $25.9 billion during 2017 to $600.8 billion at December 31, 2017 primarily driven by increases in loans and leases. The utilization rate for loans and leases, SBLCs and financial guarantees, and commercial letters of credit, in the aggregate, was 59 percent and 58 percent at December 31, 2017 and 2016.

Table 33 presents commercial credit exposure by type for utilized, unfunded and total binding committed credit exposure. Commercial utilized credit exposure includes SBLCs and financial guarantees and commercial letters of credit that have been issued and for which we are legally bound to advance funds under prescribed conditions during a specified time period, and excludes exposure related to trading account assets. Although funds have not yet been advanced, these exposure types are considered utilized for credit risk management purposes.

Table 33 Commercial Credit Exposure by Type

	Commercial Utilized [1]		Commercial Unfunded [2, 3, 4]		Total Commercial Committed	
			December 31			
(Dollars in millions)	**2017**	2016	**2017**	2016	**2017**	2016
Loans and leases [5]	**$ 487,748**	$ 464,260	**$ 364,743**	$ 356,911	**$ 852,491**	$ 821,171
Derivative assets [6]	**37,762**	42,512	**—**	—	**37,762**	42,512
Standby letters of credit and financial guarantees	**34,517**	33,135	**863**	660	**35,380**	33,795
Debt securities and other investments	**28,161**	26,244	**4,864**	5,474	**33,025**	31,718
Loans held-for-sale	**10,257**	6,510	**9,742**	13,019	**19,999**	19,529
Commercial letters of credit	**1,467**	1,464	**155**	112	**1,622**	1,576
Other	**888**	767	**—**	13	**888**	780
Total	**$ 600,800**	$ 574,892	**$ 380,367**	$ 376,189	**$ 981,167**	$ 951,081

(1) Commercial utilized exposure includes loans of $4.8 billion and $6.0 billion and issued letters of credit with a notional amount of $232 million and $284 million accounted for under the fair value option at December 31, 2017 and 2016.
(2) Commercial unfunded exposure includes commitments accounted for under the fair value option with a notional amount of $4.6 billion and $6.7 billion at December 31, 2017 and 2016.
(3) Excludes unused business card lines, which are not legally binding.
(4) Includes the notional amount of unfunded legally binding lending commitments net of amounts distributed (e.g., syndicated or participated) to other financial institutions. The distributed amounts were $11.0 billion and $12.1 billion at December 31, 2017 and 2016.
(5) Includes credit risk exposure associated with assets under operating lease arrangements of $6.3 billion and $5.7 billion at December 31, 2017 and 2016.
(6) Derivative assets are carried at fair value, reflect the effects of legally enforceable master netting agreements and have been reduced by cash collateral of $34.6 billion and $43.3 billion at December 31, 2017 and 2016. Not reflected in utilized and committed exposure is additional non-cash derivative collateral held of $26.2 billion and $25.3 billion at December 31, 2017 and 2016, which consists primarily of other marketable securities.

Outstanding commercial loans and leases increased $22.9 billion during 2017 to $481.5 billion at December 31, 2017 primarily due to growth in commercial and industrial loans. During 2017, nonperforming commercial loans and leases decreased $440 million to $1.3 billion and reservable criticized balances decreased $2.8 billion to $13.6 billion both driven by improvements in the energy sector. The allowance for loan and lease losses for the commercial portfolio decreased $248 million during 2017 to $5.0 billion at December 31, 2017. For more information, see Allowance for Credit Losses on page 88. Table 34 presents our commercial loans and leases portfolio and related credit quality information at December 31, 2017 and 2016.

Table 34 Commercial Credit Quality

	Outstandings		Nonperforming		Accruing Past Due 90 Days or More	
			December 31			
(Dollars in millions)	**2017**	2016	**2017**	2016	**2017**	2016
Commercial and industrial:						
U.S. commercial	**$ 284,836**	$ 270,372	**$ 814**	$ 1,256	**$ 144**	$ 106
Non-U.S. commercial	**97,792**	89,397	**299**	279	**3**	5
Total commercial and industrial	**382,628**	359,769	**1,113**	1,535	**147**	111
Commercial real estate [1]	**58,298**	57,355	**112**	72	**4**	7
Commercial lease financing	**22,116**	22,375	**24**	36	**19**	19
	463,042	439,499	**1,249**	1,643	**170**	137
U.S. small business commercial [2]	**13,649**	12,993	**55**	60	**75**	71
Commercial loans excluding loans accounted for under the fair value option	**476,691**	452,492	**1,304**	1,703	**245**	208
Loans accounted for under the fair value option [3]	**4,782**	6,034	**43**	84	**—**	—
Total commercial loans and leases	**$ 481,473**	$ 458,526	**$ 1,347**	$ 1,787	**$ 245**	$ 208

(1) Includes U.S. commercial real estate of $54.8 billion and $54.3 billion and non-U.S. commercial real estate of $3.5 billion and $3.1 billion at December 31, 2017 and 2016.
(2) Includes card-related products.
(3) Commercial loans accounted for under the fair value option include U.S. commercial of $2.6 billion and $2.9 billion and non-U.S. commercial of $2.2 billion and $3.1 billion at December 31, 2017 and 2016. For more information on the fair value option, see *Note 21 – Fair Value Option* to the Consolidated Financial Statements.

Table 35 presents net charge-offs and related ratios for our commercial loans and leases for 2017 and 2016. The increase in net charge-offs of $399 million for 2017 was primarily driven by a single-name non-U.S. commercial charge-off of $292 million in the fourth quarter of 2017.

Table 35 Commercial Net Charge-offs and Related Ratios

	Net Charge-offs		Net Charge-off Ratios (1)	
(Dollars in millions)	**2017**	2016	**2017**	2016
Commercial and industrial:				
U.S. commercial	**$ 232**	$ 184	**0.08 %**	0.07 %
Non-U.S. commercial	**440**	120	**0.48**	0.13
Total commercial and industrial	**672**	304	**0.18**	0.09
Commercial real estate	**9**	(31)	**0.02**	(0.05)
Commercial lease financing	**5**	21	**0.02**	0.10
	686	294	**0.15**	0.07
U.S. small business commercial	**215**	208	**1.60**	1.60
Total commercial	**$ 901**	$ 502	**0.20**	0.11

(1) Net charge-off ratios are calculated as net charge-offs divided by average outstanding loans and leases excluding loans accounted for under the fair value option.

Table 36 presents commercial utilized reservable criticized exposure by loan type. Criticized exposure corresponds to the Special Mention, Substandard and Doubtful asset categories as defined by regulatory authorities. Total commercial utilized reservable criticized exposure decreased $2.8 billion, or 17 percent, during 2017 primarily driven by paydowns and upgrades in the energy portfolio. Approximately 84 percent and 76 percent of commercial utilized reservable criticized exposure was secured at December 31, 2017 and 2016.

Table 36 Commercial Utilized Reservable Criticized Exposure

	Amount (1)	Percent (2)	Amount (1)	Percent (2)
	December 31			
(Dollars in millions)	**2017**		2016	
Commercial and industrial:				
U.S. commercial	**$ 9,891**	**3.15%**	$ 10,311	3.46%
Non-U.S. commercial	**1,766**	**1.70**	3,974	4.17
Total commercial and industrial	**11,657**	**2.79**	14,285	3.63
Commercial real estate	**566**	**0.95**	399	0.68
Commercial lease financing	**581**	**2.63**	810	3.62
	12,804	**2.57**	15,494	3.27
U.S. small business commercial	**759**	**5.56**	826	6.36
Total commercial utilized reservable criticized exposure	**$ 13,563**	**2.65**	$ 16,320	3.35

(1) Total commercial utilized reservable criticized exposure includes loans and leases of $12.5 billion and $14.9 billion and commercial letters of credit of $1.1 billion and $1.4 billion at December 31, 2017 and 2016.

(2) Percentages are calculated as commercial utilized reservable criticized exposure divided by total commercial utilized reservable exposure for each exposure category.

Commercial and Industrial

Commercial and industrial loans include U.S. commercial and non-U.S. commercial portfolios.

U.S. Commercial

At December 31, 2017, 70 percent of the U.S. commercial loan portfolio, excluding small business, was managed in *Global Banking,* 17 percent in *Global Markets*, 11 percent in *GWIM* (generally business-purpose loans for high net worth clients) and the remainder primarily in *Consumer Banking*. U.S. commercial loans, excluding loans accounted for under the fair value option, increased $14.5 billion, or five percent, during 2017 to $284.8 billion at December 31, 2017 due to growth across most of the commercial businesses. Reservable criticized balances decreased $420 million, or four percent, and nonperforming loans and leases decreased $442 million, or 35 percent, in 2017 driven by improvements in the energy sector. Net charge-offs increased $48 million for 2017 compared to 2016.

Non-U.S. Commercial

At December 31, 2017, 79 percent of the non-U.S. commercial loan portfolio was managed in *Global Banking* and 21 percent in *Global Markets*. Outstanding loans, excluding loans accounted for under the fair value option, increased $8.4 billion in 2017. Reservable criticized balances decreased $2.2 billion, or 56 percent, due primarily to paydowns and upgrades in the energy portfolio. Net charge-offs increased $320 million in 2017 to $440 million due to a single-name non-U.S. commercial charge-off of $292 million in the fourth quarter of 2017. For more information on the non-U.S. commercial portfolio, see Non-U.S. Portfolio on page 86.

Commercial Real Estate

Commercial real estate primarily includes commercial loans and leases secured by non-owner-occupied real estate and is dependent on the sale or lease of the real estate as the primary source of repayment. The portfolio remains diversified across property types and geographic regions. California represented the largest state concentration at 23 percent of the commercial real estate loans and leases portfolio at both December 31, 2017 and 2016. The commercial real estate portfolio is predominantly managed in *Global Banking* and consists of loans made primarily to public and private developers, and commercial real estate firms. Outstanding loans increased $943 million, or two percent, during 2017 to $58.3 billion at December 31, 2017 due to new originations outpacing paydowns.

During 2017, we continued to see low default rates and solid credit quality in both the residential and non-residential portfolios. We use a number of proactive risk mitigation initiatives to reduce adversely rated exposure in the commercial real estate portfolio, including transfers of deteriorating exposures to management by independent special asset officers and the pursuit of loan restructurings or asset sales to achieve the best results for our customers and the Corporation.

Nonperforming commercial real estate loans and foreclosed properties increased $78 million, or 91 percent, during 2017 to $164 million at December 31, 2017 and reservable criticized balances increased $167 million, or 42 percent, to $566 million primarily due to loan downgrades. Net charge-offs were $9 million for 2017 compared to net recoveries of $31 million in 2016.

Table 37 presents outstanding commercial real estate loans by geographic region, based on the geographic location of the collateral, and by property type.

Table 37 Outstanding Commercial Real Estate Loans

(Dollars in millions)	December 31 2017	2016
By Geographic Region		
California	**$ 13,607**	$ 13,450
Northeast	**10,072**	10,329
Southwest	**6,970**	7,567
Southeast	**5,487**	5,630
Midwest	**3,769**	4,380
Illinois	**3,263**	2,408
Florida	**3,170**	3,213
Midsouth	**2,962**	2,346
Northwest	**2,657**	2,430
Non-U.S.	**3,538**	3,103
Other [1]	**2,803**	2,499
Total outstanding commercial real estate loans	**$ 58,298**	$ 57,355
By Property Type		
Non-residential		
Office	**$ 16,718**	$ 16,643
Shopping centers / Retail	**8,825**	8,794
Multi-family rental	**8,280**	8,817
Hotels / Motels	**6,344**	5,550
Industrial / Warehouse	**6,070**	5,357
Multi-use	**2,771**	2,822
Unsecured	**2,187**	1,730
Land and land development	**160**	357
Other	**5,485**	5,595
Total non-residential	**56,840**	55,665
Residential	**1,458**	1,690
Total outstanding commercial real estate loans	**$ 58,298**	$ 57,355

[1] Includes unsecured loans to real estate investment trusts and national home builders whose portfolios of properties span multiple geographic regions and properties in the states of Colorado, Utah, Hawaii, Wyoming and Montana.

U.S. Small Business Commercial

The U.S. small business commercial loan portfolio is comprised of small business card loans and small business loans managed in *Consumer Banking*. Credit card-related products were 50 percent and 48 percent of the U.S. small business commercial portfolio at December 31, 2017 and 2016. Net charge-offs of $215 million during 2017 were relatively flat compared to $208 million during 2016. Of the U.S. small business commercial net charge-offs, 90 percent and 86 percent were credit card-related products in 2017 and 2016.

Nonperforming Commercial Loans, Leases and Foreclosed Properties Activity

Table 38 presents the nonperforming commercial loans, leases and foreclosed properties activity during 2017 and 2016. Nonperforming loans do not include loans accounted for under the fair value option. During 2017, nonperforming commercial loans and leases decreased $399 million to $1.3 billion. Approximately 77 percent of commercial nonperforming loans, leases and foreclosed properties were secured and approximately 59 percent were contractually current. Commercial nonperforming loans were carried at approximately 87 percent of their unpaid principal balance before consideration of the allowance for loan and lease losses as the carrying value of these loans has been reduced to the estimated property value less costs to sell.

Table 38 Nonperforming Commercial Loans, Leases and Foreclosed Properties Activity [1, 2]

(Dollars in millions)	2017	2016
Nonperforming loans and leases, January 1	**$ 1,703**	$ 1,212
Additions	**1,616**	2,347
Reductions:		
Paydowns	**(930)**	(824)
Sales	**(136)**	(318)
Returns to performing status [3]	**(280)**	(267)
Charge-offs	**(455)**	(434)
Transfers to foreclosed properties	**(40)**	(4)
Transfers to loans held-for-sale	**(174)**	(9)
Total net additions/(reductions) to nonperforming loans and leases	**(399)**	491
Total nonperforming loans and leases, December 31	**1,304**	1,703
Total foreclosed properties, December 31	**52**	14
Nonperforming commercial loans, leases and foreclosed properties, December 31	**$ 1,356**	$ 1,717
Nonperforming commercial loans and leases as a percentage of outstanding commercial loans and leases [4]	**0.27%**	0.38%
Nonperforming commercial loans, leases and foreclosed properties as a percentage of outstanding commercial loans, leases and foreclosed properties [4]	**0.28**	0.38

(1) Balances do not include nonperforming LHFS of $339 million and $195 million at December 31, 2017 and 2016.
(2) Includes U.S. small business commercial activity. Small business card loans are excluded as they are not classified as nonperforming.
(3) Commercial loans and leases may be returned to performing status when all principal and interest is current and full repayment of the remaining contractual principal and interest is expected, or when the loan otherwise becomes well-secured and is in the process of collection. TDRs are generally classified as performing after a sustained period of demonstrated payment performance.
(4) Outstanding commercial loans exclude loans accounted for under the fair value option.

Table 39 presents our commercial TDRs by product type and performing status. U.S. small business commercial TDRs are comprised of renegotiated small business card loans and small business loans. The renegotiated small business card loans are not classified as nonperforming as they are charged off no later than the end of the month in which the loan becomes 180 days past due. For more information on TDRs, see *Note 4 – Outstanding Loans and Leases* to the Consolidated Financial Statements.

Table 39 Commercial Troubled Debt Restructurings

	December 31, 2017			December 31, 2016		
(Dollars in millions)	Nonperforming	Performing	Total	Nonperforming	Performing	Total
Commercial and industrial:						
U.S. commercial	**$ 370**	**$ 866**	**$ 1,236**	$ 720	$ 1,140	$ 1,860
Non-U.S. commercial	**11**	**219**	**230**	25	283	308
Total commercial and industrial	**381**	**1,085**	**1,466**	745	1,423	2,168
Commercial real estate	**38**	**9**	**47**	45	95	140
Commercial lease financing	**5**	**13**	**18**	2	2	4
	424	**1,107**	**1,531**	792	1,520	2,312
U.S. small business commercial	**4**	**15**	**19**	2	13	15
Total commercial troubled debt restructurings	**$ 428**	**$ 1,122**	**$ 1,550**	$ 794	$ 1,533	$ 2,327

Industry Concentrations

Table 40 presents commercial committed and utilized credit exposure by industry and the total net credit default protection purchased to cover the funded and unfunded portions of certain credit exposures. Our commercial credit exposure is diversified across a broad range of industries. Total commercial committed exposure increased $30.1 billion, or three percent, in 2017 to $981.2 billion at December 31, 2017. The increase in commercial committed exposure was concentrated in the Media, Food & Staples Retailing, Capital Goods, Food, Beverage and Tobacco and the Asset Managers and Funds sectors. Increases were partially offset by reduced exposure to the Healthcare Equipment and Services, Telecommunications Services and the Technology Hardware and Equipment sectors.

Industry limits are used internally to manage industry concentrations and are based on committed exposure that is allocated on an industry-by-industry basis. A risk management framework is in place to set and approve industry limits as well as to provide ongoing monitoring. The MRC oversees industry limit governance.

Asset Managers and Funds, our largest industry concentration with committed exposure of $91.1 billion, increased $5.5 billion, or six percent, in 2017. The increase primarily reflected an increase in exposure to several counterparties.

Real estate, our second largest industry concentration with committed exposure of $83.8 billion, increased $115 million, or less than one percent, in 2017. For more information on the commercial real estate and related portfolios, see Commercial Portfolio Credit Risk Management – Commercial Real Estate on page 82.

Capital Goods, our third largest industry concentration with committed exposure of $70.4 billion, increased $6.2 billion, or nearly 10 percent, in 2017. The increase in committed exposure occurred primarily as a result of increases in large conglomerates and machinery manufacturers.

Our energy-related committed exposure decreased $2.5 billion, or six percent, in 2017 to $36.8 billion at December 31, 2017. Energy sector net charge-offs were $156 million in 2017 compared to $241 million in 2016. Energy sector reservable criticized exposure decreased $3.9 billion in 2017 to $1.6 billion at December 31, 2017, due to paydowns and upgrades in the energy portfolio. The energy allowance for credit losses decreased $365 million to $560 million at December 31, 2017.

Table 40 Commercial Credit Exposure by Industry [1]

	Commercial Utilized		Total Commercial Committed [2]	
	December 31			
(Dollars in millions)	**2017**	2016	**2017**	2016
Asset managers and funds	**$ 59,190**	$ 57,659	**$ 91,092**	$ 85,561
Real estate [3]	**61,940**	61,203	**83,773**	83,658
Capital goods	**36,705**	34,278	**70,417**	64,202
Government and public education	**48,684**	45,694	**58,067**	54,626
Healthcare equipment and services	**37,780**	37,656	**57,256**	64,663
Finance companies	**34,050**	35,452	**53,107**	52,953
Retailing	**26,117**	25,577	**48,796**	49,082
Materials	**24,001**	22,578	**47,386**	44,357
Consumer services	**27,191**	27,413	**43,605**	42,523
Food, beverage and tobacco	**23,252**	19,669	**42,815**	37,145
Energy	**16,345**	19,686	**36,765**	39,231
Commercial services and supplies	**22,100**	21,241	**35,496**	35,360
Media	**19,155**	13,419	**33,955**	27,116
Global commercial banks	**29,491**	27,267	**31,764**	30,712
Transportation	**21,704**	19,805	**29,946**	27,483
Utilities	**11,342**	11,349	**27,935**	27,140
Individuals and trusts	**18,549**	16,364	**25,097**	21,764
Technology hardware and equipment	**10,728**	9,625	**22,071**	25,318
Vehicle dealers	**16,896**	16,053	**20,361**	19,425
Pharmaceuticals and biotechnology	**5,653**	5,539	**18,623**	18,910
Software and services	**8,562**	7,991	**18,202**	19,790
Consumer durables and apparel	**8,859**	8,112	**17,296**	15,794
Food and staples retailing	**4,955**	4,795	**15,589**	8,869
Automobiles and components	**5,988**	5,459	**13,318**	12,969
Telecommunication services	**6,389**	6,317	**13,108**	16,925
Insurance	**6,411**	7,406	**12,990**	13,936
Religious and social organizations	**4,454**	4,423	**6,318**	6,252
Financial markets infrastructure (clearinghouses)	**688**	656	**2,403**	3,107
Other	**3,621**	2,206	**3,616**	2,210
Total commercial credit exposure by industry	**$ 600,800**	$ 574,892	**$ 981,167**	$ 951,081
Net credit default protection purchased on total commitments [4]			**$ (2,129)**	$ (3,477)

(1) Includes U.S. small business commercial exposure.
(2) Includes the notional amount of unfunded legally binding lending commitments net of amounts distributed (e.g., syndicated or participated) to other financial institutions. The distributed amounts were $11.0 billion and $12.1 billion at December 31, 2017 and 2016.
(3) Industries are viewed from a variety of perspectives to best isolate the perceived risks. For purposes of this table, the real estate industry is defined based on the borrowers' or counterparties' primary business activity using operating cash flows and primary source of repayment as key factors.
(4) Represents net notional credit protection purchased. For more information, see Commercial Portfolio Credit Risk Management – Risk Mitigation.

Risk Mitigation

We purchase credit protection to cover the funded portion as well as the unfunded portion of certain credit exposures. To lower the cost of obtaining our desired credit protection levels, we may add credit exposure within an industry, borrower or counterparty group by selling protection.

At December 31, 2017 and 2016, net notional credit default protection purchased in our credit derivatives portfolio to hedge our funded and unfunded exposures for which we elected the fair value option, as well as certain other credit exposures, was $2.1 billion and $3.5 billion. We recorded net losses of $66 million in 2017 compared to net losses of $438 million in 2016 on these positions. The gains and losses on these instruments were offset by gains and losses on the related exposures. The Value-at-Risk (VaR) results for these exposures are included in the fair value option portfolio information in Table 49. For more information, see Trading Risk Management on page 93.

Tables 41 and 42 present the maturity profiles and the credit exposure debt ratings of the net credit default protection portfolio at December 31, 2017 and 2016.

Table 41 Net Credit Default Protection by Maturity

	December 31	
	2017	2016
Less than or equal to one year	**42%**	56%
Greater than one year and less than or equal to five years	**58**	41
Greater than five years	**—**	3
Total net credit default protection	**100%**	100%

Table 42 Net Credit Default Protection by Credit Exposure Debt Rating

	Net Notional (1)	**Percent of Total**	Net Notional (1)	Percent of Total
	December 31			
(Dollars in millions)	**2017**		2016	
Ratings (2, 3)				
A	**$ (280)**	**13.2%**	$ (135)	3.9%
BBB	**(459)**	**21.6**	(1,884)	54.2
BB	**(893)**	**41.9**	(871)	25.1
B	**(403)**	**18.9**	(477)	13.7
CCC and below	**(84)**	**3.9**	(81)	2.3
NR (4)	**(10)**	**0.5**	(29)	0.8
Total net credit default	**$ (2,129)**	**100.0%**	$ (3,477)	100.0%

(1) Represents net credit default protection purchased.
(2) Ratings are refreshed on a quarterly basis.
(3) Ratings of BBB- or higher are considered to meet the definition of investment grade.
(4) NR is comprised of index positions held and any names that have not been rated.

In addition to our net notional credit default protection purchased to cover the funded and unfunded portion of certain credit exposures, credit derivatives are used for market-making activities for clients and establishing positions intended to profit from directional or relative value changes. We execute the majority of our credit derivative trades in the OTC market with large, multinational financial institutions, including broker-dealers and, to a lesser degree, with a variety of other investors. Because these transactions are executed in the OTC market, we are subject to settlement risk. We are also subject to credit risk in the event that these counterparties fail to perform under the terms of these contracts. In most cases, credit derivative transactions are executed on a daily margin basis. Therefore, events such as a credit downgrade, depending on the ultimate rating level, or a breach of credit covenants would typically require an increase in the amount of collateral required by the counterparty, where applicable, and/or allow us to take additional protective measures such as early termination of all trades.

Table 43 presents the total contract/notional amount of credit derivatives outstanding and includes both purchased and written credit derivatives. The credit risk amounts are measured as net asset exposure by counterparty, taking into consideration all contracts with the counterparty. For more information on our written credit derivatives, see *Note 2 – Derivatives* to the Consolidated Financial Statements.

The credit risk amounts discussed above and presented in Table 43 take into consideration the effects of legally enforceable master netting agreements while amounts disclosed in *Note 2 – Derivatives* to the Consolidated Financial Statements are shown on a gross basis. Credit risk reflects the potential benefit from offsetting exposure to non-credit derivative products with the same counterparties that may be netted upon the occurrence of certain events, thereby reducing our overall exposure.

Table 43 Credit Derivatives

	Contract/ Notional	**Credit Risk**	Contract/ Notional	Credit Risk
	December 31			
(Dollars in millions)	**2017**		2016	
Purchased credit derivatives:				
Credit default swaps	**$ 470,907**	**$ 2,434**	$ 603,979	$ 2,732
Total return swaps/options	**54,135**	**277**	21,165	433
Total purchased credit derivatives	**$ 525,042**	**$ 2,711**	$ 625,144	$ 3,165
Written credit derivatives:				
Credit default swaps	**$ 448,201**	**n/a**	$ 614,355	n/a
Total return swaps/options	**55,223**	**n/a**	25,354	n/a
Total written credit derivatives	**$ 503,424**	**n/a**	$ 639,709	n/a

n/a = not applicable

Counterparty Credit Risk Valuation Adjustments

We record counterparty credit risk valuation adjustments on certain derivative assets, including our credit default protection purchased, in order to properly reflect the credit risk of the counterparty, as presented in Table 44. We calculate CVA based on a modeled expected exposure that incorporates current market risk factors including changes in market spreads and non-credit related market factors that affect the value of a derivative. The exposure also takes into consideration credit mitigants such as legally enforceable master netting agreements and collateral. For more information, see *Note 2 – Derivatives* to the Consolidated Financial Statements.

We enter into risk management activities to offset market driven exposures. We often hedge the counterparty spread risk in CVA with credit default swaps (CDS). We hedge other market risks in CVA primarily with currency and interest rate swaps. In certain instances, the net-of-hedge amounts in the following table move in the same direction as the gross amount or may move in the opposite direction. This movement is a consequence of the complex interaction of the risks being hedged, resulting in limitations in the ability to perfectly hedge all of the market exposures at all times.

Table 44 Credit Valuation Gains and Losses

(Dollars in millions)	2017			2016		
Gains (Losses)	**Gross**	**Hedge**	**Net**	Gross	Hedge	Net
Credit valuation	$ 330	$ (232)	$ 98	$ 374	$ (160)	$ 214

Non-U.S. Portfolio

Our non-U.S. credit and trading portfolios are subject to country risk. We define country risk as the risk of loss from unfavorable economic and political conditions, currency fluctuations, social instability and changes in government policies. A risk management framework is in place to measure, monitor and manage non-U.S. risk and exposures. In addition to the direct risk of doing business in a country, we also are exposed to indirect country risks (e.g., related to the collateral received on secured financing transactions or related to client clearing activities). These indirect exposures are managed in the normal course of business through credit, market and operational risk governance, rather than through country risk governance.

Table 45 presents our 20 largest non-U.S. country exposures as of December 31, 2017. These exposures accounted for 86 percent and 88 percent of our total non-U.S. exposure at December 31, 2017 and 2016. Net country exposure for these 20 countries decreased $6.3 billion in 2017 primarily driven by reductions in the U.K., Japan, Switzerland and Brazil, partially offset by increases in China and Belgium. On a product basis, funded commitments decreased in the U.K., Japan and Brazil, partially offset by increases in China, Belgium and France. The decrease in the U.K. reflects the sale of the non-U.S. consumer credit card business in 2017. Unfunded commitments increased in the U.K., Germany and Belgium, which was partly offset by a decrease in Switzerland. Securities held decreased, driven by reduced holdings in France, the U.K. and Germany, while counterparty exposure decreased in Japan, Germany and the U.K.

Non-U.S. exposure is presented on an internal risk management basis and includes sovereign and non-sovereign credit exposure, securities and other investments issued by or domiciled in countries other than the U.S.

Funded loans and loan equivalents include loans, leases, and other extensions of credit and funds, including letters of credit and due from placements. Unfunded commitments are the undrawn portion of legally binding commitments related to loans and loan equivalents. Net counterparty exposure includes the fair value of derivatives, including the counterparty risk associated with CDS, and secured financing transactions. Securities and other investments are carried at fair value and long securities exposures are netted against short exposures with the same underlying issuer to, but not below, zero. Net country exposure represents country exposure less hedges and credit default protection purchased, net of credit default protection sold.

Table 45 Top 20 Non-U.S. Countries Exposure

(Dollars in millions)	Funded Loans and Loan Equivalents	Unfunded Loan Commitments	Net Counterparty Exposure	Securities/ Other Investments	Country Exposure at December 31 2017	Hedges and Credit Default Protection	**Net Country Exposure at December 31 2017**	Increase (Decrease) from December 31 2016
United Kingdom	$ 20,089	$ 14,906	$ 5,278	$ 1,962	$ 42,235	$ (4,640)	**$ 37,595**	$ (10,138)
Germany	12,572	9,856	1,061	1,102	24,591	(3,088)	**21,503**	(875)
Canada	7,037	7,645	2,016	2,579	19,277	(554)	**18,723**	(51)
China	13,634	728	746	1,058	16,166	(241)	**15,925**	5,040
Brazil	7,688	501	342	2,726	11,257	(541)	**10,716**	(2,950)
Australia	5,596	2,840	575	2,022	11,033	(444)	**10,589**	1,666
France	4,976	5,591	2,191	2,811	15,569	(5,026)	**10,543**	(151)
India	7,229	316	375	3,328	11,248	(751)	**10,497**	1,269
Japan	7,399	631	923	1,669	10,622	(1,532)	**9,090**	(5,921)
Hong Kong	6,925	187	585	1,056	8,753	(75)	**8,678**	1,199
Netherlands	5,357	3,212	650	930	10,149	(1,682)	**8,467**	1,069
South Korea	4,934	544	635	2,208	8,321	(420)	**7,901**	1,795
Singapore	3,571	312	504	1,953	6,340	(77)	**6,263**	845
Switzerland	3,792	2,810	274	184	7,060	(1,263)	**5,797**	(3,849)
Mexico	2,883	2,446	226	385	5,940	(453)	**5,487**	1,003
Italy	2,791	1,490	512	600	5,393	(1,147)	**4,246**	159
Belgium	2,440	1,184	82	511	4,217	(252)	**3,965**	2,039
United Arab Emirates	2,843	351	247	43	3,484	(97)	**3,387**	644
Spain	2,041	820	260	1,232	4,353	(1,245)	**3,108**	562
Turkey	2,761	83	66	82	2,992	(3)	**2,989**	299
Total top 20 non-U.S. countries exposure	$ 126,558	$ 56,453	$ 17,548	$ 28,441	$ 229,000	$ (23,531)	**$ 205,469**	$ (6,346)

A number of economic conditions and geopolitical events have given rise to risk aversion in certain emerging markets. Our two largest emerging market country exposures at December 31, 2017 were China and Brazil. At December 31, 2017, net exposure to China was $15.9 billion, concentrated in large state-owned companies, subsidiaries of multinational corporations and commercial banks. At December 31, 2017, net exposure to Brazil was $10.7 billion, concentrated in sovereign securities, oil and gas companies and commercial banks.

The outlook for policy direction and therefore economic performance in the EU remains uncertain as a consequence of reduced political cohesion among EU countries. Additionally, we believe that the uncertainty in the U.K.'s ability to negotiate a favorable exit from the EU will further weigh on economic performance. Our largest EU country exposure at December 31, 2017 was the U.K. with net exposure of $37.6 billion, concentrated in multinational corporations and sovereign clients. For more information, see Executive Summary – 2017 Economic and Business Environment on page 36.

Table 46 presents countries where total cross-border exposure exceeded one percent of our total assets. At December 31, 2017, the U.K. and France were the only countries where total cross-border exposure exceeded one percent of our total assets. At December 31, 2017, Germany had total cross-border exposure of $21.6 billion representing 0.95 percent of our total assets. No other countries had total cross-border exposure that exceeded 0.75 percent of our total assets at December 31, 2017.

Cross-border exposure includes the components of Country Risk Exposure as detailed in Table 45 as well as the notional amount of cash loaned under secured financing agreements. Local exposure, defined as exposure booked in local offices of a respective country with clients in the same country, is excluded.

Table 46 Total Cross-border Exposure Exceeding One Percent of Total Assets

(Dollars in millions)	December 31	Public Sector	Banks	Private Sector	Cross-border Exposure	Exposure as a Percent of Total Assets
United Kingdom	**2017**	**$ 923**	**$ 2,984**	**$ 47,205**	**$ 51,112**	**2.24%**
	2016	2,975	4,557	42,105	49,637	2.27
	2015	3,264	5,104	38,576	46,944	2.19
France	**2017**	**2,964**	**1,521**	**27,903**	**32,388**	**1.42**
	2016	4,956	1,205	23,193	29,354	1.34
	2015	3,343	1,766	17,099	22,208	1.04

Provision for Credit Losses

The provision for credit losses decreased $201 million to $3.4 billion in 2017 compared to 2016. The provision for credit losses was $583 million lower than net charge-offs for 2017, resulting in a reduction in the allowance for credit losses. This compared to a reduction of $224 million in the allowance in 2016.

The provision for credit losses for the consumer portfolio increased $159 million to $2.7 billion in 2017 compared to 2016. The increase was primarily driven by a provision increase of $672 million in the U.S. credit card portfolio due to portfolio seasoning and loan growth, largely offset by the consumer real estate portfolio due to continued portfolio improvement and increased home prices. Included in the provision is an expense of $76 million related to the PCI loan portfolio for 2017 compared to a benefit of $45 million in 2016.

The provision for credit losses for the commercial portfolio, including unfunded lending commitments, decreased $360 million to $669 million in 2017 compared to 2016 driven by reductions in energy exposures, partially offset by a single-name non-U.S. commercial charge-off.

Allowance for Credit Losses

Allowance for Loan and Lease Losses

The allowance for loan and lease losses is comprised of two components. The first component covers nonperforming commercial loans and TDRs. The second component covers loans and leases on which there are incurred losses that are not yet individually identifiable, as well as incurred losses that may not be represented in the loss forecast models. We evaluate the adequacy of the allowance for loan and lease losses based on the total of these two components, each of which is described in more detail below. The allowance for loan and lease losses excludes LHFS and loans accounted for under the fair value option as the fair value reflects a credit risk component.

The first component of the allowance for loan and lease losses covers both nonperforming commercial loans and all TDRs within the consumer and commercial portfolios. These loans are subject to impairment measurement based on the present value of projected future cash flows discounted at the loan's original effective interest rate, or in certain circumstances, impairment may also be based upon the collateral value or the loan's observable market price if available. Impairment measurement for the renegotiated consumer credit card, small business credit card and unsecured consumer TDR portfolios is based on the present value of projected cash flows discounted using the average portfolio contractual interest rate, excluding promotionally priced loans, in effect prior to restructuring. For purposes of computing this specific loss component of the allowance, larger impaired loans are evaluated individually and smaller impaired loans are evaluated as a pool using historical experience for the respective product types and risk ratings of the loans.

The second component of the allowance for loan and lease losses covers the remaining consumer and commercial loans and leases that have incurred losses that are not yet individually identifiable. The allowance for consumer and certain homogeneous commercial loan and lease products is based on aggregated portfolio evaluations, generally by product type. Loss forecast models are utilized that consider a variety of factors including, but not limited to, historical loss experience, estimated defaults or foreclosures based on portfolio trends, delinquencies, economic trends and credit scores. Our consumer real estate loss forecast model estimates the portion of loans that will default based on individual loan attributes, the most significant of which are refreshed LTV or CLTV, and borrower credit score as well as vintage and geography, all of which are further broken down into current delinquency status. Additionally, we incorporate the delinquency status of underlying first-lien loans on our junior-lien home equity portfolio in our allowance process. Incorporating refreshed LTV and CLTV into our probability of default allows us to factor the impact of changes in home prices into our allowance for loan and lease losses. These loss forecast models are updated on a quarterly basis to incorporate information reflecting the current economic environment. As of December 31, 2017, the loss forecast process resulted in reductions in the allowance related to the residential mortgage and home equity portfolios compared to December 31, 2016.

The allowance for commercial loan and lease losses is established by product type after analyzing historical loss experience, internal risk rating, current economic conditions, industry performance trends, geographic and obligor concentrations within each portfolio and any other pertinent information. The statistical models for commercial loans are generally updated annually and utilize our historical database of actual defaults and other data, including external default data. The loan risk ratings and composition of the commercial portfolios used to calculate the allowance are updated quarterly to incorporate the most recent data reflecting the current economic environment. For risk-rated commercial loans, we estimate the probability of default and the loss given default (LGD) based on our historical experience of defaults and credit losses. Factors considered when assessing the internal risk rating include the value of the underlying collateral, if applicable, the industry in which the obligor operates, the obligor's liquidity and other financial indicators, and other quantitative and qualitative factors relevant to the obligor's credit risk. As of December 31, 2017, the allowance decreased for the U.S. commercial and non-U.S. commercial portfolios compared to December 31, 2016.

Also included within the second component of the allowance for loan and lease losses are reserves to cover losses that are incurred but, in our assessment, may not be adequately represented in the historical loss data used in the loss forecast models. For example, factors that we consider include, among others, changes in lending policies and procedures, changes in economic and business conditions, changes in the nature and size of the portfolio, changes in portfolio concentrations, changes in the volume and severity of past due loans and nonaccrual loans, the effect of external factors such as competition, and legal and regulatory requirements. We also consider factors that are applicable to unique portfolio segments. For example, we consider the risk of uncertainty in our loss forecasting models related to junior-lien home equity loans that are current, but have first-lien loans that we do not service that are 30 days or more past due. In addition, we consider the increased risk of default associated with our interest-only loans that have yet to enter the amortization period. Further, we consider the inherent uncertainty in mathematical models that are built upon historical data.

During 2017, the factors that impacted the allowance for loan and lease losses included improvements in the credit quality of the consumer real estate portfolios driven by continuing improvements in the U.S. economy and labor markets, proactive credit risk management initiatives and the impact of high credit quality originations. Evidencing the improvements in the U.S. economy and labor markets are downward unemployment trends and increases in home prices. In addition to these improvements, in the consumer portfolio, nonperforming consumer loans decreased $838 million in 2017 as returns to performing status, charge-offs, paydowns and loan sales continued to outpace new nonaccrual loans. During 2017, the allowance for loan and lease losses in the commercial portfolio reflected decreased energy reserves primarily driven by reductions in energy exposures including utilized reservable criticized exposures.

We monitor differences between estimated and actual incurred loan and lease losses. This monitoring process includes periodic assessments by senior management of loan and lease portfolios and the models used to estimate incurred losses in those portfolios.

The allowance for loan and lease losses for the consumer portfolio, as presented in Table 48, was $5.4 billion at December 31, 2017, a decrease of $839 million from December 31, 2016. The decrease was primarily in the consumer real estate portfolio and the non-U.S. card portfolio which was sold in 2017, partially offset by an increase in the U.S. credit card portfolio. The reduction in the consumer real estate portfolio was due to improved home prices, lower nonperforming loans and a decrease in loan balances in our non-core portfolio. The increase in the U.S. credit card portfolio was driven by portfolio seasoning and loan growth.

The allowance for loan and lease losses for the commercial portfolio, as presented in Table 48, was $5.0 billion at December 31, 2017, a decrease of $248 million from December 31, 2016 driven by decreased energy reserves due to reductions in the higher risk energy sub-sectors. Commercial utilized reservable criticized exposure decreased to $13.6 billion at December 31, 2017 from $16.3 billion (to 2.65 percent from 3.35 percent of total commercial utilized reservable exposure) at December 31, 2016, largely due to paydowns and net upgrades in the energy portfolio. Nonperforming commercial loans decreased to $1.3 billion at December 31, 2017 from $1.7 billion (to 0.27 percent from 0.38 percent of outstanding commercial loans excluding loans accounted for under the fair value option) at December 31, 2016 with the decrease primarily in the energy and metal and mining sectors. See Tables 34, 35 and 36 for more details on key commercial credit statistics.

The allowance for loan and lease losses as a percentage of total loans and leases outstanding was 1.12 percent at December 31, 2017 compared to 1.26 percent at December 31, 2016. The decrease in the ratio was primarily due to improved credit quality in the consumer real estate portfolio driven by improved economic conditions. The December 31, 2017 and 2016 ratios above include the PCI loan portfolio. Excluding the PCI loan portfolio, the allowance for loan and lease losses as a percentage of total loans and leases outstanding was 1.10 percent and 1.24 percent at December 31, 2017 and 2016.

Reserve for Unfunded Lending Commitments

In addition to the allowance for loan and lease losses, we also estimate probable losses related to unfunded lending commitments such as letters of credit, financial guarantees, unfunded bankers' acceptances and binding loan commitments, excluding commitments accounted for under the fair value option. Unfunded lending commitments are subject to the same assessment as funded loans, including estimates of probability of default and LGD. Due to the nature of unfunded commitments, the estimate of probable losses must also consider utilization. To estimate the portion of these undrawn commitments that is likely to be drawn by a borrower at the time of estimated default, analyses of our historical experience are applied to the unfunded commitments to estimate the funded exposure at default (EAD). The expected loss for unfunded lending commitments is the product of the probability of default, the LGD and the EAD, adjusted for any qualitative factors including economic uncertainty and inherent imprecision in models.

The reserve for unfunded lending commitments was $777 million at December 31, 2017 compared to $762 million at December 31, 2016.

Table 47 presents a rollforward of the allowance for credit losses, which includes the allowance for loan and lease losses and the reserve for unfunded lending commitments, for 2017 and 2016.

Table 47 Allowance for Credit Losses

(Dollars in millions)	2017	2016
Allowance for loan and lease losses, January 1	**$ 11,237**	$ 12,234
Loans and leases charged off		
Residential mortgage	**(188)**	(403)
Home equity	**(582)**	(752)
U.S. credit card	**(2,968)**	(2,691)
Non-U.S. credit card [1]	**(103)**	(238)
Direct/Indirect consumer	**(487)**	(392)
Other consumer	**(216)**	(232)
Total consumer charge-offs	**(4,544)**	(4,708)
U.S. commercial [2]	**(589)**	(567)
Non-U.S. commercial	**(446)**	(133)
Commercial real estate	**(24)**	(10)
Commercial lease financing	**(16)**	(30)
Total commercial charge-offs	**(1,075)**	(740)
Total loans and leases charged off	**(5,619)**	(5,448)
Recoveries of loans and leases previously charged off		
Residential mortgage	**288**	272
Home equity	**369**	347
U.S. credit card	**455**	422
Non-U.S. credit card [1]	**28**	63
Direct/Indirect consumer	**276**	258
Other consumer	**50**	27
Total consumer recoveries	**1,466**	1,389
U.S. commercial [3]	**142**	175
Non-U.S. commercial	**6**	13
Commercial real estate	**15**	41
Commercial lease financing	**11**	9
Total commercial recoveries	**174**	238
Total recoveries of loans and leases previously charged off	**1,640**	1,627
Net charge-offs	**(3,979)**	(3,821)
Write-offs of PCI loans	**(207)**	(340)
Provision for loan and lease losses	**3,381**	3,581
Other [4]	**(39)**	(174)
Total allowance for loan and lease losses, December 31	**10,393**	11,480
Less: Allowance included in assets of business held for sale [5]	**—**	(243)
Allowance for loan and lease losses, December 31	**10,393**	11,237
Reserve for unfunded lending commitments, January 1	**762**	646
Provision for unfunded lending commitments	**15**	16
Other [4]	**—**	100
Reserve for unfunded lending commitments, December 31	**777**	762
Allowance for credit losses, December 31	**$ 11,170**	$ 11,999

(1) Represents net charge-offs related to the non-U.S. credit card loan portfolio, which was included in assets of business held for sale on the Consolidated Balance Sheet at December 31, 2016. In 2017, the Corporation sold its non-U.S. consumer credit card business.
(2) Includes U.S. small business commercial charge-offs of $258 million and $253 million in 2017 and 2016.
(3) Includes U.S. small business commercial recoveries of $43 million and $45 million in 2017 and 2016.
(4) Primarily represents the net impact of portfolio sales, consolidations and deconsolidations, foreign currency translation adjustments, transfers to held-for-sale and certain other reclassifications.
(5) Represents allowance related to the non-U.S. credit card loan portfolio, which was sold in 2017.

Table 47 Allowance for Credit Losses (continued)

(Dollars in millions)	2017	2016
Loan and allowance ratios [6]**:**		
Loans and leases outstanding at December 31 [7]	$ 931,039	$ 908,812
Allowance for loan and lease losses as a percentage of total loans and leases outstanding at December 31 [7]	1.12%	1.26%
Consumer allowance for loan and lease losses as a percentage of total consumer loans and leases outstanding at December 31 [8]	1.18	1.36
Commercial allowance for loan and lease losses as a percentage of total commercial loans and leases outstanding at December 31 [9]	1.05	1.16
Average loans and leases outstanding [7]	$ 911,988	$ 892,255
Net charge-offs as a percentage of average loans and leases outstanding [7, 10]	0.44%	0.43%
Net charge-offs and PCI write-offs as a percentage of average loans and leases outstanding [7]	0.46	0.47
Allowance for loan and lease losses as a percentage of total nonperforming loans and leases at December 31 [7, 11]	161	149
Ratio of the allowance for loan and lease losses at December 31 to net charge-offs [10]	2.61	3.00
Ratio of the allowance for loan and lease losses at December 31 to net charge-offs and PCI write-offs	2.48	2.76
Amounts included in allowance for loan and lease losses for loans and leases that are excluded from nonperforming loans and leases at December 31 [12]	$ 3,971	$ 3,951
Allowance for loan and lease losses as a percentage of total nonperforming loans and leases, excluding the allowance for loan and lease losses for loans and leases that are excluded from nonperforming loans and leases at December 31 [7, 12]	99%	98%
Loan and allowance ratios excluding PCI loans and the related valuation allowance [6, 13]**:**		
Allowance for loan and lease losses as a percentage of total loans and leases outstanding at December 31 [7]	1.10%	1.24%
Consumer allowance for loan and lease losses as a percentage of total consumer loans and leases outstanding at December 31 [8]	1.15	1.31
Net charge-offs as a percentage of average loans and leases outstanding [7]	0.44	0.44
Allowance for loan and lease losses as a percentage of total nonperforming loans and leases at December 31 [7, 11]	156	144
Ratio of the allowance for loan and lease losses at December 31 to net charge-offs	2.54	2.89

(6) Loan and allowance ratios for 2016 include $243 million of non-U.S. credit card allowance for loan and lease losses and $9.2 billion of ending non-U.S. credit card loans, which were included in assets of business held for sale on the Consolidated Balance Sheet at December 31, 2016. See footnote 1 for more information.

(7) Outstanding loan and lease balances and ratios do not include loans accounted for under the fair value option of $5.7 billion and $7.1 billion at December 31, 2017 and 2016. Average loans accounted for under the fair value option were $6.7 billion and $8.2 billion in 2017 and 2016.

(8) Excludes consumer loans accounted for under the fair value option of $928 million and $1.1 billion at December 31, 2017 and 2016.

(9) Excludes commercial loans accounted for under the fair value option of $4.8 billion and $6.0 billion at December 31, 2017 and 2016.

(10) Net charge-offs exclude $207 million and $340 million of write-offs in the PCI loan portfolio in 2017 and 2016. For more information on PCI write-offs, see Consumer Portfolio Credit Risk Management – Purchased Credit-impaired Loan Portfolio on page 76.

(11) For more information on our definition of nonperforming loans, see page 78 and page 83.

(12) Primarily includes amounts allocated to U.S. credit card and unsecured consumer lending portfolios in *Consumer Banking*, PCI loans and the non-U.S. credit portfolio in *All Other*.

(13) For more information on the PCI loan portfolio and the valuation allowance for PCI loans, see *Note 4 – Outstanding Loans and Leases* and *Note 5 – Allowance for Credit Losses* to the Consolidated Financial Statements.

For reporting purposes, we allocate the allowance for credit losses across products as presented in Table 48.

Table 48 Allocation of the Allowance for Credit Losses by Product Type

(Dollars in millions)	Amount	Percent of Total	Percent of Loans and Leases Outstanding (1)	Amount	Percent of Total	Percent of Loans and Leases Outstanding (1)
	December 31, 2017			December 31, 2016		
Allowance for loan and lease losses						
Residential mortgage	$ 701	6.74%	0.34%	$ 1,012	8.82%	0.53%
Home equity	1,019	9.80	1.76	1,738	15.14	2.62
U.S. credit card	3,368	32.41	3.50	2,934	25.56	3.18
Non-U.S. credit card	—	—	—	243	2.12	2.64
Direct/Indirect consumer	262	2.52	0.28	244	2.13	0.26
Other consumer	33	0.32	1.22	51	0.44	2.01
Total consumer	5,383	51.79	1.18	6,222	54.21	1.36
U.S. commercial (2)	3,113	29.95	1.04	3,326	28.97	1.17
Non-U.S. commercial	803	7.73	0.82	874	7.61	0.98
Commercial real estate	935	9.00	1.60	920	8.01	1.60
Commercial lease financing	159	1.53	0.72	138	1.20	0.62
Total commercial	5,010	48.21	1.05	5,258	45.79	1.16
Total allowance for loan and lease losses (3)	10,393	100.00%	1.12	11,480	100.00%	1.26
Less: Allowance included in assets of business held for sale (4)	—			(243)		
Allowance for loan and lease losses	10,393			11,237		
Reserve for unfunded lending commitments	777			762		
Allowance for credit losses	$ 11,170			$ 11,999		

(1) Ratios are calculated as allowance for loan and lease losses as a percentage of loans and leases outstanding excluding loans accounted for under the fair value option. Consumer loans accounted for under the fair value option included residential mortgage loans of $567 million and $710 million and home equity loans of $361 million and $341 million at December 31, 2017 and 2016. Commercial loans accounted for under the fair value option included U.S. commercial loans of $2.6 billion and $2.9 billion and non-U.S. commercial loans of $2.2 billion and $3.1 billion at December 31, 2017 and 2016.

(2) Includes allowance for loan and lease losses for U.S. small business commercial loans of $439 million and $416 million at December 31, 2017 and 2016.

(3) Includes $289 million and $419 million of valuation allowance presented with the allowance for loan and lease losses related to PCI loans at December 31, 2017 and 2016.

(4) Represents allowance for loan and lease losses related to the non-U.S. credit card loan portfolio, which was included in assets of business held for sale on the Consolidated Balance Sheet at December 31, 2016. In 2017, the Corporation sold its non-U.S. consumer credit card business.

Market Risk Management

Market risk is the risk that changes in market conditions may adversely impact the value of assets or liabilities, or otherwise negatively impact earnings. This risk is inherent in the financial instruments associated with our operations, primarily within our *Global Markets* segment. We are also exposed to these risks in other areas of the Corporation (e.g., our ALM activities). In the event of market stress, these risks could have a material impact on our results. For more information, see Interest Rate Risk Management for the Banking Book on page 97.

Our traditional banking loan and deposit products are non-trading positions and are generally reported at amortized cost for assets or the amount owed for liabilities (historical cost). However, these positions are still subject to changes in economic value based on varying market conditions, with one of the primary risks being changes in the levels of interest rates. The risk of adverse changes in the economic value of our non-trading positions arising from changes in interest rates is managed through our ALM activities. We have elected to account for certain assets and liabilities under the fair value option.

Our trading positions are reported at fair value with changes reflected in income. Trading positions are subject to various changes in market-based risk factors. The majority of this risk is generated by our activities in the interest rate, foreign exchange, credit, equity and commodities markets. In addition, the values of assets and liabilities could change due to market liquidity, correlations across markets and expectations of market volatility. We seek to manage these risk exposures by using a variety of techniques that encompass a broad range of financial instruments. The key risk management techniques are discussed in more detail in the Trading Risk Management section.

Global Risk Management is responsible for providing senior management with a clear and comprehensive understanding of the trading risks to which we are exposed. These responsibilities include ownership of market risk policy, developing and maintaining quantitative risk models, calculating aggregated risk measures, establishing and monitoring position limits consistent with risk appetite, conducting daily reviews and analysis of trading inventory, approving material risk exposures and fulfilling regulatory requirements. Market risks that impact businesses outside of *Global Markets* are monitored and governed by their respective governance functions.

Quantitative risk models, such as VaR, are an essential component in evaluating the market risks within a portfolio. The Enterprise Model Risk Committee (EMRC), a subcommittee of the MRC, is responsible for providing management oversight and approval of model risk management and governance. The EMRC defines model risk standards, consistent with our risk framework and risk appetite, prevailing regulatory guidance and industry best practice. Models must meet certain validation criteria, including effective challenge of the model development process and a sufficient demonstration of developmental evidence incorporating a comparison of alternative theories and approaches. The EMRC oversees that model standards are consistent with model risk requirements and monitors the effective challenge in the model validation process across the Corporation. In addition, the relevant stakeholders must agree on any required actions or restrictions to the models and maintain a stringent monitoring process for continued compliance.

Interest Rate Risk

Interest rate risk represents exposures to instruments whose values vary with the level or volatility of interest rates. These instruments include, but are not limited to, loans, debt securities, certain trading-related assets and liabilities, deposits, borrowings and derivatives. Hedging instruments used to mitigate these risks include derivatives such as options, futures, forwards and swaps.

Foreign Exchange Risk

Foreign exchange risk represents exposures to changes in the values of current holdings and future cash flows denominated in currencies other than the U.S. dollar. The types of instruments exposed to this risk include investments in non-U.S. subsidiaries, foreign currency-denominated loans and securities, future cash flows in foreign currencies arising from foreign exchange transactions, foreign currency-denominated debt and various foreign exchange derivatives whose values fluctuate with changes in the level or volatility of currency exchange rates or non-U.S. interest rates. Hedging instruments used to mitigate this risk include foreign exchange options, currency swaps, futures, forwards, and foreign currency-denominated debt and deposits.

Mortgage Risk

Mortgage risk represents exposures to changes in the values of mortgage-related instruments. The values of these instruments are sensitive to prepayment rates, mortgage rates, agency debt ratings, default, market liquidity, government participation and interest rate volatility. Our exposure to these instruments takes several forms. First, we trade and engage in market-making activities in a variety of mortgage securities including whole loans, pass-through certificates, commercial mortgages and collateralized mortgage obligations including collateralized debt obligations using mortgages as underlying collateral. Second, we originate a variety of MBS which involves the accumulation of mortgage-related loans in anticipation of eventual securitization. Third, we may hold positions in mortgage securities and residential mortgage loans as part of the ALM portfolio. Fourth, we create MSRs as part of our mortgage origination activities. For more information on MSRs, see *Note 1 – Summary of Significant Accounting Principles* and *Note 20 – Fair Value Measurements* to the Consolidated Financial Statements. Hedging instruments used to mitigate this risk include derivatives such as options, swaps, futures and forwards as well as securities including MBS and U.S. Treasury securities. For more information, see Mortgage Banking Risk Management on page 99.

Equity Market Risk

Equity market risk represents exposures to securities that represent an ownership interest in a corporation in the form of domestic and foreign common stock or other equity-linked instruments. Instruments that would lead to this exposure include, but are not limited to, the following: common stock, exchange-traded funds, American Depositary Receipts, convertible bonds, listed equity options (puts and calls), OTC equity options, equity total return swaps, equity index futures and other equity derivative products. Hedging instruments used to mitigate this risk include options, futures, swaps, convertible bonds and cash positions.

Commodity Risk

Commodity risk represents exposures to instruments traded in the petroleum, natural gas, power and metals markets. These instruments consist primarily of futures, forwards, swaps and options. Hedging instruments used to mitigate this risk include options, futures and swaps in the same or similar commodity product, as well as cash positions.

Issuer Credit Risk

Issuer credit risk represents exposures to changes in the creditworthiness of individual issuers or groups of issuers. Our portfolio is exposed to issuer credit risk where the value of an asset may be adversely impacted by changes in the levels of credit spreads, by credit migration or by defaults. Hedging instruments used to mitigate this risk include bonds, CDS and other credit fixed-income instruments.

Market Liquidity Risk

Market liquidity risk represents the risk that the level of expected market activity changes dramatically and, in certain cases, may even cease. This exposes us to the risk that we will not be able to transact business and execute trades in an orderly manner which may impact our results. This impact could be further exacerbated if expected hedging or pricing correlations are compromised by disproportionate demand or lack of demand for certain instruments. We utilize various risk mitigating techniques as discussed in more detail in Trading Risk Management.

Trading Risk Management

To evaluate risk in our trading activities, we focus on the actual and potential volatility of revenues generated by individual positions as well as portfolios of positions. Various techniques and procedures are utilized to enable the most complete understanding of these risks. Quantitative measures of market risk are evaluated on a daily basis from a single position to the portfolio of the Corporation. These measures include sensitivities of positions to various market risk factors, such as the potential impact on revenue from a one basis point change in interest rates, and statistical measures utilizing both actual and hypothetical market moves, such as VaR and stress testing. Periods of extreme market stress influence the reliability of these techniques to varying degrees. Qualitative evaluations of market risk utilize the suite of quantitative risk measures while understanding each of their respective limitations. Additionally, risk managers independently evaluate the risk of the portfolios under the current market environment and potential future environments.

VaR is a common statistic used to measure market risk as it allows the aggregation of market risk factors, including the effects of portfolio diversification. A VaR model simulates the value of a portfolio under a range of scenarios in order to generate a distribution of potential gains and losses. VaR represents the loss a portfolio is not expected to exceed more than a certain number of times per period, based on a specified holding period, confidence level and window of historical data. We use one VaR model consistently across the trading portfolios and it uses a historical simulation approach based on a three-year window of historical data. Our primary VaR statistic is equivalent to a 99 percent confidence level. This means that for a VaR with a one-day holding period, there should not be losses in excess of VaR, on average, 99 out of 100 trading days.

Within any VaR model, there are significant and numerous assumptions that will differ from company to company. The accuracy of a VaR model depends on the availability and quality of historical data for each of the risk factors in the portfolio. A VaR model may require additional modeling assumptions for new products that do not have the necessary historical market data or for less liquid positions for which accurate daily prices are not consistently available. For positions with insufficient historical data for the VaR calculation, the process for establishing an appropriate proxy is based on fundamental and statistical analysis of the new product or less liquid position. This analysis identifies reasonable alternatives that replicate both the expected volatility and correlation to other market risk factors that the missing data would be expected to experience.

VaR may not be indicative of realized revenue volatility as changes in market conditions or in the composition of the portfolio can have a material impact on the results. In particular, the historical data used for the VaR calculation might indicate higher or lower levels of portfolio diversification than will be experienced. In order for the VaR model to reflect current market conditions, we update the historical data underlying our VaR model on a weekly basis, or more frequently during periods of market stress, and regularly review the assumptions underlying the model. A minor portion of risks related to our trading positions is not included in VaR. These risks are reviewed as part of our ICAAP. For more information regarding ICAAP, see Capital Management on page 61.

Global Risk Management continually reviews, evaluates and enhances our VaR model so that it reflects the material risks in our trading portfolio. Changes to the VaR model are reviewed and approved prior to implementation and any material changes are reported to management through the appropriate management committees.

Trading limits on quantitative risk measures, including VaR, are independently set by Global Markets Risk Management and reviewed on a regular basis so that trading limits remain relevant and within our overall risk appetite for market risks. Trading limits are reviewed in the context of market liquidity, volatility and strategic business priorities. Trading limits are set at both a granular level to allow for extensive coverage of risks as well as at aggregated portfolios to account for correlations among risk factors. All trading limits are approved at least annually. Approved trading limits are stored and tracked in a centralized limits management system. Trading limit excesses are communicated to management for review. Certain quantitative market risk measures and corresponding limits have been identified as critical in the Corporation's Risk Appetite Statement. These risk appetite limits are reported on a daily basis and are approved at least annually by the ERC and the Board.

In periods of market stress, *Global Markets* senior leadership communicates daily to discuss losses, key risk positions and any limit excesses. As a result of this process, the businesses may selectively reduce risk.

Table 49 presents the total market-based trading portfolio VaR which is the combination of the covered positions trading portfolio and the impact from less liquid trading exposures. Covered positions are defined by regulatory standards as trading assets and liabilities, both on- and off-balance sheet, that meet a defined set of specifications. These specifications identify the most liquid trading positions which are intended to be held for a short-term horizon and where we are able to hedge the material risk elements in a two-way market. Positions in less liquid markets, or where there are restrictions on the ability to trade the positions, typically do not qualify as covered positions. Foreign exchange and commodity positions are always considered covered positions, except for structural foreign currency positions that are excluded with prior regulatory approval. In addition, Table 49 presents our fair value option portfolio, which includes substantially all of the funded and unfunded exposures for which we elect the fair value option, and their corresponding hedges. The fair value option portfolio combined with the total market-based trading portfolio VaR represents our total market-based portfolio VaR. Additionally, market risk VaR for trading activities as presented in Table 49 differs from VaR used for regulatory capital calculations due to the holding period being used. The holding period for VaR used for regulatory capital calculations is 10 days, while for the market risk VaR presented below it is one day. Both measures utilize the same process and methodology.

The total market-based portfolio VaR results in Table 49 include market risk to which we are exposed from all business segments, excluding CVA and DVA. The majority of this portfolio is within the *Global Markets* segment.

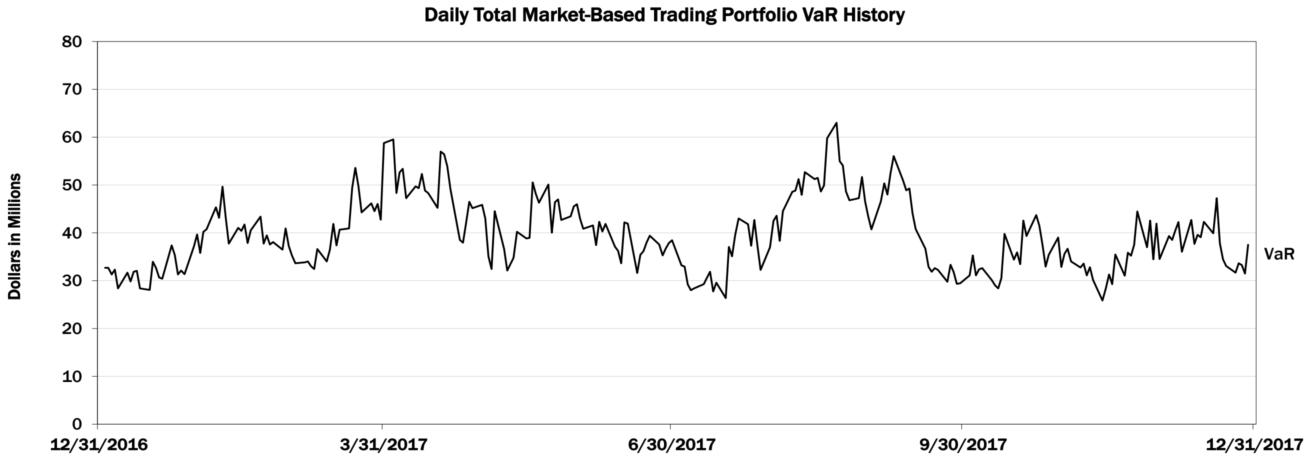
Table 49 presents year-end, average, high and low daily trading VaR for 2017 and 2016 using a 99 percent confidence level.

Table 49 Market Risk VaR for Trading Activities

	2017				2016			
(Dollars in millions)	**Year End**	**Average**	**High [1]**	**Low [1]**	Year End	Average	High [1]	Low [1]
Foreign exchange	**$ 7**	**$ 11**	**$ 25**	**$ 3**	$ 8	$ 9	$ 16	$ 5
Interest rate	**22**	**21**	**41**	**11**	11	19	30	10
Credit	**29**	**26**	**33**	**21**	25	30	37	25
Equity	**19**	**18**	**33**	**12**	19	18	30	11
Commodity	**5**	**5**	**9**	**3**	4	6	12	3
Portfolio diversification	**(49)**	**(47)**	**—**	**—**	(39)	(46)	—	—
Total covered positions trading portfolio	**33**	**34**	**53**	**23**	28	36	50	24
Impact from less liquid exposures	**5**	**6**	**—**	**—**	6	5	—	—
Total market-based trading portfolio	**38**	**40**	**63**	**26**	34	41	58	28
Fair value option loans	**9**	**10**	**14**	**7**	14	23	40	12
Fair value option hedges	**7**	**7**	**11**	**4**	6	11	22	5
Fair value option portfolio diversification	**(7)**	**(8)**	**—**	**—**	(10)	(21)	—	—
Total fair value option portfolio	**9**	**9**	**11**	**6**	10	13	20	8
Portfolio diversification	**(4)**	**(4)**	**—**	**—**	(4)	(6)	—	—
Total market-based portfolio	**$ 43**	**$ 45**	**69**	**29**	$ 40	$ 48	70	32

(1) The high and low for each portfolio may have occurred on different trading days than the high and low for the components. Therefore the impact from less liquid exposures and the amount of portfolio diversification, which is the difference between the total portfolio and the sum of the individual components, is not relevant.

The graph below presents the daily total market-based trading portfolio VaR for 2017, corresponding to the data in Table 49.



Additional VaR statistics produced within our single VaR model are provided in Table 50 at the same level of detail as in Table 49. Evaluating VaR with additional statistics allows for an increased understanding of the risks in the portfolio as the historical market data used in the VaR calculation does not necessarily follow a predefined statistical distribution. Table 50 presents average trading VaR statistics at 99 percent and 95 percent confidence levels for 2017 and 2016.

Table 50 Average Market Risk VaR for Trading Activities – 99 percent and 95 percent VaR Statistics

	2017		2016	
(Dollars in millions)	99 percent	95 percent	99 percent	95 percent
Foreign exchange	$ 11	$ 6	$ 9	$ 5
Interest rate	21	14	19	12
Credit	26	15	30	18
Equity	18	10	18	11
Commodity	5	3	6	3
Portfolio diversification	(47)	(30)	(46)	(30)
Total covered positions trading portfolio	34	18	36	19
Impact from less liquid exposures	6	2	5	3
Total market-based trading portfolio	40	20	41	22
Fair value option loans	10	6	23	13
Fair value option hedges	7	5	11	8
Fair value option portfolio diversification	(8)	(6)	(21)	(13)
Total fair value option portfolio	9	5	13	8
Portfolio diversification	(4)	(3)	(6)	(4)
Total market-based portfolio	$ 45	$ 22	$ 48	$ 26

Backtesting

The accuracy of the VaR methodology is evaluated by backtesting, which compares the daily VaR results, utilizing a one-day holding period, against a comparable subset of trading revenue. A backtesting excess occurs when a trading loss exceeds the VaR for the corresponding day. These excesses are evaluated to understand the positions and market moves that produced the trading loss and to assess whether the VaR methodology accurately represents those losses. We expect the frequency of trading losses in excess of VaR to be in line with the confidence level of the VaR statistic being tested. For example, with a 99 percent confidence level, we expect one trading loss in excess of VaR every 100 days or between two to three trading losses in excess of VaR over the course of a year. The number of backtesting excesses observed can differ from the statistically expected number of excesses if the current level of market volatility is materially different than the level of market volatility that existed during the three years of historical data used in the VaR calculation.

The trading revenue used for backtesting is defined by regulatory agencies in order to most closely align with the VaR component of the regulatory capital calculation. This revenue differs from total trading-related revenue in that it excludes revenue from trading activities that either do not generate market risk or the market risk cannot be included in VaR. Some examples of the types of revenue excluded for backtesting are fees, commissions, reserves, net interest income and intraday trading revenues.

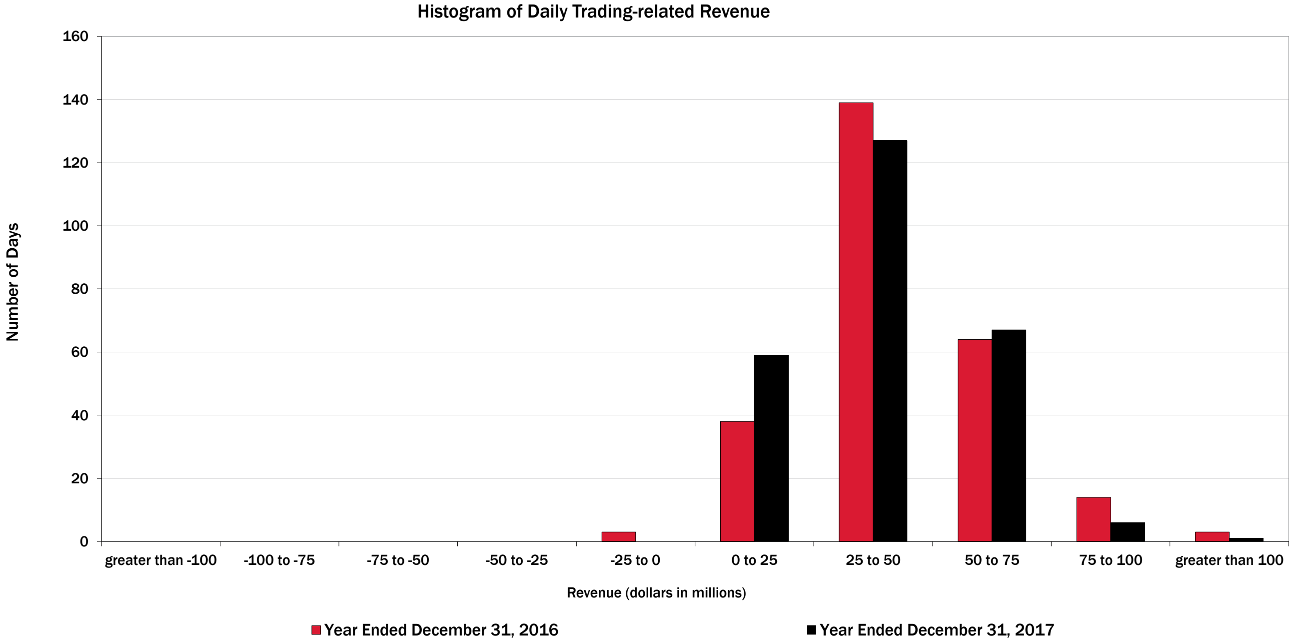
We conduct daily backtesting on our portfolios, ranging from the total market-based portfolio to individual trading areas. Additionally, we conduct daily backtesting on the VaR results used for regulatory capital calculations as well as the VaR results for key legal entities, regions and risk factors. These results are reported to senior market risk management. Senior management regularly reviews and evaluates the results of these tests.

During 2017, there were no days in which there was a backtesting excess for our total market-based portfolio VaR, utilizing a one-day holding period.

Total Trading-related Revenue

Total trading-related revenue, excluding brokerage fees, and CVA, DVA and funding valuation adjustment gains (losses), represents the total amount earned from trading positions, including market-based net interest income, which are taken in a diverse range of financial instruments and markets. Trading account assets and liabilities are reported at fair value. For more information on fair value, see *Note 20 – Fair Value Measurements* to the Consolidated Financial Statements. Trading-related revenue can be volatile and is largely driven by general market conditions and customer demand. Also, trading-related revenue is dependent on the volume and type of transactions, the level of risk assumed, and the volatility of price and rate movements at any given time within the ever-changing market environment. Significant daily revenue by business is monitored and the primary drivers of these are reviewed.

The following histogram is a graphic depiction of trading volatility and illustrates the daily level of trading-related revenue for 2017 and 2016. During 2017, positive trading-related revenue was recorded for 100 percent of the trading days, of which 77 percent were daily trading gains of over $25 million. This compares to 2016 where positive trading-related revenue was recorded for 99 percent of the trading days, of which 84 percent were daily trading gains of over $25 million and the largest loss was $24 million.



Trading Portfolio Stress Testing

Because the very nature of a VaR model suggests results can exceed our estimates and it is dependent on a limited historical window, we also stress test our portfolio using scenario analysis. This analysis estimates the change in the value of our trading portfolio that may result from abnormal market movements.

A set of scenarios, categorized as either historical or hypothetical, are computed daily for the overall trading portfolio and individual businesses. These scenarios include shocks to underlying market risk factors that may be well beyond the shocks found in the historical data used to calculate VaR. Historical scenarios simulate the impact of the market moves that occurred during a period of extended historical market stress. Generally, a multi-week period representing the most severe point during a crisis is selected for each historical scenario. Hypothetical scenarios provide estimated portfolio impacts from potential future market stress events. Scenarios are reviewed and updated in response to changing positions and new economic or political information. In addition, new or ad hoc scenarios are developed to address specific potential market events or particular vulnerabilities in the portfolio. The stress tests are reviewed on a regular basis and the results are presented to senior management.

Stress testing for the trading portfolio is integrated with enterprise-wide stress testing and incorporated into the limits framework. The macroeconomic scenarios used for enterprise-wide stress testing purposes differ from the typical trading portfolio scenarios in that they have a longer time horizon and the results are forecasted over multiple periods for use in consolidated capital and liquidity planning. For more information, see Managing Risk on page 57.

Interest Rate Risk Management for the Banking Book

The following discussion presents net interest income for banking book activities.

Interest rate risk represents the most significant market risk exposure to our banking book balance sheet. Interest rate risk is measured as the potential change in net interest income caused by movements in market interest rates. Client-facing activities, primarily lending and deposit-taking, create interest rate sensitive positions on our balance sheet.

We prepare forward-looking forecasts of net interest income. The baseline forecast takes into consideration expected future business growth, ALM positioning and the direction of interest rate movements as implied by the market-based forward curve. We then measure and evaluate the impact that alternative interest rate scenarios have on the baseline forecast in order to assess interest rate sensitivity under varied conditions. The net interest income forecast is frequently updated for changing assumptions and differing outlooks based on economic trends, market conditions and business strategies. Thus, we continually monitor our balance sheet position in order to maintain an acceptable level of exposure to interest rate changes.

The interest rate scenarios that we analyze incorporate balance sheet assumptions such as loan and deposit growth and pricing, changes in funding mix, product repricing, maturity characteristics and investment securities premium amortization. Our overall goal is to manage interest rate risk so that movements in interest rates do not significantly adversely affect earnings and capital.

Table 51 presents the spot and 12-month forward rates used in our baseline forecasts at December 31, 2017 and 2016.

Table 51 Forward Rates

	December 31, 2017		
	Federal Funds	Three-month LIBOR	10-Year Swap
Spot rates	**1.50%**	**1.69%**	**2.40%**
12-month forward rates	**2.00**	**2.14**	**2.48**
	December 31, 2016		
Spot rates	0.75%	1.00%	2.34%
12-month forward rates	1.25	1.51	2.49

Table 52 shows the pre-tax dollar impact to forecasted net interest income over the next 12 months from December 31, 2017 and 2016, resulting from instantaneous parallel and non-parallel shocks to the market-based forward curve. Periodically we evaluate the scenarios presented so that they are meaningful in the context of the current rate environment.

During 2017, the asset sensitivity of our balance sheet to rising rates was largely unchanged. We continue to be asset sensitive to a parallel move in interest rates with the majority of that benefit coming from the short end of the yield curve. Additionally, higher interest rates impact the fair value of debt securities and, accordingly, for debt securities classified as available for sale (AFS), may adversely affect accumulated OCI and thus capital levels under the Basel 3 capital rules. Under instantaneous upward parallel shifts, the near-term adverse impact to Basel 3 capital is reduced over time by offsetting positive impacts to net interest income. For more information on Basel 3, see Capital Management – Regulatory Capital on page 61.

Table 52 Estimated Banking Book Net Interest Income Sensitivity

(Dollars in millions) Curve Change	Short Rate (bps)	Long Rate (bps)	December 31 2017	December 31 2016
Parallel Shifts				
+100 bps instantaneous shift	+100	+100	**$ 3,317**	$ 3,370
-50 bps instantaneous shift	-50	-50	**(2,273)**	(2,900)
Flatteners				
Short-end instantaneous change	+100	—	**2,182**	2,473
Long-end instantaneous change	—	-50	**(1,246)**	(961)
Steepeners				
Short-end instantaneous change	-50	—	**(1,021)**	(1,918)
Long-end instantaneous change	—	+100	**1,135**	928

The sensitivity analysis in Table 52 assumes that we take no action in response to these rate shocks and does not assume any change in other macroeconomic variables normally correlated with changes in interest rates. As part of our ALM activities, we use securities, certain residential mortgages, and interest rate and foreign exchange derivatives in managing interest rate sensitivity.

The behavior of our deposit portfolio in the baseline forecast and in alternate interest rate scenarios is a key assumption in our projected estimates of net interest income. The sensitivity analysis in Table 52 assumes no change in deposit portfolio size or mix from the baseline forecast in alternate rate environments. In higher rate scenarios, any customer activity resulting in the replacement of low-cost or noninterest-bearing deposits with higher-yielding deposits or market-based funding would reduce our benefit in those scenarios.

Interest Rate and Foreign Exchange Derivative Contracts

Interest rate and foreign exchange derivative contracts are utilized in our ALM activities and serve as an efficient tool to manage our interest rate and foreign exchange risk. We use derivatives to hedge the variability in cash flows or changes in fair value on our balance sheet due to interest rate and foreign exchange components. For more information on our hedging activities, see *Note 2 – Derivatives* to the Consolidated Financial Statements.

Our interest rate contracts are generally non-leveraged generic interest rate and foreign exchange basis swaps, options, futures and forwards. In addition, we use foreign exchange contracts, including cross-currency interest rate swaps, foreign currency futures contracts, foreign currency forward contracts and options to mitigate the foreign exchange risk associated with foreign currency-denominated assets and liabilities.

Changes to the composition of our derivatives portfolio during 2017 reflect actions taken for interest rate and foreign exchange rate risk management. The decisions to reposition our derivatives portfolio are based on the current assessment of economic and financial conditions including the interest rate and foreign currency environments, balance sheet composition and trends, and the relative mix of our cash and derivative positions.

Table 53 presents derivatives utilized in our ALM activities including those designated as accounting and economic hedging instruments and shows the notional amount, fair value, weighted-average receive-fixed and pay-fixed rates, expected maturity and average estimated durations of our open ALM derivatives at December 31, 2017 and 2016. These amounts do not include derivative hedges on our MSRs.

Table 53 Asset and Liability Management Interest Rate and Foreign Exchange Contracts

	December 31, 2017								
		Expected Maturity							
(Dollars in millions, average estimated duration in years)	Fair Value	Total	2018	2019	2020	2021	2022	Thereafter	Average Estimated Duration
Receive-fixed interest rate swaps (1)	**$ 2,330**								**5.38**
Notional amount		**$ 176,390**	**$ 21,850**	**$ 27,176**	**$ 16,347**	**$ 6,498**	**$ 19,120**	**$ 85,399**	
Weighted-average fixed-rate		**2.42%**	**3.20%**	**1.87%**	**1.88%**	**2.99%**	**2.10%**	**2.52%**	
Pay-fixed interest rate swaps (1)	**(37)**								**5.63**
Notional amount		**$ 45,873**	**$ 11,555**	**$ 1,210**	**$ 4,344**	**$ 1,616**	**$ —**	**$ 27,148**	
Weighted-average fixed-rate		**2.15%**	**1.73%**	**2.07%**	**2.16%**	**2.22%**	**—%**	**2.32%**	
Same-currency basis swaps (2)	**(17)**								
Notional amount		**$ 38,622**	**$ 11,028**	**$ 6,789**	**$ 1,180**	**$ 2,807**	**$ 955**	**$ 15,863**	
Foreign exchange basis swaps (1, 3, 4)	**(1,616)**								
Notional amount		**107,263**	**24,886**	**11,922**	**13,367**	**9,301**	**6,860**	**40,927**	
Option products (5)	**13**								
Notional amount (6)		**1,218**	**1,201**	**—**	**—**	**—**	**—**	**17**	
Foreign exchange contracts (1, 4, 7)	**1,424**								
Notional amount (6)		**(11,783)**	**(28,689)**	**2,231**	**(24)**	**2,471**	**2,919**	**9,309**	
Net ALM contracts	**$ 2,097**								

	December 31, 2016								
		Expected Maturity							
(Dollars in millions, average estimated duration in years)	Fair Value	Total	2017	2018	2019	2020	2021	Thereafter	Average Estimated Duration
Receive-fixed interest rate swaps (1)	$ 4,055								4.81
Notional amount		$ 118,603	$ 21,453	$ 25,788	$ 10,283	$ 7,515	$ 5,307	$ 48,257	
Weighted-average fixed-rate		2.83%	3.64%	2.81%	2.31%	2.07%	3.18%	2.67%	
Pay-fixed interest rate swaps (1)	159								2.77
Notional amount		$ 22,400	$ 1,527	$ 9,168	$ 2,072	$ 7,975	$ 213	$ 1,445	
Weighted-average fixed-rate		1.37%	1.84%	1.47%	0.97%	1.08%	1.00%	2.45%	
Same-currency basis swaps (2)	(26)								
Notional amount		$ 59,274	$ 20,775	$ 11,027	$ 6,784	$ 1,180	$ 2,799	$ 16,709	
Foreign exchange basis swaps (1, 3, 4)	(4,233)								
Notional amount		125,522	26,509	22,724	12,178	12,150	8,365	43,596	
Option products (5)	5								
Notional amount (6)		1,687	1,673	—	—	—	—	14	
Foreign exchange contracts (1, 4, 7)	3,180								
Notional amount (6)		(20,285)	(30,199)	197	1,961	(8)	881	6,883	
Futures and forward rate contracts	19								
Notional amount (6)		37,896	37,896	—	—	—	—	—	
Net ALM contracts	$ 3,159								

(1) Does not include basis adjustments on either fixed-rate debt issued by the Corporation or AFS debt securities, which are hedged using derivatives designated as fair value hedging instruments, that substantially offset the fair values of these derivatives.

(2) At December 31, 2017 and 2016, the notional amount of same-currency basis swaps included $38.6 billion and $59.3 billion in both foreign currency and U.S. dollar-denominated basis swaps in which both sides of the swap are in the same currency.

(3) Foreign exchange basis swaps consisted of cross-currency variable interest rate swaps used separately or in conjunction with receive-fixed interest rate swaps.

(4) Does not include foreign currency translation adjustments on certain non-U.S. debt issued by the Corporation that substantially offset the fair values of these derivatives.

(5) The notional amount of option products of $1.2 billion and $1.7 billion at December 31, 2017 and 2016 was substantially all in foreign exchange options.

(6) Reflects the net of long and short positions. Amounts shown as negative reflect a net short position.

(7) The notional amount of foreign exchange contracts of $(11.8) billion at December 31, 2017 was comprised of $29.1 billion in foreign currency-denominated and cross-currency receive-fixed swaps, $(35.6) billion in net foreign currency forward rate contracts, $(6.2) billion in foreign currency-denominated pay-fixed swaps and $940 million in net foreign currency futures contracts. Foreign exchange contracts of $(20.3) billion at December 31, 2016 were comprised of $21.5 billion in foreign currency-denominated and cross-currency receive-fixed swaps, $(38.5) billion in net foreign currency forward rate contracts, $(4.6) billion in foreign currency-denominated pay-fixed swaps and $1.3 billion in foreign currency futures contracts.

We use interest rate derivative instruments to hedge the variability in the cash flows of our assets and liabilities and other forecasted transactions (collectively referred to as cash flow hedges). The net losses on both open and terminated cash flow hedge derivative instruments recorded in accumulated OCI were $1.3 billion and $1.4 billion, on a pre-tax basis, at December 31, 2017 and 2016. These net losses are expected to be reclassified into earnings in the same period as the hedged cash flows affect earnings and will decrease income or increase expense on the respective hedged cash flows. Assuming no change in open cash flow derivative hedge positions and no changes in prices or interest rates beyond what is implied in forward yield curves at December 31, 2017, the pre-tax net losses are expected to be reclassified into earnings as follows: $208 million, or 16 percent, within the next year, 56 percent in years two through five, and 18 percent in years six through 10, with the remaining 10 percent thereafter. For more information on derivatives designated as cash flow hedges, see *Note 2 – Derivatives* to the Consolidated Financial Statements.

We hedge our net investment in non-U.S. operations determined to have functional currencies other than the U.S. dollar using forward foreign exchange contracts that typically settle in less than 180 days, cross-currency basis swaps and foreign exchange options. We recorded net after-tax losses on derivatives in accumulated OCI associated with net investment hedges which were offset by gains on our net investments in consolidated non-U.S. entities at December 31, 2017.

Mortgage Banking Risk Management

We originate, fund and service mortgage loans, which subject us to credit, liquidity and interest rate risks, among others. We determine whether loans will be held for investment or held for sale at the time of commitment and manage credit and liquidity risks by selling or securitizing a portion of the loans we originate.

Interest rate risk and market risk can be substantial in the mortgage business. Changes in interest rates and other market factors impact the volume of mortgage originations. Changes in interest rates also impact the value of IRLCs and the related residential first mortgage LHFS between the date of the IRLC and the date the loans are sold to the secondary market. An increase in mortgage interest rates typically leads to a decrease in the value of these instruments. Conversely, the value of the MSRs will increase driven by lower prepayment expectations when there is an increase in interest rates. Because the interest rate risks of these two hedged items offset, we combine them into one overall hedged item with one combined economic hedge portfolio consisting of derivative contracts and securities.

During 2017 and 2016, we recorded gains in mortgage banking income of $118 million and $366 million related to the change in fair value of the MSRs, IRLCs and LHFS, net of gains and losses on the hedge portfolio. For more information on MSRs, see *Note 20 – Fair Value Measurements* to the Consolidated Financial Statements and for more information on mortgage banking income, see *Consumer Banking* on page 47.

Compliance Risk Management

Compliance risk is the risk of legal or regulatory sanctions, material financial loss or damage to the reputation of the Corporation arising from the failure of the Corporation to comply with the requirements of applicable laws, rules, regulations and related self-regulatory organizations' standards and codes of conduct (collectively, applicable laws, rules and regulations). Global Compliance independently assesses compliance risk, and evaluates FLUs and control functions for adherence to applicable laws, rules and regulations, including identifying compliance issues and risks, performing monitoring and developing tests to be conducted by the Enterprise Independent Testing unit, and reporting on the state of compliance activities across the Corporation. Enterprise Independent Testing, an independent testing function within IRM, works with Global Compliance, the FLUs and control functions in the identification of testing needs and test design, and is accountable for test execution, reporting and analysis of results. Additionally, Global Compliance works with FLUs and control functions so that day-to-day activities operate in a compliant manner.

The Corporation's approach to the management of compliance risk is described in the Global Compliance - Enterprise Policy, which outlines the requirements of the Corporation's global compliance program, and defines roles and responsibilities of FLUs, IRM and Corporate Audit, the three lines of defense in managing compliance risk. The requirements work together to drive a comprehensive risk-based approach for the proactive identification, management and escalation of compliance risks throughout the Corporation. For more information on FLUs and control functions, see Managing Risk on page 57.

The Global Compliance - Enterprise Policy also sets the requirements for reporting compliance risk information to executive management as well as the Board or appropriate Board-level committees in support of Global Compliance's responsibility for conducting independent oversight of the Corporation's compliance risk management activities. The Board provides oversight of compliance risk through its Audit Committee and the ERC.

Operational Risk Management

Operational risk is the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. Operational risk may occur anywhere in the Corporation, including third-party business processes, and is not limited to operations functions. Effects may extend beyond financial losses and may result in reputational risk impacts. Operational risk includes legal risk. Additionally, operational risk is a component in the calculation of total risk-weighted assets used in the Basel 3 capital calculation. For more information on Basel 3 calculations, see Capital Management on page 61.

The Corporation's approach to Operational Risk Management is outlined in the Operational Risk - Enterprise Policy, and supporting standards which establish the requirements and accountabilities for managing operational risk through a comprehensive set of integrated practices implemented by the Corporation so that our business processes are designed and executed effectively. The Operational Risk - Enterprise Policy is the basis for the operational risk management program.

The operational risk management program describes the processes for identifying, measuring, monitoring, controlling and reporting operational risk information to executive management, as well as the Board or Appropriate Board-Level committees. Under the operational risk management program, FLUs and control functions are responsible for identifying, escalating and debating risk associated with their business activities. The operational risk management teams independently monitor and assess processes and controls, and develop tests to be conducted by the Enterprise Independent Testing unit to validate that processes are operating as intended. The requirements work together to drive a comprehensive risk-based approach for the proactive identification, management and escalation of operational risks throughout the Corporation.

The MRC oversees the Corporation's policies and processes for operational risk management and serves as an escalation point for critical operational risk matters with the Corporation. The MRC reports operational risk activities to the ERC of the Board.

Reputational Risk Management

Reputational risk is the risk that negative perceptions of the Corporation's conduct or business practices may adversely impact its profitability or operations. Reputational risk may result from many of the Corporation's activities, including those related to the management of our strategic, operational, compliance and credit risks.

The Corporation manages reputational risk through established policies and controls in its businesses and risk management processes to mitigate reputational risks in a timely manner and through proactive monitoring and identification of potential reputational risk events. The Corporation has processes and procedures in place to respond to events that give rise to reputational risk, including educating individuals and organizations that influence public opinion, implementing external communication strategies to mitigate the risk, and informing key stakeholders of potential reputational risks.

The Corporation's organization and governance structure provides oversight of reputational risks, and reputational risk reporting is provided regularly and directly to management and the ERC, which provides primary oversight of reputational risk. In addition, each FLU has a committee, which includes representatives from Compliance, Legal and Risk, that is responsible for the oversight of reputational risk. Such committees' oversight includes providing approval for business activities that present elevated levels of reputational risks.

Complex Accounting Estimates

Our significant accounting principles, as described in *Note 1 – Summary of Significant Accounting Principles* to the Consolidated Financial Statements, are essential in understanding the MD&A. Many of our significant accounting principles require complex judgments to estimate the values of assets and liabilities. We have procedures and processes in place to facilitate making these judgments.

The more judgmental estimates are summarized in the following discussion. We have identified and described the development of the variables most important in the estimation processes that involve mathematical models to derive the estimates. In many cases, there are numerous alternative judgments that could be used in the process of determining the inputs to the models. Where alternatives exist, we have used the factors that we believe represent the most reasonable value in developing the inputs. Actual performance that differs from our estimates of the key variables could impact our results of operations. Separate from the possible future impact to our results of operations from input and model variables, the value of our lending portfolio and market-sensitive assets and liabilities may change subsequent to the balance sheet date, often significantly, due to the nature and magnitude of future credit and market conditions. Such credit and market conditions may change quickly and in unforeseen ways and the resulting volatility could have a significant, negative effect on future operating results. These fluctuations would not be indicative of deficiencies in our models or inputs.

Allowance for Credit Losses

The allowance for credit losses, which includes the allowance for loan and lease losses and the reserve for unfunded lending commitments, represents management's estimate of probable losses inherent in the Corporation's loan portfolio excluding those loans accounted for under the fair value option. Our process for determining the allowance for credit losses is discussed in *Note 1 – Summary of Significant Accounting Principles* to the Consolidated Financial Statements.

Our estimate for the allowance for loan and lease losses is sensitive to the loss rates and expected cash flows from our Consumer Real Estate and Credit Card and Other Consumer portfolio segments, as well as our U.S. small business commercial card portfolio within the Commercial portfolio segment. For each one-percent increase in the loss rates on loans collectively evaluated for impairment in our Consumer Real Estate portfolio segment, excluding PCI loans, coupled with a one-percent decrease in the discounted cash flows on those loans individually evaluated for impairment within this portfolio segment, the allowance for loan and lease losses at December 31, 2017 would have increased $36 million. We subject our PCI portfolio to stress scenarios to evaluate the potential impact given certain events. A one-percent decrease in the expected cash flows could result in a $99 million impairment of the portfolio. Within our Credit Card and Other Consumer portfolio segment and U.S. small business commercial card portfolio, for each one-percent increase in the loss rates on loans collectively evaluated for impairment coupled with a one-percent decrease in the expected cash flows on those loans individually evaluated for impairment, the allowance for loan and lease losses at December 31, 2017 would have increased $41 million.

Our allowance for loan and lease losses is sensitive to the risk ratings assigned to loans and leases within the Commercial portfolio segment (excluding the U.S. small business commercial card portfolio). Assuming a downgrade of one level in the internal risk ratings for commercial loans and leases, except loans and leases already risk-rated Doubtful as defined by regulatory authorities, the allowance for loan and lease losses would have increased $2.6 billion at December 31, 2017.

The allowance for loan and lease losses as a percentage of total loans and leases at December 31, 2017 was 1.12 percent and these hypothetical increases in the allowance would raise the ratio to 1.41 percent.

These sensitivity analyses do not represent management's expectations of the deterioration in risk ratings or the increases in loss rates but are provided as hypothetical scenarios to assess the sensitivity of the allowance for loan and lease losses to changes in key inputs. We believe the risk ratings and loss severities currently in use are appropriate and that the probability of the alternative scenarios outlined above occurring within a short period of time is remote.

The process of determining the level of the allowance for credit losses requires a high degree of judgment. It is possible that others, given the same information, may at any point in time reach different reasonable conclusions.

Fair Value of Financial Instruments

We are, under applicable accounting standards, required to maximize the use of observable inputs and minimize the use of unobservable inputs in measuring fair value. We classify fair value measurements of financial instruments and MSRs based on the three-level fair value hierarchy in the accounting standards.

The fair values of assets and liabilities may include adjustments, such as market liquidity and credit quality, where appropriate. Valuations of products using models or other techniques are sensitive to assumptions used for the significant inputs. Where market data is available, the inputs used for valuation reflect that information as of our valuation date. Inputs to valuation models are considered unobservable if they are supported by little or no market activity. In periods of extreme volatility, lessened liquidity or in illiquid markets, there may be more variability in market pricing or a lack of market data to use in the valuation process. In keeping with the prudent application of estimates and management judgment in determining the fair value of assets and liabilities, we have in place various processes and controls that include: a model validation policy that requires review and approval of quantitative models used for deal pricing, financial statement fair value determination and risk quantification; a trading product valuation policy that requires verification of all traded product valuations; and a periodic review and substantiation of daily profit and loss reporting for all traded products. Primarily through validation controls, we utilize both broker and pricing service inputs which can and do include both market-observable and internally-modeled values and/or valuation inputs. Our reliance on this information is affected by our understanding of how the broker and/or pricing service develops its data with a higher degree of reliance applied to those that are more directly observable and lesser reliance applied to those developed through their own internal modeling. Similarly, broker quotes that are executable are given a higher level of reliance than indicative broker quotes, which are not executable. These processes and controls are performed independently of the business. For more information, see *Note 20 – Fair Value Measurements* and *Note 21 – Fair Value Option* to the Consolidated Financial Statements.

Level 3 Assets and Liabilities

Financial assets and liabilities, and MSRs, where values are based on valuation techniques that require inputs that are both unobservable and are significant to the overall fair value measurement are classified as Level 3 under the fair value hierarchy established in applicable accounting standards. The fair value of these Level 3 financial assets and liabilities and MSRs is determined using pricing models, discounted cash flow methodologies or similar techniques for which the determination of fair value requires significant management judgment or estimation. Total recurring Level 3 assets were $12.9 billion, or 0.57 percent of total assets, and total recurring Level 3 liabilities were $7.7 billion, or 0.38 percent of total liabilities, at December 31, 2017 compared to $14.5 billion or 0.66 percent and $7.2 billion or 0.37 percent at December 31, 2016.

Level 3 financial instruments may be hedged with derivatives classified as Level 1 or 2; therefore, gains or losses associated with Level 3 financial instruments may be offset by gains or losses associated with financial instruments classified in other levels of the fair value hierarchy. The Level 3 gains and losses recorded in earnings did not have a significant impact on our liquidity or capital. We conduct a review of our fair value hierarchy classifications on a quarterly basis. Transfers into or out of Level 3 are made if the significant inputs used in the financial models measuring the fair values of the assets and liabilities became unobservable or observable, respectively, in the current marketplace. These transfers are considered to be effective as of the beginning of the quarter in which they occur. For more information on the significant transfers into and out of Level 3 during 2017 and 2016, see *Note 20 – Fair Value Measurements* to the Consolidated Financial Statements.

Accrued Income Taxes and Deferred Tax Assets

Accrued income taxes, reported as a component of either other assets or accrued expenses and other liabilities on the Consolidated Balance Sheet, represent the net amount of current income taxes we expect to pay to or receive from various taxing jurisdictions attributable to our operations to date. We currently file income tax returns in more than 100 federal, state and non-U.S. jurisdictions and consider many factors, including statutory, judicial and regulatory guidance, in estimating the appropriate accrued income taxes for each jurisdiction.

Net deferred tax assets, reported as a component of other assets on the Consolidated Balance Sheet, represent the net decrease in taxes expected to be paid in the future because of net operating loss (NOL) and tax credit carryforwards and because of future reversals of temporary differences in the bases of assets and liabilities as measured by tax laws and their bases as reported in the financial statements. NOL and tax credit carryforwards result in reductions to future tax liabilities, and many of these attributes can expire if not utilized within certain periods. We consider the need for valuation allowances to reduce net deferred tax assets to the amounts that we estimate are more-likely-than-not to be realized.

Consistent with the applicable accounting standards, we monitor relevant tax authorities and change our estimates of accrued income taxes and/or net deferred tax assets due to changes in income tax laws and their interpretation by the courts and regulatory authorities. These revisions of our estimates, which also may result from our income tax planning and from the resolution of income tax audit matters, may be material to our operating results for any given period.

On December 22, 2017, the President signed into law the Tax Act which made significant changes to federal income tax law including, among other things, reducing the statutory corporate income tax rate to 21 percent from 35 percent and changing the taxation of our non-U.S. business activities. On that same date, the SEC issued Staff Accounting Bulletin No. 118, which specifies, among other things, that reasonable estimates of the income tax effects of the Tax Act should be used, if determinable. We have accounted for the effects of the Tax Act using reasonable estimates based on currently available information and our interpretations thereof. This accounting may change due to, among other things, changes in interpretations we have made and the issuance of new tax or accounting guidance.

See *Note 19 – Income Taxes* to the Consolidated Financial Statements for additional information. For more information, see Item 1A. Risk Factors of our 2017 Annual Report on Form 10-K.

Goodwill and Intangible Assets

The nature of and accounting for goodwill and intangible assets are discussed in *Note 1 – Summary of Significant Accounting Principles* and *Note 8 – Goodwill and Intangible Assets* to the Consolidated Financial Statements. Goodwill is reviewed for potential impairment at the reporting unit level on an annual basis, which for the Corporation is as of June 30, and in interim periods if events or circumstances indicate a potential impairment. A reporting unit is an operating segment or one level below.

We completed our annual goodwill impairment test as of June 30, 2017 for all of our reporting units that had goodwill. In performing that test, we compared the fair value of each reporting unit to its estimated carrying value as measured by allocated equity, which includes goodwill. To determine fair value, we utilized a combination of valuation techniques, consistent with the market approach and the income approach, and also utilized independent valuation specialists.

Under the market approach we estimated the fair value of the individual reporting units utilizing various market multiples from comparable publicly-traded companies in industries similar to the reporting unit, including the application of a control premium of 30 percent, based upon observed comparable premiums paid for change-in-control transactions for financial institutions.

Under the income approach, we estimated the fair value of the individual reporting units based on the net present value of estimated future cash flows, utilizing internal forecasts, and an appropriate terminal value. Discount rates used ranged from 8.9 to 13.3 percent and were derived from a capital asset pricing model (i.e., cost of equity financing) that we believe adequately reflects the risk and uncertainty specifically in our internally-developed forecasts, the financial markets generally and industries similar to each of the reporting units. Cumulative average growth rates developed by management for revenues and expenses in each reporting unit ranged from zero to 5.1 percent.

A prolonged decrease in a particular assumption could eventually lead to the fair value of a reporting unit being less than its carrying value.

Based on the results of the test, we determined that the fair value exceeded the carrying value for all reporting units that had goodwill, indicating there was no impairment.

Representations and Warranties Liability

The methodology used to estimate the liability for obligations under representations and warranties related to transfers of residential mortgage loans considers, among other things, the repurchase experience implied in prior settlements, and adjusts the experience implied by those prior settlements based on the characteristics of those trusts where the Corporation has a continuing possibility of timely claims. The estimate of the liability for obligations under representations and warranties is based upon currently available information, significant judgment, and a number of factors, including those set forth above, that are subject to change. Changes to any one of these factors could significantly impact the estimate of our liability.

The estimate of the liability for representations and warranties is sensitive to future defaults, loss severity and the net repurchase rate. An assumed simultaneous increase or decrease of 10 percent in estimated future defaults, loss severity and the net repurchase rate would result in an increase of approximately $250 million or decrease of approximately $200 million in the representations and warranties liability as of December 31, 2017. These sensitivities are hypothetical and are intended to provide an indication of the impact of a significant change in these key assumptions on the representations and warranties liability. In reality, changes in one assumption may result in changes in other assumptions, which may or may not counteract the sensitivity.

For more information on representations and warranties exposure and the corresponding estimated range of possible loss, see Off-Balance Sheet Arrangements and Contractual Obligations – Representations and Warranties on page 56, as well as *Note 7 – Representations and Warranties Obligations and Corporate Guarantees* and *Note 12 – Commitments and Contingencies* to the Consolidated Financial Statements.

2016 Compared to 2015

The following discussion and analysis provide a comparison of our results of operations for 2016 and 2015. This discussion should be read in conjunction with the Consolidated Financial Statements and related Notes.

Overview

Net Income

Net income was $17.8 billion, or $1.49 per diluted share in 2016 compared to $15.9 billion, or $1.31 per diluted share in 2015. The results for 2016 compared to 2015 were driven by higher net interest income and lower noninterest expense, partially offset by a decline in noninterest income and higher provision for credit losses.

Net Interest Income

Net interest income increased $2.1 billion to $41.1 billion in 2016 compared to 2015. The net interest yield increased seven bps to 2.21 percent for 2016. These increases were primarily driven by growth in commercial loans, the impact of higher short-end interest rates and increased debt securities balances, as well as a charge of $612 million in 2015 related to the redemption of certain trust preferred securities, partially offset by lower loan spreads and market-related hedge ineffectiveness.

Noninterest Income

Noninterest income decreased $1.4 billion to $42.6 billion in 2016 compared to 2015. The following highlights the significant changes.

- Service charges increased $257 million primarily due to higher treasury-related revenue.
- Investment and brokerage services income decreased $592 million driven by lower transactional revenue, and decreased asset management fees due to lower market valuations, partially offset by the impact of higher long-term AUM flows.
- Investment banking income decreased $331 million driven by lower equity issuance fees and advisory fees due to a decline in market fee pools.
- Trading account profits increased $429 million due to a stronger performance across credit products led by mortgages, and continued strength in rates products, partially offset by reduced client activity in equities.
- Mortgage banking income decreased $511 million primarily driven by a decline in production income, higher representations and warranties provision and lower servicing income, partially offset by more favorable MSR results, net of the related hedge performance.
- Gains on sales of debt securities decreased $648 million primarily driven by lower sales volume.
- Other income increased $102 million primarily due to lower DVA losses on structured liabilities, improved results from loans and the related hedging activities in the fair value option portfolio and lower payment protection insurance expense, partially offset by lower gains on asset sales. DVA losses related to structured liabilities were $97 million in 2015 compared to $633 million in 2015.

Provision for Credit Losses

The provision for credit losses increased $436 million to $3.6 billion for 2016 compared to 2015. The provision for credit losses was $224 million lower than net charge-offs for 2016, resulting in a reduction in the allowance for credit losses. This compared to a reduction of $1.2 billion in the allowance for credit losses in 2015.

The provision for credit losses for the consumer portfolio increased $360 million to $2.6 billion in 2016 compared to 2015 due to a slower pace of credit quality improvement. Included in the provision is a benefit of $45 million related to the PCI loan portfolio for 2016 compared to a benefit of $40 million in 2015. The provision for credit losses for the commercial portfolio, including unfunded lending commitments, increased $76 million to $1.0 billion in 2016 compared to 2015 driven by an increase in energy sector reserves in the first half of 2016 for the higher risk energy sub-sectors. While we experienced some deterioration in the energy sector in 2016, oil prices stabilized which contributed to a modest improvement in energy-related exposure by year end.

Noninterest Expense

Noninterest expense decreased $2.5 billion to $55.1 billion for 2016 compared to 2015. Personnel expense decreased $1.0 billion as we continued to manage headcount and achieve cost savings. Continued expense management, as well as the expiration of advisor retention awards, more than offset the increases in client-facing professionals. Professional fees decreased $293 million primarily due to lower legal fees. Other general operating expense decreased $655 million primarily driven by lower foreclosed properties expense and lower brokerage fees, partially offset by higher FDIC expense.

Income Tax Expense

The income tax expense was $7.2 billion on pretax income of $25.0 billion in 2016 compared to tax expense of $6.3 billion on pre-tax income of $22.2 billion in 2015. The effective tax rate for 2016 was 28.8 percent and was driven by our recurring tax preferences and net tax benefits related to various tax audit matters, partially offset by a $348 million charge for the impact of the U.K. tax law changes discussed below. The effective tax rate for 2015 was 28.3 percent and was driven by our recurring tax preferences and by tax benefits related to certain non-U.S. restructurings, partially offset by a charge for the impact of the U.K. tax law change enacted in 2015. The charge recorded in both years for the reduction in the U.K. corporate income tax rate was the result of remeasuring our U.K. net deferred tax assets using the lower tax rate.

Business Segment Operations

Consumer Banking

Net income for *Consumer Banking* increased $523 million to $7.2 billion in 2016 compared to 2015 primarily driven by lower noninterest expense and higher revenue, partially offset by higher provision for credit losses. Net interest income increased $862 million to $21.3 billion primarily due to the beneficial impact of an increase in investable assets as a result of higher deposits. Noninterest income decreased $650 million to $10.4 billion due to lower mortgage banking income and gains in 2015 on certain divestitures. The provision for credit losses increased $369 million to $2.7 billion in 2016 primarily driven by a slower pace of improvement in the credit card portfolio. Noninterest expense decreased $1.1 billion to $17.7 billion driven by improved operating efficiencies and lower fraud costs, partially offset by higher FDIC expense.

Global Wealth & Investment Management

Net income for *GWIM* increased $205 million to $2.8 billion in 2016 compared to 2015 driven by a decrease in noninterest expense, partially offset by a decrease in revenue. Net interest income increased $232 million to $5.8 billion driven by the impact of growth in loan and deposit balances. Noninterest income, which primarily includes investment and brokerage services income, decreased $616 million to $11.9 billion. The decline in noninterest income was driven by lower transactional revenue and decreased asset management fees primarily due to lower market valuations in 2016, partially offset by the impact of long-term AUM flows. Noninterest expense decreased $763 million to $13.2 billion primarily due to the expiration of advisor retention awards, lower revenue-related incentives and lower operating and support costs, partially offset by higher FDIC expense.

Global Banking

Net income for *Global Banking* increased $390 million to $5.7 billion in 2016 compared to 2015 as higher revenue more than offset an increase in the provision for credit losses. Revenue increased $824 million to $18.4 billion in 2016 compared to 2015 driven by higher net interest income, which increased $227 million to $9.5 billion driven by the impact of growth in loans and leases and higher deposits. Noninterest income increased $597 million to $9.0 billion primarily due to the impact from loans and the related loan hedging activities in the fair value option portfolio and higher treasury-related revenues, partially offset by lower investment banking fees. The provision for credit losses increased $197 million to $883 million in 2016 driven by increases in energy-related reserves as well as loan growth. Noninterest expense of $8.5 billion remained relatively unchanged in 2016 as investments in client-facing professionals in Commercial and Business Banking, higher severance costs and an increase in FDIC expense were largely offset by lower operating and support costs.

Global Markets

Net income for *Global Markets* increased $1.4 billion to $3.8 billion in 2016 compared to 2015. Net DVA losses were $238 million compared to losses of $786 million in 2015. Excluding net DVA, net income increased $1.1 billion to $4.0 billion in 2016 compared to 2015 primarily driven by higher sales and trading revenue and lower noninterest expense, partially offset by lower investment banking fees and investment and brokerage services revenue. Sales and trading revenue, excluding net DVA, increased $638 million primarily due to a stronger performance globally across credit products led by mortgages and continued strength in rates products. The increase was partially offset by challenging credit market conditions in early 2016 as well as reduced client activity in equities, most notably in Asia, and a less favorable trading environment for equity derivatives. Noninterest expense decreased $1.2 billion to $10.2 billion primarily due to lower litigation expense and lower revenue-related expenses.

All Other

The net loss for *All Other* increased $601 million to $1.7 billion in 2016 primarily due to lower gains on the sale of debt securities, lower mortgage banking income, lower gains on sales of consumer real estate loans and an increase in noninterest expense, partially offset by an improvement in the provision for credit losses. Mortgage banking income decreased $133 million primarily due to higher representations and warranties provision, partially offset by more favorable net MSR results. Gains on the sales of loans were $232 million in 2016 compared to gains of $1.0 billion in 2015. The benefit in the provision for credit losses improved $79 million to a benefit of $100 million in 2016 primarily driven by lower loan and lease balances from continued run-off of non-core consumer real estate loans. Noninterest expense increased $486 million to $5.6 billion driven by litigation expense.

Non-GAAP Reconciliations

Tables 54 and 55 provide reconciliations of certain non-GAAP financial measures to GAAP financial measures.

Table 54 Five-year Reconciliations to GAAP Financial Measures (1)

(Dollars in millions, shares in thousands)	2017	2016	2015	2014	2013
Reconciliation of net interest income to net interest income on a fully taxable-equivalent basis					
Net interest income	$ 44,667	$ 41,096	$ 38,958	$ 40,779	$ 40,719
Fully taxable-equivalent adjustment	925	900	889	851	859
Net interest income on a fully taxable-equivalent basis	$ 45,592	$ 41,996	$ 39,847	$ 41,630	$ 41,578
Reconciliation of total revenue, net of interest expense to total revenue, net of interest expense on a fully taxable-equivalent basis					
Total revenue, net of interest expense	$ 87,352	$ 83,701	$ 82,965	$ 85,894	$ 87,502
Fully taxable-equivalent adjustment	925	900	889	851	859
Total revenue, net of interest expense on a fully taxable-equivalent basis	$ 88,277	$ 84,601	$ 83,854	$ 86,745	$ 88,361
Reconciliation of income tax expense to income tax expense on a fully taxable-equivalent basis					
Income tax expense	$ 10,981	$ 7,199	$ 6,277	$ 2,443	$ 4,194
Fully taxable-equivalent adjustment	925	900	889	851	859
Income tax expense on a fully taxable-equivalent basis	$ 11,906	$ 8,099	$ 7,166	$ 3,294	$ 5,053
Reconciliation of average common shareholders' equity to average tangible common shareholders' equity					
Common shareholders' equity	$ 247,101	$ 241,187	$ 229,576	$ 222,907	$ 218,340
Goodwill	(69,286)	(69,750)	(69,772)	(69,809)	(69,910)
Intangible assets (excluding MSRs)	(2,652)	(3,382)	(4,201)	(5,109)	(6,132)
Related deferred tax liabilities	1,463	1,644	1,852	2,090	2,328
Tangible common shareholders' equity	$ 176,626	$ 169,699	$ 157,455	$ 150,079	$ 144,626
Reconciliation of average shareholders' equity to average tangible shareholders' equity					
Shareholders' equity	$ 271,289	$ 265,843	$ 251,384	$ 238,317	$ 233,819
Goodwill	(69,286)	(69,750)	(69,772)	(69,809)	(69,910)
Intangible assets (excluding MSRs)	(2,652)	(3,382)	(4,201)	(5,109)	(6,132)
Related deferred tax liabilities	1,463	1,644	1,852	2,090	2,328
Tangible shareholders' equity	$ 200,814	$ 194,355	$ 179,263	$ 165,489	$ 160,105
Reconciliation of year-end common shareholders' equity to year-end tangible common shareholders' equity					
Common shareholders' equity	$ 244,823	$ 240,975	$ 233,343	$ 224,167	$ 219,124
Goodwill	(68,951)	(69,744)	(69,761)	(69,777)	(69,844)
Intangible assets (excluding MSRs)	(2,312)	(2,989)	(3,768)	(4,612)	(5,574)
Related deferred tax liabilities	943	1,545	1,716	1,960	2,166
Tangible common shareholders' equity	$ 174,503	$ 169,787	$ 161,530	$ 151,738	$ 145,872
Reconciliation of year-end shareholders' equity to year-end tangible shareholders' equity					
Shareholders' equity	$ 267,146	$ 266,195	$ 255,615	$ 243,476	$ 232,475
Goodwill	(68,951)	(69,744)	(69,761)	(69,777)	(69,844)
Intangible assets (excluding MSRs)	(2,312)	(2,989)	(3,768)	(4,612)	(5,574)
Related deferred tax liabilities	943	1,545	1,716	1,960	2,166
Tangible shareholders' equity	$ 196,826	$ 195,007	$ 183,802	$ 171,047	$ 159,223
Reconciliation of year-end assets to year-end tangible assets					
Assets	$2,281,234	$2,188,067	$2,144,606	$2,104,539	$2,102,064
Goodwill	(68,951)	(69,744)	(69,761)	(69,777)	(69,844)
Intangible assets (excluding MSRs)	(2,312)	(2,989)	(3,768)	(4,612)	(5,574)
Related deferred tax liabilities	943	1,545	1,716	1,960	2,166
Tangible assets	$2,210,914	$2,116,879	$2,072,793	$2,032,110	$2,028,812

(1) Presents reconciliations of non-GAAP financial measures to GAAP financial measures. We believe the use of these non-GAAP financial measures provides additional clarity in assessing the results of the Corporation. Other companies may define or calculate these measures differently. For more information on non-GAAP financial measures and ratios we use in assessing the results of the Corporation, see Supplemental Financial Data on page 43.

Table 55 Quarterly Reconciliations to GAAP Financial Measures (1)

(Dollars in millions)	2017 Quarters Fourth	Third	Second	First	2016 Quarters Fourth	Third	Second	First
Reconciliation of net interest income to net interest income on a fully taxable-equivalent basis								
Net interest income	**$ 11,462**	$ 11,161	$ 10,986	$ 11,058	$ 10,292	$ 10,201	$ 10,118	$ 10,485
Fully taxable-equivalent adjustment	**251**	240	237	197	234	228	223	215
Net interest income on a fully taxable-equivalent basis	**$ 11,713**	$ 11,401	$ 11,223	$ 11,255	$ 10,526	$ 10,429	$ 10,341	$ 10,700
Reconciliation of total revenue, net of interest expense to total revenue, net of interest expense on a fully taxable-equivalent basis								
Total revenue, net of interest expense	**$ 20,436**	$ 21,839	$ 22,829	$ 22,248	$ 19,990	$ 21,635	$ 21,286	$ 20,790
Fully taxable-equivalent adjustment	**251**	240	237	197	234	228	223	215
Total revenue, net of interest expense on a fully taxable-equivalent basis	**$ 20,687**	$ 22,079	$ 23,066	$ 22,445	$ 20,224	$ 21,863	$ 21,509	$ 21,005
Reconciliation of income tax expense to income tax expense on a fully taxable-equivalent basis								
Income tax expense	**$ 3,796**	$ 2,187	$ 3,015	$ 1,983	$ 1,268	$ 2,257	$ 1,943	$ 1,731
Fully taxable-equivalent adjustment	**251**	240	237	197	234	228	223	215
Income tax expense on a fully taxable-equivalent basis	**$ 4,047**	$ 2,427	$ 3,252	$ 2,180	$ 1,502	$ 2,485	$ 2,166	$ 1,946
Reconciliation of average common shareholders' equity to average tangible common shareholders' equity								
Common shareholders' equity	**$ 250,838**	$ 249,214	$ 245,756	$ 242,480	$ 244,519	$ 243,220	$ 240,078	$ 236,871
Goodwill	**(68,954)**	(68,969)	(69,489)	(69,744)	(69,745)	(69,744)	(69,751)	(69,761)
Intangible assets (excluding MSRs)	**(2,399)**	(2,549)	(2,743)	(2,923)	(3,091)	(3,276)	(3,480)	(3,687)
Related deferred tax liabilities	**1,344**	1,465	1,506	1,539	1,580	1,628	1,662	1,707
Tangible common shareholders' equity	**$ 180,829**	$ 179,161	$ 175,030	$ 171,352	$ 173,263	$ 171,828	$ 168,509	$ 165,130
Reconciliation of average shareholders' equity to average tangible shareholders' equity								
Shareholders' equity	**$ 273,162**	$ 273,238	$ 270,977	$ 267,700	$ 269,739	$ 268,440	$ 265,056	$ 260,065
Goodwill	**(68,954)**	(68,969)	(69,489)	(69,744)	(69,745)	(69,744)	(69,751)	(69,761)
Intangible assets (excluding MSRs)	**(2,399)**	(2,549)	(2,743)	(2,923)	(3,091)	(3,276)	(3,480)	(3,687)
Related deferred tax liabilities	**1,344**	1,465	1,506	1,539	1,580	1,628	1,662	1,707
Tangible shareholders' equity	**$ 203,153**	$ 203,185	$ 200,251	$ 196,572	$ 198,483	$ 197,048	$ 193,487	$ 188,324
Reconciliation of period-end common shareholders' equity to period-end tangible common shareholders' equity								
Common shareholders' equity	**$ 244,823**	$ 249,646	$ 245,440	$ 242,770	$ 240,975	$ 244,379	$ 241,884	$ 238,501
Goodwill	**(68,951)**	(68,968)	(68,969)	(69,744)	(69,744)	(69,744)	(69,744)	(69,761)
Intangible assets (excluding MSRs)	**(2,312)**	(2,459)	(2,610)	(2,827)	(2,989)	(3,168)	(3,352)	(3,578)
Related deferred tax liabilities	**943**	1,435	1,471	1,513	1,545	1,588	1,637	1,667
Tangible common shareholders' equity	**$ 174,503**	$ 179,654	$ 175,332	$ 171,712	$ 169,787	$ 173,055	$ 170,425	$ 166,829
Reconciliation of period-end shareholders' equity to period-end tangible shareholders' equity								
Shareholders' equity	**$ 267,146**	$ 271,969	$ 270,660	$ 267,990	$ 266,195	$ 269,600	$ 267,104	$ 262,843
Goodwill	**(68,951)**	(68,968)	(68,969)	(69,744)	(69,744)	(69,744)	(69,744)	(69,761)
Intangible assets (excluding MSRs)	**(2,312)**	(2,459)	(2,610)	(2,827)	(2,989)	(3,168)	(3,352)	(3,578)
Related deferred tax liabilities	**943**	1,435	1,471	1,513	1,545	1,588	1,637	1,667
Tangible shareholders' equity	**$ 196,826**	$ 201,977	$ 200,552	$ 196,932	$ 195,007	$ 198,276	$ 195,645	$ 191,171
Reconciliation of period-end assets to period-end tangible assets								
Assets	**$ 2,281,234**	$ 2,284,174	$ 2,254,714	$ 2,247,794	$ 2,188,067	$ 2,195,588	$ 2,187,149	$ 2,185,818
Goodwill	**(68,951)**	(68,968)	(68,969)	(69,744)	(69,744)	(69,744)	(69,744)	(69,761)
Intangible assets (excluding MSRs)	**(2,312)**	(2,459)	(2,610)	(2,827)	(2,989)	(3,168)	(3,352)	(3,578)
Related deferred tax liabilities	**943**	1,435	1,471	1,513	1,545	1,588	1,637	1,667
Tangible assets	**$ 2,210,914**	$ 2,214,182	$ 2,184,606	$ 2,176,736	$ 2,116,879	$ 2,124,264	$ 2,115,690	$ 2,114,146

(1) Presents reconciliations of non-GAAP financial measures to GAAP financial measures. We believe the use of these non-GAAP financial measures provides additional clarity in assessing the results of the Corporation. Other companies may define or calculate these measures differently. For more information on non-GAAP financial measures and ratios we use in assessing the results of the Corporation, see Supplemental Financial Data on page 43.

Statistical Tables
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Table I Outstanding Loans and Leases

(Dollars in millions)	December 31 2017	2016	2015	2014	2013
Consumer					
Residential mortgage (1)	**$ 203,811**	$ 191,797	$ 187,911	$ 216,197	$ 248,066
Home equity	**57,744**	66,443	75,948	85,725	93,672
U.S. credit card	**96,285**	92,278	89,602	91,879	92,338
Non-U.S. credit card	**—**	9,214	9,975	10,465	11,541
Direct/Indirect consumer (2)	**93,830**	94,089	88,795	80,381	82,192
Other consumer (3)	**2,678**	2,499	2,067	1,846	1,977
Total consumer loans excluding loans accounted for under the fair value option	**454,348**	456,320	454,298	486,493	529,786
Consumer loans accounted for under the fair value option (4)	**928**	1,051	1,871	2,077	2,164
Total consumer	**455,276**	457,371	456,169	488,570	531,950
Commercial					
U.S. commercial (5)	**298,485**	283,365	265,647	233,586	225,851
Non-U.S. commercial	**97,792**	89,397	91,549	80,083	89,462
Commercial real estate (6)	**58,298**	57,355	57,199	47,682	47,893
Commercial lease financing	**22,116**	22,375	21,352	19,579	25,199
Total commercial loans excluding loans accounted for under the fair value option	**476,691**	452,492	435,747	380,930	388,405
Commercial loans accounted for under the fair value option (4)	**4,782**	6,034	5,067	6,604	7,878
Total commercial	**481,473**	458,526	440,814	387,534	396,283
Less: Loans of business held for sale (7)	**—**	(9,214)	—	—	—
Total loans and leases	**$ 936,749**	$ 906,683	$ 896,983	$ 876,104	$ 928,233

(1) Includes pay option loans of $1.4 billion, $1.8 billion, $2.3 billion, $3.2 billion and $4.4 billion at December 31, 2017, 2016, 2015, 2014 and 2013, respectively. The Corporation no longer originates pay option loans.

(2) Includes auto and specialty lending loans of $49.9 billion, $48.9 billion, $42.6 billion, $37.7 billion and $38.5 billion, unsecured consumer lending loans of $469 million, $585 million, $886 million, $1.5 billion and $2.7 billion, U.S. securities-based lending loans of $39.8 billion, $40.1 billion, $39.8 billion, $35.8 billion and $31.2 billion, non-U.S. consumer loans of $3.0 billion, $3.0 billion, $3.9 billion, $4.0 billion and $4.7 billion, student loans of $0, $497 million, $564 million, $632 million and $4.1 billion, and other consumer loans of $684 million, $1.1 billion, $1.0 billion, $761 million and $1.0 billion at December 31, 2017, 2016, 2015, 2014 and 2013, respectively.

(3) Includes consumer finance loans of $0, $465 million, $564 million, $676 million and $1.2 billion, consumer leases of $2.5 billion, $1.9 billion, $1.4 billion, $1.0 billion and $606 million, and consumer overdrafts of $163 million, $157 million, $146 million, $162 million and $176 million at December 31, 2017, 2016, 2015, 2014 and 2013, respectively.

(4) Consumer loans accounted for under the fair value option includes residential mortgage loans of $567 million, $710 million, $1.6 billion, $1.9 billion and $2.0 billion, and home equity loans of $361 million, $341 million, $250 million, $196 million and $147 million at December 31, 2017, 2016, 2015, 2014 and 2013, respectively. Commercial loans accounted for under the fair value option includes U.S. commercial loans of $2.6 billion, $2.9 billion, $2.3 billion, $1.9 billion and $1.5 billion, and non-U.S. commercial loans of $2.2 billion, $3.1 billion, $2.8 billion, $4.7 billion and $6.4 billion at December 31, 2017, 2016, 2015, 2014 and 2013, respectively.

(5) Includes U.S. small business commercial loans, including card-related products, of $13.6 billion, $13.0 billion, $12.9 billion, $13.3 billion and $13.3 billion at December 31, 2017, 2016, 2015, 2014 and 2013, respectively.

(6) Includes U.S. commercial real estate loans of $54.8 billion, $54.3 billion, $53.6 billion, $45.2 billion and $46.3 billion, and non-U.S. commercial real estate loans of $3.5 billion, $3.1 billion, $3.5 billion, $2.5 billion and $1.6 billion at December 31, 2017, 2016, 2015, 2014 and 2013, respectively.

(7) Represents non-U.S. credit card loans, which were included in assets of business held for sale on the Consolidated Balance Sheet.

Table II Nonperforming Loans, Leases and Foreclosed Properties [1]

(Dollars in millions)	December 31 2017	2016	2015	2014	2013
Consumer					
Residential mortgage	**$ 2,476**	$ 3,056	$ 4,803	$ 6,889	$ 11,712
Home equity	**2,644**	2,918	3,337	3,901	4,075
Direct/Indirect consumer	**46**	28	24	28	35
Other consumer	**—**	2	1	1	18
Total consumer [2]	**5,166**	6,004	8,165	10,819	15,840
Commercial					
U.S. commercial	**814**	1,256	867	701	819
Non-U.S. commercial	**299**	279	158	1	64
Commercial real estate	**112**	72	93	321	322
Commercial lease financing	**24**	36	12	3	16
	1,249	1,643	1,130	1,026	1,221
U.S. small business commercial	**55**	60	82	87	88
Total commercial [3]	**1,304**	1,703	1,212	1,113	1,309
Total nonperforming loans and leases	**6,470**	7,707	9,377	11,932	17,149
Foreclosed properties	**288**	377	459	697	623
Total nonperforming loans, leases and foreclosed properties	**$ 6,758**	$ 8,084	$ 9,836	$ 12,629	$ 17,772

(1) Balances do not include PCI loans even though the customer may be contractually past due. PCI loans are recorded at fair value upon acquisition and accrete interest income over the remaining life of the loan. In addition, balances do not include foreclosed properties insured by certain government-guaranteed loans, principally FHA-insured loans, that entered foreclosure of $801 million, $1.2 billion, $1.4 billion, $1.1 billion and $1.4 billion at December 31, 2017, 2016, 2015, 2014 and 2013, respectively.

(2) In 2017, $867 million in interest income was estimated to be contractually due on $5.2 billion of consumer loans and leases classified as nonperforming at December 31, 2017, as presented in the table above, plus $10.1 billion of TDRs classified as performing at December 31, 2017. Approximately $578 million of the estimated $867 million in contractual interest was received and included in interest income for 2017.

(3) In 2017, $90 million in interest income was estimated to be contractually due on $1.3 billion of commercial loans and leases classified as nonperforming at December 31, 2017, as presented in the table above, plus $1.1 billion of TDRs classified as performing at December 31, 2017. Approximately $58 million of the estimated $90 million in contractual interest was received and included in interest income for 2017.

Table III Accruing Loans and Leases Past Due 90 Days or More (1)

(Dollars in millions)	December 31 2017	2016	2015	2014	2013
Consumer					
Residential mortgage (2)	**$ 3,230**	$ 4,793	$ 7,150	$ 11,407	$ 16,961
U.S. credit card	**900**	782	789	866	1,053
Non-U.S. credit card	**—**	66	76	95	131
Direct/Indirect consumer	**40**	34	39	64	408
Other consumer	**—**	4	3	1	2
Total consumer	**4,170**	5,679	8,057	12,433	18,555
Commercial					
U.S. commercial	**144**	106	113	110	47
Non-U.S. commercial	**3**	5	1	—	17
Commercial real estate	**4**	7	3	3	21
Commercial lease financing	**19**	19	15	40	41
	170	137	132	153	126
U.S. small business commercial	**75**	71	61	67	78
Total commercial	**245**	208	193	220	204
Total accruing loans and leases past due 90 days or more (3)	**$ 4,415**	$ 5,887	$ 8,250	$ 12,653	$ 18,759

(1) Our policy is to classify consumer real estate-secured loans as nonperforming at 90 days past due, except the PCI loan portfolio, the fully-insured loan portfolio and loans accounted for under the fair value option as referenced in footnote 3.
(2) Balances are fully-insured loans.
(3) Balances exclude loans accounted for under the fair value option. At December 31, 2017, 2016, 2015, 2014 and 2013, $2 million, $1 million, $1 million, $5 million and $8 million of loans accounted for under the fair value option were past due 90 days or more and still accruing interest.

Table IV Allowance for Credit Losses

(Dollars in millions)	2017	2016	2015	2014	2013
Allowance for loan and lease losses, January 1	$ 11,237	$ 12,234	$ 14,419	$ 17,428	$ 24,179
Loans and leases charged off					
Residential mortgage	(188)	(403)	(866)	(855)	(1,508)
Home equity	(582)	(752)	(975)	(1,364)	(2,258)
U.S. credit card	(2,968)	(2,691)	(2,738)	(3,068)	(4,004)
Non-U.S. credit card [(1)]	(103)	(238)	(275)	(357)	(508)
Direct/Indirect consumer	(487)	(392)	(383)	(456)	(710)
Other consumer	(216)	(232)	(224)	(268)	(273)
Total consumer charge-offs	(4,544)	(4,708)	(5,461)	(6,368)	(9,261)
U.S. commercial [(2)]	(589)	(567)	(536)	(584)	(774)
Non-U.S. commercial	(446)	(133)	(59)	(35)	(79)
Commercial real estate	(24)	(10)	(30)	(29)	(251)
Commercial lease financing	(16)	(30)	(19)	(10)	(4)
Total commercial charge-offs	(1,075)	(740)	(644)	(658)	(1,108)
Total loans and leases charged off	(5,619)	(5,448)	(6,105)	(7,026)	(10,369)
Recoveries of loans and leases previously charged off					
Residential mortgage	288	272	393	969	424
Home equity	369	347	339	457	455
U.S. credit card	455	422	424	430	628
Non-U.S. credit card	28	63	87	115	109
Direct/Indirect consumer	276	258	271	287	365
Other consumer	50	27	31	39	39
Total consumer recoveries	1,466	1,389	1,545	2,297	2,020
U.S. commercial [(3)]	142	175	172	214	287
Non-U.S. commercial	6	13	5	1	34
Commercial real estate	15	41	35	112	102
Commercial lease financing	11	9	10	19	29
Total commercial recoveries	174	238	222	346	452
Total recoveries of loans and leases previously charged off	1,640	1,627	1,767	2,643	2,472
Net charge-offs	(3,979)	(3,821)	(4,338)	(4,383)	(7,897)
Write-offs of PCI loans	(207)	(340)	(808)	(810)	(2,336)
Provision for loan and lease losses	3,381	3,581	3,043	2,231	3,574
Other [(4)]	(39)	(174)	(82)	(47)	(92)
Total allowance for loan and lease losses, December 31	10,393	11,480	12,234	14,419	17,428
Less: Allowance included in assets of business held for sale [(5)]	—	(243)	—	—	—
Allowance for loan and lease losses, December 31	10,393	11,237	12,234	14,419	17,428
Reserve for unfunded lending commitments, January 1	762	646	528	484	513
Provision for unfunded lending commitments	15	16	118	44	(18)
Other [(4)]	—	100	—	—	(11)
Reserve for unfunded lending commitments, December 31	777	762	646	528	484
Allowance for credit losses, December 31	$ 11,170	$ 11,999	$ 12,880	$ 14,947	$ 17,912

(1) Represents net charge-offs related to the non-U.S. credit card loan portfolio, which was included in assets of business held for sale on the Consolidated Balance Sheet at December 31, 2016. In 2017, the Corporation sold its non-U.S. consumer credit card business.
(2) Includes U.S. small business commercial charge-offs of $258 million, $253 million, $282 million, $345 million and $457 million in 2017, 2016, 2015, 2014 and 2013, respectively.
(3) Includes U.S. small business commercial recoveries of $43 million, $45 million, $57 million, $63 million and $98 million in 2017, 2016, 2015, 2014 and 2013, respectively.
(4) Primarily represents the net impact of portfolio sales, consolidations and deconsolidations, foreign currency translation adjustments, transfers to held-for-sale and certain other reclassifications.
(5) Represents allowance related to the non-U.S. credit card loan portfolio, which was sold in 2017.

Table IV Allowance for Credit Losses (continued)

(Dollars in millions)	2017	2016	2015	2014	2013
Loan and allowance ratios [(6)]:					
Loans and leases outstanding at December 31 [(7)]	**$ 931,039**	$ 908,812	$ 890,045	$ 867,422	$ 918,191
Allowance for loan and lease losses as a percentage of total loans and leases outstanding at December 31 [(7)]	**1.12%**	1.26%	1.37%	1.66%	1.90%
Consumer allowance for loan and lease losses as a percentage of total consumer loans and leases outstanding at December 31 [(8)]	**1.18**	1.36	1.63	2.05	2.53
Commercial allowance for loan and lease losses as a percentage of total commercial loans and leases outstanding at December 31 [(9)]	**1.05**	1.16	1.11	1.16	1.03
Average loans and leases outstanding [(7)]	**$ 911,988**	$ 892,255	$ 869,065	$ 888,804	$ 909,127
Net charge-offs as a percentage of average loans and leases outstanding [(7, 10)]	**0.44%**	0.43%	0.50%	0.49%	0.87%
Net charge-offs and PCI write-offs as a percentage of average loans and leases outstanding [(7)]	**0.46**	0.47	0.59	0.58	1.13
Allowance for loan and lease losses as a percentage of total nonperforming loans and leases at December 31 [(7, 11)]	**161**	149	130	121	102
Ratio of the allowance for loan and lease losses at December 31 to net charge-offs [(10)]	**2.61**	3.00	2.82	3.29	2.21
Ratio of the allowance for loan and lease losses at December 31 to net charge-offs and PCI write-offs	**2.48**	2.76	2.38	2.78	1.70
Amounts included in allowance for loan and lease losses for loans and leases that are excluded from nonperforming loans and leases at December 31 [(12)]	**$ 3,971**	$ 3,951	$ 4,518	$ 5,944	$ 7,680
Allowance for loan and lease losses as a percentage of total nonperforming loans and leases, excluding the allowance for loan and lease losses for loans and leases that are excluded from nonperforming loans and leases at December 31 [(7, 12)]	**99%**	98%	82%	71%	57%
Loan and allowance ratios excluding PCI loans and the related valuation allowance [(6, 13)]:					
Allowance for loan and lease losses as a percentage of total loans and leases outstanding at December 31 [(7)]	**1.10%**	1.24%	1.31%	1.51%	1.67%
Consumer allowance for loan and lease losses as a percentage of total consumer loans and leases outstanding at December 31 [(8)]	**1.15**	1.31	1.50	1.79	2.17
Net charge-offs as a percentage of average loans and leases outstanding [(7)]	**0.44**	0.44	0.51	0.50	0.90
Allowance for loan and lease losses as a percentage of total nonperforming loans and leases at December 31 [(7, 11)]	**156**	144	122	107	87
Ratio of the allowance for loan and lease losses at December 31 to net charge-offs	**2.54**	2.89	2.64	2.91	1.89

(6) Loan and allowance ratios for 2016 include $243 million of non-U.S. credit card allowance for loan and lease losses and $9.2 billion of ending non-U.S. credit card loans, which were included in assets of business held for sale on the Consolidated Balance Sheet at December 31, 2016. See footnote 1 for more information.

(7) Outstanding loan and lease balances and ratios do not include loans accounted for under the fair value option of $5.7 billion, $7.1 billion, $6.9 billion, $8.7 billion and $10.0 billion at December 31, 2017, 2016, 2015, 2014 and 2013, respectively. Average loans accounted for under the fair value option were $6.7 billion, $8.2 billion, $7.7 billion, $9.9 billion and $9.5 billion in 2017, 2016, 2015, 2014 and 2013, respectively.

(8) Excludes consumer loans accounted for under the fair value option of $928 million, $1.1 billion, $1.9 billion, $2.1 billion and $2.2 billion at December 31, 2017, 2016, 2015, 2014 and 2013, respectively.

(9) Excludes commercial loans accounted for under the fair value option of $4.8 billion, $6.0 billion, $5.1 billion, $6.6 billion and $7.9 billion at December 31, 2017, 2016, 2015, 2014 and 2013, respectively.

(10) Net charge-offs exclude $207 million, $340 million, $808 million, $810 million and $2.3 billion of write-offs in the PCI loan portfolio in 2017, 2016, 2015, 2014 and 2013 respectively. For more information on PCI write-offs, see Consumer Portfolio Credit Risk Management – Purchased Credit-impaired Loan Portfolio on page 76.

(11) For more information on our definition of nonperforming loans, see page 78 and page 83.

(12) Primarily includes amounts allocated to U.S. credit card and unsecured consumer lending portfolios in *Consumer Banking*, PCI loans and the non-U.S. credit portfolio in *All Other*.

(13) For more information on the PCI loan portfolio and the valuation allowance for PCI loans, see *Note 4 – Outstanding Loans and Leases* and *Note 5 – Allowance for Credit Losses* to the Consolidated Financial Statements.

Table V Allocation of the Allowance for Credit Losses by Product Type

(Dollars in millions)	2017 Amount	2017 Percent of Total	2016 Amount	2016 Percent of Total	2015 Amount	2015 Percent of Total	2014 Amount	2014 Percent of Total	2013 Amount	2013 Percent of Total
	December 31									
Allowance for loan and lease losses										
Residential mortgage	**$ 701**	**6.74%**	$ 1,012	8.82%	$ 1,500	12.26%	$ 2,900	20.11%	$ 4,084	23.43%
Home equity	**1,019**	**9.80**	1,738	15.14	2,414	19.73	3,035	21.05	4,434	25.44
U.S. credit card	**3,368**	**32.41**	2,934	25.56	2,927	23.93	3,320	23.03	3,930	22.55
Non-U.S. credit card	**—**	**—**	243	2.12	274	2.24	369	2.56	459	2.63
Direct/Indirect consumer	**262**	**2.52**	244	2.13	223	1.82	299	2.07	417	2.39
Other consumer	**33**	**0.32**	51	0.44	47	0.38	59	0.41	99	0.58
Total consumer	**5,383**	**51.79**	6,222	54.21	7,385	60.36	9,982	69.23	13,423	77.02
U.S. commercial (1)	**3,113**	**29.95**	3,326	28.97	2,964	24.23	2,619	18.16	2,394	13.74
Non-U.S. commercial	**803**	**7.73**	874	7.61	754	6.17	649	4.50	576	3.30
Commercial real estate	**935**	**9.00**	920	8.01	967	7.90	1,016	7.05	917	5.26
Commercial lease financing	**159**	**1.53**	138	1.20	164	1.34	153	1.06	118	0.68
Total commercial	**5,010**	**48.21**	5,258	45.79	4,849	39.64	4,437	30.77	4,005	22.98
Total allowance for loan and lease losses (2)	**10,393**	**100.00%**	11,480	100.00%	12,234	100.00%	14,419	100.00%	17,428	100.00%
Less: Allowance included in assets of business held for sale (3)	**—**		(243)		—		—		—	
Allowance for loan and lease losses	**10,393**		11,237		12,234		14,419		17,428	
Reserve for unfunded lending commitments	**777**		762		646		528		484	
Allowance for credit losses	**$ 11,170**		$ 11,999		$ 12,880		$ 14,947		$ 17,912	

(1) Includes allowance for loan and lease losses for U.S. small business commercial loans of $439 million, $416 million, $507 million, $536 million and $462 million at December 31, 2017, 2016, 2015, 2014 and 2013, respectively.
(2) Includes $289 million, $419 million, $804 million, $1.7 billion and $2.5 billion of valuation allowance presented with the allowance for loan and lease losses related to PCI loans at December 31, 2017, 2016, 2015, 2014 and 2013, respectively.
(3) Represents allowance for loan and lease losses related to the non-U.S. credit card loan portfolio, which was included in assets of business held for sale on the Consolidated Balance Sheet at December 31, 2016. In 2017, the Corporation sold its non-U.S. consumer credit card business.

Table VI Selected Loan Maturity Data (1, 2)

(Dollars in millions)	Due in One Year or Less	Due After One Year Through Five Years	Due After Five Years	Total
	December 31, 2017			
U.S. commercial	$ 74,563	$ 177,459	$ 49,090	**$ 301,112**
U.S. commercial real estate	14,015	35,741	5,005	**54,761**
Non-U.S. and other (3)	42,933	53,094	7,457	**103,484**
Total selected loans	**$ 131,511**	**$ 266,294**	**$ 61,552**	**$ 459,357**
Percent of total	29%	58%	13%	**100%**
Sensitivity of selected loans to changes in interest rates for loans due after one year:				
Fixed interest rates		$ 17,765	$ 27,992	
Floating or adjustable interest rates		248,529	33,560	
Total		**$ 266,294**	**$ 61,552**	

(1) Loan maturities are based on the remaining maturities under contractual terms.
(2) Includes loans accounted for under the fair value option.
(3) Loan maturities include non-U.S. commercial and commercial real estate loans.

Financial Statements and Notes
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Report of Management on Internal Control Over Financial Reporting

Bank of America Corporation and Subsidiaries

The management of Bank of America Corporation is responsible for establishing and maintaining adequate internal control over financial reporting.

The Corporation'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 accounting principles generally accepted in the United States of America. The Corporation'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 Corporation; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with accounting principles generally accepted in the United States of America, and that receipts and expenditures of the Corporation are being made only in accordance with authorizations of management and directors of the Corporation; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Corporation'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.

Management assessed the effectiveness of the Corporation's internal control over financial reporting as of December 31, 2017 based on the framework set forth by the Committee of Sponsoring Organizations of the Treadway Commission in *Internal Control – Integrated Framework (2013)*. Based on that assessment, management concluded that, as of December 31, 2017, the Corporation's internal control over financial reporting is effective.

The Corporation's internal control over financial reporting as of December 31, 2017 has been audited by PricewaterhouseCoopers, LLP, an independent registered public accounting firm, as stated in their accompanying report which expresses an unqualified opinion on the effectiveness of the Corporation's internal control over financial reporting as of December 31, 2017.

Brian T. Moynihan
Chairman, Chief Executive Officer and President

Paul M. Donofrio
Chief Financial Officer

Report of Independent Registered Public Accounting Firm

Bank of America Corporation and Subsidiaries

To the Board of Directors and Shareholders of Bank of America Corporation:

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Bank of America Corporation and its subsidiaries as of December 31, 2017 and December 31, 2016, and the related consolidated statements of income, comprehensive income, changes in shareholders' equity and cash flows for each of the three years in the period ended December 31, 2017, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Corporation's internal control over financial reporting as of December 31, 2017, 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 Corporation as of December 31, 2017 and December 31, 2016, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2017 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Corporation maintained, in all material respects, effective internal control over financial reporting as of December 31, 2017, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.

Change In Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Corporation changed the manner in which it accounts for the determination of when certain stock-based compensation awards are considered authorized for purposes of determining their service inception date.

Basis for Opinions

The Corporation'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 the accompanying Report of Management on Internal Control Over Financial Reporting. Our responsibility is to express opinions on the Corporation's consolidated financial statements and on the Corporation'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 Corporation 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.

PricewaterhouseCoopers LLP

Charlotte, North Carolina
February 22, 2018

We have served as the Corporation's auditor since 1958.

Consolidated Statement of Income

(Dollars in millions, except per share information)	2017	2016	2015
Interest income			
Loans and leases	$ 36,221	$ 33,228	$ 31,918
Debt securities	10,471	9,167	9,178
Federal funds sold and securities borrowed or purchased under agreements to resell	2,390	1,118	988
Trading account assets	4,474	4,423	4,397
Other interest income	4,023	3,121	3,026
Total interest income	57,579	51,057	49,507
Interest expense			
Deposits	1,931	1,015	861
Short-term borrowings	3,538	2,350	2,387
Trading account liabilities	1,204	1,018	1,343
Long-term debt	6,239	5,578	5,958
Total interest expense	12,912	9,961	10,549
Net interest income	44,667	41,096	38,958
Noninterest income			
Card income	5,902	5,851	5,959
Service charges	7,818	7,638	7,381
Investment and brokerage services	13,281	12,745	13,337
Investment banking income	6,011	5,241	5,572
Trading account profits	7,277	6,902	6,473
Mortgage banking income	224	1,853	2,364
Gains on sales of debt securities	255	490	1,138
Other income	1,917	1,885	1,783
Total noninterest income	42,685	42,605	44,007
Total revenue, net of interest expense	87,352	83,701	82,965
Provision for credit losses	3,396	3,597	3,161
Noninterest expense			
Personnel	31,642	31,748	32,751
Occupancy	4,009	4,038	4,093
Equipment	1,692	1,804	2,039
Marketing	1,746	1,703	1,811
Professional fees	1,888	1,971	2,264
Data processing	3,139	3,007	3,115
Telecommunications	699	746	823
Other general operating	9,928	10,066	10,721
Total noninterest expense	54,743	55,083	57,617
Income before income taxes	29,213	25,021	22,187
Income tax expense	10,981	7,199	6,277
Net income	$ 18,232	$ 17,822	$ 15,910
Preferred stock dividends	1,614	1,682	1,483
Net income applicable to common shareholders	$ 16,618	$ 16,140	$ 14,427
Per common share information			
Earnings	$ 1.63	$ 1.57	$ 1.38
Diluted earnings	1.56	1.49	1.31
Dividends paid	0.39	0.25	0.20
Average common shares issued and outstanding (in thousands)	10,195,646	10,284,147	10,462,282
Average diluted common shares issued and outstanding (in thousands)	10,778,428	11,046,806	11,236,230

See accompanying Notes to Consolidated Financial Statements.

Consolidated Statement of Comprehensive Income

(Dollars in millions)	2017	2016	2015
Net income	**$ 18,232**	$ 17,822	$ 15,910
Other comprehensive income (loss), net-of-tax:			
Net change in debt and marketable equity securities	**61**	(1,345)	(1,580)
Net change in debit valuation adjustments	**(293)**	(156)	615
Net change in derivatives	**64**	182	584
Employee benefit plan adjustments	**288**	(524)	394
Net change in foreign currency translation adjustments	**86**	(87)	(123)
Other comprehensive income (loss)	**206**	(1,930)	(110)
Comprehensive income	**$ 18,438**	$ 15,892	$ 15,800

See accompanying Notes to Consolidated Financial Statements.

Consolidated Balance Sheet

(Dollars in millions)	December 31 2017	December 31 2016
Assets		
Cash and due from banks	**$ 29,480**	$ 30,719
Interest-bearing deposits with the Federal Reserve, non-U.S. central banks and other banks	**127,954**	117,019
Cash and cash equivalents	**157,434**	147,738
Time deposits placed and other short-term investments	**11,153**	9,861
Federal funds sold and securities borrowed or purchased under agreements to resell (includes **$52,906** and $49,750 measured at fair value)	**212,747**	198,224
Trading account assets (includes **$106,274** and $106,057 pledged as collateral)	**209,358**	180,209
Derivative assets	**37,762**	42,512
Debt securities:		
Carried at fair value (includes **$29,830** and $29,804 pledged as collateral)	**315,117**	313,660
Held-to-maturity, at cost (fair value – **$123,299** and $115,285; **$6,007** and $8,233 pledged as collateral)	**125,013**	117,071
Total debt securities	**440,130**	430,731
Loans and leases (includes **$5,710** and $7,085 measured at fair value and **$40,051** and $31,805 pledged as collateral)	**936,749**	906,683
Allowance for loan and lease losses	**(10,393)**	(11,237)
Loans and leases, net of allowance	**926,356**	895,446
Premises and equipment, net	**9,247**	9,139
Mortgage servicing rights	**2,302**	2,747
Goodwill	**68,951**	68,969
Loans held-for-sale (includes **$2,156** and $4,026 measured at fair value)	**11,430**	9,066
Customer and other receivables	**61,623**	58,759
Assets of business held for sale (includes $619 measured at fair value at December 31, 2016)	**—**	10,670
Other assets (includes **$20,279** and $13,802 measured at fair value)	**132,741**	123,996
Total assets	**$ 2,281,234**	$ 2,188,067

Assets of consolidated variable interest entities included in total assets above (isolated to settle the liabilities of the variable interest entities)		
Trading account assets	**$ 6,521**	$ 5,773
Loans and leases	**48,929**	56,001
Allowance for loan and lease losses	**(1,016)**	(1,032)
Loans and leases, net of allowance	**47,913**	54,969
Loans held-for-sale	**27**	188
All other assets	**1,694**	1,596
Total assets of consolidated variable interest entities	**$ 56,155**	$ 62,526

See accompanying Notes to Consolidated Financial Statements.

Consolidated Balance Sheet (continued)

(Dollars in millions)	December 31 2017	December 31 2016
Liabilities		
Deposits in U.S. offices:		
Noninterest-bearing	**$ 430,650**	$ 438,125
Interest-bearing (includes **$449** and $731 measured at fair value)	**796,576**	750,891
Deposits in non-U.S. offices:		
Noninterest-bearing	**14,024**	12,039
Interest-bearing	**68,295**	59,879
Total deposits	**1,309,545**	1,260,934
Federal funds purchased and securities loaned or sold under agreements to repurchase (includes **$36,182** and $35,766 measured at fair value)	**176,865**	170,291
Trading account liabilities	**81,187**	63,031
Derivative liabilities	**34,300**	39,480
Short-term borrowings (includes **$1,494** and $2,024 measured at fair value)	**32,666**	23,944
Accrued expenses and other liabilities (includes **$22,840** and $14,630 measured at fair value and **$777** and $762 of reserve for unfunded lending commitments)	**152,123**	147,369
Long-term debt (includes **$31,786** and $30,037 measured at fair value)	**227,402**	216,823
Total liabilities	**2,014,088**	1,921,872
Commitments and contingencies *(Note 6 – Securitizations and Other Variable Interest Entities, Note 7 – Representations and Warranties Obligations and Corporate Guarantees* and *Note 10 – Commitments and Contingencies)*		
Shareholders' equity		
Preferred stock, $0.01 par value; authorized – **100,000,000** shares; issued and outstanding – **3,837,683** and 3,887,329 shares	**22,323**	25,220
Common stock and additional paid-in capital, $0.01 par value; authorized – **12,800,000,000** shares; issued and outstanding – **10,287,302,431** and 10,052,625,604 shares	**138,089**	147,038
Retained earnings	**113,816**	101,225
Accumulated other comprehensive income (loss)	**(7,082)**	(7,288)
Total shareholders' equity	**267,146**	266,195
Total liabilities and shareholders' equity	**$ 2,281,234**	$ 2,188,067

Liabilities of consolidated variable interest entities included in total liabilities above	2017	2016
Short-term borrowings	**$ 312**	$ 348
Long-term debt (includes **$9,872** and $10,417 of non-recourse debt)	**9,873**	10,646
All other liabilities (includes **$34** and $38 of non-recourse liabilities)	**37**	41
Total liabilities of consolidated variable interest entities	**$ 10,222**	$ 11,035

See accompanying Notes to Consolidated Financial Statements.

Consolidated Statement of Changes in Shareholders' Equity

(Dollars in millions, shares in thousands)	Preferred Stock	Common Stock and Additional Paid-in Capital Shares	Common Stock and Additional Paid-in Capital Amount	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total Shareholders' Equity
Balance, December 31, 2014	$ 19,309	10,516,542	$ 153,458	$ 74,731	$ (4,022)	$ 243,476
Cumulative adjustment for accounting change related to debit valuation adjustments				1,226	(1,226)	—
Cumulative adjustment for accounting change related to retirement-eligible stock-based compensation expense				(635)		(635)
Net income				15,910		15,910
Net change in debt and marketable equity securities					(1,580)	(1,580)
Net change in debit valuation adjustments					615	615
Net change in derivatives					584	584
Employee benefit plan adjustments					394	394
Net change in foreign currency translation adjustments					(123)	(123)
Dividends declared:						
Common				(2,091)		(2,091)
Preferred				(1,483)		(1,483)
Issuance of preferred stock	2,964					2,964
Common stock issued under employee plans, net, and related tax effects		4,054	(42)			(42)
Common stock repurchased		(140,331)	(2,374)			(2,374)
Balance, December 31, 2015	$ 22,273	10,380,265	$ 151,042	$ 87,658	$ (5,358)	$ 255,615
Net income				17,822		17,822
Net change in debt and marketable equity securities					(1,345)	(1,345)
Net change in debit valuation adjustments					(156)	(156)
Net change in derivatives					182	182
Employee benefit plan adjustments					(524)	(524)
Net change in foreign currency translation adjustments					(87)	(87)
Dividends declared:						
Common				(2,573)		(2,573)
Preferred				(1,682)		(1,682)
Issuance of preferred stock	2,947					2,947
Common stock issued under employee plans, net, and related tax effects		5,111	1,108			1,108
Common stock repurchased		(332,750)	(5,112)			(5,112)
Balance, December 31, 2016	$ 25,220	10,052,626	$ 147,038	$ 101,225	$ (7,288)	$ 266,195
Net income				**18,232**		**18,232**
Net change in debt and marketable equity securities					**61**	**61**
Net change in debit valuation adjustments					**(293)**	**(293)**
Net change in derivatives					**64**	**64**
Employee benefit plan adjustments					**288**	**288**
Net change in foreign currency translation adjustments					**86**	**86**
Dividends declared:						
Common				**(4,027)**		**(4,027)**
Preferred				**(1,578)**		**(1,578)**
Common stock issued in connection with exercise of warrants and exchange of preferred stock	**(2,897)**	**700,000**	**2,933**	**(36)**		**—**
Common stock issued under employee plans, net and other		**43,329**	**932**			**932**
Common stock repurchased		**(508,653)**	**(12,814)**			**(12,814)**
Balance, December 31, 2017	**$ 22,323**	**10,287,302**	**$ 138,089**	**$ 113,816**	**$ (7,082)**	**$ 267,146**

See accompanying Notes to Consolidated Financial Statements.

Consolidated Statement of Cash Flows

(Dollars in millions)	2017	2016	2015
Operating activities			
Net income	$ 18,232	$ 17,822	$ 15,910
Adjustments to reconcile net income to net cash provided by operating activities:			
Provision for credit losses	3,396	3,597	3,161
Gains on sales of debt securities	(255)	(490)	(1,138)
Depreciation and premises improvements amortization	1,482	1,511	1,555
Amortization of intangibles	621	730	834
Net amortization of premium/discount on debt securities	2,251	3,134	2,613
Deferred income taxes	8,175	5,793	2,967
Stock-based compensation	1,649	1,367	(89)
Loans held-for-sale:			
Originations and purchases	(43,506)	(33,107)	(37,933)
Proceeds from sales and paydowns of loans originally classified as held-for-sale	40,059	31,376	36,204
Net change in:			
Trading and derivative instruments	(13,939)	(866)	2,550
Other assets	(19,859)	(13,802)	2,645
Accrued expenses and other liabilities	4,673	(35)	730
Other operating activities, net	7,424	1,331	(1,612)
Net cash provided by operating activities	10,403	18,361	28,397
Investing activities			
Net change in:			
Time deposits placed and other short-term investments	(1,292)	(2,117)	50
Federal funds sold and securities borrowed or purchased under agreements to resell	(14,523)	(5,742)	(659)
Debt securities carried at fair value:			
Proceeds from sales	73,353	71,547	137,569
Proceeds from paydowns and maturities	93,874	108,592	92,498
Purchases	(166,975)	(189,061)	(219,412)
Held-to-maturity debt securities:			
Proceeds from paydowns and maturities	16,653	18,677	12,872
Purchases	(25,088)	(39,899)	(36,575)
Loans and leases:			
Proceeds from sales	11,761	18,230	22,316
Purchases	(6,846)	(12,283)	(12,629)
Other changes in loans and leases, net	(41,104)	(31,194)	(51,895)
Other investing activities, net	8,180	107	294
Net cash used in investing activities	(52,007)	(63,143)	(55,571)
Financing activities			
Net change in:			
Deposits	48,611	63,675	78,347
Federal funds purchased and securities loaned or sold under agreements to repurchase	7,024	(4,000)	(26,986)
Short-term borrowings	8,538	(4,014)	(3,074)
Long-term debt:			
Proceeds from issuance	53,486	35,537	43,670
Retirement of long-term debt	(49,553)	(51,849)	(40,365)
Preferred stock: Proceeds from issuance	—	2,947	2,964
Common stock repurchased	(12,814)	(5,112)	(2,374)
Cash dividends paid	(5,700)	(4,194)	(3,574)
Other financing activities, net	(397)	(63)	(73)
Net cash provided by financing activities	49,195	32,927	48,535
Effect of exchange rate changes on cash and cash equivalents	2,105	240	(597)
Net increase (decrease) in cash and cash equivalents	9,696	(11,615)	20,764
Cash and cash equivalents at January 1	147,738	159,353	138,589
Cash and cash equivalents at December 31	$ 157,434	$ 147,738	$ 159,353
Supplemental cash flow disclosures			
Interest paid	$ 12,852	$ 10,510	$ 10,623
Income taxes paid	3,297	1,633	2,326
Income taxes refunded	(62)	(590)	(151)

See accompanying Notes to Consolidated Financial Statements.

NOTE 1 Summary of Significant Accounting Principles

Bank of America Corporation, a bank holding company and a financial holding company, provides a diverse range of financial services and products throughout the U.S. and in certain international markets. The term "the Corporation" as used herein may refer to Bank of America Corporation, individually, Bank of America Corporation and its subsidiaries, or certain of Bank of America Corporation's subsidiaries or affiliates.

Principles of Consolidation and Basis of Presentation

The Consolidated Financial Statements include the accounts of the Corporation and its majority-owned subsidiaries and those variable interest entities (VIEs) where the Corporation is the primary beneficiary. Intercompany accounts and transactions have been eliminated. Results of operations of acquired companies are included from the dates of acquisition and for VIEs, from the dates that the Corporation became the primary beneficiary. Assets held in an agency or fiduciary capacity are not included in the Consolidated Financial Statements. The Corporation accounts for investments in companies for which it owns a voting interest and for which it has the ability to exercise significant influence over operating and financing decisions using the equity method of accounting. These investments are included in other assets. Equity method investments are subject to impairment testing, and the Corporation's proportionate share of income or loss is included in other income.

The preparation of the Consolidated Financial Statements in conformity with accounting principles generally accepted in the United States of America (GAAP) requires management to make estimates and assumptions that affect reported amounts and disclosures. Realized results could materially differ from those estimates and assumptions. Certain prior-period amounts have been reclassified to conform to current period presentation.

On June 1, 2017, the Corporation completed the sale of its non-U.S. consumer credit card business to a third party. The Corporation has indemnified the purchaser for substantially all payment protection insurance (PPI) exposure above reserves assumed by the purchaser. The impact of the sale was an after-tax gain of $103 million, and is presented in the Consolidated Statement of Income as other income of $793 million and an income tax expense of $690 million. The income tax expense was related to gains on the derivatives used to hedge the currency risk of the net investment. Total cash proceeds from the sale were $10.9 billion. The assets of the business sold primarily included consumer credit card receivables of $9.8 billion and $9.2 billion at June 1, 2017 and December 31, 2016 and goodwill of $775 million at both of those period ends. This business was included in *All Other*.

Change in Tax Law

On December 22, 2017, the President signed into law the Tax Cuts and Jobs Act (the Tax Act) which made significant changes to federal income tax law including, among other things, reducing the statutory corporate income tax rate to 21 percent from 35 percent and changing the taxation of the Corporation's non-U.S. business activities. On the same date, the Securities and Exchange Commission issued Staff Accounting Bulletin No. 118 which specifies, among other things, that reasonable estimates of the income tax effects of the Tax Act should be used, if determinable. The Corporation has accounted for the effects of the Tax Act using reasonable estimates based on currently available information and its interpretations thereof. This accounting may change due to, among other things, changes in interpretations the Corporation has made and the issuance of new tax or accounting guidance. GAAP requires that the effects of a change in tax rate from revaluing deferred tax assets and deferred tax liabilities be recognized upon enactment, resulting in $1.9 billion of estimated incremental income tax expense recognized in 2017. The change in tax rate also resulted in a downward valuation adjustment, primarily related to tax-advantaged energy investments, of $946 million recorded in other income.

Change in Accounting Method

GAAP requires that stock-based compensation awards be expensed over the service period (the period they are earned), based on their grant-date fair value. Awards to retirement-eligible employees have no future service requirement, and historically, the Corporation has deemed these awards to be authorized on the grant date, resulting in full recognition of the related expense at that time. Effective October 1, 2017, the Corporation changed its accounting method for determining when these awards are deemed authorized, changing from the grant date to the beginning of the year preceding the grant date when the incentive award plans are generally approved. As a result, the estimated value of the awards is now expensed ratably over the year preceding the grant date. The Corporation believes this change is a preferable method of accounting as it is consistent with the accounting method used by several peer institutions for similar awards and results in an improved pattern of expense recognition.

Adoption of this change is voluntary and has been adopted retrospectively with all prior periods presented herein being restated. The change in accounting method resulted in a decrease in retained earnings of $635 million at January 1, 2015. All other effects of the change on the Consolidated Statement of Income and diluted earnings per share were not material for any period presented; additionally, the impact of the change in accounting method was not material to any interim periods. The change affected consolidated financial information and *All Other*; it did not affect the business segments.

The following Notes have been impacted by the change in accounting method: *Note 13 – Shareholders' Equity*, *Note 15 – Earnings Per Common Share*, *Note 16 – Regulatory Requirements and Restrictions* and *Note 18 – Stock-based Compensation Plans*.

New Accounting Pronouncements

Accounting for Share-based Compensation

Effective January 1, 2017, the Corporation adopted the new accounting standard that simplifies certain aspects of the accounting for share-based payment transactions, including income tax consequences, classification of awards as either equity or liabilities and classification on the statement of cash flows. Under this new accounting standard, all excess tax benefits and tax deficiencies on the delivery of share-based awards are recognized as discrete items in income tax expense or benefit in the Consolidated Statement of Income. Previously such amounts were recorded in shareholders' equity. The adoption of this new accounting standard resulted in $236 million of tax benefits upon the delivery of share-settled awards in 2017.

Revenue Recognition

Effective January 1, 2018, the Corporation adopted the new accounting standard for recognizing revenue from contracts with customers. The new standard does not impact the timing or measurement of the Corporation's revenue recognition as it is consistent with the Corporation's existing accounting for contracts within the scope of the new standard. However, beginning prospectively in 2018, the Corporation's presentation of certain costs, which are primarily related to underwriting activities, will be presented as operating expenses under the new standard rather than presented net in investment banking income, resulting in an expected increase to both line items of approximately $200 million for the year. The new accounting standard does not have a material impact on the Corporation's consolidated financial position or results of operations and will not have a material impact on the disclosures in the Notes to the Consolidated Financial Statements.

Hedge Accounting

Effective January 1, 2018, the Corporation early adopted the new standard that simplifies and expands the ability to apply hedge accounting to certain risk management activities. The accounting standard does not have a material impact on the Corporation's consolidated financial position or results of operations and will not have a material impact on the disclosures in the Notes to the Consolidated Financial Statements. The Corporation recognized an insignificant cumulative-effect adjustment to its January 1, 2018 opening retained earnings to reflect the impact of applying the new standard to certain outstanding hedge strategies, mainly related to fair value hedges of fixed-rate debt instruments.

Recognition and Measurement of Financial Assets and Financial Liabilities

The Financial Accounting Standards Board (FASB) issued a new accounting standard on recognition and measurement of financial instruments, including certain equity investments and financial liabilities recorded at fair value under the fair value option. Effective January 1, 2015, the Corporation early adopted the provisions related to debit valuation adjustments (DVA) on financial liabilities accounted for under the fair value option. The Corporation adopted the remaining provisions on January 1, 2018, which will not have a material impact on the Corporation's consolidated financial position, results of operations or disclosures in the Notes to the Consolidated Financial Statements.

Tax Effects in Accumulated Other Comprehensive Income

The FASB issued a new accounting standard effective on January 1, 2019, with early adoption permitted, that addresses certain tax effects in accumulated other comprehensive income (OCI) related to the Tax Act. Under this new accounting standard, those tax effects, representing the difference between the newly enacted federal tax rate of 21 percent and the historical tax rate, may, at the entity's election, be reclassified from accumulated OCI to retained earnings. The new accounting standard can be applied retrospectively to each period in which the effects of the change in federal tax rate are recognized or applied at the beginning of the period of adoption. The new accounting standard will not have a material impact on the Corporation's consolidated financial position, results of operations or disclosures in the Notes to the Consolidated Financial Statements.

Lease Accounting

The FASB issued a new accounting standard effective on January 1, 2019 that requires substantially all leases to be recorded as assets and liabilities on the balance sheet. On January 5, 2018, the FASB issued an exposure draft proposing an amendment to the standard that, if approved, would permit companies the option to apply the provisions of the new lease standard either prospectively as of the effective date, without adjusting comparative periods presented, or using a modified retrospective transition applicable to all prior periods presented. The Corporation is in the process of reviewing its existing lease portfolios, including certain service contracts for embedded leases, to evaluate the impact of the standard on the consolidated financial statements, as well as the impact to regulatory capital and risk-weighted assets. The effect of the adoption will depend on the lease portfolio at the time of transition and the transition options ultimately available; however, the Corporation does not expect the new accounting standard to have a material impact on its consolidated financial position, results of operations or disclosures in the Notes to the Consolidated Financial Statements.

Accounting for Financial Instruments – Credit Losses

The FASB issued a new accounting standard effective on January 1, 2020, with early adoption permitted on January 1, 2019, that will require the earlier recognition of credit losses on loans and other financial instruments based on an expected loss model, replacing the incurred loss model that is currently in use. The standard also requires expanded credit quality disclosures, including credit quality indicators disaggregated by vintage. The Corporation is in the process of identifying and implementing required changes to loan loss estimation models and processes and evaluating the impact of this new accounting standard, which at the date of adoption is expected to increase the allowance for credit losses with a resulting negative adjustment to retained earnings.

Significant Accounting Principles

Cash and Cash Equivalents

Cash and cash equivalents include cash on hand, cash items in the process of collection, cash segregated under federal and other brokerage regulations, and amounts due from correspondent banks, the Federal Reserve Bank and certain non-U.S. central banks.

Securities Financing Agreements

Securities borrowed or purchased under agreements to resell and securities loaned or sold under agreements to repurchase (securities financing agreements) are treated as collateralized financing transactions except in instances where the transaction is required to be accounted for as individual sale and purchase transactions. Generally, these agreements are recorded at acquisition or sale price plus accrued interest, except for certain securities financing agreements that the Corporation accounts for under the fair value option. Changes in the fair value of securities financing agreements that are accounted for under the fair value option are recorded in trading account profits in the Consolidated Statement of Income.

The Corporation's policy is to monitor the market value of the principal amount loaned under resale agreements and obtain collateral from or return collateral pledged to counterparties when appropriate. Securities financing agreements do not create material credit risk due to these collateral provisions; therefore, an allowance for loan losses is unnecessary.

In transactions where the Corporation acts as the lender in a securities lending agreement and receives securities that can be pledged or sold as collateral, it recognizes an asset on the Consolidated Balance Sheet at fair value, representing the securities received, and a liability, representing the obligation to return those securities.

Collateral

The Corporation accepts securities and loans as collateral that it is permitted by contract or practice to sell or repledge. At December 31, 2017 and 2016, the fair value of this collateral was $561.9 billion and $452.1 billion, of which $476.1 billion and $372.0 billion was sold or repledged. The primary source of this collateral is securities borrowed or purchased under agreements to resell.

The Corporation also pledges company-owned securities and loans as collateral in transactions that include repurchase agreements, securities loaned, public and trust deposits, U.S. Treasury tax and loan notes, and short-term borrowings. This collateral, which in some cases can be sold or repledged by the counterparties to the transactions, is parenthetically disclosed on the Consolidated Balance Sheet.

In certain cases, the Corporation has transferred assets to consolidated VIEs where those restricted assets serve as collateral for the interests issued by the VIEs. These assets are included on the Consolidated Balance Sheet in Assets of Consolidated VIEs.

In addition, the Corporation obtains collateral in connection with its derivative contracts. Required collateral levels vary depending on the credit risk rating and the type of counterparty. Generally, the Corporation accepts collateral in the form of cash, U.S. Treasury securities and other marketable securities. Based on provisions contained in master netting agreements, the Corporation nets cash collateral received against derivative assets. The Corporation also pledges collateral on its own derivative positions which can be applied against derivative liabilities.

Trading Instruments

Financial instruments utilized in trading activities are carried at fair value. Fair value is generally based on quoted market prices or quoted market prices for similar assets and liabilities. If these market prices are not available, fair values are estimated based on dealer quotes, pricing models, discounted cash flow methodologies, or similar techniques where the determination of fair value may require significant management judgment or estimation. Realized gains and losses are recorded on a trade-date basis. Realized and unrealized gains and losses are recognized in trading account profits.

Derivatives and Hedging Activities

Derivatives are entered into on behalf of customers, for trading or to support risk management activities. Derivatives used in risk management activities include derivatives that are both designated in qualifying accounting hedge relationships and derivatives used to hedge market risks in relationships that are not designated in qualifying accounting hedge relationships (referred to as other risk management activities). The Corporation manages interest rate and foreign currency exchange rate sensitivity predominantly through the use of derivatives. Derivatives utilized by the Corporation include swaps, futures and forward settlement contracts, and option contracts.

All derivatives are recorded on the Consolidated Balance Sheet at fair value, taking into consideration the effects of legally enforceable master netting agreements that allow the Corporation to settle positive and negative positions and offset cash collateral held with the same counterparty on a net basis. For exchange-traded contracts, fair value is based on quoted market prices in active or inactive markets or is derived from observable market-based pricing parameters, similar to those applied to over-the-counter (OTC) derivatives. For non-exchange traded contracts, fair value is based on dealer quotes, pricing models, discounted cash flow methodologies or similar techniques for which the determination of fair value may require significant management judgment or estimation.

Valuations of derivative assets and liabilities reflect the value of the instrument including counterparty credit risk. These values also take into account the Corporation's own credit standing.

Trading Derivatives and Other Risk Management Activities

Derivatives held for trading purposes are included in derivative assets or derivative liabilities on the Consolidated Balance Sheet with changes in fair value included in trading account profits.

Derivatives used for other risk management activities are included in derivative assets or derivative liabilities. Derivatives used in other risk management activities have not been designated in qualifying accounting hedge relationships because they did not qualify or the risk that is being mitigated pertains to an item that is reported at fair value through earnings so that the effect of measuring the derivative instrument and the asset or liability to which the risk exposure pertains will offset in the Consolidated Statement of Income to the extent effective. The changes in the fair value of derivatives that serve to mitigate certain risks associated with mortgage servicing rights (MSRs), interest rate lock commitments (IRLCs) and first mortgage loans held-for-sale (LHFS) that are originated by the Corporation are recorded in mortgage banking income. Changes in the fair value of derivatives that serve to mitigate interest rate risk and foreign currency risk are included in other income. Credit derivatives are also used by the Corporation to mitigate the risk associated with various credit exposures. The changes in the fair value of these derivatives are included in other income.

Derivatives Used For Hedge Accounting Purposes (Accounting Hedges)

For accounting hedges, the Corporation formally documents at inception all relationships between hedging instruments and hedged items, as well as the risk management objectives and strategies for undertaking various accounting hedges. Additionally, the Corporation primarily uses regression analysis at the inception of a hedge and for each reporting period thereafter to assess whether the derivative used in an accounting hedge transaction is expected to be and has been highly effective in offsetting changes in the fair value or cash flows of a hedged item or forecasted transaction. The Corporation discontinues hedge accounting when it is determined that a derivative is not expected to be or has ceased to be highly effective as a hedge, and then reflects changes in fair value of the derivative in earnings after termination of the hedge relationship.

Fair value hedges are used to protect against changes in the fair value of the Corporation's assets and liabilities that are attributable to interest rate or foreign exchange volatility. Changes in the fair value of derivatives designated as fair value hedges are recorded in earnings, together and in the same income statement line item with changes in the fair value of the related hedged item. If a derivative instrument in a fair value hedge is terminated or the hedge designation removed, the previous adjustments to the carrying value of the hedged asset or liability are subsequently accounted for in the same manner as other components of the carrying value of that asset or liability. For interest-earning assets and interest-bearing liabilities, such adjustments are amortized to earnings over the remaining life of the respective asset or liability.

Cash flow hedges are used primarily to minimize the variability in cash flows of assets and liabilities, or forecasted transactions caused by interest rate or foreign exchange rate fluctuations. Changes in the fair value of derivatives used in cash flow hedges are recorded in accumulated OCI and are reclassified into the line item in the income statement in which the hedged item is recorded in the same period the hedged item affects earnings. Hedge ineffectiveness and gains and losses on the component of a derivative excluded in assessing hedge effectiveness are recorded in the same income statement line item.

Net investment hedges are used to manage the foreign exchange rate sensitivity arising from a net investment in a foreign operation. Changes in the fair value of derivatives designated as net investment hedges of foreign operations, to the extent effective, are recorded as a component of accumulated OCI.

Securities

Debt securities are reported on the Consolidated Balance Sheet at their trade date. Their classification is dependent on the purpose for which the assets were acquired. Debt securities purchased for use in the Corporation's trading activities are reported in trading account assets at fair value with unrealized gains and losses included in trading account profits. Substantially all other debt securities purchased are used in the Corporation's asset and liability management (ALM) activities and are reported on the Consolidated Balance Sheet as either debt securities carried at fair value or as debt securities held-to-maturity (HTM). Debt securities carried at fair value are either available-for-sale (AFS) securities with unrealized gains and losses net-of-tax included in accumulated OCI or carried at fair value with unrealized gains and losses reported in other income. Debt securities HTM, which are certain debt securities that management has the intent and ability to hold to maturity, are reported at amortized cost.

The Corporation regularly evaluates each AFS and HTM debt security where the value has declined below amortized cost to assess whether the decline in fair value is other than temporary. In determining whether an impairment is other than temporary, the Corporation considers the severity and duration of the decline in fair value, the length of time expected for recovery, the financial condition of the issuer, and other qualitative factors, as well as whether the Corporation either plans to sell the security or it is more-likely-than-not that it will be required to sell the security before recovery of the amortized cost. For AFS debt securities the Corporation intends to hold, an analysis is performed to determine how much of the decline in fair value is related to the issuer's credit and how much is related to market factors (e.g., interest rates). If any of the decline in fair value is due to credit, an other-than-temporary impairment (OTTI) loss is recognized in the Consolidated Statement of Income for that amount. If any of the decline in fair value is related to market factors, that amount is recognized in accumulated OCI. In certain instances, the credit loss may exceed the total decline in fair value, in which case, the difference is due to market factors and is recognized as an unrealized gain in accumulated OCI. If the Corporation intends to sell or believes it is more-likely-than-not that it will be required to sell the debt security, it is written down to fair value as an OTTI loss.

Interest on debt securities, including amortization of premiums and accretion of discounts, is included in interest income. Premiums and discounts are amortized or accreted to interest income at a constant effective yield over the contractual lives of the securities. Realized gains and losses from the sales of debt securities are determined using the specific identification method.

Marketable equity securities are classified based on management's intention on the date of purchase and recorded on the Consolidated Balance Sheet as of the trade date. Marketable equity securities that are bought and held principally for the purpose of resale in the near term are classified as trading and are carried at fair value with unrealized gains and losses included in trading account profits. Other marketable equity securities are accounted for as AFS and classified in other assets. All AFS marketable equity securities are carried at fair value with net unrealized gains and losses included in accumulated OCI, net-of-tax. If there is an other-than-temporary decline in the fair value of any individual AFS marketable equity security, the cost basis is reduced and the Corporation reclassifies the associated net unrealized loss out of accumulated OCI with a corresponding charge to other income. Dividend income on AFS marketable equity securities is included in other income. Realized gains and losses on the sale of all AFS marketable equity securities, which are recorded in other income, are determined using the specific identification method.

Loans and Leases

Loans, with the exception of loans accounted for under the fair value option, are measured at historical cost and reported at their outstanding principal balances net of any unearned income, charge-offs, unamortized deferred fees and costs on originated loans, and for purchased loans, net of any unamortized premiums or discounts. Loan origination fees and certain direct origination costs are deferred and recognized as adjustments to interest income over the lives of the related loans. Unearned income, discounts and premiums are amortized to interest income using a level yield methodology. The Corporation elects to account for certain consumer and commercial loans under the fair value option with changes in fair value reported in other income.

Under applicable accounting guidance, for reporting purposes, the loan and lease portfolio is categorized by portfolio segment and, within each portfolio segment, by class of financing receivables. A portfolio segment is defined as the level at which an entity develops and documents a systematic methodology to determine the allowance for credit losses, and a class of financing receivables is defined as the level of disaggregation of portfolio segments based on the initial measurement attribute, risk characteristics and methods for assessing risk. The Corporation's three portfolio segments are Consumer Real Estate, Credit Card and Other Consumer, and Commercial. The classes within the Consumer Real Estate portfolio segment are residential mortgage and home equity. The classes within the Credit Card and Other Consumer portfolio segment are U.S. credit card, non-U.S. credit card (sold in 2017), direct/indirect consumer and other consumer. The classes within the Commercial portfolio segment are U.S. commercial, non-U.S. commercial, commercial real estate, commercial lease financing and U.S. small business commercial.

Purchased Credit-impaired Loans

Purchased loans with evidence of credit quality deterioration as of the purchase date for which it is probable that the Corporation will not receive all contractually required payments receivable are accounted for as purchased credit-impaired (PCI) loans. Evidence of credit quality deterioration since origination may include past due status, refreshed credit scores and refreshed loan-to-value (LTV) ratios. At acquisition, PCI loans are recorded at fair value with no allowance for credit losses, and accounted for individually or aggregated in pools based on similar risk characteristics such as credit risk, collateral type and interest rate risk. The Corporation estimates the amount and timing of expected cash flows for each loan or pool of loans. The expected cash flows in excess of the amount paid for the loans is referred to as the accretable yield and is recorded as interest income over the remaining estimated life of the loan or pool of loans. The excess of the PCI loans' contractual principal and interest over the expected cash flows is referred to as the nonaccretable difference. Over the life of the PCI loans, the expected cash flows continue to be estimated using models that incorporate management's estimate of current assumptions such as default rates, loss severity and prepayment speeds. If, upon subsequent valuation, the Corporation determines it is probable that the present value of the expected cash flows has decreased, a charge to the provision for credit losses is recorded with a corresponding increase in the allowance for credit losses. If it is probable that there is a significant increase in the present value of expected cash flows, the allowance for credit losses is reduced or, if there is no remaining allowance for credit losses related to these PCI loans, the accretable yield is increased through a reclassification from nonaccretable difference, resulting in a prospective increase in interest income. Reclassifications to or from nonaccretable difference can also occur for changes in the PCI loans' estimated lives. If a loan within a PCI pool is sold, foreclosed, forgiven or the expectation of any future proceeds is remote, the loan is removed from the pool at its proportional carrying value. If the loan's recovery value is less than the loan's carrying value, the difference is first applied against the PCI pool's nonaccretable difference and then against the allowance for credit losses.

Leases

The Corporation provides equipment financing to its customers through a variety of lease arrangements. Direct financing leases are carried at the aggregate of lease payments receivable plus estimated residual value of the leased property less unearned income. Leveraged leases, which are a form of financing leases, are reported net of non-recourse debt. Unearned income on leveraged and direct financing leases is accreted to interest income over the lease terms using methods that approximate the interest method.

Allowance for Credit Losses

The allowance for credit losses, which includes the allowance for loan and lease losses and the reserve for unfunded lending commitments, represents management's estimate of probable losses inherent in the Corporation's lending activities excluding loans and unfunded lending commitments accounted for under the fair value option. The allowance for loan and lease losses represents the estimated probable credit losses on funded consumer and commercial loans and leases while the reserve for unfunded lending commitments, including standby letters of credit (SBLCs) and binding unfunded loan commitments, represents estimated probable credit losses on these unfunded credit instruments based on utilization assumptions. Lending-related credit exposures deemed to be uncollectible, excluding loans carried at fair value, are charged off against these accounts. Write-offs on PCI loans on which there is a valuation allowance are recorded against the valuation allowance. For more information, see Purchased Credit-impaired Loans in this Note.

The Corporation performs periodic and systematic detailed reviews of its lending portfolios to identify credit risks and to assess the overall collectability of those portfolios. The allowance on certain homogeneous consumer loan portfolios, which generally consist of consumer real estate loans within the Consumer Real Estate portfolio segment and credit card loans within the Credit Card and Other Consumer portfolio segment, is based on aggregated portfolio segment evaluations generally by product type. Loss forecast models are utilized for these portfolios which consider a variety of factors including, but not limited to, historical loss experience, estimated defaults or foreclosures based on portfolio trends, delinquencies, bankruptcies, economic conditions, credit scores and the amount of loss in the event of default.

For consumer loans secured by residential real estate, using statistical modeling methodologies, the Corporation estimates the number of loans that will default based on the individual loan attributes aggregated into pools of homogeneous loans with similar attributes. The attributes that are most significant to the probability of default and are used to estimate defaults include refreshed LTV or, in the case of a subordinated lien, refreshed combined LTV (CLTV), borrower credit score, months since origination (referred to as vintage) and geography, all of which are further broken down by present collection status (whether the loan is current, delinquent, in default or in bankruptcy). The severity or loss given default is estimated based on the refreshed LTV for first mortgages or CLTV for subordinated liens. The estimates are based on the Corporation's historical experience with the loan portfolio, adjusted to reflect an assessment of environmental factors not yet reflected in the historical data underlying the loss estimates, such as changes in real estate values, local and national economies, underwriting standards and the regulatory environment. The probability of default models also incorporate recent experience with modification programs including re-defaults subsequent to modification, a loan's default history prior to modification and the change in borrower payments post-modification. On home equity loans where the Corporation holds only a second-lien position and foreclosure is not the best alternative, the loss severity is estimated at 100 percent.

The allowance on certain commercial loans (except business card and certain small business loans) is calculated using loss rates delineated by risk rating and product type. Factors considered when assessing loss rates include the value of the underlying collateral, if applicable, the industry of the obligor, and the obligor's liquidity and other financial indicators along with certain qualitative factors. These statistical models are updated regularly for changes in economic and business conditions. Included in the analysis of consumer and commercial loan portfolios are reserves which are maintained to cover uncertainties that affect the Corporation's estimate of probable losses including domestic and global economic uncertainty and large single-name defaults.

For impaired loans, which include nonperforming commercial loans as well as consumer and commercial loans and leases modified in a troubled debt restructuring (TDR), management measures impairment primarily based on the present value of payments expected to be received, discounted at the loans' original effective contractual interest rates. Credit card loans are discounted at the portfolio average contractual annual percentage rate, excluding promotionally priced loans, in effect prior to restructuring. Impaired loans and TDRs may also be measured based on observable market prices, or for loans that are solely dependent on the collateral for repayment, the estimated fair value of the collateral less costs to sell. If the recorded investment in impaired loans exceeds this amount, a specific allowance is established as a component of the allowance for loan and lease losses unless these are secured consumer loans that are solely dependent on the collateral for repayment, in which case the amount that exceeds the fair value of the collateral is charged off.

Generally, the Corporation initially estimates the fair value of the collateral securing these consumer real estate-secured loans using an automated valuation model (AVM). An AVM is a tool that estimates the value of a property by reference to market data including sales of comparable properties and price trends specific to the Metropolitan Statistical Area in which the property being valued is located. In the event that an AVM value is not available, the Corporation utilizes publicized indices or if these methods provide less reliable valuations, the Corporation uses appraisals or broker price opinions to estimate the fair value of the collateral. While there is inherent imprecision in these valuations, the Corporation believes that they are representative of the portfolio in the aggregate.

In addition to the allowance for loan and lease losses, the Corporation also estimates probable losses related to unfunded lending commitments, such as letters of credit, financial guarantees and binding unfunded loan commitments. Unfunded lending commitments are subject to individual reviews and are analyzed and segregated by risk according to the Corporation's internal risk rating scale. These risk classifications, in conjunction with an analysis of historical loss experience, utilization assumptions, current economic conditions, performance trends within the portfolio and any other pertinent information, result in the estimation of the reserve for unfunded lending commitments.

The allowance for credit losses related to the loan and lease portfolio is reported separately on the Consolidated Balance Sheet whereas the reserve for unfunded lending commitments is reported on the Consolidated Balance Sheet in accrued expenses and other liabilities. The provision for credit losses related to the loan and lease portfolio and unfunded lending commitments is reported in the Consolidated Statement of Income.

Nonperforming Loans and Leases, Charge-offs and Delinquencies

Nonperforming loans and leases generally include loans and leases that have been placed on nonaccrual status. Loans accounted for under the fair value option, PCI loans and LHFS are not reported as nonperforming.

In accordance with the Corporation's policies, consumer real estate-secured loans, including residential mortgages and home equity loans, are generally placed on nonaccrual status and classified as nonperforming at 90 days past due unless repayment of the loan is insured by the Federal Housing Administration (FHA) or through individually insured long-term standby agreements with Fannie Mae (FNMA) or Freddie Mac (FHLMC) (the fully-insured portfolio). Residential mortgage loans in the fully-insured portfolio are not placed on nonaccrual status and, therefore, are not reported as nonperforming. Junior-lien home equity loans are placed on nonaccrual status and classified as nonperforming when the underlying first-lien mortgage loan becomes 90 days past due even if the junior-lien loan is current. The outstanding balance of real estate-secured loans that is in excess of the estimated property value less costs to sell is charged off no later than the end of the month in which the loan becomes 180 days past due unless the loan is fully insured, or for loans in bankruptcy, within 60 days of receipt of notification of filing, with the remaining balance classified as nonperforming.

Consumer loans secured by personal property, credit card loans and other unsecured consumer loans are not placed on nonaccrual status prior to charge-off and, therefore, are not reported as nonperforming loans, except for certain secured consumer loans, including those that have been modified in a TDR. Personal property-secured loans (including auto loans) are charged off to collateral value no later than the end of the month in which the account becomes 120 days past due, or upon repossession of an auto or, for loans in bankruptcy, within 60 days of receipt of notification of filing. Credit card and other unsecured customer loans are charged off no later than the end of the month in which the account becomes 180 days past due or within 60 days after receipt of notification of death, bankruptcy or fraud.

Commercial loans and leases, excluding business card loans, that are past due 90 days or more as to principal or interest, or where reasonable doubt exists as to timely collection, including loans that are individually identified as being impaired, are generally placed on nonaccrual status and classified as nonperforming unless well-secured and in the process of collection.

Business card loans are charged off no later than the end of the month in which the account becomes 180 days past due or 60 days after receipt of notification of death or bankruptcy. These loans are not placed on nonaccrual status prior to charge-off and, therefore, are not reported as nonperforming loans. Other commercial loans and leases are generally charged off when all or a portion of the principal amount is determined to be uncollectible.

The entire balance of a consumer loan or commercial loan or lease is contractually delinquent if the minimum payment is not received by the specified due date on the customer's billing statement. Interest and fees continue to accrue on past due loans and leases until the date the loan is placed on nonaccrual status, if applicable. Accrued interest receivable is reversed when loans and leases are placed on nonaccrual status. Interest collections on nonaccruing loans and leases for which the ultimate collectability of principal is uncertain are applied as principal reductions; otherwise, such collections are credited to income when received. Loans and leases may be restored to accrual status when all principal and interest is current and full repayment of the remaining contractual principal and interest is expected.

PCI loans are recorded at fair value at the acquisition date. Although the PCI loans may be contractually delinquent, the Corporation does not classify these loans as nonperforming as the loans were written down to fair value at the acquisition date and the accretable yield is recognized in interest income over the remaining life of the loan. In addition, reported net charge-offs exclude write-offs on PCI loans as the fair value already considers the estimated credit losses.

Troubled Debt Restructurings

Consumer and commercial loans and leases whose contractual terms have been restructured in a manner that grants a concession to a borrower experiencing financial difficulties are classified as TDRs. Concessions could include a reduction in the interest rate to a rate that is below market on the loan, payment extensions, forgiveness of principal, forbearance or other actions designed to maximize collections. Loans that are carried at fair value, LHFS and PCI loans are not classified as TDRs.

Loans and leases whose contractual terms have been modified in a TDR and are current at the time of restructuring may remain on accrual status if there is demonstrated performance prior to the restructuring and payment in full under the restructured terms is expected. Otherwise, the loans are placed on nonaccrual status and reported as nonperforming, except for fully-insured consumer real estate loans, until there is sustained repayment performance for a reasonable period, generally six months. If accruing TDRs cease to perform in accordance with their modified contractual terms, they are placed on nonaccrual status and reported as nonperforming TDRs.

Secured consumer loans that have been discharged in Chapter 7 bankruptcy and have not been reaffirmed by the borrower are classified as TDRs at the time of discharge. Such loans are placed on nonaccrual status and written down to the estimated collateral value less costs to sell no later than at the time of discharge. If these loans are contractually current, interest collections are generally recorded in interest income on a cash basis. Consumer real estate-secured loans for which a binding offer to restructure has been extended are also classified as TDRs. Credit card and other unsecured consumer loans that have been renegotiated in a TDR generally remain on accrual status until the loan is either paid in full or charged off, which occurs no later than the end of the month in which the loan becomes 180 days past due or, for loans that have been placed on a fixed payment plan, 120 days past due.

A loan that had previously been modified in a TDR and is subsequently refinanced under current underwriting standards at a market rate with no concessionary terms is accounted for as a new loan and is no longer reported as a TDR.

Loans Held-for-sale

Loans that are intended to be sold in the foreseeable future, including residential mortgages, loan syndications, and to a lesser degree, commercial real estate, consumer finance and other loans, are reported as LHFS and are carried at the lower of aggregate cost or fair value. The Corporation accounts for certain LHFS, including residential mortgage LHFS, under the fair value option. Loan origination costs related to LHFS that the Corporation accounts for under the fair value option are recognized in noninterest expense when incurred. Loan origination costs for LHFS carried at the lower of cost or fair value are capitalized as part of the carrying value of the loans and recognized as a reduction of noninterest income upon the sale of such loans. LHFS that are on nonaccrual status and are reported as nonperforming, as defined in the policy herein, are reported separately from nonperforming loans and leases.

Premises and Equipment

Premises and equipment are carried at cost less accumulated depreciation and amortization. Depreciation and amortization are recognized using the straight-line method over the estimated useful lives of the assets. Estimated lives range up to 40 years for buildings, up to 12 years for furniture and equipment, and the shorter of lease term or estimated useful life for leasehold improvements.

Goodwill and Intangible Assets

Goodwill is the purchase premium after adjusting for the fair value of net assets acquired. Goodwill is not amortized but is reviewed for potential impairment on an annual basis, or when events or circumstances indicate a potential impairment, at the reporting unit level. A reporting unit is a business segment or one level below a business segment. The Corporation compares the fair value of each reporting unit with its carrying value, including goodwill, as measured by allocated equity. For purposes of goodwill impairment testing, the Corporation utilizes allocated equity as a proxy for the carrying value of its reporting units. Allocated equity in the reporting units is comprised of allocated capital plus capital for the portion of goodwill and intangibles specifically assigned to the reporting unit. If the fair value of the reporting unit exceeds its carrying value, goodwill of the reporting unit is considered not impaired; however, if the carrying value of the reporting unit exceeds its fair value, an additional step must be performed to measure potential impairment.

This step involves calculating an implied fair value of goodwill which is the excess of the fair value of the reporting unit, as determined in the first step, over the aggregate fair values of the assets, liabilities and identifiable intangibles as if the reporting unit was being acquired in a business combination. If the implied fair value of goodwill exceeds the goodwill assigned to the reporting unit, there is no impairment. If the goodwill assigned to a reporting unit exceeds the implied fair value of goodwill, an impairment charge is recorded for the excess. An impairment loss recognized cannot exceed the amount of goodwill assigned to a reporting unit. An impairment loss establishes a new basis in the goodwill and subsequent reversals of goodwill impairment losses are not permitted under applicable accounting guidance.

For intangible assets subject to amortization, an impairment loss is recognized if the carrying value of the intangible asset is not recoverable and exceeds fair value. The carrying value of the intangible asset is considered not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the use of the asset. Intangible assets deemed to have indefinite useful lives are not subject to amortization. An impairment loss is recognized if the carrying value of the intangible asset with an indefinite life exceeds its fair value.

Variable Interest Entities

A VIE is an entity that lacks equity investors or whose equity investors do not have a controlling financial interest in the entity through their equity investments. The Corporation consolidates a VIE if it has both the power to direct the activities of the VIE that most significantly impact the VIE's economic performance and an obligation to absorb losses or the right to receive benefits that could potentially be significant to the VIE. On a quarterly basis, the Corporation reassesses its involvement with the VIE and evaluates the impact of changes in governing documents and its financial interests in the VIE. The consolidation status of the VIEs with which the Corporation is involved may change as a result of such reassessments.

The Corporation primarily uses VIEs for its securitization activities, in which the Corporation transfers whole loans or debt securities into a trust or other vehicle. When the Corporation is the servicer of whole loans held in a securitization trust, including non-agency residential mortgages, home equity loans, credit cards, and other loans, the Corporation has the power to direct the most significant activities of the trust. The Corporation generally does not have the power to direct the most significant activities of a residential mortgage agency trust except in certain circumstances in which the Corporation holds substantially all of the issued securities and has the unilateral right to liquidate the trust. The power to direct the most significant activities of a commercial mortgage securitization trust is typically held by the special servicer or by the party holding specific subordinate securities which embody certain controlling rights. The Corporation consolidates a whole-loan securitization trust if it has the power to direct the most significant activities and also holds securities issued by the trust or has other contractual arrangements, other than standard representations and warranties, that could potentially be significant to the trust.

The Corporation may also transfer trading account securities and AFS securities into municipal bond or resecuritization trusts. The Corporation consolidates a municipal bond or resecuritization trust if it has control over the ongoing activities of the trust such as the remarketing of the trust's liabilities or, if there are no ongoing activities, sole discretion over the design of the trust, including the identification of securities to be transferred in and the structure of securities to be issued, and also retains securities or has liquidity or other commitments that could potentially be significant to the trust. The Corporation does not consolidate a municipal bond or resecuritization trust if one or a limited number of third-party investors share responsibility for the design of the trust or have control over the significant activities of the trust through liquidation or other substantive rights.

Other VIEs used by the Corporation include collateralized debt obligations (CDOs), investment vehicles created on behalf of customers and other investment vehicles. The Corporation does not routinely serve as collateral manager for CDOs and, therefore, does not typically have the power to direct the activities that most significantly impact the economic performance of a CDO. However, following an event of default, if the Corporation is a majority holder of senior securities issued by a CDO and acquires the power to manage its assets, the Corporation consolidates the CDO.

The Corporation consolidates a customer or other investment vehicle if it has control over the initial design of the vehicle or manages the assets in the vehicle and also absorbs potentially significant gains or losses through an investment in the vehicle, derivative contracts or other arrangements. The Corporation does not consolidate an investment vehicle if a single investor controlled the initial design of the vehicle or manages the assets in the vehicles or if the Corporation does not have a variable interest that could potentially be significant to the vehicle.

Retained interests in securitized assets are initially recorded at fair value. In addition, the Corporation may invest in debt securities issued by unconsolidated VIEs. Fair values of these debt securities, which are classified as trading account assets, debt securities carried at fair value or HTM securities, are based primarily on quoted market prices in active or inactive markets. Generally, quoted market prices for retained residual interests are not available; therefore, the Corporation estimates fair values based on the present value of the associated expected future cash flows.

Fair Value

The Corporation measures the fair values of its assets and liabilities, where applicable, in accordance with accounting guidance that requires an entity to base fair value on exit price. Under this guidance, an entity is required to maximize the use of observable inputs and minimize the use of unobservable inputs in measuring fair value. A hierarchy is established which categorizes fair value measurements into three levels based on the inputs to the valuation technique with the highest priority given to unadjusted quoted prices in active markets and the lowest priority given to unobservable inputs. The Corporation categorizes its fair value measurements of financial instruments based on this three-level hierarchy.

Level 1 Unadjusted quoted prices in active markets for identical assets or liabilities. Level 1 assets and liabilities include debt and equity securities and derivative contracts that are traded in an active exchange market, as well as certain U.S. Treasury securities that are highly liquid and are actively traded in OTC markets.

Level 2 Observable inputs other than Level 1 prices, such as quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities. Level 2 assets and liabilities include debt securities with quoted prices that are traded less frequently than exchange-traded instruments and derivative contracts where fair value is determined using a pricing model with inputs that are observable in the market or can be derived principally from or corroborated by observable market data. This category generally includes U.S. government and agency mortgage-backed (MBS) and asset-backed securities (ABS), corporate debt securities, derivative contracts, certain loans and LHFS.

Level 3 Unobservable inputs that are supported by little or no market activity and that are significant to the overall fair value of the assets or liabilities. Level 3 assets and liabilities include financial instruments for which the determination of fair value requires significant management judgment or estimation. The fair value for such assets and liabilities is generally determined using pricing models, discounted cash flow methodologies or similar techniques that incorporate the assumptions a market participant would use in pricing the asset or liability. This category generally includes retained residual interests in securitizations, consumer MSRs, certain ABS, highly structured, complex or long-dated derivative contracts, certain loans and LHFS, IRLCs and certain CDOs where independent pricing information cannot be obtained for a significant portion of the underlying assets.

Income Taxes

There are two components of income tax expense: current and deferred. Current income tax expense reflects taxes to be paid or refunded for the current period. Deferred income tax expense results from changes in deferred tax assets and liabilities between periods. These gross deferred tax assets and liabilities represent decreases or increases in taxes expected to be paid in the future because of future reversals of temporary differences in the bases of assets and liabilities as measured by tax laws and their bases as reported in the financial statements. Deferred tax assets are also recognized for tax attributes such as net operating loss carryforwards and tax credit carryforwards. Valuation allowances are recorded to reduce deferred tax assets to the amounts management concludes are more-likely-than-not to be realized.

Income tax benefits are recognized and measured based upon a two-step model: first, a tax position must be more-likely-than-not to be sustained based solely on its technical merits in order to be recognized, and second, the benefit is measured as the largest dollar amount of that position that is more-likely-than-not to be sustained upon settlement. The difference between the benefit recognized and the tax benefit claimed on a tax return is referred to as an unrecognized tax benefit. The Corporation records income tax-related interest and penalties, if applicable, within income tax expense.

Revenue Recognition

Revenue is recorded when earned, which is generally over the period services are provided and no contingencies exist. The following summarizes the Corporation's revenue recognition policies as they relate to certain noninterest income line items in the Consolidated Statement of Income.

Card income includes fees such as interchange, cash advance, annual, late, over-limit and other miscellaneous fees. Uncollected fees are included in customer card receivables balances with an amount recorded in the allowance for loan and lease losses for estimated uncollectible card receivables. Uncollected fees are written off when a card receivable reaches 180 days past due.

Service charges include fees for insufficient funds, overdrafts and other banking services. Uncollected fees are included in outstanding loan balances with an amount recorded for estimated uncollectible service fees receivable. Uncollected fees are written off when a fee receivable reaches 60 days past due.

Investment and brokerage services revenue consists primarily of asset management fees and brokerage income. Asset management fees consist primarily of fees for investment management and trust services and are generally based on the dollar amount of the assets being managed. Brokerage income generally includes commissions and fees earned on the sale of various financial products.

Investment banking income consists primarily of advisory and underwriting fees which are generally recognized net of any direct expenses. Non-reimbursed expenses are recorded as noninterest expense.

Earnings Per Common Share

Earnings per common share (EPS) is computed by dividing net income allocated to common shareholders by the weighted-average common shares outstanding, excluding unvested common shares subject to repurchase or cancellation. Net income allocated to common shareholders is net income adjusted for preferred stock dividends including dividends declared, accretion of discounts on preferred stock including accelerated accretion when preferred stock is repaid early, and cumulative dividends related to the current dividend period that have not been declared as of period end, less income allocated to participating securities (see below for more information). Diluted EPS is computed by dividing income allocated to common shareholders plus dividends on dilutive convertible preferred stock and preferred stock that can be tendered to exercise warrants, by the weighted-average common shares outstanding plus amounts representing the dilutive effect of stock options outstanding, restricted stock, restricted stock units (RSUs), outstanding warrants and the dilution resulting from the conversion of convertible preferred stock, if applicable.

Foreign Currency Translation

Assets, liabilities and operations of foreign branches and subsidiaries are recorded based on the functional currency of each entity. When the functional currency of a foreign operation is the local currency, the assets, liabilities and operations are translated, for consolidation purposes, from the local currency to the U.S. dollar reporting currency at period-end rates for assets and liabilities and generally at average rates for results of operations. The resulting unrealized gains and losses are reported as a component of accumulated OCI, net-of-tax. When the foreign entity's functional currency is the U.S. dollar, the resulting remeasurement gains or losses on foreign currency-denominated assets or liabilities are included in earnings.

Credit Card and Deposit Arrangements

Endorsing Organization Agreements

The Corporation contracts with other organizations to obtain their endorsement of the Corporation's loan and deposit products. This endorsement may provide to the Corporation exclusive rights to market to the organization's members or to customers on behalf of the Corporation. These organizations endorse the Corporation's loan and deposit products and provide the Corporation with their mailing lists and marketing activities. These agreements generally have terms that range five or more years. The Corporation typically pays royalties in exchange for the endorsement. Compensation costs related to the credit card agreements are recorded as contra-revenue in card income.

Cardholder Reward Agreements

The Corporation offers reward programs that allow its cardholders to earn points that can be redeemed for a broad range of rewards including cash, travel and gift cards. The Corporation establishes a rewards liability based upon the points earned that are expected to be redeemed and the average cost per point redeemed. The points to be redeemed are estimated based on past redemption behavior, card product type, account transaction activity and other historical card performance. The liability is reduced as the points are redeemed. The estimated cost of the rewards programs is recorded as contra-revenue in card income.

NOTE 2 Derivatives

Derivative Balances

Derivatives are entered into on behalf of customers, for trading or to support risk management activities. Derivatives used in risk management activities include derivatives that may or may not be designated in qualifying hedge accounting relationships. Derivatives that are not designated in qualifying hedge accounting relationships are referred to as other risk management derivatives. For more information on the Corporation's derivatives and hedging activities, see *Note 1 – Summary of Significant Accounting Principles.* The following tables present derivative instruments included on the Consolidated Balance Sheet in derivative assets and liabilities at December 31, 2017 and 2016. Balances are presented on a gross basis, prior to the application of counterparty and cash collateral netting. Total derivative assets and liabilities are adjusted on an aggregate basis to take into consideration the effects of legally enforceable master netting agreements and have been reduced by the cash collateral received or paid.

		December 31, 2017					
		Gross Derivative Assets			Gross Derivative Liabilities		
(Dollars in billions)	Contract/ Notional [1]	Trading and Other Risk Management Derivatives	Qualifying Accounting Hedges	Total	Trading and Other Risk Management Derivatives	Qualifying Accounting Hedges	Total
Interest rate contracts							
Swaps [2]	$ 15,416.4	$ 175.1	$ 2.9	$ 178.0	$ 172.5	$ 1.7	$ 174.2
Futures and forwards [2]	4,332.4	0.5	—	0.5	0.5	—	0.5
Written options	1,170.5	—	—	—	35.5	—	35.5
Purchased options	1,184.5	37.6	—	37.6	—	—	—
Foreign exchange contracts							
Swaps	2,011.1	35.6	2.2	37.8	36.1	2.7	38.8
Spot, futures and forwards	3,543.3	39.1	0.7	39.8	39.1	0.8	39.9
Written options	291.8	—	—	—	5.1	—	5.1
Purchased options	271.9	4.6	—	4.6	—	—	—
Equity contracts							
Swaps	265.6	4.8	—	4.8	4.4	—	4.4
Futures and forwards	106.9	1.5	—	1.5	0.9	—	0.9
Written options	480.8	—	—	—	23.9	—	23.9
Purchased options	428.2	24.7	—	24.7	—	—	—
Commodity contracts							
Swaps	46.1	1.8	—	1.8	4.6	—	4.6
Futures and forwards	47.1	3.5	—	3.5	0.6	—	0.6
Written options	21.7	—	—	—	1.4	—	1.4
Purchased options	22.9	1.4	—	1.4	—	—	—
Credit derivatives [3]							
Purchased credit derivatives:							
Credit default swaps [2]	470.9	4.1	—	4.1	11.1	—	11.1
Total return swaps/options	54.1	0.1	—	0.1	1.3	—	1.3
Written credit derivatives:							
Credit default swaps [2]	448.2	10.6	—	10.6	3.6	—	3.6
Total return swaps/options	55.2	0.8	—	0.8	0.2	—	0.2
Gross derivative assets/liabilities		$ 345.8	$ 5.8	$ 351.6	$ 340.8	$ 5.2	$ 346.0
Less: Legally enforceable master netting agreements [2]				(279.2)			(279.2)
Less: Cash collateral received/paid [2]				(34.6)			(32.5)
Total derivative assets/liabilities				$ 37.8			$ 34.3

(1) Represents the total contract/notional amount of derivative assets and liabilities outstanding.

(2) Derivative assets and liabilities reflect the effects of contractual amendments by two central clearing counterparties to legally re-characterize daily cash variation margin from collateral, which secures an outstanding exposure, to settlement, which discharges an outstanding exposure. One of these central clearing counterparties amended its governing documents, which became effective in January 2017. In addition, the Corporation elected to transfer its existing positions to the settlement platform for the other central clearing counterparty in September 2017.

(3) The net derivative asset and notional amount of written credit derivatives for which the Corporation held purchased credit derivatives with identical underlying referenced names were $6.4 billion and $435.1 billion at December 31, 2017.

		December 31, 2016					
		Gross Derivative Assets			Gross Derivative Liabilities		
(Dollars in billions)	Contract/ Notional [1]	Trading and Other Risk Management Derivatives	Qualifying Accounting Hedges	Total	Trading and Other Risk Management Derivatives	Qualifying Accounting Hedges	Total
Interest rate contracts							
Swaps	$ 16,977.7	$ 385.0	$ 5.9	$ 390.9	$ 386.9	$ 2.0	$ 388.9
Futures and forwards	5,609.5	2.2	—	2.2	2.1	—	2.1
Written options	1,146.2	—	—	—	52.2	—	52.2
Purchased options	1,178.7	53.3	—	53.3	—	—	—
Foreign exchange contracts							
Swaps	1,828.6	54.6	4.2	58.8	58.8	6.2	65.0
Spot, futures and forwards	3,410.7	58.8	1.7	60.5	56.6	0.8	57.4
Written options	356.6	—	—	—	9.4	—	9.4
Purchased options	342.4	8.9	—	8.9	—	—	—
Equity contracts							
Swaps	189.7	3.4	—	3.4	4.0	—	4.0
Futures and forwards	68.7	0.9	—	0.9	0.9	—	0.9
Written options	431.5	—	—	—	21.4	—	21.4
Purchased options	385.5	23.9	—	23.9	—	—	—
Commodity contracts							
Swaps	48.2	2.5	—	2.5	5.1	—	5.1
Futures and forwards	49.1	3.6	—	3.6	0.5	—	0.5
Written options	29.3	—	—	—	1.9	—	1.9
Purchased options	28.9	2.0	—	2.0	—	—	—
Credit derivatives [2]							
Purchased credit derivatives:							
Credit default swaps	604.0	8.1	—	8.1	10.3	—	10.3
Total return swaps/options	21.2	0.4	—	0.4	1.5	—	1.5
Written credit derivatives:							
Credit default swaps	614.4	10.7	—	10.7	7.5	—	7.5
Total return swaps/options	25.4	1.0	—	1.0	0.2	—	0.2
Gross derivative assets/liabilities		$ 619.3	$ 11.8	$ 631.1	$ 619.3	$ 9.0	$ 628.3
Less: Legally enforceable master netting agreements				(545.3)			(545.3)
Less: Cash collateral received/paid				(43.3)			(43.5)
Total derivative assets/liabilities				$ 42.5			$ 39.5

(1) Represents the total contract/notional amount of derivative assets and liabilities outstanding.
(2) The net derivative asset and notional amount of written credit derivatives for which the Corporation held purchased credit derivatives with identical underlying referenced names were $2.2 billion and $548.9 billion at December 31, 2016.

Offsetting of Derivatives

The Corporation enters into International Swaps and Derivatives Association, Inc. (ISDA) master netting agreements or similar agreements with substantially all of the Corporation's derivative counterparties. Where legally enforceable, these master netting agreements give the Corporation, in the event of default by the counterparty, the right to liquidate securities held as collateral and to offset receivables and payables with the same counterparty. For purposes of the Consolidated Balance Sheet, the Corporation offsets derivative assets and liabilities and cash collateral held with the same counterparty where it has such a legally enforceable master netting agreement.

The following table presents derivative instruments included in derivative assets and liabilities on the Consolidated Balance Sheet at December 31, 2017 and 2016 by primary risk (e.g., interest rate risk) and the platform, where applicable, on which these derivatives are transacted. Balances are presented on a gross basis, prior to the application of counterparty and cash collateral netting. Total gross derivative assets and liabilities are adjusted on an aggregate basis to take into consideration the effects of legally enforceable master netting agreements which includes reducing the balance for counterparty netting and cash collateral received or paid.

For more information on offsetting of securities financing agreements, see *Note 10 – Federal Funds Sold or Purchased, Securities Financing Agreements and Short-term Borrowings*.

Offsetting of Derivatives [1]

(Dollars in billions)	Derivative Assets	Derivative Liabilities	Derivative Assets	Derivative Liabilities
	December 31, 2017		December 31, 2016	
Interest rate contracts				
Over-the-counter	$ 211.7	$ 206.0	$ 267.3	$ 258.2
Over-the-counter cleared [2]	1.9	1.8	177.2	182.8
Foreign exchange contracts				
Over-the-counter	78.7	80.8	124.3	126.7
Over-the-counter cleared	0.9	0.7	0.3	0.3
Equity contracts				
Over-the-counter	18.3	16.2	15.6	13.7
Exchange-traded	9.1	8.5	11.4	10.8
Commodity contracts				
Over-the-counter	2.9	4.4	3.7	4.9
Exchange-traded	0.7	0.8	1.1	1.0
Credit derivatives				
Over-the-counter	9.1	9.6	15.3	14.7
Over-the-counter cleared [2]	6.1	6.0	4.3	4.3
Total gross derivative assets/liabilities, before netting				
Over-the-counter	320.7	317.0	426.2	418.2
Exchange-traded	9.8	9.3	12.5	11.8
Over-the-counter cleared [2]	8.9	8.5	181.8	187.4
Less: Legally enforceable master netting agreements and cash collateral received/paid				
Over-the-counter	(296.9)	(294.6)	(398.2)	(392.6)
Exchange-traded	(8.6)	(8.6)	(8.9)	(8.9)
Over-the-counter cleared [2]	(8.3)	(8.5)	(181.5)	(187.3)
Derivative assets/liabilities, after netting	25.6	23.1	31.9	28.6
Other gross derivative assets/liabilities [3]	12.2	11.2	10.6	10.9
Total derivative assets/liabilities	37.8	34.3	42.5	39.5
Less: Financial instruments collateral [4]	(11.2)	(10.4)	(13.5)	(10.5)
Total net derivative assets/liabilities	$ 26.6	$ 23.9	$ 29.0	$ 29.0

(1) OTC derivatives include bilateral transactions between the Corporation and a particular counterparty. OTC-cleared derivatives include bilateral transactions between the Corporation and a counterparty where the transaction is cleared through a clearinghouse, and exchange-traded derivatives include listed options transacted on an exchange.
(2) Derivative assets and liabilities reflect the effects of contractual amendments by two central clearing counterparties to legally re-characterize daily cash variation margin from collateral, which secures an outstanding exposure, to settlement, which discharges an outstanding exposure. One of these central clearing counterparties amended its governing documents, which became effective in January 2017. In addition, the Corporation elected to transfer its existing positions to the settlement platform for the other central clearing counterparty in September 2017.
(3) Consists of derivatives entered into under master netting agreements where the enforceability of these agreements is uncertain under bankruptcy laws in some countries or industries.
(4) Amounts are limited to the derivative asset/liability balance and, accordingly, do not include excess collateral received/pledged. Financial instruments collateral includes securities collateral received or pledged and cash securities held and posted at third-party custodians that are not offset on the Consolidated Balance Sheet but shown as a reduction to derive net derivative assets and liabilities.

ALM and Risk Management Derivatives

The Corporation's ALM and risk management activities include the use of derivatives to mitigate risk to the Corporation including derivatives designated in qualifying hedge accounting relationships and derivatives used in other risk management activities. Interest rate, foreign exchange, equity, commodity and credit contracts are utilized in the Corporation's ALM and risk management activities.

The Corporation maintains an overall interest rate risk management strategy that incorporates the use of interest rate contracts, which are generally non-leveraged generic interest rate and basis swaps, options, futures and forwards, to minimize significant fluctuations in earnings caused by interest rate volatility. The Corporation's goal is to manage interest rate sensitivity and volatility so that movements in interest rates do not significantly adversely affect earnings or capital. As a result of interest rate fluctuations, hedged fixed-rate assets and liabilities appreciate or depreciate in fair value. Gains or losses on the derivative instruments that are linked to the hedged fixed-rate assets and liabilities are expected to substantially offset this unrealized appreciation or depreciation.

Market risk, including interest rate risk, can be substantial in the mortgage business. Market risk in the mortgage business is the risk that values of mortgage assets or revenues will be adversely affected by changes in market conditions such as interest rate movements. To mitigate the interest rate risk in mortgage banking production income, the Corporation utilizes forward loan sale commitments and other derivative instruments, including purchased options, and certain debt securities. The Corporation also utilizes derivatives such as interest rate options, interest rate swaps, forward settlement contracts and eurodollar futures to hedge certain market risks of MSRs. For more information on MSRs, see *Note 20 – Fair Value Measurements*.

The Corporation uses foreign exchange contracts to manage the foreign exchange risk associated with certain foreign currency-denominated assets and liabilities, as well as the Corporation's investments in non-U.S. subsidiaries. Foreign exchange contracts, which include spot and forward contracts, represent agreements to exchange the currency of one country for the currency of another country at an agreed-upon price on an agreed-upon settlement date. Exposure to loss on these contracts will increase or decrease over their respective lives as currency exchange and interest rates fluctuate.

The Corporation purchases credit derivatives to manage credit risk related to certain funded and unfunded credit exposures. Credit derivatives include credit default swaps (CDS), total return swaps and swaptions. These derivatives are recorded on the Consolidated Balance Sheet at fair value with changes in fair value recorded in other income.

Derivatives Designated as Accounting Hedges

The Corporation uses various types of interest rate, commodity and foreign exchange derivative contracts to protect against changes in the fair value of its assets and liabilities due to fluctuations in interest rates, commodity prices and exchange rates (fair value hedges). The Corporation also uses these types of contracts and equity derivatives to protect against changes in the cash flows of its assets and liabilities, and other forecasted transactions (cash flow hedges). The Corporation hedges its net investment in consolidated non-U.S. operations determined to have functional currencies other than the U.S. dollar using forward exchange contracts and cross-currency basis swaps, and by issuing foreign currency-denominated debt (net investment hedges).

Fair Value Hedges

The following table summarizes information related to fair value hedges for 2017, 2016 and 2015, including hedges of interest rate risk on long-term debt that were acquired as part of a business combination and redesignated at that time. At redesignation, the fair value of the derivatives was positive. As the derivatives mature, the fair value will approach zero. As a result, ineffectiveness will occur and the fair value changes in the derivatives and the long-term debt being hedged may be directionally the same in certain scenarios. Based on a regression analysis, the derivatives continue to be highly effective at offsetting changes in the fair value of the long-term debt attributable to interest rate risk.

Derivatives Designated as Fair Value Hedges

Gains (Losses)	Derivative			Hedged Item			Hedge Ineffectiveness		
(Dollars in millions)	**2017**	2016	2015	**2017**	2016	2015	**2017**	2016	2015
Interest rate risk on long-term debt (1)	**$ (1,537)**	$ (1,488)	$ (718)	**$ 1,045**	$ 646	$ (77)	**$ (492)**	$ (842)	$ (795)
Interest rate and foreign currency risk on long-term debt (1)	**1,811**	(941)	(1,898)	**(1,767)**	944	1,812	**44**	3	(86)
Interest rate risk on available-for-sale securities (2)	**(67)**	227	105	**35**	(286)	(127)	**(32)**	(59)	(22)
Total	**$ 207**	$ (2,202)	$ (2,511)	**$ (687)**	$ 1,304	$ 1,608	**$ (480)**	$ (898)	$ (903)

(1) Amounts are recorded in interest expense on long-term debt and in other income.
(2) Amounts are recorded in interest income on debt securities.

Cash Flow and Net Investment Hedges

The table below summarizes certain information related to cash flow hedges and net investment hedges for 2017, 2016, and 2015. Of the $831 million after-tax net loss ($1.3 billion pre-tax) on derivatives in accumulated OCI at December 31, 2017, $130 million after-tax ($208 million pre-tax) is expected to be reclassified into earnings in the next 12 months. These net losses reclassified into earnings are expected to primarily reduce net interest income related to the respective hedged items. Amounts related to price risk on restricted stock awards reclassified from accumulated OCI are recorded in personnel expense. For terminated cash flow hedges, the time period over which the majority of the forecasted transactions are hedged is approximately seven years, with a maximum length of time for certain forecasted transactions of 19 years.

Derivatives Designated as Cash Flow and Net Investment Hedges

	Gains (Losses) Recognized in Accumulated OCI on Derivatives			Gains (Losses) in Income Reclassified from Accumulated OCI		
(Dollars in millions, amounts pre-tax)	**2017**	2016	2015	**2017**	2016	2015
Cash flow hedges						
Interest rate risk on variable-rate portfolios	**$ (109)**	$ (340)	$ 95	**$ (327)**	$ (553)	$ (974)
Price risk on certain restricted stock awards (1)	**59**	41	(40)	**148**	(32)	91
Total (2)	**$ (50)**	$ (299)	$ 55	**$ (179)**	$ (585)	$ (883)
Net investment hedges						
Foreign exchange risk (3)	**$ (1,588)**	$ 1,636	$ 3,010	**$ 1,782**	$ 3	$ 153

(1) Gains (losses) recognized in accumulated OCI are primarily related to the change in the Corporation's stock price for the period.
(2) In 2017, 2016 and 2015, amounts representing hedge ineffectiveness were not significant.
(3) In 2017, substantially all of the gains in income reclassified from accumulated OCI were comprised of the gain recognized on derivatives used to hedge the currency risk of the Corporation's net investment in its non-U.S. consumer credit card business, which was sold in 2017. For more information, see *Note 14 – Accumulated Other Comprehensive Income (Loss)*. In 2017, 2016 and 2015, amounts excluded from effectiveness testing in total were $120 million, $325 million and $298 million.

Other Risk Management Derivatives

Other risk management derivatives are used by the Corporation to reduce certain risk exposures. These derivatives are not qualifying accounting hedges because either they did not qualify for or were not designated as accounting hedges. The table below presents gains (losses) on these derivatives for 2017, 2016 and 2015. These gains (losses) are largely offset by the income or expense that is recorded on the hedged item.

Other Risk Management Derivatives

Gains (Losses) (Dollars in millions)	2017	2016	2015
Interest rate risk on mortgage banking income [(1)]	$ **8**	$ 461	$ 254
Credit risk on loans [(2)]	**(6)**	(107)	(22)
Interest rate and foreign currency risk on ALM activities [(3)]	**(36)**	(754)	(222)
Price risk on certain restricted stock awards [(4)]	**301**	9	(267)

(1) Net gains (losses) on these derivatives are recorded in mortgage banking income as they are used to mitigate the interest rate risk related to MSRs, IRLCs and mortgage LHFS, all of which are measured at fair value with changes in fair value recorded in mortgage banking income. The fair value of IRLCs is derived from the fair value of related mortgage loans which is based on observable market data and includes the expected net future cash flows related to servicing of the loans. The net gains on IRLCs related to the origination of mortgage loans that are held-for-sale, which are not included in the table but are considered derivative instruments, were $220 million, $533 million and $714 million for 2017, 2016 and 2015, respectively.

(2) Primarily related to derivatives that are economic hedges of credit risk on loans. Net gains (losses) on these derivatives are recorded in other income.

(3) Primarily related to hedges of debt securities carried at fair value and hedges of foreign currency-denominated debt. Gains (losses) on these derivatives and the related hedged items are recorded in other income.

(4) Gains (losses) on these derivatives are recorded in personnel expense.

Transfers of Financial Assets with Risk Retained through Derivatives

The Corporation enters into certain transactions involving the transfer of financial assets that are accounted for as sales where substantially all of the economic exposure to the transferred financial assets is retained through derivatives (e.g., interest rate and/or credit), but the Corporation does not retain control over the assets transferred. Through December 31, 2017 and 2016, the Corporation transferred $6.0 billion and $6.6 billion of non-U.S. government-guaranteed MBS to a third-party trust and retained economic exposure to the transferred assets through derivative contracts. In connection with these transfers, the Corporation received gross cash proceeds of $6.0 billion and $6.6 billion at the transfer dates. At December 31, 2017 and 2016, the fair value of the transferred securities was $6.1 billion and $6.3 billion. Derivative assets of $46 million and $43 million and liabilities of $3 million and $10 million were recorded at December 31, 2017 and 2016, and are included in credit derivatives in the derivative instruments table on page 131.

Sales and Trading Revenue

The Corporation enters into trading derivatives to facilitate client transactions and to manage risk exposures arising from trading account assets and liabilities. It is the Corporation's policy to include these derivative instruments in its trading activities which include derivatives and non-derivative cash instruments. The resulting risk from these derivatives is managed on a portfolio basis as part of the Corporation's *Global Markets* business segment. The related sales and trading revenue generated within *Global Markets* is recorded in various income statement line items including trading account profits and net interest income as well as other revenue categories.

Sales and trading revenue includes changes in the fair value and realized gains and losses on the sales of trading and other assets, net interest income, and fees primarily from commissions on equity securities. Revenue is generated by the difference in the client price for an instrument and the price at which the trading desk can execute the trade in the dealer market. For equity securities, commissions related to purchases and sales are recorded in the "Other" column in the Sales and Trading Revenue table. Changes in the fair value of these securities are included in trading account profits. For debt securities, revenue, with the exception of interest associated with the debt securities, is typically included in trading account profits. Unlike commissions for equity securities, the initial revenue related to broker-dealer services for debt securities is typically included in the pricing of the instrument rather than being charged through separate fee arrangements. Therefore, this revenue is recorded in trading account profits as part of the initial mark to fair value. For derivatives, the majority of revenue is included in trading account profits. In transactions where the Corporation acts as agent, which include exchange-traded futures and options, fees are recorded in other income.

The table below, which includes both derivatives and non-derivative cash instruments, identifies the amounts in the respective income statement line items attributable to the Corporation's sales and trading revenue in *Global Markets*, categorized by primary risk, for 2017, 2016 and 2015. The difference between total trading account profits in the following table and in the Consolidated Statement of Income represents trading activities in business segments other than *Global Markets*. This table includes DVA and funding valuation adjustment (FVA) gains (losses). *Global Markets* results in *Note 23 – Business Segment Information* are presented on a fully taxable-equivalent (FTE) basis. The following table is not presented on an FTE basis.

Sales and Trading Revenue

(Dollars in millions)	Trading Account Profits	Net Interest Income	Other (1)	Total
	2017			
Interest rate risk	**$ 1,145**	**$ 980**	**$ 417**	**$ 2,542**
Foreign exchange risk	**1,417**	**(1)**	**(162)**	**1,254**
Equity risk	**2,689**	**(525)**	**1,904**	**4,068**
Credit risk	**1,251**	**2,537**	**577**	**4,365**
Other risk	**204**	**33**	**75**	**312**
Total sales and trading revenue	**$ 6,706**	**$ 3,024**	**$ 2,811**	**$ 12,541**
	2016			
Interest rate risk	$ 1,613	$ 1,410	$ 304	$ 3,327
Foreign exchange risk	1,360	(10)	(154)	1,196
Equity risk	1,917	20	2,074	4,011
Credit risk	1,250	2,569	424	4,243
Other risk	407	(20)	40	427
Total sales and trading revenue	$ 6,547	$ 3,969	$ 2,688	$ 13,204
	2015			
Interest rate risk	$ 1,290	$ 1,333	$ (259)	$ 2,364
Foreign exchange risk	1,322	(10)	(117)	1,195
Equity risk	2,115	56	2,152	4,323
Credit risk	920	2,333	445	3,698
Other risk	459	(81)	62	440
Total sales and trading revenue	$ 6,106	$ 3,631	$ 2,283	$ 12,020

(1) Represents amounts in investment and brokerage services and other income that are recorded in *Global Markets* and included in the definition of sales and trading revenue. Includes investment and brokerage services revenue of $2.0 billion, $2.1 billion, and $2.2 billion for 2017, 2016, and 2015, respectively.

Credit Derivatives

The Corporation enters into credit derivatives primarily to facilitate client transactions and to manage credit risk exposures. Credit derivatives derive value based on an underlying third-party referenced obligation or a portfolio of referenced obligations and generally require the Corporation, as the seller of credit protection, to make payments to a buyer upon the occurrence of a pre-defined credit event. Such credit events generally include bankruptcy of the referenced credit entity and failure to pay under the obligation, as well as acceleration of indebtedness and payment repudiation or moratorium. For credit derivatives based on a portfolio of referenced credits or credit indices, the Corporation may not be required to make payment until a specified amount of loss has occurred and/or may only be required to make payment up to a specified amount.

Credit derivative instruments where the Corporation is the seller of credit protection and their expiration at December 31, 2017 and 2016 are summarized in the following table.

Credit Derivative Instruments

(Dollars in millions)	Less than One Year	One to Three Years	Three to Five Years	Over Five Years	Total
	December 31, 2017				
	Carrying Value				
Credit default swaps:					
Investment grade	$ 4	$ 3	$ 61	$ 245	$ 313
Non-investment grade	203	453	484	2,133	3,273
Total	207	456	545	2,378	3,586
Total return swaps/options:					
Investment grade	30	—	—	—	30
Non-investment grade	150	—	—	3	153
Total	180	—	—	3	183
Total credit derivatives	$ 387	$ 456	$ 545	$ 2,381	$ 3,769
Credit-related notes:					
Investment grade	$ —	$ —	$ 7	$ 689	$ 696
Non-investment grade	12	4	34	1,548	1,598
Total credit-related notes	$ 12	$ 4	$ 41	$ 2,237	$ 2,294
	Maximum Payout/Notional				
Credit default swaps:					
Investment grade	$ 61,388	$ 115,480	$ 107,081	$ 21,579	$ 305,528
Non-investment grade	39,312	49,843	39,098	14,420	142,673
Total	100,700	165,323	146,179	35,999	448,201
Total return swaps/options:					
Investment grade	37,394	2,581	—	143	40,118
Non-investment grade	13,751	514	143	697	15,105
Total	51,145	3,095	143	840	55,223
Total credit derivatives	$ 151,845	$ 168,418	$ 146,322	$ 36,839	$ 503,424
	December 31, 2016				
	Carrying Value				
Credit default swaps:					
Investment grade	$ 10	$ 64	$ 535	$ 783	$ 1,392
Non-investment grade	771	1,053	908	3,339	6,071
Total	781	1,117	1,443	4,122	7,463
Total return swaps/options:					
Investment grade	16	—	—	—	16
Non-investment grade	127	10	2	1	140
Total	143	10	2	1	156
Total credit derivatives	$ 924	$ 1,127	$ 1,445	$ 4,123	$ 7,619
Credit-related notes:					
Investment grade	$ —	$ 12	$ 542	$ 1,423	$ 1,977
Non-investment grade	70	22	60	1,318	1,470
Total credit-related notes	$ 70	$ 34	$ 602	$ 2,741	$ 3,447
	Maximum Payout/Notional				
Credit default swaps:					
Investment grade	$ 121,083	$ 143,200	$ 116,540	$ 21,905	$ 402,728
Non-investment grade	84,755	67,160	41,001	18,711	211,627
Total	205,838	210,360	157,541	40,616	614,355
Total return swaps/options:					
Investment grade	12,792	—	—	—	12,792
Non-investment grade	6,638	5,127	589	208	12,562
Total	19,430	5,127	589	208	25,354
Total credit derivatives	$ 225,268	$ 215,487	$ 158,130	$ 40,824	$ 639,709

Credit derivatives are classified as investment and non-investment grade based on the credit quality of the underlying referenced obligation. The Corporation considers ratings of BBB- or higher as investment grade. Non-investment grade includes non-rated credit derivative instruments. The Corporation discloses internal categorizations of investment grade and non-investment grade consistent with how risk is managed for these instruments.

The notional amount represents the maximum amount payable by the Corporation for most credit derivatives. However, the Corporation does not monitor its exposure to credit derivatives based solely on the notional amount because this measure does not take into consideration the probability of occurrence. As such, the notional amount is not a reliable indicator of the Corporation's exposure to these contracts. Instead, a risk framework is used to define risk tolerances and establish limits so that certain credit risk-related losses occur within acceptable, predefined limits.

Credit-related notes in the table above include investments in securities issued by CDO, collateralized loan obligation (CLO) and credit-linked note vehicles. These instruments are primarily classified as trading securities. The carrying value of these instruments equals the Corporation's maximum exposure to loss.

The Corporation is not obligated to make any payments to the entities under the terms of the securities owned.

Credit-related Contingent Features and Collateral

The Corporation executes the majority of its derivative contracts in the OTC market with large, international financial institutions, including broker-dealers and, to a lesser degree, with a variety of non-financial companies. A significant majority of the derivative transactions are executed on a daily margin basis. Therefore, events such as a credit rating downgrade (depending on the ultimate rating level) or a breach of credit covenants would typically require an increase in the amount of collateral required of the counterparty, where applicable, and/or allow the Corporation to take additional protective measures such as early termination of all trades. Further, as previously discussed on page 132, the Corporation enters into legally enforceable master netting agreements which reduce risk by permitting closeout and netting of transactions with the same counterparty upon the occurrence of certain events.

A majority of the Corporation's derivative contracts contain credit risk-related contingent features, primarily in the form of ISDA master netting agreements and credit support documentation that enhance the creditworthiness of these instruments compared to other obligations of the respective counterparty with whom the Corporation has transacted. These contingent features may be for the benefit of the Corporation as well as its counterparties with respect to changes in the Corporation's creditworthiness and the mark-to-market exposure under the derivative transactions. At December 31, 2017 and 2016, the Corporation held cash and securities collateral of $77.2 billion and $85.5 billion, and posted cash and securities collateral of $59.2 billion and $71.1 billion in the normal course of business under derivative agreements, excluding cross-product margining agreements where clients are permitted to margin on a net basis for both derivative and secured financing arrangements.

In connection with certain OTC derivative contracts and other trading agreements, the Corporation can be required to provide additional collateral or to terminate transactions with certain counterparties in the event of a downgrade of the senior debt ratings of the Corporation or certain subsidiaries. The amount of additional collateral required depends on the contract and is usually a fixed incremental amount and/or the market value of the exposure.

At December 31, 2017, the amount of collateral, calculated based on the terms of the contracts, that the Corporation and certain subsidiaries could be required to post to counterparties but had not yet posted to counterparties was approximately $3.2 billion, including $2.1 billion for Bank of America, National Association (Bank of America, N.A. or BANA).

Some counterparties are currently able to unilaterally terminate certain contracts, or the Corporation or certain subsidiaries may be required to take other action such as find a suitable replacement or obtain a guarantee. At December 31, 2017 and 2016, the liability recorded for these derivative contracts was not significant.

The following table presents the amount of additional collateral that would have been contractually required by derivative contracts and other trading agreements at December 31, 2017 if the rating agencies had downgraded their long-term senior debt ratings for the Corporation or certain subsidiaries by one incremental notch and by an additional second incremental notch.

Additional Collateral Required to be Posted Upon Downgrade at December 31, 2017

(Dollars in millions)	One incremental notch	Second incremental notch
Bank of America Corporation	$ 779	$ 487
Bank of America, N.A. and subsidiaries [1]	391	230

[1] Included in Bank of America Corporation collateral requirements in this table.

The table below presents the derivative liabilities that would be subject to unilateral termination by counterparties and the amounts of collateral that would have been contractually required at December 31, 2017 if the long-term senior debt ratings for the Corporation or certain subsidiaries had been lower by one incremental notch and by an additional second incremental notch.

Derivative Liabilities Subject to Unilateral Termination Upon Downgrade at December 31, 2017

(Dollars in millions)	One incremental notch	Second incremental notch
Derivative liabilities	$ 428	$ 1,163
Collateral posted	339	800

Valuation Adjustments on Derivatives

The Corporation records credit risk valuation adjustments on derivatives in order to properly reflect the credit quality of the counterparties and its own credit quality. The Corporation calculates valuation adjustments on derivatives based on a modeled expected exposure that incorporates current market risk factors. The exposure also takes into consideration credit mitigants such as enforceable master netting agreements and collateral. CDS spread data is used to estimate the default probabilities and severities that are applied to the exposures. Where no observable credit default data is available for counterparties, the Corporation uses proxies and other market data to estimate default probabilities and severity.

Valuation adjustments on derivatives are affected by changes in market spreads, non-credit related market factors such as interest rate and currency changes that affect the expected exposure, and other factors like changes in collateral arrangements and partial payments. Credit spreads and non-credit factors can move independently. For example, for an interest rate swap, changes in interest rates may increase the expected exposure, which would increase the counterparty credit valuation adjustment (CVA). Independently, counterparty credit spreads may tighten, which would result in an offsetting decrease to CVA.

The Corporation enters into risk management activities to offset market driven exposures. The Corporation often hedges the counterparty spread risk in CVA with CDS. The Corporation hedges other market risks in both CVA and DVA primarily with currency and interest rate swaps. In certain instances, the net-of-hedge amounts in the table below move in the same direction as the gross amount or may move in the opposite direction. This movement is a consequence of the complex interaction of the risks being hedged, resulting in limitations in the ability to perfectly hedge all of the market exposures at all times.

The table below presents CVA, DVA and FVA gains (losses) on derivatives, which are recorded in trading account profits, on a gross and net of hedge basis for 2017, 2016 and 2015. CVA gains reduce the cumulative CVA thereby increasing the derivative assets balance. DVA gains increase the cumulative DVA thereby decreasing the derivative liabilities balance. CVA and DVA losses have the opposite impact. FVA gains related to derivative assets reduce the cumulative FVA thereby increasing the derivative assets balance. FVA gains related to derivative liabilities increase the cumulative FVA thereby decreasing the derivative liabilities balance. FVA losses have the opposite impact.

Valuation Adjustments on Derivatives [1]

Gains (Losses)	**Gross**	**Net**	Gross	Net	Gross	Net
(Dollars in millions)	**2017**		2016		2015	
Derivative assets (CVA)	**$ 330**	**$ 98**	$ 374	$ 214	$ 255	$ 227
Derivative assets/liabilities (FVA)	**160**	**178**	186	102	16	16
Derivative liabilities (DVA)	**(324)**	**(281)**	24	(141)	(18)	(153)

(1) At December 31, 2017, 2016 and 2015, cumulative CVA reduced the derivative assets balance by $677 million, $1.0 billion and $1.4 billion, cumulative FVA reduced the net derivatives balance by $136 million, $296 million and $481 million, and cumulative DVA reduced the derivative liabilities balance by $450 million, $774 million and $750 million, respectively.

NOTE 3 Securities

The table below presents the amortized cost, gross unrealized gains and losses, and fair value of AFS debt securities, other debt securities carried at fair value, HTM debt securities and AFS marketable equity securities at December 31, 2017 and 2016.

Debt Securities and Available-for-Sale Marketable Equity Securities

(Dollars in millions)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
	December 31, 2017			
Available-for-sale debt securities				
Mortgage-backed securities:				
Agency	**$ 194,119**	**$ 506**	**$ (1,696)**	**$ 192,929**
Agency-collateralized mortgage obligations	**6,846**	**39**	**(81)**	**6,804**
Commercial	**13,864**	**28**	**(208)**	**13,684**
Non-agency residential [(1)]	**2,410**	**267**	**(8)**	**2,669**
Total mortgage-backed securities	**217,239**	**840**	**(1,993)**	**216,086**
U.S. Treasury and agency securities	**54,523**	**18**	**(1,018)**	**53,523**
Non-U.S. securities	**6,669**	**9**	**(1)**	**6,677**
Other taxable securities, substantially all asset-backed securities	**5,699**	**73**	**(2)**	**5,770**
Total taxable securities	**284,130**	**940**	**(3,014)**	**282,056**
Tax-exempt securities	**20,541**	**138**	**(104)**	**20,575**
Total available-for-sale debt securities	**304,671**	**1,078**	**(3,118)**	**302,631**
Other debt securities carried at fair value	**12,273**	**252**	**(39)**	**12,486**
Total debt securities carried at fair value	**316,944**	**1,330**	**(3,157)**	**315,117**
Held-to-maturity debt securities, substantially all U.S. agency mortgage-backed securities	**125,013**	**111**	**(1,825)**	**123,299**
Total debt securities [(2)]	**$ 441,957**	**$ 1,441**	**$ (4,982)**	**$ 438,416**
Available-for-sale marketable equity securities [(3)]	**$ 27**	**$ —**	**$ (2)**	**$ 25**
	December 31, 2016			
Available-for-sale debt securities				
Mortgage-backed securities:				
Agency	$ 190,809	$ 640	$ (1,963)	$ 189,486
Agency-collateralized mortgage obligations	8,296	85	(51)	8,330
Commercial	12,594	21	(293)	12,322
Non-agency residential [(1)]	1,863	181	(31)	2,013
Total mortgage-backed securities	213,562	927	(2,338)	212,151
U.S. Treasury and agency securities	48,800	204	(752)	48,252
Non-U.S. securities	6,372	13	(3)	6,382
Other taxable securities, substantially all asset-backed securities	10,573	64	(23)	10,614
Total taxable securities	279,307	1,208	(3,116)	277,399
Tax-exempt securities	17,272	72	(184)	17,160
Total available-for-sale debt securities	296,579	1,280	(3,300)	294,559
Less: Available-for-sale securities of business held for sale [(4)]	(619)	—	—	(619)
Other debt securities carried at fair value	19,748	121	(149)	19,720
Total debt securities carried at fair value	315,708	1,401	(3,449)	313,660
Held-to-maturity debt securities, substantially all U.S. agency mortgage-backed securities	117,071	248	(2,034)	115,285
Total debt securities [(2)]	$ 432,779	$ 1,649	$ (5,483)	$ 428,945
Available-for-sale marketable equity securities [(3)]	$ 325	$ 51	$ (1)	$ 375

(1) At December 31, 2017 and 2016, the underlying collateral type included approximately 62 percent and 60 percent prime, 13 percent and 19 percent Alt-A, and 25 percent and 21 percent subprime.

(2) The Corporation had debt securities from FNMA and FHLMC that each exceeded 10 percent of shareholders' equity, with an amortized cost of $163.6 billion and $50.3 billion, and a fair value of $162.1 billion and $50.0 billion at December 31, 2017, and an amortized cost of $156.4 billion and $48.7 billion, and a fair value of $154.4 billion and $48.3 billion at December 31, 2016.

(3) Classified in other assets on the Consolidated Balance Sheet.

(4) Represents AFS debt securities of business held for sale. In 2017, the Corporation sold its non-U.S. consumer credit card business.

At December 31, 2017, the accumulated net unrealized loss on AFS debt securities included in accumulated OCI was $1.2 billion, net of the related income tax benefit of $872 million. At December 31, 2017 and 2016, the Corporation had nonperforming AFS debt securities of $99 million and $121 million.

The following table presents the components of other debt securities carried at fair value where the changes in fair value are reported in other income. In 2017, the Corporation recorded unrealized mark-to-market net gains of $243 million and realized net losses of $49 million compared to unrealized mark-to-market net gains of $51 million and realized net losses of $128 million in 2016. These amounts exclude hedge results.

Other Debt Securities Carried at Fair Value

	December 31	
(Dollars in millions)	**2017**	2016
Mortgage-backed securities:		
Agency-collateralized mortgage obligations	**$ 5**	$ 5
Non-agency residential	**2,764**	3,139
Total mortgage-backed securities	**2,769**	3,144
Non-U.S. securities [1]	**9,488**	16,336
Other taxable securities, substantially all asset-backed securities	**229**	240
Total	**$ 12,486**	$ 19,720

(1) These securities are primarily used to satisfy certain international regulatory liquidity requirements.

The gross realized gains and losses on sales of AFS debt securities for 2017, 2016 and 2015 are presented in the table below.

Gains and Losses on Sales of AFS Debt Securities

(Dollars in millions)	**2017**	2016	2015
Gross gains	**$ 352**	$ 520	$ 1,174
Gross losses	**(97)**	(30)	(36)
Net gains on sales of AFS debt securities	**$ 255**	**$ 490**	**$ 1,138**
Income tax expense attributable to realized net gains on sales of AFS debt securities	**$ 97**	**$ 186**	**$ 432**

The table below presents the fair value and the associated gross unrealized losses on AFS debt securities and whether these securities have had gross unrealized losses for less than 12 months or for 12 months or longer at December 31, 2017 and 2016.

Temporarily Impaired and Other-than-temporarily Impaired AFS Debt Securities

	Less than Twelve Months		Twelve Months or Longer		Total	
	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
(Dollars in millions)	**December 31, 2017**					
Temporarily impaired AFS debt securities						
Mortgage-backed securities:						
Agency	**$ 73,535**	**$ (352)**	**$ 72,612**	**$ (1,344)**	**$ 146,147**	**$ (1,696)**
Agency-collateralized mortgage obligations	**2,743**	**(29)**	**1,684**	**(52)**	**4,427**	**(81)**
Commercial	**5,575**	**(50)**	**4,586**	**(158)**	**10,161**	**(208)**
Non-agency residential	**335**	**(7)**	**—**	**—**	**335**	**(7)**
Total mortgage-backed securities	**82,188**	**(438)**	**78,882**	**(1,554)**	**161,070**	**(1,992)**
U.S. Treasury and agency securities	**27,537**	**(251)**	**24,035**	**(767)**	**51,572**	**(1,018)**
Non-U.S. securities	**772**	**(1)**	**—**	**—**	**772**	**(1)**
Other taxable securities, substantially all asset-backed securities	**—**	**—**	**92**	**(2)**	**92**	**(2)**
Total taxable securities	**110,497**	**(690)**	**103,009**	**(2,323)**	**213,506**	**(3,013)**
Tax-exempt securities	**1,090**	**(2)**	**7,100**	**(102)**	**8,190**	**(104)**
Total temporarily impaired AFS debt securities	**111,587**	**(692)**	**110,109**	**(2,425)**	**221,696**	**(3,117)**
Other-than-temporarily impaired AFS debt securities [1]						
Non-agency residential mortgage-backed securities	**58**	**(1)**	**—**	**—**	**58**	**(1)**
Total temporarily impaired and other-than-temporarily impaired AFS debt securities	**$ 111,645**	**$ (693)**	**$ 110,109**	**$ (2,425)**	**$ 221,754**	**$ (3,118)**
	December 31, 2016					
Temporarily impaired AFS debt securities						
Mortgage-backed securities:						
Agency	$ 135,210	$ (1,846)	$ 3,770	$ (117)	$ 138,980	$ (1,963)
Agency-collateralized mortgage obligations	3,229	(25)	1,028	(26)	4,257	(51)
Commercial	9,018	(293)	—	—	9,018	(293)
Non-agency residential	212	(1)	204	(13)	416	(14)
Total mortgage-backed securities	147,669	(2,165)	5,002	(156)	152,671	(2,321)
U.S. Treasury and agency securities	28,462	(752)	—	—	28,462	(752)
Non-U.S. securities	52	(1)	142	(2)	194	(3)
Other taxable securities, substantially all asset-backed securities	762	(5)	1,438	(18)	2,200	(23)
Total taxable securities	176,945	(2,923)	6,582	(176)	183,527	(3,099)
Tax-exempt securities	4,782	(148)	1,873	(36)	6,655	(184)
Total temporarily impaired AFS debt securities	181,727	(3,071)	8,455	(212)	190,182	(3,283)
Other-than-temporarily impaired AFS debt securities [1]						
Non-agency residential mortgage-backed securities	94	(1)	401	(16)	495	(17)
Total temporarily impaired and other-than-temporarily impaired AFS debt securities	$ 181,821	$ (3,072)	$ 8,856	$ (228)	$ 190,677	$ (3,300)

(1) Includes OTTI AFS debt securities on which an OTTI loss, primarily related to changes in interest rates, remains in accumulated OCI.

The Corporation had $41 million, $19 million and $81 million of credit-related OTTI losses on AFS debt securities that were recognized in other income in 2017, 2016 and 2015, respectfully. The amount of noncredit-related OTTI losses, which is recognized in OCI, was insignificant for all periods presented.

The cumulative credit loss component of OTTI losses that have been recognized in income related to AFS debt securities that the Corporation does not intend to sell was $274 million, $253 million and $266 million at December 31, 2017, 2016 and 2015, respectfully.

The Corporation estimates the portion of a loss on a security that is attributable to credit using a discounted cash flow model and estimates the expected cash flows of the underlying collateral using internal credit, interest rate and prepayment risk models that incorporate management's best estimate of current key assumptions such as default rates, loss severity and prepayment rates. Assumptions used for the underlying loans that support the MBS can vary widely from loan to loan and are influenced by such factors as loan interest rate, geographic location of the borrower, borrower characteristics and collateral type. Based on these assumptions, the Corporation then determines how the underlying collateral cash flows will be distributed to each MBS issued from the applicable special purpose entity. Expected principal and interest cash flows on an impaired AFS debt security are discounted using the effective yield of each individual impaired AFS debt security.

Significant assumptions used in estimating the expected cash flows for measuring credit losses on non-agency residential mortgage-backed securities (RMBS) were as follows at December 31, 2017.

Significant Assumptions

	Weighted-average	Range [1] 10th Percentile [2]	90th Percentile [2]
Prepayment speed	12.4%	3.0%	21.3%
Loss severity	20.2	9.1	36.7
Life default rate	20.9	1.2	76.6

(1) Represents the range of inputs/assumptions based upon the underlying collateral.
(2) The value of a variable below which the indicated percentile of observations will fall.

Annual constant prepayment speed and loss severity rates are projected considering collateral characteristics such as LTV, creditworthiness of borrowers as measured using Fair Isaac Corporation (FICO) scores, and geographic concentrations. The weighted-average severity by collateral type was 17.5 percent for prime, 18.1 percent for Alt-A and 29.0 percent for subprime at December 31, 2017. Default rates are projected by considering collateral characteristics including, but not limited to, LTV, FICO and geographic concentration. Weighted-average life default rates by collateral type were 16.9 percent for prime, 21.4 percent for Alt-A and 21.6 percent for subprime at December 31, 2017.

The remaining contractual maturity distribution and yields of the Corporation's debt securities carried at fair value and HTM debt securities at December 31, 2017 are summarized in the table below. Actual duration and yields may differ as prepayments on the loans underlying the mortgages or other ABS are passed through to the Corporation.

Maturities of Debt Securities Carried at Fair Value and Held-to-maturity Debt Securities

	Due in One Year or Less		Due after One Year through Five Years		Due after Five Years through Ten Years		Due after Ten Years		Total	
	Amount	Yield (1)	Amount	Yield (1)	Amount	Yield (1)	Amount	Yield (1)	Amount	Yield (1)
(Dollars in millions)	December 31, 2017									
Amortized cost of debt securities carried at fair value										
Mortgage-backed securities:										
Agency	$ 5	4.20%	$ 28	3.69%	$ 555	2.57%	$193,531	3.22%	$194,119	3.22%
Agency-collateralized mortgage obligations	—	—	—	—	33	2.52	6,817	3.18	6,850	3.18
Commercial	54	7.45	974	1.98	11,866	2.43	970	2.78	13,864	2.44
Non-agency residential	—	—	—	—	24	0.01	4,955	9.32	4,979	9.28
Total mortgage-backed securities	59	7.18	1,002	2.03	12,478	2.43	206,273	3.36	219,812	3.31
U.S. Treasury and agency securities	490	0.39	23,395	1.42	30,615	2.03	23	2.52	54,523	1.75
Non-U.S. securities	13,832	1.02	2,111	0.97	48	0.72	167	6.60	16,158	1.07
Other taxable securities, substantially all asset-backed securities	1,979	2.53	2,029	3.02	1,151	3.22	751	4.74	5,910	3.11
Total taxable securities	16,360	1.21	28,537	1.52	44,292	2.17	207,214	3.37	296,403	2.89
Tax-exempt securities	1,327	1.81	6,927	1.88	9,132	1.79	3,155	1.84	20,541	1.83
Total amortized cost of debt securities carried at fair value	**$ 17,687**	**1.25**	**$ 35,464**	**1.59**	**$ 53,424**	**2.11**	**$ 210,369**	**3.35**	**$ 316,944**	**2.82**
Amortized cost of HTM debt securities (2)	**$ 1**	**5.82**	**$ 71**	**3.06**	**$ 1,144**	**2.65**	**$ 123,797**	**3.03**	**$ 125,013**	**3.03**
Debt securities carried at fair value										
Mortgage-backed securities:										
Agency	$ 5		$ 28		$ 555		$192,341		$192,929	
Agency-collateralized mortgage obligations	—		—		32		6,777		6,809	
Commercial	54		969		11,703		958		13,684	
Non-agency residential	—		—		33		5,400		5,433	
Total mortgage-backed securities	59		997		12,323		205,476		218,855	
U.S. Treasury and agency securities	491		22,898		30,111		23		53,523	
Non-U.S. securities	13,830		2,115		48		172		16,165	
Other taxable securities, substantially all asset-backed securities	1,981		2,006		1,184		828		5,999	
Total taxable securities	16,361		28,016		43,666		206,499		294,542	
Tax-exempt securities	1,326		6,934		9,162		3,153		20,575	
Total debt securities carried at fair value	**$ 17,687**		**$ 34,950**		**$ 52,828**		**$ 209,652**		**$ 315,117**	
Fair value of HTM debt securities (2)	**$ 1**		**$ 71**		**$ 1,117**		**$ 122,110**		**$ 123,299**	

(1) The average yield is computed based on a constant effective interest rate over the contractual life of each security. The average yield considers the contractual coupon and the amortization of premiums and accretion of discounts, excluding the effect of related hedging derivatives.

(2) Substantially all U.S. agency MBS.

NOTE 4 Outstanding Loans and Leases

The following tables present total outstanding loans and leases and an aging analysis for the Consumer Real Estate, Credit Card and Other Consumer, and Commercial portfolio segments, by class of financing receivables, at December 31, 2017 and 2016.

In 2017, the Corporation sold its non-U.S. consumer credit card business. This business, which at December 31, 2016 included $9.2 billion of non-U.S. credit card loans and the related allowance for loan and lease losses of $243 million, was presented in assets of business held for sale on the Consolidated Balance Sheet. In this Note, all applicable amounts for December 31, 2016 include these balances, unless otherwise noted. For more information, see *Note 1 – Summary of Significant Accounting Principles.*

(Dollars in millions)	30-59 Days Past Due [1]	60-89 Days Past Due [1]	90 Days or More Past Due [2]	Total Past Due 30 Days or More	Total Current or Less Than 30 Days Past Due [3]	Purchased Credit-impaired [4]	Loans Accounted for Under the Fair Value Option	Total Outstandings
	December 31, 2017							
Consumer real estate								
Core portfolio								
Residential mortgage	$ 1,242	$ 321	$ 1,040	$ 2,603	$ 174,015			$ 176,618
Home equity	215	108	473	796	43,449			44,245
Non-core portfolio								
Residential mortgage [5]	1,028	468	3,535	5,031	14,161	$ 8,001		27,193
Home equity	224	121	572	917	9,866	2,716		13,499
Credit card and other consumer								
U.S. credit card	542	405	900	1,847	94,438			96,285
Direct/Indirect consumer [6]	320	102	43	465	93,365			93,830
Other consumer [7]	10	2	1	13	2,665			2,678
Total consumer	3,581	1,527	6,564	11,672	431,959	10,717		454,348
Consumer loans accounted for under the fair value option [8]							$ 928	928
Total consumer loans and leases	3,581	1,527	6,564	11,672	431,959	10,717	928	455,276
Commercial								
U.S. commercial	547	244	425	1,216	283,620			284,836
Non-U.S. commercial	52	1	3	56	97,736			97,792
Commercial real estate [9]	48	10	29	87	58,211			58,298
Commercial lease financing	110	68	26	204	21,912			22,116
U.S. small business commercial	95	45	88	228	13,421			13,649
Total commercial	852	368	571	1,791	474,900			476,691
Commercial loans accounted for under the fair value option [8]							4,782	4,782
Total commercial loans and leases	852	368	571	1,791	474,900		4,782	481,473
Total loans and leases [10]	$ 4,433	$ 1,895	$ 7,135	$ 13,463	$ 906,859	$ 10,717	$ 5,710	$ 936,749
Percentage of outstandings	0.48%	0.20%	0.76%	1.44%	96.81%	1.14%	0.61%	100.00%

(1) Consumer real estate loans 30-59 days past due includes fully-insured loans of $850 million and nonperforming loans of $253 million. Consumer real estate loans 60-89 days past due includes fully-insured loans of $386 million and nonperforming loans of $195 million.
(2) Consumer real estate includes fully-insured loans of $3.2 billion.
(3) Consumer real estate includes $2.3 billion and direct/indirect consumer includes $43 million of nonperforming loans.
(4) PCI loan amounts are shown gross of the valuation allowance.
(5) Total outstandings includes pay option loans of $1.4 billion. The Corporation no longer originates this product.
(6) Total outstandings includes auto and specialty lending loans of $49.9 billion, unsecured consumer lending loans of $469 million, U.S. securities-based lending loans of $39.8 billion, non-U.S. consumer loans of $3.0 billion and other consumer loans of $684 million.
(7) Total outstandings includes consumer leases of $2.5 billion and consumer overdrafts of $163 million.
(8) Consumer loans accounted for under the fair value option includes residential mortgage loans of $567 million and home equity loans of $361 million. Commercial loans accounted for under the fair value option includes U.S. commercial loans of $2.6 billion and non-U.S. commercial loans of $2.2 billion. For more information, see *Note 20 – Fair Value Measurements* and *Note 21 – Fair Value Option*.
(9) Total outstandings includes U.S. commercial real estate loans of $54.8 billion and non-U.S. commercial real estate loans of $3.5 billion.
(10) The Corporation pledged $160.3 billion of loans to secure potential borrowing capacity with the Federal Reserve Bank and Federal Home Loan Bank (FHLB). This amount is not included in the parenthetical disclosure of loans and leases pledged as collateral on the Consolidated Balance Sheet as there were no related outstanding borrowings.

(Dollars in millions)	30-59 Days Past Due (1)	60-89 Days Past Due (1)	90 Days or More Past Due (2)	Total Past Due 30 Days or More	Total Current or Less Than 30 Days Past Due (3)	Purchased Credit-impaired (4)	Loans Accounted for Under the Fair Value Option	Total Outstandings
	December 31, 2016							
Consumer real estate								
Core portfolio								
Residential mortgage	$ 1,340	$ 425	$ 1,213	$ 2,978	$ 153,519			$ 156,497
Home equity	239	105	451	795	48,578			49,373
Non-core portfolio								
Residential mortgage (5)	1,338	674	5,343	7,355	17,818	$ 10,127		35,300
Home equity	260	136	832	1,228	12,231	3,611		17,070
Credit card and other consumer								
U.S. credit card	472	341	782	1,595	90,683			92,278
Non-U.S. credit card	37	27	66	130	9,084			9,214
Direct/Indirect consumer (6)	272	79	34	385	93,704			94,089
Other consumer (7)	26	8	6	40	2,459			2,499
Total consumer	3,984	1,795	8,727	14,506	428,076	13,738		456,320
Consumer loans accounted for under the fair value option (8)							$ 1,051	1,051
Total consumer loans and leases	3,984	1,795	8,727	14,506	428,076	13,738	1,051	457,371
Commercial								
U.S. commercial	952	263	400	1,615	268,757			270,372
Non-U.S. commercial	348	4	5	357	89,040			89,397
Commercial real estate (9)	20	10	56	86	57,269			57,355
Commercial lease financing	167	21	27	215	22,160			22,375
U.S. small business commercial	96	49	84	229	12,764			12,993
Total commercial	1,583	347	572	2,502	449,990			452,492
Commercial loans accounted for under the fair value option (8)							6,034	6,034
Total commercial loans and leases	1,583	347	572	2,502	449,990		6,034	458,526
Total consumer and commercial loans and leases (10)	$ 5,567	$ 2,142	$ 9,299	$ 17,008	$ 878,066	$ 13,738	$ 7,085	$ 915,897
Less: Loans of business held for sale (10)								(9,214)
Total loans and leases (11)								$ 906,683
Percentage of outstandings (10)	0.61%	0.23%	1.02%	1.86%	95.87%	1.50%	0.77%	100.00%

(1) Consumer real estate loans 30-59 days past due includes fully-insured loans of $1.1 billion and nonperforming loans of $266 million. Consumer real estate loans 60-89 days past due includes fully-insured loans of $547 million and nonperforming loans of $216 million.
(2) Consumer real estate includes fully-insured loans of $4.8 billion.
(3) Consumer real estate includes $2.5 billion and direct/indirect consumer includes $27 million of nonperforming loans.
(4) PCI loan amounts are shown gross of the valuation allowance.
(5) Total outstandings includes pay option loans of $1.8 billion. The Corporation no longer originates this product.
(6) Total outstandings includes auto and specialty lending loans of $48.9 billion, unsecured consumer lending loans of $585 million, U.S. securities-based lending loans of $40.1 billion, non-U.S. consumer loans of $3.0 billion, student loans of $497 million and other consumer loans of $1.1 billion.
(7) Total outstandings includes consumer finance loans of $465 million, consumer leases of $1.9 billion and consumer overdrafts of $157 million.
(8) Consumer loans accounted for under the fair value option includes residential mortgage loans of $710 million and home equity loans of $341 million. Commercial loans accounted for under the fair value option includes U.S. commercial loans of $2.9 billion and non-U.S. commercial loans of $3.1 billion. For more information, see *Note 20 – Fair Value Measurements* and *Note 21 – Fair Value Option*.
(9) Total outstandings includes U.S. commercial real estate loans of $54.3 billion and non-U.S. commercial real estate loans of $3.1 billion.
(10) Includes non-U.S. credit card loans, which were included in assets of business held for sale on the Consolidated Balance Sheet.
(11) The Corporation pledged $143.1 billion of loans to secure potential borrowing capacity with the Federal Reserve Bank and FHLB. This amount is not included in the parenthetical disclosure of loans and leases pledged as collateral on the Consolidated Balance Sheet as there were no related outstanding borrowings.

The Corporation categorizes consumer real estate loans as core and non-core based on loan and customer characteristics such as origination date, product type, LTV, FICO score and delinquency status consistent with its current consumer and mortgage servicing strategy. Generally, loans that were originated after January 1, 2010, qualified under government-sponsored enterprise underwriting guidelines, or otherwise met the Corporation's underwriting guidelines in place in 2015 are characterized as core loans. All other loans are generally characterized as non-core loans and represent run-off portfolios.

The Corporation has entered into long-term credit protection agreements with FNMA and FHLMC on loans totaling $6.3 billion and $6.4 billion at December 31, 2017 and 2016, providing full credit protection on residential mortgage loans that become severely delinquent. All of these loans are individually insured and therefore the Corporation does not record an allowance for credit losses related to these loans.

Nonperforming Loans and Leases

The Corporation classifies junior-lien home equity loans as nonperforming when the first-lien loan becomes 90 days past due even if the junior-lien loan is performing. At December 31, 2017 and 2016, $330 million and $428 million of such junior-lien home equity loans were included in nonperforming loans.

The Corporation classifies consumer real estate loans that have been discharged in Chapter 7 bankruptcy and not reaffirmed by the borrower as TDRs, irrespective of payment history or delinquency status, even if the repayment terms for the loan have not been otherwise modified. The Corporation continues to have a lien on the underlying collateral. At December 31, 2017, nonperforming loans discharged in Chapter 7 bankruptcy with no change in repayment terms were $358 million of which $209 million were current on their contractual payments, while $124 million were 90 days or more past due. Of the contractually current nonperforming loans, 66 percent were discharged in Chapter 7 bankruptcy over 12 months ago, and 57 percent were discharged 24 months or more ago.

During 2017, the Corporation sold nonperforming and other delinquent consumer real estate loans with a carrying value of $1.3 billion, including $803 million of PCI loans, compared to $2.2 billion, including $549 million of PCI loans, in 2016. The Corporation recorded net recoveries of $105 million related to these sales during 2017 and net charge-offs of $30 million during 2016. Gains related to these sales of $57 million and $75 million were recorded in other income in the Consolidated Statement of Income during 2017 and 2016. In 2017 and 2016, the Corporation transferred consumer nonperforming loans with a net carrying value of $198 million and $55 million to held-for-sale.

The table below presents the Corporation's nonperforming loans and leases including nonperforming TDRs, and loans accruing past due 90 days or more at December 31, 2017 and 2016. Nonperforming LHFS are excluded from nonperforming loans and leases as they are recorded at either fair value or the lower of cost or fair value. For more information on the criteria for classification as nonperforming, see *Note 1 – Summary of Significant Accounting Principles*.

Credit Quality

	Nonperforming Loans and Leases		Accruing Past Due 90 Days or More	
	December 31			
(Dollars in millions)	**2017**	2016	**2017**	2016
Consumer real estate				
Core portfolio				
Residential mortgage [1]	**$ 1,087**	$ 1,274	**$ 417**	$ 486
Home equity	**1,079**	969	**—**	—
Non-core portfolio				
Residential mortgage [1]	**1,389**	1,782	**2,813**	4,307
Home equity	**1,565**	1,949	**—**	—
Credit card and other consumer				
U.S. credit card	**n/a**	n/a	**900**	782
Non-U.S. credit card	**n/a**	n/a	**—**	66
Direct/Indirect consumer	**46**	28	**40**	34
Other consumer	**—**	2	**—**	4
Total consumer	**5,166**	6,004	**4,170**	5,679
Commercial				
U.S. commercial	**814**	1,256	**144**	106
Non-U.S. commercial	**299**	279	**3**	5
Commercial real estate	**112**	72	**4**	7
Commercial lease financing	**24**	36	**19**	19
U.S. small business commercial	**55**	60	**75**	71
Total commercial	**1,304**	1,703	**245**	208
Total loans and leases	**$ 6,470**	$ 7,707	**$ 4,415**	$ 5,887

(1) Residential mortgage loans in the core and non-core portfolios accruing past due 90 days or more are fully-insured loans. At December 31, 2017 and 2016, residential mortgage includes $2.2 billion and $3.0 billion of loans on which interest has been curtailed by the FHA, and therefore are no longer accruing interest, although principal is still insured, and $1.0 billion and $1.8 billion of loans on which interest is still accruing.

n/a = not applicable

Credit Quality Indicators

The Corporation monitors credit quality within its Consumer Real Estate, Credit Card and Other Consumer, and Commercial portfolio segments based on primary credit quality indicators. For more information on the portfolio segments, see *Note 1 – Summary of Significant Accounting Principles*. Within the Consumer Real Estate portfolio segment, the primary credit quality indicators are refreshed LTV and refreshed FICO score. Refreshed LTV measures the carrying value of the loan as a percentage of the value of the property securing the loan, refreshed quarterly. Home equity loans are evaluated using CLTV which measures the carrying value of the Corporation's loan and available line of credit combined with any outstanding senior liens against the property as a percentage of the value of the property securing the loan, refreshed quarterly. FICO score measures the creditworthiness of the borrower based on the financial obligations of the borrower and the borrower's credit history. FICO scores are typically refreshed quarterly or more frequently. Certain borrowers (e.g., borrowers that have had debts discharged in a bankruptcy proceeding) may not have their FICO scores updated. FICO scores are also a primary credit quality indicator for the Credit Card and Other Consumer portfolio segment and the business card portfolio within U.S. small business commercial. Within the Commercial portfolio segment, loans are evaluated using the internal classifications of pass rated or reservable criticized as the primary credit quality indicators. The term reservable criticized refers to those commercial loans that are internally classified or listed by the Corporation as Special Mention, Substandard or Doubtful, which are asset quality categories defined by regulatory authorities. These assets have an elevated level of risk and may have a high probability of default or total loss. Pass rated refers to all loans not considered reservable criticized. In addition to these primary credit quality indicators, the Corporation uses other credit quality indicators for certain types of loans.

The following tables present certain credit quality indicators for the Corporation's Consumer Real Estate, Credit Card and Other Consumer, and Commercial portfolio segments, by class of financing receivables, at December 31, 2017 and 2016.

Consumer Real Estate – Credit Quality Indicators [1]

(Dollars in millions)	Core Residential Mortgage [2]	Non-core Residential Mortgage [2]	Residential Mortgage PCI [3]	Core Home Equity [2]	Non-core Home Equity [2]	Home Equity PCI
	December 31, 2017					
Refreshed LTV [4]						
Less than or equal to 90 percent	$ 153,669	$ 12,135	$ 6,872	$ 43,048	$ 7,944	$ 1,781
Greater than 90 percent but less than or equal to 100 percent	3,082	850	559	549	1,053	412
Greater than 100 percent	1,322	1,011	570	648	1,786	523
Fully-insured loans [5]	18,545	5,196	—	—	—	—
Total consumer real estate	$ 176,618	$ 19,192	$ 8,001	$ 44,245	$ 10,783	$ 2,716
Refreshed FICO score						
Less than 620	$ 2,234	$ 2,390	$ 1,941	$ 1,169	$ 2,098	$ 452
Greater than or equal to 620 and less than 680	4,531	2,086	1,657	2,371	2,393	466
Greater than or equal to 680 and less than 740	22,934	3,519	2,396	8,115	2,723	786
Greater than or equal to 740	128,374	6,001	2,007	32,590	3,569	1,012
Fully-insured loans [5]	18,545	5,196	—	—	—	—
Total consumer real estate	$ 176,618	$ 19,192	$ 8,001	$ 44,245	$ 10,783	$ 2,716

(1) Excludes $928 million of loans accounted for under the fair value option.
(2) Excludes PCI loans.
(3) Includes $1.2 billion of pay option loans. The Corporation no longer originates this product.
(4) Refreshed LTV percentages for PCI loans are calculated using the carrying value net of the related valuation allowance.
(5) Credit quality indicators are not reported for fully-insured loans as principal repayment is insured.

Credit Card and Other Consumer – Credit Quality Indicators

(Dollars in millions)	U.S. Credit Card	Direct/Indirect Consumer	Other Consumer
	December 31, 2017		
Refreshed FICO score			
Less than 620	$ 4,730	$ 1,630	$ 49
Greater than or equal to 620 and less than 680	12,422	2,000	143
Greater than or equal to 680 and less than 740	35,656	11,906	398
Greater than or equal to 740	43,477	34,838	1,921
Other internal credit metrics [1, 2]	—	43,456	167
Total credit card and other consumer	$ 96,285	$ 93,830	$ 2,678

(1) Other internal credit metrics may include delinquency status, geography or other factors.
(2) Direct/indirect consumer includes $42.8 billion of securities-based lending which is overcollateralized and therefore has minimal credit risk.

Commercial – Credit Quality Indicators [1]

(Dollars in millions)	U.S. Commercial	Non-U.S. Commercial	Commercial Real Estate	Commercial Lease Financing	U.S. Small Business Commercial [2]
	December 31, 2017				
Risk ratings					
Pass rated	$ 275,904	$ 96,199	$ 57,732	$ 21,535	$ 322
Reservable criticized	8,932	1,593	566	581	50
Refreshed FICO score [3]					
Less than 620					223
Greater than or equal to 620 and less than 680					625
Greater than or equal to 680 and less than 740					1,875
Greater than or equal to 740					3,713
Other internal credit metrics [3, 4]					6,841
Total commercial	$ 284,836	$ 97,792	$ 58,298	$ 22,116	$ 13,649

(1) Excludes $4.8 billion of loans accounted for under the fair value option.
(2) U.S. small business commercial includes $709 million of criticized business card and small business loans which are evaluated using refreshed FICO scores or internal credit metrics, including delinquency status, rather than risk ratings. At December 31, 2017, 98 percent of the balances where internal credit metrics are used was current or less than 30 days past due.
(3) Refreshed FICO score and other internal credit metrics are applicable only to the U.S. small business commercial portfolio.
(4) Other internal credit metrics may include delinquency status, application scores, geography or other factors.

Consumer Real Estate – Credit Quality Indicators [(1)]

(Dollars in millions)	Core Residential Mortgage [(2)]	Non-core Residential Mortgage [(2)]	Residential Mortgage PCI [(3)]	Core Home Equity [(2)]	Non-core Home Equity [(2)]	Home Equity PCI
	December 31, 2016					
Refreshed LTV [(4)]						
Less than or equal to 90 percent	$ 129,737	$ 14,280	$ 7,811	$ 47,171	$ 8,480	$ 1,942
Greater than 90 percent but less than or equal to 100 percent	3,634	1,446	1,021	1,006	1,668	630
Greater than 100 percent	1,872	1,972	1,295	1,196	3,311	1,039
Fully-insured loans [(5)]	21,254	7,475	—	—	—	—
Total consumer real estate	$ 156,497	$ 25,173	$ 10,127	$ 49,373	$ 13,459	$ 3,611
Refreshed FICO score						
Less than 620	$ 2,479	$ 3,198	$ 2,741	$ 1,254	$ 2,692	$ 559
Greater than or equal to 620 and less than 680	5,094	2,807	2,241	2,853	3,094	636
Greater than or equal to 680 and less than 740	22,629	4,512	2,916	10,069	3,176	1,069
Greater than or equal to 740	105,041	7,181	2,229	35,197	4,497	1,347
Fully-insured loans [(5)]	21,254	7,475	—	—	—	—
Total consumer real estate	$ 156,497	$ 25,173	$ 10,127	$ 49,373	$ 13,459	$ 3,611

(1) Excludes $1.1 billion of loans accounted for under the fair value option.
(2) Excludes PCI loans.
(3) Includes $1.6 billion of pay option loans. The Corporation no longer originates this product.
(4) Refreshed LTV percentages for PCI loans are calculated using the carrying value net of the related valuation allowance.
(5) Credit quality indicators are not reported for fully-insured loans as principal repayment is insured.

Credit Card and Other Consumer – Credit Quality Indicators

(Dollars in millions)	U.S. Credit Card	Non-U.S. Credit Card	Direct/Indirect Consumer	Other Consumer [(1)]
	December 31, 2016			
Refreshed FICO score				
Less than 620	$ 4,431	$ —	$ 1,478	$ 187
Greater than or equal to 620 and less than 680	12,364	—	2,070	222
Greater than or equal to 680 and less than 740	34,828	—	12,491	404
Greater than or equal to 740	40,655	—	33,420	1,525
Other internal credit metrics [(2, 3, 4)]	—	9,214	44,630	161
Total credit card and other consumer	$ 92,278	$ 9,214	$ 94,089	$ 2,499

(1) At December 31, 2016, 19 percent of the other consumer portfolio was associated with portfolios from certain consumer finance businesses that the Corporation previously exited.
(2) Other internal credit metrics may include delinquency status, geography or other factors.
(3) Direct/indirect consumer includes $43.1 billion of securities-based lending which is overcollateralized and therefore has minimal credit risk and $499 million of loans the Corporation no longer originates, primarily student loans.
(4) Non-U.S. credit card represents the U.K. credit card portfolio which was evaluated using internal credit metrics, including delinquency status. At December 31, 2016, 98 percent of this portfolio was current or less than 30 days past due, one percent was 30-89 days past due and one percent was 90 days or more past due.

Commercial – Credit Quality Indicators [(1)]

(Dollars in millions)	U.S. Commercial	Non-U.S. Commercial	Commercial Real Estate	Commercial Lease Financing	U.S. Small Business Commercial [(2)]
	December 31, 2016				
Risk ratings					
Pass rated	$ 261,214	$ 85,689	$ 56,957	$ 21,565	$ 453
Reservable criticized	9,158	3,708	398	810	71
Refreshed FICO score [(3)]					
Less than 620					200
Greater than or equal to 620 and less than 680					591
Greater than or equal to 680 and less than 740					1,741
Greater than or equal to 740					3,264
Other internal credit metrics [(3, 4)]					6,673
Total commercial	$ 270,372	$ 89,397	$ 57,355	$ 22,375	$ 12,993

(1) Excludes $6.0 billion of loans accounted for under the fair value option.
(2) U.S. small business commercial includes $755 million of criticized business card and small business loans which are evaluated using refreshed FICO scores or internal credit metrics, including delinquency status, rather than risk ratings. At December 31, 2016, 98 percent of the balances where internal credit metrics are used was current or less than 30 days past due.
(3) Refreshed FICO score and other internal credit metrics are applicable only to the U.S. small business commercial portfolio.
(4) Other internal credit metrics may include delinquency status, application scores, geography or other factors.

Impaired Loans and Troubled Debt Restructurings

A loan is considered impaired when, based on current information, it is probable that the Corporation will be unable to collect all amounts due from the borrower in accordance with the contractual terms of the loan. Impaired loans include nonperforming commercial loans and all consumer and commercial TDRs. Impaired loans exclude nonperforming consumer loans and nonperforming commercial leases unless they are classified as TDRs. Loans accounted for under the fair value option are also excluded. PCI loans are excluded and reported separately on page 155. For more information, see *Note 1 – Summary of Significant Accounting Principles*.

Consumer Real Estate

Impaired consumer real estate loans within the Consumer Real Estate portfolio segment consist entirely of TDRs. Excluding PCI loans, most modifications of consumer real estate loans meet the definition of TDRs when a binding offer is extended to a borrower. Modifications of consumer real estate loans are done in accordance with government programs or the Corporation's proprietary programs. These modifications are considered to be TDRs if concessions have been granted to borrowers experiencing financial difficulties. Concessions may include reductions in interest rates, capitalization of past due amounts, principal and/or interest forbearance, payment extensions, principal and/or interest forgiveness, or combinations thereof.

Prior to permanently modifying a loan, the Corporation may enter into trial modifications with certain borrowers under both government and proprietary programs. Trial modifications generally represent a three- to four-month period during which the borrower makes monthly payments under the anticipated modified payment terms. Upon successful completion of the trial period, the Corporation and the borrower enter into a permanent modification. Binding trial modifications are classified as TDRs when the trial offer is made and continue to be classified as TDRs regardless of whether the borrower enters into a permanent modification.

Consumer real estate loans that have been discharged in Chapter 7 bankruptcy with no change in repayment terms and not reaffirmed by the borrower of $1.2 billion were included in TDRs at December 31, 2017, of which $358 million were classified as nonperforming and $419 million were loans fully-insured by the FHA. For more information on loans discharged in Chapter 7 bankruptcy, see Nonperforming Loans and Leases in this Note.

Consumer real estate TDRs are measured primarily based on the net present value of the estimated cash flows discounted at the loan's original effective interest rate. If the carrying value of a TDR exceeds this amount, a specific allowance is recorded as a component of the allowance for loan and lease losses. Alternatively, consumer real estate TDRs that are considered to be dependent solely on the collateral for repayment (e.g., due to the lack of income verification) are measured based on the estimated fair value of the collateral and a charge-off is recorded if the carrying value exceeds the fair value of the collateral. Consumer real estate loans that reached 180 days past due prior to modification had been charged off to their net realizable value, less costs to sell, before they were modified as TDRs in accordance with established policy. Therefore, modifications of consumer real estate loans that are 180 or more days past due as TDRs do not have an impact on the allowance for loan and lease losses nor are additional charge-offs required at the time of modification. Subsequent declines in the fair value of the collateral after a loan has reached 180 days past due are recorded as charge-offs. Fully-insured loans are protected against principal loss, and therefore, the Corporation does not record an allowance for loan and lease losses on the outstanding principal balance, even after they have been modified in a TDR.

At December 31, 2017 and 2016, remaining commitments to lend additional funds to debtors whose terms have been modified in a consumer real estate TDR were immaterial. Consumer real estate foreclosed properties totaled $236 million and $363 million at December 31, 2017 and 2016. The carrying value of consumer real estate loans, including fully-insured and PCI loans, for which formal foreclosure proceedings were in process at December 31, 2017 was $3.6 billion. During 2017 and 2016, the Corporation reclassified $815 million and $1.4 billion of consumer real estate loans to foreclosed properties or, for properties acquired upon foreclosure of certain government-guaranteed loans (principally FHA-insured loans), to other assets. The reclassifications represent non-cash investing activities and, accordingly, are not reflected in the Consolidated Statement of Cash Flows.

The following table provides the unpaid principal balance, carrying value and related allowance at December 31, 2017 and 2016, and the average carrying value and interest income recognized for 2017, 2016 and 2015 for impaired loans in the Corporation's Consumer Real Estate portfolio segment. Certain impaired consumer real estate loans do not have a related allowance as the current valuation of these impaired loans exceeded the carrying value, which is net of previously recorded charge-offs.

Impaired Loans – Consumer Real Estate

(Dollars in millions)	Unpaid Principal Balance	Carrying Value	Related Allowance	Unpaid Principal Balance	Carrying Value	Related Allowance
	December 31, 2017			December 31, 2016		
With no recorded allowance						
Residential mortgage	$ 8,856	$ 6,870	$ —	$ 11,151	$ 8,695	$ —
Home equity	3,622	1,956	—	3,704	1,953	—
With an allowance recorded						
Residential mortgage	$ 2,908	$ 2,828	$ 174	$ 4,041	$ 3,936	$ 219
Home equity	972	900	174	910	824	137
Total						
Residential mortgage	$ 11,764	$ 9,698	$ 174	$ 15,192	$ 12,631	$ 219
Home equity	4,594	2,856	174	4,614	2,777	137

	Average Carrying Value	Interest Income Recognized (1)	Average Carrying Value	Interest Income Recognized (1)	Average Carrying Value	Interest Income Recognized (1)
	2017		2016		2015	
With no recorded allowance						
Residential mortgage	$ 7,737	$ 311	$ 10,178	$ 360	$ 13,867	$ 403
Home equity	1,997	109	1,906	90	1,777	89
With an allowance recorded						
Residential mortgage	$ 3,414	$ 123	$ 5,067	$ 167	$ 7,290	$ 236
Home equity	858	24	852	24	785	24
Total						
Residential mortgage	$ 11,151	$ 434	$ 15,245	$ 527	$ 21,157	$ 639
Home equity	2,855	133	2,758	114	2,562	113

(1) Interest income recognized includes interest accrued and collected on the outstanding balances of accruing impaired loans as well as interest cash collections on nonaccruing impaired loans for which the principal is considered collectible.

The table below presents the December 31, 2017, 2016 and 2015 unpaid principal balance, carrying value, and average pre- and post-modification interest rates on consumer real estate loans that were modified in TDRs during 2017, 2016 and 2015, and net charge-offs recorded during the period in which the modification occurred. The following Consumer Real Estate portfolio segment tables include loans that were initially classified as TDRs during the period and also loans that had previously been classified as TDRs and were modified again during the period.

Consumer Real Estate – TDRs Entered into During 2017, 2016 and 2015 (1)

(Dollars in millions)	Unpaid Principal Balance	Carrying Value	Pre-Modification Interest Rate	Post-Modification Interest Rate (2)	Net Charge-offs (3)
	December 31, 2017				2017
Residential mortgage	$ 824	$ 712	4.43%	4.16%	$ 6
Home equity	764	590	4.22	3.49	42
Total	$ 1,588	$ 1,302	4.33	3.83	$ 48
	December 31, 2016				2016
Residential mortgage	$ 1,130	$ 1,017	4.73%	4.16%	$ 11
Home equity	849	649	3.95	2.72	61
Total	$ 1,979	$ 1,666	4.40	3.54	$ 72
	December 31, 2015				2015
Residential mortgage	$ 2,986	$ 2,655	4.98%	4.43%	$ 97
Home equity	1,019	775	3.54	3.17	84
Total	$ 4,005	$ 3,430	4.61	4.11	$ 181

(1) During 2017, there was no forgiveness of principal related to residential mortgage loans in connection with TDRs compared to $13 million and $396 million during 2016 and 2015.
(2) The post-modification interest rate reflects the interest rate applicable only to permanently completed modifications, which exclude loans that are in a trial modification period.
(3) Net charge-offs include amounts recorded on loans modified during the period that are no longer held by the Corporation at December 31, 2017, 2016 and 2015 due to sales and other dispositions.

The table below presents the December 31, 2017, 2016 and 2015 carrying value for consumer real estate loans that were modified in a TDR during 2017, 2016 and 2015, by type of modification.

Consumer Real Estate – Modification Programs

	TDRs Entered into During		
(Dollars in millions)	**2017**	2016	2015
Modifications under government programs			
Contractual interest rate reduction	**$ 59**	$ 151	$ 431
Principal and/or interest forbearance	**4**	13	11
Other modifications [1]	**22**	23	46
Total modifications under government programs	**85**	187	488
Modifications under proprietary programs			
Contractual interest rate reduction	**281**	235	219
Capitalization of past due amounts	**63**	40	79
Principal and/or interest forbearance	**38**	72	168
Other modifications [1]	**55**	75	129
Total modifications under proprietary programs	**437**	422	595
Trial modifications	**569**	831	1,968
Loans discharged in Chapter 7 bankruptcy [2]	**211**	226	379
Total modifications	**$ 1,302**	$ 1,666	$ 3,430

(1) Includes other modifications such as term or payment extensions and repayment plans.
(2) Includes loans discharged in Chapter 7 bankruptcy with no change in repayment terms that are classified as TDRs.

The table below presents the carrying value of consumer real estate loans that entered into payment default during 2017, 2016 and 2015 that were modified in a TDR during the 12 months preceding payment default. A payment default for consumer real estate TDRs is recognized when a borrower has missed three monthly payments (not necessarily consecutively) since modification.

Consumer Real Estate – TDRs Entering Payment Default that were Modified During the Preceding 12 Months

(Dollars in millions)	**2017**	2016	2015
Modifications under government programs	**$ 81**	$ 262	$ 457
Modifications under proprietary programs	**138**	196	287
Loans discharged in Chapter 7 bankruptcy [1]	**116**	158	285
Trial modifications [2]	**391**	824	3,178
Total modifications	**$ 726**	$ 1,440	$ 4,207

(1) Includes loans discharged in Chapter 7 bankruptcy with no change in repayment terms that are classified as TDRs.
(2) Includes trial modification offers to which the customer did not respond.

Credit Card and Other Consumer

Impaired loans within the Credit Card and Other Consumer portfolio segment consist entirely of loans that have been modified in TDRs. The Corporation seeks to assist customers that are experiencing financial difficulty by modifying loans while ensuring compliance with federal, local and international laws and guidelines. Credit card and other consumer loan modifications generally involve reducing the interest rate on the account and placing the customer on a fixed payment plan not exceeding 60 months, all of which are considered TDRs. In substantially all cases, the customer's available line of credit is canceled. The Corporation makes loan modifications directly with borrowers for debt held only by the Corporation (internal programs). Additionally, the Corporation makes loan modifications for borrowers working with third-party renegotiation agencies that provide solutions to customers' entire unsecured debt structures (external programs). The Corporation classifies other secured consumer loans that have been discharged in Chapter 7 bankruptcy as TDRs which are written down to collateral value and placed on nonaccrual status no later than the time of discharge. For more information on the regulatory guidance on loans discharged in Chapter 7 bankruptcy, see Nonperforming Loans and Leases in this Note.

The following table provides the unpaid principal balance, carrying value and related allowance at December 31, 2017 and 2016, and the average carrying value and interest income recognized for 2017, 2016 and 2015 on TDRs within the Credit Card and Other Consumer portfolio segment.

Impaired Loans – Credit Card and Other Consumer

(Dollars in millions)	Unpaid Principal Balance	Carrying Value (1)	Related Allowance	Unpaid Principal Balance	Carrying Value (1)	Related Allowance
	December 31, 2017			December 31, 2016		
With no recorded allowance						
Direct/Indirect consumer	**$ 58**	**$ 28**	**$ —**	$ 49	$ 22	$ —
With an allowance recorded						
U.S. credit card	**$ 454**	**$ 461**	**$ 125**	$ 479	$ 485	$ 128
Non-U.S. credit card	**n/a**	**n/a**	**n/a**	88	100	61
Direct/Indirect consumer	**1**	**1**	**—**	3	3	—
Total						
U.S. credit card	**$ 454**	**$ 461**	**$ 125**	$ 479	$ 485	$ 128
Non-U.S. credit card	**n/a**	**n/a**	**n/a**	88	100	61
Direct/Indirect consumer	**59**	**29**	**—**	52	25	—

	Average Carrying Value	Interest Income Recognized (2)	Average Carrying Value	Interest Income Recognized (2)	Average Carrying Value	Interest Income Recognized (2)
	2017		2016		2015	
With no recorded allowance						
Direct/Indirect consumer	**$ 21**	**$ 2**	$ 20	$ —	$ 22	$ —
With an allowance recorded						
U.S. credit card	**$ 464**	**$ 25**	$ 556	$ 31	$ 749	$ 43
Non-U.S. credit card	**47**	**1**	111	3	145	4
Direct/Indirect consumer	**2**	**—**	10	1	51	3
Total						
U.S. credit card	**$ 464**	**$ 25**	$ 556	$ 31	$ 749	$ 43
Non-U.S. credit card	**47**	**1**	111	3	145	4
Direct/Indirect consumer	**23**	**2**	30	1	73	3

(1) Includes accrued interest and fees.
(2) Interest income recognized includes interest accrued and collected on the outstanding balances of accruing impaired loans as well as interest cash collections on nonaccruing impaired loans for which the principal is considered collectible.
n/a = not applicable

The table below provides information on the Corporation's primary modification programs for the Credit Card and Other Consumer TDR portfolio at December 31, 2017 and 2016.

Credit Card and Other Consumer – TDRs by Program Type at December 31

(Dollars in millions)	Internal Programs 2017	Internal Programs 2016	External Programs 2017	External Programs 2016	Other (1) 2017	Other (1) 2016	Total 2017	Total 2016	Percent of Balances Current or Less Than 30 Days Past Due 2017	Percent of Balances Current or Less Than 30 Days Past Due 2016
U.S. credit card	**$ 203**	$ 220	**$ 257**	$ 264	**$ 1**	$ 1	**$ 461**	$ 485	**86.92%**	88.99%
Non-U.S. credit card	**n/a**	11	**n/a**	7	**n/a**	82	**n/a**	100	**n/a**	38.47
Direct/Indirect consumer	**1**	2	**—**	1	**28**	22	**29**	25	**88.16**	90.49
Total TDRs by program type	**$ 204**	$ 233	**$ 257**	$ 272	**$ 29**	$ 105	**$ 490**	$ 610	**87.00**	80.79

(1) Other TDRs for non-U.S. credit card included modifications of accounts that are ineligible for a fixed payment plan.
n/a = not applicable

The table below provides information on the Corporation's Credit Card and Other Consumer TDR portfolio including the December 31, 2017, 2016 and 2015 unpaid principal balance, carrying value, and average pre- and post-modification interest rates of loans that were modified in TDRs during 2017, 2016 and 2015, and net charge-offs recorded during the period in which the modification occurred.

Credit Card and Other Consumer – TDRs Entered into During 2017, 2016 and 2015

(Dollars in millions)	Unpaid Principal Balance	Carrying Value [1]	Pre-Modification Interest Rate	Post-Modification Interest Rate
	December 31, 2017			
U.S. credit card	**$ 203**	**$ 213**	**18.47%**	**5.32%**
Direct/Indirect consumer	**37**	**22**	**4.81**	**4.30**
Total [2]	**$ 240**	**$ 235**	**17.17**	**5.22**
	December 31, 2016			
U.S. credit card	$ 163	$ 172	17.54%	5.47%
Non-U.S. credit card	66	75	23.99	0.52
Direct/Indirect consumer	21	13	3.44	3.29
Total [2]	$ 250	$ 260	18.73	3.93
	December 31, 2015			
U.S. credit card	$ 205	$ 218	17.07%	5.08%
Non-U.S. credit card	74	86	24.05	0.53
Direct/Indirect consumer	19	12	5.95	5.19
Total [2]	$ 298	$ 316	18.58	3.84

[1] Includes accrued interest and fees.
[2] Net charge-offs were $52 million, $74 million and $98 million in 2017, 2016 and 2015, respectively.

Credit card and other consumer loans are deemed to be in payment default during the quarter in which a borrower misses the second of two consecutive payments. Payment defaults are one of the factors considered when projecting future cash flows in the calculation of the allowance for loan and lease losses for impaired credit card and other consumer loans. Based on historical experience, the Corporation estimates that 13 percent of new U.S. credit card TDRs and 15 percent of new direct/indirect consumer TDRs may be in payment default within 12 months after modification. Loans that entered into payment default during 2017, 2016 and 2015 that had been modified in a TDR during the preceding 12 months were $28 million, $30 million and $43 million for U.S. credit card, $0, $127 million and $152 million for non-U.S. credit card, and $4 million, $2 million and $3 million for direct/indirect consumer.

Commercial Loans

Impaired commercial loans include nonperforming loans and TDRs (both performing and nonperforming). Modifications of loans to commercial borrowers that are experiencing financial difficulty are designed to reduce the Corporation's loss exposure while providing the borrower with an opportunity to work through financial difficulties, often to avoid foreclosure or bankruptcy. Each modification is unique and reflects the individual circumstances of the borrower. Modifications that result in a TDR may include extensions of maturity at a concessionary (below market) rate of interest, payment forbearances or other actions designed to benefit the customer while mitigating the Corporation's risk exposure. Reductions in interest rates are rare. Instead, the interest rates are typically increased, although the increased rate may not represent a market rate of interest. Infrequently, concessions may also include principal forgiveness in connection with foreclosure, short sale or other settlement agreements leading to termination or sale of the loan.

At the time of restructuring, the loans are remeasured to reflect the impact, if any, on projected cash flows resulting from the modified terms. If there was no forgiveness of principal and the interest rate was not decreased, the modification may have little or no impact on the allowance established for the loan. If a portion of the loan is deemed to be uncollectible, a charge-off may be recorded at the time of restructuring. Alternatively, a charge-off may have already been recorded in a previous period such that no charge-off is required at the time of modification. For more information on modifications for the U.S. small business commercial portfolio, see Credit Card and Other Consumer in this Note.

At December 31, 2017 and 2016, remaining commitments to lend additional funds to debtors whose terms have been modified in a commercial loan TDR were $205 million and $461 million.

Commercial foreclosed properties totaled $52 million and $14 million at December 31, 2017 and 2016.

The table below provides information on impaired loans in the Commercial loan portfolio segment including the unpaid principal balance, carrying value and related allowance at December 31, 2017 and 2016, and the average carrying value and interest income recognized for 2017, 2016 and 2015. Certain impaired commercial loans do not have a related allowance as the valuation of these impaired loans exceeded the carrying value, which is net of previously recorded charge-offs.

Impaired Loans – Commercial

(Dollars in millions)	Unpaid Principal Balance	Carrying Value	Related Allowance	Unpaid Principal Balance	Carrying Value	Related Allowance
	December 31, 2017			December 31, 2016		
With no recorded allowance						
U.S. commercial	$ 576	$ 571	$ —	$ 860	$ 827	$ —
Non-U.S. commercial	14	11	—	130	130	—
Commercial real estate	83	80	—	77	71	—
With an allowance recorded						
U.S. commercial	$ 1,393	$ 1,109	$ 98	$ 2,018	$ 1,569	$ 132
Non-U.S. commercial	528	507	58	545	432	104
Commercial real estate	133	41	4	243	96	10
Commercial lease financing	20	18	3	6	4	—
U.S. small business commercial (1)	84	70	27	85	73	27
Total						
U.S. commercial	$ 1,969	$ 1,680	$ 98	$ 2,878	$ 2,396	$ 132
Non-U.S. commercial	542	518	58	675	562	104
Commercial real estate	216	121	4	320	167	10
Commercial lease financing	20	18	3	6	4	—
U.S. small business commercial (1)	84	70	27	85	73	27

	Average Carrying Value	Interest Income Recognized (2)	Average Carrying Value	Interest Income Recognized (2)	Average Carrying Value	Interest Income Recognized (2)
	2017		2016		2015	
With no recorded allowance						
U.S. commercial	$ 772	$ 12	$ 787	$ 14	$ 688	$ 14
Non-U.S. commercial	46	—	34	1	29	1
Commercial real estate	69	1	67	—	75	1
With an allowance recorded						
U.S. commercial	$ 1,260	$ 33	$ 1,569	$ 59	$ 953	$ 48
Non-U.S. commercial	463	13	409	14	125	7
Commercial real estate	73	2	92	4	216	7
Commercial lease financing	8	—	2	—	—	—
U.S. small business commercial (1)	73	—	87	1	109	1
Total						
U.S. commercial	$ 2,032	$ 45	$ 2,356	$ 73	$ 1,641	$ 62
Non-U.S. commercial	509	13	443	15	154	8
Commercial real estate	142	3	159	4	291	8
Commercial lease financing	8	—	2	—	—	—
U.S. small business commercial (1)	73	—	87	1	109	1

(1) Includes U.S. small business commercial renegotiated TDR loans and related allowance.
(2) Interest income recognized includes interest accrued and collected on the outstanding balances of accruing impaired loans as well as interest cash collections on nonaccruing impaired loans for which the principal is considered collectible.

The table below presents the December 31, 2017, 2016 and 2015 unpaid principal balance and carrying value of commercial loans that were modified as TDRs during 2017, 2016 and 2015, and net charge-offs that were recorded during the period in which the modification occurred. The table below includes loans that were initially classified as TDRs during the period and also loans that had previously been classified as TDRs and were modified again during the period.

Commercial – TDRs Entered into During 2017, 2016 and 2015

(Dollars in millions)	Unpaid Principal Balance	Carrying Value
	December 31, 2017	
U.S. commercial	**$ 1,033**	**$ 922**
Non-U.S. commercial	**105**	**105**
Commercial real estate	**35**	**24**
Commercial lease financing	**20**	**17**
U.S. small business commercial [(1)]	**13**	**13**
Total [(2)]	**$ 1,206**	**$ 1,081**
	December 31, 2016	
U.S. commercial	$ 1,556	$ 1,482
Non-U.S. commercial	255	253
Commercial real estate	77	77
Commercial lease financing	6	4
U.S. small business commercial [(1)]	1	1
Total [(2)]	$ 1,895	$ 1,817
	December 31, 2015	
U.S. commercial	$ 853	$ 779
Non-U.S. commercial	329	326
Commercial real estate	42	42
U.S. small business commercial [(1)]	14	11
Total [(2)]	$ 1,238	$ 1,158

(1) U.S. small business commercial TDRs are comprised of renegotiated small business card loans.
(2) Net charge-offs were $138 million, $137 million and $31 million in 2017, 2016 and 2015, respectively.

A commercial TDR is generally deemed to be in payment default when the loan is 90 days or more past due, including delinquencies that were not resolved as part of the modification. U.S. small business commercial TDRs are deemed to be in payment default during the quarter in which a borrower misses the second of two consecutive payments. Payment defaults are one of the factors considered when projecting future cash flows, along with observable market prices or fair value of collateral when measuring the allowance for loan and lease losses. TDRs that were in payment default had a carrying value of $64 million, $140 million and $105 million for U.S. commercial and $19 million, $34 million and $25 million for commercial real estate at December 31, 2017, 2016 and 2015, respectively.

Purchased Credit-impaired Loans

The table below shows activity for the accretable yield on PCI loans, which include the Countrywide Financial Corporation (Countrywide) portfolio and loans repurchased in connection with the 2013 settlement with FNMA. The amount of accretable yield is affected by changes in credit outlooks, including metrics such as default rates and loss severities, prepayment speeds, which can change the amount and period of time over which interest payments are expected to be received, and the interest rates on variable rate loans. The reclassifications from nonaccretable difference during 2017 and 2016 were primarily due to an increase in the expected principal and interest cash flows due to lower default estimates and rising interest rate environment.

Rollforward of Accretable Yield

(Dollars in millions)	
Accretable yield, January 1, 2016	$ 4,569
Accretion	(722)
Disposals/transfers	(486)
Reclassifications from nonaccretable difference	444
Accretable yield, December 31, 2016	3,805
Accretion	**(601)**
Disposals/transfers	**(634)**
Reclassifications from nonaccretable difference	**219**
Accretable yield, December 31, 2017	**$ 2,789**

During 2017 and 2016, the Corporation sold PCI loans with a carrying value of $803 million and $549 million. For more information on PCI loans, see *Note 1 – Summary of Significant Accounting Principles* and for the carrying value and valuation allowance for PCI loans, see *Note 5 – Allowance for Credit Losses*.

Loans Held-for-sale

The Corporation had LHFS of $11.4 billion and $9.1 billion at December 31, 2017 and 2016. Cash and non-cash proceeds from sales and paydowns of loans originally classified as LHFS were $41.3 billion, $32.6 billion and $41.2 billion for 2017, 2016 and 2015, respectively. Cash used for originations and purchases of LHFS totaled $43.5 billion, $33.1 billion and $37.9 billion for 2017, 2016 and 2015, respectively.

NOTE 5 Allowance for Credit Losses

The table below summarizes the changes in the allowance for credit losses by portfolio segment for 2017, 2016 and 2015.

(Dollars in millions)	Consumer Real Estate [1]	Credit Card and Other Consumer	Commercial	Total Allowance
		2017		
Allowance for loan and lease losses, January 1	$ 2,750	$ 3,229	$ 5,258	$ 11,237
Loans and leases charged off	(770)	(3,774)	(1,075)	(5,619)
Recoveries of loans and leases previously charged off	657	809	174	1,640
Net charge-offs [2]	(113)	(2,965)	(901)	(3,979)
Write-offs of PCI loans [3]	(207)	—	—	(207)
Provision for loan and lease losses [4]	(710)	3,437	654	3,381
Other [5]	—	(38)	(1)	(39)
Allowance for loan and lease losses, December 31	1,720	3,663	5,010	10,393
Reserve for unfunded lending commitments, January 1	—	—	762	762
Provision for unfunded lending commitments	—	—	15	15
Reserve for unfunded lending commitments, December 31	—	—	777	777
Allowance for credit losses, December 31	$ 1,720	$ 3,663	$ 5,787	$ 11,170
		2016		
Allowance for loan and lease losses, January 1	$ 3,914	$ 3,471	$ 4,849	$ 12,234
Loans and leases charged off	(1,155)	(3,553)	(740)	(5,448)
Recoveries of loans and leases previously charged off	619	770	238	1,627
Net charge-offs [2]	(536)	(2,783)	(502)	(3,821)
Write-offs of PCI loans [3]	(340)	—	—	(340)
Provision for loan and lease losses [4]	(258)	2,826	1,013	3,581
Other [5]	(30)	(42)	(102)	(174)
Total allowance for loan and lease losses, December 31	2,750	3,472	5,258	11,480
Less: Allowance included in assets of business held for sale [6]	—	(243)	—	(243)
Allowance for loan and lease losses, December 31	2,750	3,229	5,258	11,237
Reserve for unfunded lending commitments, January 1	—	—	646	646
Provision for unfunded lending commitments	—	—	16	16
Other [5]	—	—	100	100
Reserve for unfunded lending commitments, December 31	—	—	762	762
Allowance for credit losses, December 31	$ 2,750	$ 3,229	$ 6,020	$ 11,999
		2015		
Allowance for loan and lease losses, January 1	$ 5,935	$ 4,047	$ 4,437	$ 14,419
Loans and leases charged off	(1,841)	(3,620)	(644)	(6,105)
Recoveries of loans and leases previously charged off	732	813	222	1,767
Net charge-offs	(1,109)	(2,807)	(422)	(4,338)
Write-offs of PCI loans [3]	(808)	—	—	(808)
Provision for loan and lease losses [4]	(70)	2,278	835	3,043
Other [5]	(34)	(47)	(1)	(82)
Allowance for loan and lease losses, December 31	3,914	3,471	4,849	12,234
Reserve for unfunded lending commitments, January 1	—	—	528	528
Provision for unfunded lending commitments	—	—	118	118
Reserve for unfunded lending commitments, December 31	—	—	646	646
Allowance for credit losses, December 31	$ 3,914	$ 3,471	$ 5,495	$ 12,880

(1) Includes valuation allowance associated with the PCI loan portfolio.
(2) Includes net charge-offs related to the non-U.S. credit card loan portfolio, which was included in assets of business held for sale on the Consolidated Balance Sheet at December 31, 2016. In 2017, the Corporation sold its non-U.S. consumer credit card business.
(3) Includes write-offs of $87 million, $60 million and $234 million associated with the sale of PCI loans in 2017, 2016 and 2015, respectively.
(4) Includes provision expense of $76 million and a benefit of $45 million and $40 million associated with the PCI loan portfolio in 2017, 2016 and 2015, respectively.
(5) Primarily represents the net impact of portfolio sales, consolidations and deconsolidations, foreign currency translation adjustments, transfers to held-for-sale and certain other reclassifications.
(6) Represents allowance for loan and lease losses related to the non-U.S. credit card loan portfolio, which was sold in 2017.

The table below presents the allowance and the carrying value of outstanding loans and leases by portfolio segment at December 31, 2017 and 2016.

Allowance and Carrying Value by Portfolio Segment

(Dollars in millions)	Consumer Real Estate	Credit Card and Other Consumer	Commercial	Total
	December 31, 2017			
Impaired loans and troubled debt restructurings [1]				
Allowance for loan and lease losses [2]	**$ 348**	**$ 125**	**$ 190**	**$ 663**
Carrying value [3]	**12,554**	**490**	**2,407**	**15,451**
Allowance as a percentage of carrying value	**2.77%**	**25.51%**	**7.89%**	**4.29%**
Loans collectively evaluated for impairment				
Allowance for loan and lease losses	**$ 1,083**	**$ 3,538**	**$ 4,820**	**$ 9,441**
Carrying value [3, 4]	**238,284**	**192,303**	**474,284**	**904,871**
Allowance as a percentage of carrying value [4]	**0.45%**	**1.84%**	**1.02%**	**1.04%**
Purchased credit-impaired loans				
Valuation allowance	**$ 289**	**n/a**	**n/a**	**$ 289**
Carrying value gross of valuation allowance	**10,717**	**n/a**	**n/a**	**10,717**
Valuation allowance as a percentage of carrying value	**2.70%**	**n/a**	**n/a**	**2.70%**
Total				
Allowance for loan and lease losses	**$ 1,720**	**$ 3,663**	**$ 5,010**	**$ 10,393**
Carrying value [3, 4]	**261,555**	**192,793**	**476,691**	**931,039**
Allowance as a percentage of carrying value [4]	**0.66%**	**1.90%**	**1.05%**	**1.12%**
	December 31, 2016			
Impaired loans and troubled debt restructurings [1]				
Allowance for loan and lease losses [2]	$ 356	$ 189	$ 273	$ 818
Carrying value [3]	15,408	610	3,202	19,220
Allowance as a percentage of carrying value	2.31%	30.98%	8.53%	4.26%
Loans collectively evaluated for impairment				
Allowance for loan and lease losses	$ 1,975	$ 3,283	$ 4,985	$ 10,243
Carrying value [3, 4]	229,094	197,470	449,290	875,854
Allowance as a percentage of carrying value [4]	0.86%	1.66%	1.11%	1.17%
Purchased credit-impaired loans				
Valuation allowance	$ 419	n/a	n/a	$ 419
Carrying value gross of valuation allowance	13,738	n/a	n/a	13,738
Valuation allowance as a percentage of carrying value	3.05%	n/a	n/a	3.05%
Less: Assets of business held for sale [5]				
Allowance for loan and lease losses [6]	n/a	$ (243)	n/a	$ (243)
Carrying value [3]	n/a	(9,214)	n/a	(9,214)
Total				
Allowance for loan and lease losses	$ 2,750	$ 3,229	$ 5,258	$ 11,237
Carrying value [3, 4]	258,240	188,866	452,492	899,598
Allowance as a percentage of carrying value [4]	1.06%	1.71%	1.16%	1.25%

(1) Impaired loans include nonperforming commercial loans and all TDRs, including both commercial and consumer TDRs. Impaired loans exclude nonperforming consumer loans unless they are TDRs, and all consumer and commercial loans accounted for under the fair value option.
(2) Allowance for loan and lease losses includes $27 million related to impaired U.S. small business commercial at both December 31, 2017 and 2016.
(3) Amounts are presented gross of the allowance for loan and lease losses.
(4) Outstanding loan and lease balances and ratios do not include loans accounted for under the fair value option of $5.7 billion and $7.1 billion at December 31, 2017 and 2016.
(5) Represents allowance for loan and lease losses and loans related to the non-U.S. credit card loan portfolio, which was included in assets of business held for sale on the Consolidated Balance Sheet at December 31, 2016. In 2017, the Corporation sold its non-U.S. consumer credit card business.
(6) Includes $61 million of allowance for loan and lease losses related to impaired loans and TDRs and $182 million related to loans collectively evaluated for impairment at December 31, 2016.
n/a = not applicable

NOTE 6 Securitizations and Other Variable Interest Entities

The Corporation utilizes VIEs in the ordinary course of business to support its own and its customers' financing and investing needs. The Corporation routinely securitizes loans and debt securities using VIEs as a source of funding for the Corporation and as a means of transferring the economic risk of the loans or debt securities to third parties. The assets are transferred into a trust or other securitization vehicle such that the assets are legally isolated from the creditors of the Corporation and are not available to satisfy its obligations. These assets can only be used to settle obligations of the trust or other securitization vehicle. The Corporation also administers, structures or invests in other VIEs including CDOs, investment vehicles and other entities. For more information on the Corporation's use of VIEs, see *Note 1 – Summary of Significant Accounting Principles.*

The tables in this Note present the assets and liabilities of consolidated and unconsolidated VIEs at December 31, 2017 and 2016 in situations where the Corporation has continuing involvement with transferred assets or if the Corporation otherwise has a variable interest in the VIE. The tables also present the Corporation's maximum loss exposure at December 31, 2017 and 2016 resulting from its involvement with consolidated VIEs and unconsolidated VIEs in which the Corporation holds a variable interest. The Corporation's maximum loss exposure is based on the unlikely event that all of the assets in the VIEs become worthless and incorporates not only potential losses associated with assets recorded on the Consolidated Balance Sheet but also potential losses associated with off-balance sheet commitments, such as unfunded liquidity commitments and other contractual arrangements. The Corporation's maximum loss exposure does not include losses previously recognized through write-downs of assets.

The Corporation invests in ABS issued by third-party VIEs with which it has no other form of involvement and enters into certain commercial lending arrangements that may also incorporate the use of VIEs, for example to hold collateral. These securities and loans are included in *Note 3 – Securities* or *Note 4 – Outstanding Loans and Leases.* In addition, the Corporation uses VIEs such as trust preferred securities trusts in connection with its funding activities. For more information, see *Note 11 – Long-term Debt.* These VIEs, which are generally not consolidated by the Corporation, as applicable, are not included in the tables herein.

Except as described below, the Corporation did not provide financial support to consolidated or unconsolidated VIEs during 2017, 2016 and 2015 that it was not previously contractually required to provide, nor does it intend to do so.

First-lien Mortgage Securitizations

First-lien Mortgages

As part of its mortgage banking activities, the Corporation securitizes a portion of the first-lien residential mortgage loans it originates or purchases from third parties, generally in the form of RMBS guaranteed by government-sponsored enterprises, FNMA and FHLMC (collectively the GSEs), or the Government National Mortgage Association (GNMA) primarily in the case of FHA-insured and U.S. Department of Veterans Affairs (VA)-guaranteed mortgage loans. Securitization usually occurs in conjunction with or shortly after origination or purchase, and the Corporation may also securitize loans held in its residential mortgage portfolio. In addition, the Corporation may, from time to time, securitize commercial mortgages it originates or purchases from other entities. The Corporation typically services the loans it securitizes. Further, the Corporation may retain beneficial interests in the securitization trusts including senior and subordinate securities and equity tranches issued by the trusts. Except as described below and in *Note 7 – Representations and Warranties Obligations and Corporate Guarantees*, the Corporation does not provide guarantees or recourse to the securitization trusts other than standard representations and warranties.

The table below summarizes select information related to first-lien mortgage securitizations for 2017, 2016 and 2015.

First-lien Mortgage Securitizations

	Residential Mortgage - Agency			Commercial Mortgage		
(Dollars in millions)	**2017**	2016	2015	**2017**	2016	2015
Cash proceeds from new securitizations [(1)]	**$ 14,467**	$ 24,201	$ 27,164	**$ 5,641**	$ 3,887	$ 7,945
Gains on securitizations [(2)]	**158**	370	894	**91**	38	49
Repurchases from securitization trusts [(3)]	**2,713**	3,611	3,716	**—**	—	—

(1) The Corporation transfers residential mortgage loans to securitizations sponsored by the GSEs or GNMA in the normal course of business and receives RMBS in exchange which may then be sold into the market to third-party investors for cash proceeds.

(2) A majority of the first-lien residential mortgage loans securitized are initially classified as LHFS and accounted for under the fair value option. Gains recognized on these LHFS prior to securitization, which totaled $243 million, $487 million and $750 million net of hedges, during 2017, 2016 and 2015, respectively, are not included in the table above.

(3) The Corporation may have the option to repurchase delinquent loans out of securitization trusts, which reduces the amount of servicing advances it is required to make. The Corporation may also repurchase loans from securitization trusts to perform modifications. Repurchased loans include FHA-insured mortgages collateralizing GNMA securities.

In addition to cash proceeds as reported in the table above, the Corporation received securities with an initial fair value of $1.9 billion, $4.2 billion and $22.3 billion in connection with first-lien mortgage securitizations in 2017, 2016 and 2015. The receipt of these securities represents non-cash operating and investing activities and, accordingly, is not reflected in the Consolidated Statement of Cash Flows. Substantially all of these securities were initially classified as Level 2 assets within the fair value hierarchy. During 2017, 2016 and 2015, there were no changes to the initial classification.

The Corporation recognizes consumer MSRs from the sale or securitization of consumer real estate loans. The unpaid principal balance of loans serviced for investors, including residential mortgage and home equity loans, totaled $277.6 billion and $326.2 billion at December 31, 2017 and 2016. Servicing fee and ancillary fee income on serviced loans was $893 million, $1.2 billion and $1.4 billion in 2017, 2016 and 2015. Servicing advances on serviced loans, including loans serviced for others and loans held for investment, were $4.5 billion and $6.2 billion at December 31, 2017 and 2016. For more information on MSRs, see *Note 20 – Fair Value Measurements*.

During 2016 and 2015, the Corporation deconsolidated agency residential mortgage securitization vehicles with total assets of $3.8 billion and $4.5 billion, and total liabilities of $628 million and $0 following the sale of retained interests to third parties, after which the Corporation no longer had the unilateral ability to liquidate the vehicles. Of the balances deconsolidated in 2016, $706 million of assets and $628 million of liabilities represent non-cash investing and financing activities and, accordingly, are not reflected on the Consolidated Statement of Cash Flows. Gains on sale of $125 million and $287 million in 2016 and 2015 related to these deconsolidations were recorded in other income in the Consolidated Statement of Income. There were no deconsolidations of agency residential mortgage securitizations in 2017.

The table below summarizes select information related to first-lien mortgage securitization trusts in which the Corporation held a variable interest at December 31, 2017 and 2016.

First-lien Mortgage VIEs

	Residential Mortgage								Commercial Mortgage	
			Non-agency							
	Agency		Prime		Subprime		Alt-A			
	December 31									
(Dollars in millions)	**2017**	2016	**2017**	2016	**2017**	2016	**2017**	2016	**2017**	2016
Unconsolidated VIEs										
Maximum loss exposure [(1)]	**$ 19,110**	$ 22,661	**$ 689**	$ 757	**$ 2,643**	$ 2,750	**$ 403**	$ 560	**$ 585**	$ 344
On-balance sheet assets										
Senior securities:										
Trading account assets	**$ 716**	$ 1,399	**$ 6**	$ 20	**$ 10**	$ 112	**$ 50**	$ 118	**$ 108**	$ 51
Debt securities carried at fair value	**15,036**	17,620	**477**	441	**2,221**	2,235	**351**	305	**—**	—
Held-to-maturity securities	**3,348**	3,630	**—**	—	**—**	—	**—**	—	**274**	64
Subordinate securities	**—**	—	**5**	9	**38**	25	**2**	24	**69**	81
Residual interests	**—**	—	**—**	—	**—**	—	**—**	—	**19**	25
All other assets [(2)]	**10**	12	**—**	28	**—**	—	**—**	113	**—**	—
Total retained positions	**$ 19,110**	$ 22,661	**$ 488**	$ 498	**$ 2,269**	$ 2,372	**$ 403**	$ 560	**$ 470**	$ 221
Principal balance outstanding [(3)]	**$ 232,761**	$ 265,332	**$ 10,549**	$ 16,280	**$ 10,254**	$ 19,373	**$ 28,129**	$ 35,788	**$ 26,504**	$ 23,826
Consolidated VIEs										
Maximum loss exposure [(1)]	**$ 14,502**	$ 18,084	**$ 571**	$ —	**$ —**	$ —	**$ —**	$ 25	**$ —**	$ —
On-balance sheet assets										
Trading account assets	**$ 232**	$ 434	**$ 571**	$ —	**$ —**	$ —	**$ —**	$ 99	**$ —**	$ —
Loans and leases, net	**14,030**	17,223	**—**	—	**—**	—	**—**	—	**—**	—
All other assets	**240**	427	**—**	—	**—**	—	**—**	—	**—**	—
Total assets	**$ 14,502**	$ 18,084	**$ 571**	$ —	**$ —**	$ —	**$ —**	$ 99	**$ —**	$ —
On-balance sheet liabilities										
Long-term debt	**$ —**	$ —	**$ —**	$ —	**$ —**	$ —	**$ —**	$ 74	**$ —**	$ —
All other liabilities	**3**	4	**—**	—	**—**	—	**—**	—	**—**	—
Total liabilities	**$ 3**	$ 4	**$ —**	$ —	**$ —**	$ —	**$ —**	$ 74	**$ —**	$ —

(1) Maximum loss exposure includes obligations under loss-sharing reinsurance and other arrangements for non-agency residential mortgage and commercial mortgage securitizations, but excludes the reserve for representations and warranties obligations and corporate guarantees and also excludes servicing advances and other servicing rights and obligations. For more information, see *Note 7 – Representations and Warranties Obligations and Corporate Guarantees* and *Note 20 – Fair Value Measurements*.

(2) Not included in the table above are all other assets of $148 million and $189 million, representing the unpaid principal balance of mortgage loans eligible for repurchase from unconsolidated residential mortgage securitization vehicles, principally guaranteed by GNMA, and all other liabilities of $148 million and $189 million, representing the principal amount that would be payable to the securitization vehicles if the Corporation was to exercise the repurchase option, at December 31, 2017 and 2016.

(3) Principal balance outstanding includes loans where the Corporation was the transferor to securitization vehicles with which it has continuing involvement, which may include servicing the loans.

Other Asset-backed Securitizations

The table below summarizes select information related to home equity loan, credit card and other asset-backed VIEs in which the Corporation held a variable interest at December 31, 2017 and 2016.

Home Equity Loan, Credit Card and Other Asset-backed VIEs

	Home Equity Loan [1]		Credit Card [2, 3]		Resecuritization Trusts		Municipal Bond Trusts	
	December 31							
(Dollars in millions)	2017	2016	2017	2016	2017	2016	2017	2016
Unconsolidated VIEs								
Maximum loss exposure	**$ 1,522**	$ 2,732	**$ —**	$ —	**$ 8,204**	$ 9,906	**$ 1,631**	$ 1,635
On-balance sheet assets								
Senior securities [4]:								
Trading account assets	**$ —**	$ —	**$ —**	$ —	**$ 869**	$ 902	**$ 33**	$ —
Debt securities carried at fair value	**36**	46	**—**	—	**1,661**	2,338	**—**	—
Held-to-maturity securities	**—**	—	**—**	—	**5,644**	6,569	**—**	—
Subordinate securities [4]	**—**	—	**—**	—	**30**	97	**—**	—
Total retained positions	**$ 36**	$ 46	**$ —**	$ —	**$ 8,204**	$ 9,906	**$ 33**	$ —
Total assets of VIEs [5]	**$ 2,432**	$ 4,274	**$ —**	$ —	**$ 19,281**	$ 22,155	**$ 2,287**	$ 2,406
Consolidated VIEs								
Maximum loss exposure	**$ 112**	$ 149	**$ 24,337**	$ 25,859	**$ 628**	$ 420	**$ 1,453**	$ 1,442
On-balance sheet assets								
Trading account assets	**$ —**	$ —	**$ —**	$ —	**$ 1,557**	$ 1,428	**$ 1,452**	$ 1,454
Loans and leases	**177**	244	**32,554**	35,135	**—**	—	**—**	—
Allowance for loan and lease losses	**(9)**	(16)	**(988)**	(1,007)	**—**	—	**—**	—
All other assets	**6**	7	**1,385**	793	**—**	—	**1**	—
Total assets	**$ 174**	$ 235	**$ 32,951**	$ 34,921	**$ 1,557**	$ 1,428	**$ 1,453**	$ 1,454
On-balance sheet liabilities								
Short-term borrowings	**$ —**	$ —	**$ —**	$ —	**$ —**	$ —	**$ 312**	$ 348
Long-term debt	**76**	108	**8,598**	9,049	**929**	1,008	**—**	12
All other liabilities	**—**	—	**16**	13	**—**	—	**—**	—
Total liabilities	**$ 76**	$ 108	**$ 8,614**	$ 9,062	**$ 929**	$ 1,008	**$ 312**	$ 360

(1) For unconsolidated home equity loan VIEs, the maximum loss exposure includes outstanding trust certificates issued by trusts in rapid amortization, net of recorded reserves. For both consolidated and unconsolidated home equity loan VIEs, the maximum loss exposure excludes the reserve for representations and warranties obligations and corporate guarantees. For more information, see *Note 7 – Representations and Warranties Obligations and Corporate Guarantees*.
(2) At December 31, 2017 and 2016, loans and leases in the consolidated credit card trust included $15.6 billion and $17.6 billion of seller's interest.
(3) At December 31, 2017 and 2016, all other assets in the consolidated credit card trust included restricted cash, certain short-term investments, and unbilled accrued interest and fees.
(4) The retained senior and subordinate securities were valued using quoted market prices or observable market inputs (Level 2 of the fair value hierarchy).
(5) Total assets include loans the Corporation transferred with which it has continuing involvement, which may include servicing the loan.

Home Equity Loans

The Corporation retains interests in home equity securitization trusts to which it transferred home equity loans. These retained interests primarily include senior securities. In addition, the Corporation may be obligated to provide subordinate funding to the trusts during a rapid amortization event. This obligation is included in the maximum loss exposure in the table above. The charges that will ultimately be recorded as a result of the rapid amortization events depend on the undrawn portion of the home equity lines of credit (HELOCs), performance of the loans, the amount of subsequent draws and the timing of related cash flows.

During 2015, the Corporation deconsolidated several HELOC trusts with total assets of $488 million and total liabilities of $611 million as its obligation to provide subordinated funding is no longer considered to be a potentially significant variable interest in the trusts following a decline in the amount of credit available to be drawn by borrowers. In connection with deconsolidation, the Corporation recorded a gain of $123 million in other income in the Consolidated Statement of Income. The derecognition of assets and liabilities represents non-cash investing and financing activities and, accordingly, is not reflected on the Consolidated Statement of Cash Flows. There were no deconsolidations of HELOC trusts in 2017 or 2016.

Credit Card Securitizations

The Corporation securitizes originated and purchased credit card loans. The Corporation's continuing involvement with the securitization trust includes servicing the receivables, retaining an undivided interest (seller's interest) in the receivables, and holding certain retained interests including subordinate interests in accrued interest and fees on the securitized receivables and cash reserve accounts.

During 2017, 2016 and 2015, new senior debt securities issued to third-party investors from the credit card securitization trust were $3.1 billion, $750 million and $2.3 billion.

At December 31, 2017 and 2016, the Corporation held subordinate securities issued by the credit card securitization trust with a notional principal amount of $7.4 billion and $7.5 billion. These securities serve as a form of credit enhancement to the senior debt securities and have a stated interest rate of zero percent. During 2017, 2016 and 2015, the credit card securitization trust issued $500 million, $121 million and $371 million of these subordinate securities.

Resecuritization Trusts

The Corporation transfers securities, typically MBS, into resecuritization vehicles at the request of customers seeking securities with specific characteristics. Generally, there are no significant ongoing activities performed in a resecuritization trust, and no single investor has the unilateral ability to liquidate the trust.

The Corporation resecuritized $25.1 billion, $23.4 billion and $30.7 billion of securities in 2017, 2016 and 2015. Securities transferred into resecuritization vehicles during 2017, 2016 and 2015 were measured at fair value with changes in fair value recorded in trading account profits prior to the resecuritization and no gain or loss on sale was recorded. During 2017, 2016 and 2015, resecuritization proceeds included securities with an initial fair value of $3.3 billion, $3.3 billion and $9.8 billion, including $6.9 billion which were classified as HTM during 2015. Substantially all of the other securities received as resecuritization proceeds were classified as trading securities and were categorized as Level 2 within the fair value hierarchy.

Municipal Bond Trusts

The Corporation administers municipal bond trusts that hold highly-rated, long-term, fixed-rate municipal bonds. The trusts obtain financing by issuing floating-rate trust certificates that reprice on a weekly or other short-term basis to third-party investors.

The Corporation's liquidity commitments to unconsolidated municipal bond trusts, including those for which the Corporation was transferor, totaled $1.6 billion at both December 31, 2017 and 2016. The weighted-average remaining life of bonds held in the trusts at December 31, 2017 was 6.0 years. There were no material write-downs or downgrades of assets or issuers during 2017, 2016 and 2015.

Other Variable Interest Entities

The table below summarizes select information related to other VIEs in which the Corporation held a variable interest at December 31, 2017 and 2016.

Other VIEs

	Consolidated	Unconsolidated	Total	Consolidated	Unconsolidated	Total
	December 31					
(Dollars in millions)	2017			2016		
Maximum loss exposure	**$ 4,660**	**$ 19,785**	**$ 24,445**	$ 6,114	$ 17,754	$ 23,868
On-balance sheet assets						
Trading account assets	**$ 2,709**	**$ 346**	**$ 3,055**	$ 2,358	$ 233	$ 2,591
Debt securities carried at fair value	**—**	**160**	**160**	—	122	122
Loans and leases	**2,152**	**3,596**	**5,748**	3,399	3,249	6,648
Allowance for loan and lease losses	**(3)**	**(32)**	**(35)**	(9)	(24)	(33)
Loans held-for-sale	**27**	**940**	**967**	188	464	652
All other assets	**62**	**14,276**	**14,338**	369	13,156	13,525
Total	**$ 4,947**	**$ 19,286**	**$ 24,233**	$ 6,305	$ 17,200	$ 23,505
On-balance sheet liabilities						
Long-term debt [(1)]	**$ 270**	**$ —**	**$ 270**	$ 395	$ —	$ 395
All other liabilities	**18**	**3,417**	**3,435**	24	2,959	2,983
Total	**$ 288**	**$ 3,417**	**$ 3,705**	$ 419	$ 2,959	$ 3,378
Total assets of VIEs	**$ 4,947**	**$ 69,746**	**$ 74,693**	$ 6,305	$ 62,269	$ 68,574

(1) Includes $1 million and $229 million of long-term debt at December 31, 2017 and 2016 issued by other consolidated VIEs, which has recourse to the general credit of the Corporation.

Customer Vehicles

Customer vehicles include credit-linked, equity-linked and commodity-linked note vehicles, repackaging vehicles, and asset acquisition vehicles, which are typically created on behalf of customers who wish to obtain market or credit exposure to a specific company, index, commodity or financial instrument.

The Corporation's maximum loss exposure to consolidated and unconsolidated customer vehicles totaled $2.3 billion and $2.9 billion at December 31, 2017 and 2016, including the notional amount of derivatives to which the Corporation is a counterparty, net of losses previously recorded, and the Corporation's investment, if any, in securities issued by the vehicles. The Corporation also had liquidity commitments, including written put options and collateral value guarantees, with certain unconsolidated vehicles of $442 million and $323 million at December 31, 2017 and 2016, that are included in the table above.

Collateralized Debt Obligation Vehicles

The Corporation receives fees for structuring CDO vehicles, which hold diversified pools of fixed-income securities, typically corporate debt or ABS, which the CDO vehicles fund by issuing multiple tranches of debt and equity securities. CDOs are generally managed by third-party portfolio managers. The Corporation typically transfers assets to these CDOs, holds securities issued by the CDOs and may be a derivative counterparty to the CDOs. The Corporation's maximum loss exposure to consolidated and unconsolidated CDOs totaled $358 million and $430 million at December 31, 2017 and 2016.

Investment Vehicles

The Corporation sponsors, invests in or provides financing, which may be in connection with the sale of assets, to a variety of investment vehicles that hold loans, real estate, debt securities or other financial instruments and are designed to provide the desired investment profile to investors or the Corporation. At December 31, 2017 and 2016, the Corporation's consolidated investment vehicles had total assets of $249 million and $846 million. The Corporation also held investments in unconsolidated vehicles with total assets of $20.3 billion and $17.3 billion at December 31, 2017 and 2016. The Corporation's maximum loss exposure associated with both consolidated and unconsolidated investment vehicles totaled $5.7 billion and $5.1 billion at December 31, 2017 and 2016 comprised primarily of on-balance sheet assets less non-recourse liabilities.

In prior periods, the Corporation transferred servicing advance receivables to independent third parties in connection with the sale of MSRs. Portions of the receivables were transferred into unconsolidated securitization trusts. The Corporation retained senior interests in such receivables with a maximum loss exposure and funding obligation of $50 million and $150 million, including a funded balance of $39 million and $75 million at December 31, 2017 and 2016, which were classified in other debt securities carried at fair value.

Leveraged Lease Trusts

The Corporation's net investment in consolidated leveraged lease trusts totaled $2.0 billion and $2.6 billion at December 31, 2017 and 2016. The trusts hold long-lived equipment such as rail cars, power generation and distribution equipment, and commercial aircraft. The Corporation structures the trusts and holds a significant residual interest. The net investment represents the Corporation's maximum loss exposure to the trusts in the unlikely event that the leveraged lease investments become worthless. Debt issued by the leveraged lease trusts is non-recourse to the Corporation.

Tax Credit Vehicles

The Corporation holds investments in unconsolidated limited partnerships and similar entities that construct, own and operate affordable housing, wind and solar projects. An unrelated third party is typically the general partner or managing member and has control over the significant activities of the vehicle. The Corporation earns a return primarily through the receipt of tax credits allocated to the projects. The maximum loss exposure included in the Other VIEs table was $13.8 billion and $12.6 billion at December 31, 2017 and 2016. The Corporation's risk of loss is generally mitigated by policies requiring that the project qualify for the expected tax credits prior to making its investment.

The Corporation's investments in affordable housing partnerships, which are reported in other assets on the Consolidated Balance Sheet, totaled $8.0 billion and $7.4 billion, including unfunded commitments to provide capital contributions of $3.1 billion and $2.7 billion at December 31, 2017 and 2016. The unfunded commitments are expected to be paid over the next 5 years. During 2017, 2016 and 2015, the Corporation recognized tax credits and other tax benefits from investments in affordable housing partnerships of $1.0 billion, $1.1 billion and $928 million and reported pre-tax losses in other noninterest income of $766 million, $789 million and $629 million, respectively. Tax credits are recognized as part of the Corporation's annual effective tax rate used to determine tax expense in a given quarter. Accordingly, the portion of a year's expected tax benefits recognized in any given quarter may differ from 25 percent. The Corporation may from time to time be asked to invest additional amounts to support a troubled affordable housing project. Such additional investments have not been and are not expected to be significant.

NOTE 7 Representations and Warranties Obligations and Corporate Guarantees

The Corporation securitizes first-lien residential mortgage loans generally in the form of RMBS guaranteed by the GSEs or by GNMA in the case of FHA-insured, VA-guaranteed and Rural Housing Service-guaranteed mortgage loans, and sells pools of first-lien residential mortgage loans in the form of whole loans. In addition, in prior years, legacy companies and certain subsidiaries sold pools of first-lien residential mortgage loans and home equity loans as private-label securitizations or in the form of whole loans. In connection with these transactions, the Corporation or certain of its subsidiaries or legacy companies make and have made various representations and warranties. Breaches of these representations and warranties have resulted in and may continue to result in the requirement to repurchase mortgage loans or to otherwise make whole or provide other remedies to investors, securitization trusts, guarantors, insurers or other parties (collectively, repurchases).

Settlement Actions

The Corporation has vigorously contested any request for repurchase where it has concluded that a valid basis for repurchase does not exist and will continue to do so in the future. However, in an effort to resolve legacy mortgage-related issues, the Corporation has reached bulk settlements, certain of which have been for significant amounts, in lieu of a loan-by-loan review process. The Corporation's liability in connection with the transactions and claims not covered by these settlements could be material to the Corporation's results of operations or liquidity for any particular reporting period. The Corporation may reach other settlements in the future if opportunities arise on terms it believes to be advantageous. However, there can be no assurance that the Corporation will reach future settlements or, if it does, that the terms of past settlements can be relied upon to predict the terms of future settlements.

Unresolved Repurchase Claims

Unresolved representations and warranties repurchase claims represent the notional amount of repurchase claims made by counterparties, typically the outstanding principal balance or the unpaid principal balance at the time of default. In the case of first-lien mortgages, the claim amount is often significantly greater than the expected loss amount due to the benefit of collateral and, in some cases, mortgage insurance or mortgage guarantee payments. Claims received from a counterparty remain outstanding until the underlying loan is repurchased, the claim is rescinded by the counterparty, the Corporation determines that the applicable statute of limitations has expired, or representations and warranties claims with respect to the applicable trust are settled, and fully and finally released. The Corporation does not include duplicate claims in the amounts disclosed.

The table below presents unresolved repurchase claims at December 31, 2017 and 2016. The unresolved repurchase claims include only claims where the Corporation believes that the counterparty has the contractual right to submit claims. The unresolved repurchase claims predominantly relate to subprime and pay option first-lien loans and home equity loans originated primarily between 2004 and 2008. For more information, see Private-label Securitizations and Whole-loan Sales Experience in this Note and *Note 12 – Commitments and Contingencies*.

Unresolved Repurchase Claims by Counterparty, Net of Duplicate Claims

	December 31	
(Dollars in millions)	**2017**	2016
By counterparty		
Private-label securitization trustees, whole-loan investors, including third-party securitization sponsors and other [1]	**$ 16,064**	$ 16,685
Monolines	**1,565**	1,583
GSEs	**5**	9
Total unresolved repurchase claims by counterparty, net of duplicate claims	**$ 17,634**	$ 18,277

(1) Includes $11.4 billion and $11.9 billion of claims based on individual file reviews and $4.7 billion and $4.8 billion of claims submitted without individual file reviews at December 31, 2017 and 2016.

During 2017, the Corporation received $151 million in new repurchase claims and $794 million in claims were resolved, including $640 million related to settlements. Of the remaining unresolved monoline claims, substantially all of the claims pertain to second-lien loans and are currently the subject of litigation with a single monoline insurer. There may be additional claims or file requests in the future.

In addition to the unresolved repurchase claims in the Unresolved Repurchase Claims by Counterparty, Net of Duplicate Claims table, the Corporation has received notifications from a sponsor of third-party securitizations with whom the Corporation engaged in whole-loan transactions indicating that the Corporation may have indemnity obligations with respect to specific loans for which the Corporation has not received a repurchase request. These notifications were received prior to 2015, and totaled $1.3 billion at both December 31, 2017 and 2016. During 2017, the Corporation reached agreements with certain parties requesting indemnity. One such agreement is subject to acceptance by a securitization trustee. The impact of these agreements is included in the provision and reserve for representations and warranties.

The presence of repurchase claims on a given trust, receipt of notices of indemnification obligations and receipt of other communications, as discussed above, are all factors that inform the Corporation's reserve for representations and warranties and the corresponding estimated range of possible loss.

Private-label Securitizations and Whole-loan Sales Experience

The notional amount of unresolved repurchase claims at December 31, 2017 and 2016 included $6.9 billion and $5.6 billion of claims related to loans in specific private-label securitization groups or tranches where the Corporation owns substantially all of the outstanding securities or will otherwise realize the benefit of any repurchase claims paid.

The overall decrease in the notional amount of outstanding unresolved repurchase claims in 2017 was primarily due to claims that were resolved as a result of settlements. Outstanding repurchase claims remained unresolved primarily due to (1) the level of detail, support and analysis accompanying such claims, which impact overall claim quality and, therefore, claims resolution, and (2) the lack of an established process to resolve disputes related to these claims.

The Corporation reviews properly presented repurchase claims on a loan-by-loan basis. For time-barred claims, the counterparty is informed that the claim is denied on the basis of the statute of limitations and the claim is treated as resolved. For timely claims, if the Corporation, after review, does not believe a claim is valid, it will deny the claim and generally indicate a reason for the denial. If the counterparty agrees with the Corporation's denial of the claim, the counterparty may rescind the claim. If there is a disagreement as to the resolution of the claim, meaningful dialogue and negotiation between the parties are generally necessary to reach a resolution on an individual claim. The Corporation has performed an initial review with respect to substantially all outstanding claims and, although the Corporation does not believe a valid basis for repurchase has been established by the claimant, it considers such claims activity in the computation of its liability for representations and warranties.

Reserve and Estimated Range of Possible Loss

The reserve for representations and warranties and corporate guarantees is included in accrued expenses and other liabilities on the Consolidated Balance Sheet and the related provision is included in mortgage banking income in the Consolidated Statement of Income. The reserve for representations and warranties is established when those obligations are both probable and reasonably estimable.

The Corporation's representations and warranties reserve and the corresponding estimated range of possible loss at December 31, 2017 consider, among other things, the repurchase experience implied in prior settlements, and uses the experience implied in those prior settlements in the assessment for those trusts where the Corporation has a continuing possibility of timely claims in order to determine the representations and warranties reserve and the corresponding estimated range of possible loss.

The table below presents a rollforward of the reserve for representations and warranties and corporate guarantees.

Representations and Warranties and Corporate Guarantees

(Dollars in millions)	**2017**	2016
Reserve for representations and warranties and corporate guarantees, January 1	**$ 2,339**	$ 11,326
Additions for new sales	**4**	4
Payments [1]	**(814)**	(9,097)
Provision	**393**	106
Reserve for representations and warranties and corporate guarantees, December 31	**$ 1,922**	$ 2,339

(1) In February 2016, the Corporation made an $8.5 billion settlement payment as part of the settlement with BNY Mellon.

The representations and warranties reserve represents the Corporation's best estimate of probable incurred losses as of December 31, 2017. However, it is reasonably possible that future representations and warranties losses may occur in excess of the amounts recorded for these exposures.

The Corporation currently estimates that the range of possible loss for representations and warranties exposures could be up to $1 billion over existing accruals at December 31, 2017. This estimate is lower than the estimate at December 31, 2016 due to recent reductions in risk as we reach settlements with counterparties. The Corporation treats claims that are time-barred as resolved and does not consider such claims in the estimated range of possible loss. The estimated range of possible loss reflects principally exposures related to loans in private-label securitization trusts, including related indemnity claims. It represents a reasonably possible loss, but does not represent a probable loss, and is based on currently available information, significant judgment and a number of assumptions that are subject to change.

The reserve for representations and warranties exposures and the corresponding estimated range of possible loss do not consider certain losses related to servicing, including foreclosure and related costs, fraud, indemnity, or claims (including for RMBS) related to securities law or monoline insurance litigation. Losses with respect to one or more of these matters could be material to the Corporation's results of operations or liquidity for any particular reporting period.

Future provisions and/or ranges of possible loss for representations and warranties may be significantly impacted if actual experiences are different from the Corporation's assumptions in predictive models.

NOTE 8 Goodwill and Intangible Assets

Goodwill

The table below presents goodwill balances by business segment and *All Other* at December 31, 2017 and 2016. The reporting units utilized for goodwill impairment testing are the operating segments or one level below.

Goodwill

(Dollars in millions)	December 31 2017	2016
Consumer Banking	**$ 30,123**	$ 30,123
Global Wealth & Investment Management	**9,677**	9,681
Global Banking	**23,923**	23,923
Global Markets	**5,182**	5,197
All Other	**46**	820
Less: Goodwill of business held for sale [1]	**—**	(775)
Total goodwill	**$ 68,951**	$ 68,969

(1) Reflects the goodwill assigned to the non-U.S. consumer credit card business, which was included in assets of business held for sale on the Consolidated Balance Sheet at December 31, 2016. In 2017, the Corporation sold its non-U.S. consumer credit card business.

During 2017, the Corporation completed its annual goodwill impairment test as of June 30, 2017 for all applicable reporting units. Based on the results of the annual goodwill impairment test, the Corporation determined there was no impairment.

Intangible Assets

The table below presents the gross and net carrying values and accumulated amortization for intangible assets at December 31, 2017 and 2016.

Intangible Assets [1, 2]

(Dollars in millions)	Gross Carrying Value	Accumulated Amortization	Net Carrying Value	Gross Carrying Value	Accumulated Amortization	Net Carrying Value
	December 31, 2017			December 31, 2016		
Purchased credit card and affinity relationships	**$ 5,919**	**$ 5,604**	**$ 315**	$ 6,830	$ 6,243	$ 587
Core deposit and other intangibles [3]	**3,835**	**2,140**	**1,695**	3,836	2,046	1,790
Customer relationships	**3,886**	**3,584**	**302**	3,887	3,275	612
Total intangible assets [4]	**$ 13,640**	**$ 11,328**	**$ 2,312**	$ 14,553	$ 11,564	$ 2,989

(1) Excludes fully amortized intangible assets.
(2) At December 31, 2017 and 2016, none of the intangible assets were impaired.
(3) Includes $1.6 billion at both December 31, 2017 and 2016 of intangible assets associated with trade names that have an indefinite life and, accordingly, are not amortized.
(4) Includes $67 million at December 31, 2016 of intangible assets assigned to the non-U.S. consumer credit card business, which was included in assets of business held for sale on the Consolidated Balance Sheet at December 31, 2016.

Amortization of intangibles expense was $621 million, $730 million and $834 million for 2017, 2016 and 2015. The Corporation estimates aggregate amortization expense will be $538 million, $105 million and $53 million for the years through 2020 and none for the years thereafter.

NOTE 9 Deposits

The table below presents information about the Corporation's time deposits of $100 thousand or more at December 31, 2017 and 2016. The Corporation also had aggregate time deposits of $17.0 billion and $18.3 billion in denominations that met or exceeded the Federal Deposit Insurance Corporation (FDIC) insurance limit at December 31, 2017 and 2016.

Time Deposits of $100 Thousand or More

	December 31, 2017				December 31 2016
(Dollars in millions)	Three Months or Less	Over Three Months to Twelve Months	Thereafter	Total	Total
U.S. certificates of deposit and other time deposits	$ 12,505	$ 10,660	$ 2,027	$ 25,192	$ 32,898
Non-U.S. certificates of deposit and other time deposits	10,561	3,652	1,259	15,472	14,677

The scheduled contractual maturities for total time deposits at December 31, 2017 are presented in the table below.

Contractual Maturities of Total Time Deposits

(Dollars in millions)	U.S.	Non-U.S.	Total
Due in 2018	$ 46,774	$ 14,264	$ 61,038
Due in 2019	2,623	657	3,280
Due in 2020	1,661	49	1,710
Due in 2021	514	15	529
Due in 2022	452	562	1,014
Thereafter	264	9	273
Total time deposits	$ 52,288	$ 15,556	$ 67,844

NOTE 10 Federal Funds Sold or Purchased, Securities Financing Agreements and Short-term Borrowings

The table below presents federal funds sold or purchased, securities financing agreements, which include securities borrowed or purchased under agreements to resell and securities loaned or sold under agreements to repurchase, and short-term borrowings. The Corporation elects to account for certain securities financing agreements and short-term borrowings under the fair value option. For more information on the election of the fair value option, see *Note 21 – Fair Value Option*.

	Amount	Rate	Amount	Rate
(Dollars in millions)	2017		2016	
Federal funds sold and securities borrowed or purchased under agreements to resell				
Average during year	$ 222,818	1.07%	$ 216,161	0.52%
Maximum month-end balance during year	237,064	n/a	225,015	n/a
Federal funds purchased and securities loaned or sold under agreements to repurchase				
Average during year	$ 199,501	1.30%	$ 183,818	0.97%
Maximum month-end balance during year	218,017	n/a	196,631	n/a
Short-term borrowings				
Average during year	37,337	2.48%	29,440	1.95%
Maximum month-end balance during year	46,202	n/a	33,051	n/a

n/a = not applicable

Bank of America, N.A. maintains a global program to offer up to a maximum of $75 billion outstanding at any one time, of bank notes with fixed or floating rates and maturities of at least seven days from the date of issue. Short-term bank notes outstanding under this program totaled $14.2 billion and $9.3 billion at December 31, 2017 and 2016. These short-term bank notes, along with FHLB advances, U.S. Treasury tax and loan notes, and term federal funds purchased, are included in short-term borrowings on the Consolidated Balance Sheet.

Offsetting of Securities Financing Agreements

The Corporation enters into securities financing agreements to accommodate customers (also referred to as "matched-book transactions"), obtain securities to cover short positions, and to finance inventory positions. Substantially all of the Corporation's securities financing activities are transacted under legally enforceable master repurchase agreements or legally enforceable master securities lending agreements that give the Corporation, in the event of default by the counterparty, the right to liquidate securities held and to offset receivables and payables with the same counterparty.

The Securities Financing Agreements table presents securities financing agreements included on the Consolidated Balance Sheet in federal funds sold and securities borrowed or purchased under agreements to resell, and in federal funds purchased and securities loaned or sold under agreements to repurchase at December 31, 2017 and 2016. Balances are presented on a gross basis, prior to the application of counterparty netting. Gross assets and liabilities are adjusted on an aggregate basis to take into consideration the effects of legally enforceable master netting agreements. For more information on the offsetting of derivatives, see *Note 2 – Derivatives*.

Securities Financing Agreements

(Dollars in millions)	Gross Assets/ Liabilities [1]	Amounts Offset	Net Balance Sheet Amount	Financial Instruments [2]	Net Assets/ Liabilities
			December 31, 2017		
Securities borrowed or purchased under agreements to resell [3]	**$ 348,472**	**$ (135,725)**	**$ 212,747**	**$ (165,720)**	**$ 47,027**
Securities loaned or sold under agreements to repurchase	**$ 312,582**	**$ (135,725)**	**$ 176,857**	**$ (146,205)**	**$ 30,652**
Other [4]	**22,711**	**—**	**22,711**	**(22,711)**	**—**
Total	**$ 335,293**	**$ (135,725)**	**$ 199,568**	**$ (168,916)**	**$ 30,652**
			December 31, 2016		
Securities borrowed or purchased under agreements to resell [3]	$ 326,970	$ (128,746)	$ 198,224	$ (154,974)	$ 43,250
Securities loaned or sold under agreements to repurchase	$ 299,028	$ (128,746)	$ 170,282	$ (140,774)	$ 29,508
Other [4]	14,448	—	14,448	(14,448)	—
Total	$ 313,476	$ (128,746)	$ 184,730	$ (155,222)	$ 29,508

(1) Includes activity where uncertainty exists as to the enforceability of certain master netting agreements under bankruptcy laws in some countries or industries.
(2) Includes securities collateral received or pledged under repurchase or securities lending agreements where there is a legally enforceable master netting agreement. These amounts are not offset on the Consolidated Balance Sheet, but are shown as a reduction to derive a net asset or liability. Securities collateral received or pledged where the legal enforceability of the master netting agreements is uncertain is excluded from the table.
(3) Excludes repurchase activity of $10.2 billion and $10.1 billion reported in loans and leases on the Consolidated Balance Sheet at December 31, 2017 and 2016.
(4) Balance is reported in accrued expenses and other liabilities on the Consolidated Balance Sheet and relates to transactions where the Corporation acts as the lender in a securities lending agreement and receives securities that can be pledged as collateral or sold. In these transactions, the Corporation recognizes an asset at fair value, representing the securities received, and a liability, representing the obligation to return those securities.

Repurchase Agreements and Securities Loaned Transactions Accounted for as Secured Borrowings

The following tables present securities sold under agreements to repurchase and securities loaned by remaining contractual term to maturity and class of collateral pledged. Included in "Other" are transactions where the Corporation acts as the lender in a securities lending agreement and receives securities that can be pledged as collateral or sold. Certain agreements contain a right to substitute collateral and/or terminate the agreement prior to maturity at the option of the Corporation or the counterparty. Such agreements are included in the table below based on the remaining contractual term to maturity.

Remaining Contractual Maturity

(Dollars in millions)	Overnight and Continuous	30 Days or Less	After 30 Days Through 90 Days	Greater than 90 Days [1]	Total
			December 31, 2017		
Securities sold under agreements to repurchase	**$ 125,956**	**$ 79,913**	**$ 46,091**	**$ 38,935**	**$ 290,895**
Securities loaned	**9,853**	**5,658**	**2,043**	**4,133**	**21,687**
Other	**22,711**	**—**	**—**	**—**	**22,711**
Total	**$ 158,520**	**$ 85,571**	**$ 48,134**	**$ 43,068**	**$ 335,293**
			December 31, 2016		
Securities sold under agreements to repurchase	$ 129,853	$ 77,780	$ 31,851	$ 40,752	$ 280,236
Securities loaned	8,564	6,602	1,473	2,153	18,792
Other	14,448	—	—	—	14,448
Total	$ 152,865	$ 84,382	$ 33,324	$ 42,905	$ 313,476

(1) No agreements have maturities greater than three years.

Class of Collateral Pledged

(Dollars in millions)	Securities Sold Under Agreements to Repurchase	Securities Loaned	Other	Total
	December 31, 2017			
U.S. government and agency securities	**$ 158,299**	**$ —**	**$ 409**	**$ 158,708**
Corporate securities, trading loans and other	**12,787**	**2,669**	**624**	**16,080**
Equity securities	**23,975**	**13,523**	**21,628**	**59,126**
Non-U.S. sovereign debt	**90,857**	**5,495**	**50**	**96,402**
Mortgage trading loans and ABS	**4,977**	**—**	**—**	**4,977**
Total	**$ 290,895**	**$ 21,687**	**$ 22,711**	**$ 335,293**
	December 31, 2016			
U.S. government and agency securities	$ 153,184	$ —	$ 70	$ 153,254
Corporate securities, trading loans and other	11,086	1,630	127	12,843
Equity securities	24,007	11,175	14,196	49,378
Non-U.S. sovereign debt	84,171	5,987	55	90,213
Mortgage trading loans and ABS	7,788	—	—	7,788
Total	$ 280,236	$ 18,792	$ 14,448	$ 313,476

The Corporation is required to post collateral with a market value equal to or in excess of the principal amount borrowed under repurchase agreements. For securities loaned transactions, the Corporation receives collateral in the form of cash, letters of credit or other securities. To determine whether the market value of the underlying collateral remains sufficient, collateral is generally valued daily, and the Corporation may be required to deposit additional collateral or may receive or return collateral pledged when appropriate. Repurchase agreements and securities loaned transactions are generally either overnight, continuous (i.e., no stated term) or short-term. The Corporation manages liquidity risks related to these agreements by sourcing funding from a diverse group of counterparties, providing a range of securities collateral and pursuing longer durations, when appropriate.

NOTE 11 Long-term Debt

Long-term debt consists of borrowings having an original maturity of one year or more. The table below presents the balance of long-term debt at December 31, 2017 and 2016, and the related contractual rates and maturity dates as of December 31, 2017.

	December 31	
(Dollars in millions)	2017	2016
Notes issued by Bank of America Corporation		
Senior notes:		
Fixed, with a weighted-average rate of 3.64%, ranging from 0.39% to 8.40%, due 2018 to 2048	$ **119,548**	$ 108,933
Floating, with a weighted-average rate of 1.54%, ranging from 0.04% to 6.13%, due 2018 to 2044	**21,048**	13,164
Senior structured notes	**15,460**	17,049
Subordinated notes:		
Fixed, with a weighted-average rate of 4.90%, ranging from 2.94% to 8.57%, due 2018 to 2045	**22,004**	26,047
Floating, with a weighted-average rate of 1.00%, ranging from 0.20% to 2.56%, due 2018 to 2026	**4,058**	4,350
Junior subordinated notes (related to trust preferred securities):		
Fixed, with a weighted-average rate of 6.91%, ranging from 5.25% to 8.05%, due 2027 to 2067	**3,282**	3,280
Floating, with a weighted-average rate of 2.13%, ranging from 1.91% to 2.60%, due 2027 to 2056	**553**	552
Total notes issued by Bank of America Corporation	**185,953**	173,375
Notes issued by Bank of America, N.A.		
Senior notes:		
Fixed, with a weighted-average rate of 1.78%, ranging from 0.02% to 2.05%, due in 2018	**4,686**	5,936
Floating, with a weighted-average rate of 2.60%, ranging from 1.44% to 2.80%, due 2018 to 2041	**1,033**	3,383
Subordinated notes:		
Fixed, with a rate of 6.00%, due in 2036	**1,679**	4,424
Floating, with a rate of 1.33%, due in 2019	**1**	598
Advances from Federal Home Loan Banks:		
Fixed, with a weighted-average rate of 5.22%, ranging from 0.01% to 7.72%, due 2018 to 2034	**146**	162
Floating, with a weighted-average rate of 1.42%, ranging from 1.35% to 1.60%, due 2018 to 2019	**5,000**	—
Securitizations and other BANA VIEs [(1)]	**8,641**	9,164
Other	**432**	3,084
Total notes issued by Bank of America, N.A.	**21,618**	26,751
Other debt		
Structured liabilities	**18,574**	15,171
Nonbank VIEs [(1)]	**1,232**	1,482
Other	**25**	44
Total other debt	**19,831**	16,697
Total long-term debt	$ **227,402**	$ 216,823

(1) Represents the total long-term debt included in the liabilities of consolidated VIEs on the Consolidated Balance Sheet.

Bank of America Corporation and Bank of America, N.A. maintain various U.S. and non-U.S. debt programs to offer both senior and subordinated notes. The notes may be denominated in U.S. dollars or foreign currencies. At December 31, 2017 and 2016, the amount of foreign currency-denominated debt translated into U.S. dollars included in total long-term debt was $51.8 billion and $44.7 billion. Foreign currency contracts may be used to convert certain foreign currency-denominated debt into U.S. dollars.

At December 31, 2017, long-term debt of consolidated VIEs in the table above included debt from credit card, home equity and all other VIEs of $8.6 billion, $76 million and $1.2 billion, respectively. Long-term debt of VIEs is collateralized by the assets of the VIEs. For more information, see *Note 6 – Securitizations and Other Variable Interest Entities.*

The weighted-average effective interest rates for total long-term debt (excluding senior structured notes), total fixed-rate debt and total floating-rate debt were 3.44 percent, 3.87 percent and 1.49 percent, respectively, at December 31, 2017, and 3.80 percent, 4.36 percent and 1.52 percent, respectively, at December 31, 2016. The Corporation's ALM activities maintain an overall interest rate risk management strategy that incorporates the use of interest rate contracts to manage fluctuations in earnings that are caused by interest rate volatility. The Corporation's goal is to manage interest rate sensitivity so that movements in interest rates do not significantly adversely affect earnings and capital. The weighted-average rates are the contractual interest rates on the debt and do not reflect the impacts of derivative transactions.

Certain senior structured notes and structured liabilities are accounted for under the fair value option. For more information on these notes, see *Note 21 – Fair Value Option.* Debt outstanding of $2.7 billion at December 31, 2017 was issued by a 100 percent owned finance subsidiary of the parent company and is unconditionally guaranteed by the parent company.

The following table shows the carrying value for aggregate annual contractual maturities of long-term debt as of December 31, 2017. Included in the table are certain structured notes issued by the Corporation that contain provisions whereby the borrowings are redeemable at the option of the holder (put options) at specified dates prior to maturity. Other structured notes have coupon or repayment terms linked to the performance of debt or equity securities, indices, currencies or commodities, and the maturity may be accelerated based on the value of a referenced index or security. In both cases, the Corporation or a subsidiary may be required to settle the obligation for cash or other securities prior to the contractual maturity date. These borrowings are reflected in the table as maturing at their contractual maturity date.

During 2017, the Corporation had total long-term debt maturities and redemptions in the aggregate of $48.8 billion consisting of $29.1 billion for Bank of America Corporation, $13.3 billion for Bank of America, N.A. and $6.4 billion of other debt. During 2016, the Corporation had total long-term debt maturities and redemptions in the aggregate of $51.6 billion consisting of

$30.6 billion for Bank of America Corporation, $11.6 billion for Bank of America, N.A. and $9.4 billion of other debt.

In December 2017, pursuant to a private offering, the Corporation exchanged $11.0 billion of outstanding long-term debt for new fixed/floating-rate senior notes, subject to certain terms and conditions. Based on the attributes of the exchange transactions, the newly issued securities are not considered substantially different, for accounting purposes, from the exchanged securities. Therefore, there was no impact to the Corporation's results of operations as any amounts paid to debt holders were capitalized, and the premiums or discounts on the outstanding long-term debt were carried over to the new securities and will be amortized over their contractual lives using a revised effective interest rate.

Long-term Debt by Maturity

(Dollars in millions)	2018	2019	2020	2021	2022	Thereafter	Total
Bank of America Corporation							
Senior notes	$ 19,577	$ 15,115	$ 10,580	$ 16,196	$ 9,691	$ 69,437	**$ 140,596**
Senior structured notes	2,749	1,486	950	437	2,017	7,821	**15,460**
Subordinated notes	2,973	1,552	—	375	476	20,686	**26,062**
Junior subordinated notes	—	—	—	—	—	3,835	**3,835**
Total Bank of America Corporation	25,299	18,153	11,530	17,008	12,184	101,779	**185,953**
Bank of America, N.A.							
Senior notes	5,699	—	—	—	—	20	**5,719**
Subordinated notes	—	1	—	—	—	1,679	**1,680**
Advances from Federal Home Loan Banks	3,009	2,013	11	2	3	108	**5,146**
Securitizations and other Bank VIEs [(1)]	2,300	3,200	3,098	—	—	43	**8,641**
Other	51	194	15	—	9	163	**432**
Total Bank of America, N.A.	11,059	5,408	3,124	2	12	2,013	**21,618**
Other debt							
Structured liabilities	5,677	2,340	1,545	870	803	7,339	**18,574**
Nonbank VIEs [(1)]	22	45	—	—	—	1,165	**1,232**
Other	—	—	—	—	—	25	**25**
Total other debt	5,699	2,385	1,545	870	803	8,529	**19,831**
Total long-term debt	**$ 42,057**	**$ 25,946**	**$ 16,199**	**$ 17,880**	**$ 12,999**	**$ 112,321**	**$ 227,402**

(1) Represents the total long-term debt included in the liabilities of consolidated VIEs on the Consolidated Balance Sheet.

Trust Preferred and Hybrid Securities

Trust preferred securities (Trust Securities) are primarily issued by trust companies (the Trusts) that are not consolidated. These Trust Securities are mandatorily redeemable preferred security obligations of the Trusts. The sole assets of the Trusts generally are junior subordinated deferrable interest notes of the Corporation or its subsidiaries (the Notes). The Trusts generally are 100 percent-owned finance subsidiaries of the Corporation. Obligations associated with the Notes are included in the long-term debt table on page 168.

Certain of the Trust Securities were issued at a discount and may be redeemed prior to maturity at the option of the Corporation. The Trusts generally have invested the proceeds of such Trust Securities in the Notes. Each issue of the Notes has an interest rate equal to the corresponding Trust Securities distribution rate. The Corporation has the right to defer payment of interest on the Notes at any time or from time to time for a period not exceeding five years provided that no extension period may extend beyond the stated maturity of the relevant Notes. During any such extension period, distributions on the Trust Securities will also be deferred, and the Corporation's ability to pay dividends on its common and preferred stock will be restricted.

The Trust Securities generally are subject to mandatory redemption upon repayment of the related Notes at their stated maturity dates or their earlier redemption at a redemption price equal to their liquidation amount plus accrued distributions to the date fixed for redemption and the premium, if any, paid by the Corporation upon concurrent repayment of the related Notes.

Periodic cash payments and payments upon liquidation or redemption with respect to Trust Securities are guaranteed by the Corporation or its subsidiaries to the extent of funds held by the Trusts (the Preferred Securities Guarantee). The Preferred Securities Guarantee, when taken together with the Corporation's other obligations including its obligations under the Notes, generally will constitute a full and unconditional guarantee, on a subordinated basis, by the Corporation of payments due on the Trust Securities.

The Trust Securities Summary table details the outstanding Trust Securities and the related Notes previously issued which remained outstanding at December 31, 2017.

Trust Securities Summary

(Dollars in millions)

Issuer	Issuance Date	Aggregate Principal Amount of Trust Securities	Aggregate Principal Amount of the Notes	Stated Maturity of the Trust Securities	Per Annum Interest Rate of the Notes	Interest Payment Dates	Redemption Period
		December 31, 2017					
Bank of America							
Capital Trust VI	March 2005	$ 27	$ 27	March 2035	5.63%	Semi-Annual	Any time
Capital Trust VII [1]	August 2005	6	6	August 2035	5.25	Semi-Annual	Any time
Capital Trust XI	May 2006	658	678	May 2036	6.63	Semi-Annual	Any time
Capital Trust XV	May 2007	1	1	June 2056	3-mo. LIBOR + 80 bps	Quarterly	On or after 6/01/37
NationsBank							
Capital Trust III	February 1997	131	135	January 2027	3-mo. LIBOR + 55 bps	Quarterly	On or after 1/15/07
BankAmerica							
Capital III	January 1997	103	105	January 2027	3-mo. LIBOR + 57 bps	Quarterly	On or after 1/15/02
Fleet							
Capital Trust V	December 1998	79	82	December 2028	3-mo. LIBOR + 100 bps	Quarterly	On or after 12/18/03
BankBoston							
Capital Trust III	June 1997	53	55	June 2027	3-mo. LIBOR + 75 bps	Quarterly	On or after 6/15/07
Capital Trust IV	June 1998	102	106	June 2028	3-mo. LIBOR + 60 bps	Quarterly	On or after 6/08/03
MBNA							
Capital Trust B	January 1997	70	73	February 2027	3-mo. LIBOR + 80 bps	Quarterly	On or after 2/01/07
Countrywide							
Capital III	June 1997	200	206	June 2027	8.05	Semi-Annual	Only under special event
Capital V	November 2006	1,495	1,496	November 2036	7.00	Quarterly	On or after 11/01/11
Merrill Lynch							
Capital Trust I	December 2006	1,050	1,051	December 2066	6.45	Quarterly	On or after 12/11
Capital Trust III	August 2007	750	751	September 2067	7.375	Quarterly	On or after 9/12
Total		$ 4,725	$ 4,772				

(1) Notes are denominated in British pound. Presentation currency is U.S. dollar.

NOTE 12 Commitments and Contingencies

In the normal course of business, the Corporation enters into a number of off-balance sheet commitments. These commitments expose the Corporation to varying degrees of credit and market risk and are subject to the same credit and market risk limitation reviews as those instruments recorded on the Consolidated Balance Sheet.

Credit Extension Commitments

The Corporation enters into commitments to extend credit such as loan commitments, SBLCs and commercial letters of credit to meet the financing needs of its customers. The following table includes the notional amount of unfunded legally binding lending commitments net of amounts distributed (e.g., syndicated or participated) to other financial institutions. The distributed amounts were $11.0 billion and $12.1 billion at December 31, 2017 and 2016. At December 31, 2017, the carrying value of these commitments, excluding commitments accounted for under the fair value option, was $793 million, including deferred revenue of $16 million and a reserve for unfunded lending commitments of $777 million. At December 31, 2016, the comparable amounts were $779 million, $17 million and $762 million, respectively. The carrying value of these commitments is classified in accrued expenses and other liabilities on the Consolidated Balance Sheet.

The following table also includes the notional amount of commitments of $4.8 billion and $7.0 billion at December 31, 2017 and 2016 that are accounted for under the fair value option. However, the following table excludes cumulative net fair value of $120 million and $173 million on these commitments, which is classified in accrued expenses and other liabilities. For more information regarding the Corporation's loan commitments accounted for under the fair value option, see *Note 21 – Fair Value Option.*

Credit Extension Commitments

(Dollars in millions)	Expire in One Year or Less	Expire After One Year Through Three Years	Expire After Three Years Through Five Years	Expire After Five Years	Total
			December 31, 2017		
Notional amount of credit extension commitments					
Loan commitments	**$ 85,804**	**$ 140,942**	**$ 147,043**	**$ 21,342**	**$ 395,131**
Home equity lines of credit	**6,172**	**4,457**	**2,288**	**31,250**	**44,167**
Standby letters of credit and financial guarantees (1)	**19,976**	**11,261**	**3,420**	**1,144**	**35,801**
Letters of credit	**1,291**	**117**	**129**	**87**	**1,624**
Legally binding commitments	**113,243**	**156,777**	**152,880**	**53,823**	**476,723**
Credit card lines (2)	**362,030**	**—**	**—**	**—**	**362,030**
Total credit extension commitments	**$ 475,273**	**$ 156,777**	**$ 152,880**	**$ 53,823**	**$ 838,753**
			December 31, 2016		
Notional amount of credit extension commitments					
Loan commitments	$ 82,609	$ 133,063	$ 152,854	$ 22,129	$ 390,655
Home equity lines of credit	8,806	10,701	2,644	25,050	47,201
Standby letters of credit and financial guarantees (1)	19,165	10,754	3,225	1,027	34,171
Letters of credit	1,285	103	114	53	1,555
Legally binding commitments	111,865	154,621	158,837	48,259	473,582
Credit card lines (2)	377,773	—	—	—	377,773
Total credit extension commitments	$ 489,638	$ 154,621	$ 158,837	$ 48,259	$ 851,355

(1) The notional amounts of SBLCs and financial guarantees classified as investment grade and non-investment grade based on the credit quality of the underlying reference name within the instrument were $27.3 billion and $8.1 billion at December 31, 2017, and $25.5 billion and $8.3 billion at December 31, 2016. Amounts in the table include consumer SBLCs of $421 million and $376 million at December 31, 2017 and 2016.

(2) Includes business card unused lines of credit.

Legally binding commitments to extend credit generally have specified rates and maturities. Certain of these commitments have adverse change clauses that help to protect the Corporation against deterioration in the borrower's ability to pay.

Other Commitments

At December 31, 2017 and 2016, the Corporation had commitments to purchase loans (e.g., residential mortgage and commercial real estate) of $344 million and $767 million, and commitments to purchase commercial loans of $994 million and $636 million, which upon settlement will be included in loans or LHFS.

At December 31, 2017 and 2016, the Corporation had commitments to purchase commodities, primarily liquefied natural gas, of $1.5 billion and $1.9 billion, which upon settlement will be included in trading account assets. At December 31, 2017 and 2016, the Corporation had commitments to enter into resale and forward-dated resale and securities borrowing agreements of $56.8 billion and $48.9 billion, and commitments to enter into forward-dated repurchase and securities lending agreements of $34.3 billion and $24.4 billion. These commitments expire primarily within the next 12 months.

The Corporation has entered into agreements to purchase retail automobile loans from certain auto loan originators. These agreements provide for stated purchase amounts and contain cancellation provisions that allow the Corporation to terminate its commitment to purchase at any time, with a minimum notification period. At December 31, 2017 and 2016, the Corporation's maximum purchase commitment was $345 million and $475 million. In addition, the Corporation has a commitment to originate or purchase auto loans and leases up to $3.0 billion from a strategic partner during 2018. This commitment extends through November 2022 and can be terminated with 12 months prior notice.

The Corporation is a party to operating leases for certain of its premises and equipment. Commitments under these leases are approximately $2.3 billion, $2.1 billion, $1.9 billion, $1.7 billion and $1.4 billion for 2018 through 2022, respectively, and $5.1 billion in the aggregate for all years thereafter.

Other Guarantees

Bank-owned Life Insurance Book Value Protection

The Corporation sells products that offer book value protection to insurance carriers who offer group life insurance policies to corporations, primarily banks. At December 31, 2017 and 2016, the notional amount of these guarantees, which is recorded as derivatives totaled $10.4 billion and $13.9 billion. At December 31, 2017 and 2016, the Corporation's maximum exposure related to these guarantees totaled $1.6 billion and $3.2 billion, with estimated maturity dates between 2033 and 2039. The net fair value including the fee receivable associated with these guarantees was $3 million and $4 million at December 31, 2017 and 2016, and reflects the probability of surrender as well as the multiple structural protection features in the contracts.

Indemnifications

In the ordinary course of business, the Corporation enters into various agreements that contain indemnifications, such as tax indemnifications, whereupon payment may become due if certain external events occur, such as a change in tax law. The indemnification clauses are often standard contractual terms and were entered into in the normal course of business based on an assessment that the risk of loss would be remote. These agreements typically contain an early termination clause that permits the Corporation to exit the agreement upon these events. The maximum potential future payment under indemnification agreements is difficult to assess for several reasons, including the occurrence of an external event, the inability to predict future changes in tax and other laws, the difficulty in determining how such laws would apply to parties in contracts, the absence of exposure limits contained in standard contract language and the timing of any early termination clauses. Historically, any payments made under these guarantees have been de minimis. The

Corporation has assessed the probability of making such payments in the future as remote.

Merchant Services

In accordance with credit and debit card association rules, the Corporation sponsors merchant processing servicers that process credit and debit card transactions on behalf of various merchants. In connection with these services, a liability may arise in the event of a billing dispute between the merchant and a cardholder that is ultimately resolved in the cardholder's favor. If the merchant defaults on its obligation to reimburse the cardholder, the cardholder, through its issuing bank, generally has until six months after the date of the transaction to present a chargeback to the merchant processor, which is primarily liable for any losses on covered transactions. However, if the merchant processor fails to meet its obligation to reimburse the cardholder for disputed transactions, then the Corporation, as the sponsor, could be held liable for the disputed amount. In 2017 and 2016, the sponsored entities processed and settled $812.2 billion and $731.4 billion of transactions and recorded losses of $28 million and $33 million. A significant portion of this activity was processed by a joint venture in which the Corporation holds a 49 percent ownership, which is recorded in other assets on the Consolidated Balance Sheet and in *All Other*. At both December 31, 2017 and 2016, the carrying value of the Corporation's investment in the merchant services joint venture was $2.9 billion.

As of December 31, 2017 and 2016, the maximum potential exposure for sponsored transactions totaled $346.4 billion and $325.7 billion. However, the Corporation believes that the maximum potential exposure is not representative of the actual potential loss exposure and does not expect to make material payments in connection with these guarantees.

Exchange and Clearing House Member Guarantees

The Corporation is a member of various securities and derivative exchanges and clearinghouses, both in the U.S. and other countries. As a member, the Corporation may be required to pay a pro-rata share of the losses incurred by some of these organizations as a result of another member default and under other loss scenarios. The Corporation's potential obligations may be limited to its membership interests in such exchanges and clearinghouses, to the amount (or multiple) of the Corporation's contribution to the guarantee fund or, in limited instances, to the full pro-rata share of the residual losses after applying the guarantee fund. The Corporation's maximum potential exposure under these membership agreements is difficult to estimate; however, the potential for the Corporation to be required to make these payments is remote.

Prime Brokerage and Securities Clearing Services

In connection with its prime brokerage and clearing businesses, the Corporation performs securities clearance and settlement services with other brokerage firms and clearinghouses on behalf of its clients. Under these arrangements, the Corporation stands ready to meet the obligations of its clients with respect to securities transactions. The Corporation's obligations in this respect are secured by the assets in the clients' accounts and the accounts of their customers as well as by any proceeds received from the transactions cleared and settled by the firm on behalf of clients or their customers. The Corporation's maximum potential exposure under these arrangements is difficult to estimate; however, the potential for the Corporation to incur material losses pursuant to these arrangements is remote.

Other Guarantees

The Corporation has entered into additional guarantee agreements and commitments, including sold risk participation swaps, liquidity facilities, lease-end obligation agreements, partial credit guarantees on certain leases, real estate joint venture guarantees, divested business commitments and sold put options that require gross settlement. The maximum potential future payment under these agreements was approximately $5.9 billion and $6.7 billion at December 31, 2017 and 2016. The estimated maturity dates of these obligations extend up to 2040. The Corporation has made no material payments under these guarantees.

In the normal course of business, the Corporation periodically guarantees the obligations of its affiliates in a variety of transactions including ISDA-related transactions and non-ISDA related transactions such as commodities trading, repurchase agreements, prime brokerage agreements and other transactions.

Payment Protection Insurance Claims Matter

On June 1, 2017, the Corporation sold its non-U.S. consumer credit card business. Included in the calculation of the gain on sale, the Corporation recorded an obligation to indemnify the purchaser for substantially all PPI exposure above reserves assumed by the purchaser.

Litigation and Regulatory Matters

In the ordinary course of business, the Corporation and its subsidiaries are routinely defendants in or parties to many pending and threatened legal, regulatory and governmental actions and proceedings.

In view of the inherent difficulty of predicting the outcome of such matters, particularly where the claimants seek very large or indeterminate damages or where the matters present novel legal theories or involve a large number of parties, the Corporation generally cannot predict what the eventual outcome of the pending matters will be, what the timing of the ultimate resolution of these matters will be, or what the eventual loss, fines or penalties related to each pending matter may be.

In accordance with applicable accounting guidance, the Corporation establishes an accrued liability when those matters present loss contingencies that are both probable and estimable. In such cases, there may be an exposure to loss in excess of any amounts accrued. As a matter develops, the Corporation, in conjunction with any outside counsel handling the matter, evaluates on an ongoing basis whether such matter presents a loss contingency that is probable and estimable. Once the loss contingency is deemed to be both probable and estimable, the Corporation will establish an accrued liability and record a corresponding amount of litigation-related expense. The Corporation continues to monitor the matter for further developments that could affect the amount of the accrued liability that has been previously established. Excluding expenses of internal and external legal service providers, litigation-related expense of $753 million was recognized for 2017 compared to $1.2 billion for 2016.

For a limited number of the matters disclosed in this Note, for which a loss, whether in excess of a related accrued liability or where there is no accrued liability, is reasonably possible in future periods, the Corporation is able to estimate a range of possible loss. In determining whether it is possible to estimate a range of possible loss, the Corporation reviews and evaluates its matters on an ongoing basis, in conjunction with any outside counsel handling the matter, in light of potentially relevant factual and legal developments. In cases in which the Corporation possesses sufficient appropriate information to estimate a range of possible loss, that estimate is aggregated and disclosed below. There may be other disclosed matters for which a loss is probable or reasonably possible but such an estimate of the range of possible loss may not be possible. For those matters where an estimate of the range of possible loss is possible, management currently estimates the aggregate range of possible loss is $0 to $1.3 billion in excess of the accrued liability (if any) related to those matters. This estimated range of possible loss is based upon currently available information and is subject to significant judgment and a variety of assumptions, and known and unknown uncertainties. The matters underlying the estimated range will change from time to time, and actual results may vary significantly from the current estimate. Therefore, this estimated range of possible loss represents what the Corporation believes to be an estimate of possible loss only for certain matters meeting these criteria. It does not represent the Corporation's maximum loss exposure.

Information is provided below regarding the nature of all of these contingencies and, where specified, the amount of the claim associated with these loss contingencies. Based on current knowledge, management does not believe that loss contingencies arising from pending matters, including the matters described herein will have a material adverse effect on the consolidated financial position or liquidity of the Corporation. However, in light of the inherent uncertainties involved in these matters, some of which are beyond the Corporation's control, and the very large or indeterminate damages sought in some of these matters, an adverse outcome in one or more of these matters could be material to the Corporation's results of operations or liquidity for any particular reporting period.

Ambac Bond Insurance Litigation

Ambac Assurance Corporation and the Segregated Account of Ambac Assurance Corporation (together, Ambac) have filed five separate lawsuits against the Corporation and its subsidiaries relating to bond insurance policies Ambac provided on certain securitized pools of HELOCs, first-lien subprime home equity loans, fixed-rate second-lien mortgage loans and negative amortization pay option adjustable-rate mortgage loans. Ambac alleges that they have paid or will pay claims as a result of defaults in the underlying loans and assert that the defendants misrepresented the characteristics of the underlying loans and/or breached certain contractual representations and warranties regarding the underwriting and servicing of the loans. In those actions where the Corporation is named as a defendant, Ambac contends the Corporation is liable on various successor and vicarious liability theories.

Ambac v. Countrywide I

The Corporation, Countrywide and other Countrywide entities are named as defendants in an action filed on September 29, 2010 in New York Supreme Court. Ambac asserts claims for fraudulent inducement as well as breach of contract and seeks damages in excess of $2.2 billion, plus unspecified punitive damages.

On May 16, 2017, the First Department issued its decision on the parties' cross-appeals of the trial court's October 22, 2015 summary judgment rulings. Among other things, the First Department reversed on the applicability of New York insurance law to Ambac's common-law fraud claim, ruling that Ambac must prove all of the elements of its fraudulent inducement claim, including justifiable reliance and loss causation; reversed as to Ambac's remedy for its breach of contract claims, finding that Ambac's sole remedy is the repurchase protocol of cure, repurchases or substitution of any materially defective loan; affirmed the trial court's ruling that Ambac's compensatory damages claim was an impermissible request for rescissory damages; reversed the dismissal of Ambac's claim for reimbursement of claims payments, but affirmed the dismissal of Ambac's claim for reimbursements of attorneys' fees; and reversed as to the meaning of specific representations and warranties, ruling that disputed issues of fact precluded summary judgment. On July 25, 2017, the First Department granted Ambac's motion for leave to appeal to the Court of Appeals. That appeal is pending.

Ambac v. Countrywide II

On December 30, 2014, Ambac filed a complaint in New York Supreme Court against the same defendants, claiming fraudulent inducement against Countrywide, and successor and vicarious liability against the Corporation. Ambac claims damages in excess of $600 million plus punitive damages. On December 19, 2016, the Court granted in part and denied in part Countrywide's motion to dismiss the complaint.

Ambac v. Countrywide III

On December 30, 2014, Ambac filed an action in Wisconsin state court against Countrywide. The complaint seeks damages in excess of $350 million plus punitive damages. Countrywide has challenged the Wisconsin courts' jurisdiction over it. Following a ruling by the lower court that jurisdiction did not exist, the Wisconsin Court of Appeals reversed. On June 30, 2017, the Wisconsin Supreme Court reversed the decision of the Wisconsin Court of Appeals and held that Countrywide did not consent to the jurisdiction of the Wisconsin courts and remanded the case to the Court of Appeals for further consideration of whether specific jurisdiction exists. On December 14, 2017, the Wisconsin Court of Appeals ruled that specific jurisdiction over Countrywide does not exist for this matter. On January 16, 2018, Ambac asked the Wisconsin Supreme Court to review the decision of the Court of Appeals.

Ambac v. Countrywide IV

On July 21, 2015, Ambac filed an action in New York Supreme Court against Countrywide asserting the same claims for fraudulent inducement that Ambac asserted in *Ambac v. Countrywide III*. Ambac simultaneously moved to stay the action pending resolution of its appeal in *Ambac v. Countrywide III*. Countrywide moved to dismiss the complaint. On September 20, 2016, the Court granted Ambac's motion to stay the action pending resolution of *Ambac v. Countrywide III*.

Ambac v. First Franklin

On April 16, 2012, Ambac filed an action against BANA, First Franklin and various Merrill Lynch entities, including Merrill Lynch, Pierce, Fenner & Smith Incorporated (MLPF&S) in New York Supreme Court relating to guaranty insurance Ambac provided on a First Franklin securitization sponsored by Merrill Lynch. The complaint alleges fraudulent inducement and breach of contract, including breach of contract claims against BANA based upon its servicing of the loans in the securitization. The complaint alleges that Ambac has paid hundreds of millions of dollars in claims and has accrued and continues to accrue tens of millions of dollars in additional claims. Ambac seeks as damages the total claims it has paid and its projected future claims payment obligations, as well as specific performance of defendants' contractual repurchase obligations.

ATM Access Fee Litigation

On January 10, 2012, a putative consumer class action was filed in U.S. District Court for the District of Columbia against Visa, Inc., MasterCard, Inc. and several financial institutions, including the Corporation and BANA alleging that surcharges paid at financial institution ATMs are artificially inflated by Visa and MasterCard rules and regulations. The network rules are alleged to be the product of a conspiracy between Visa, MasterCard and financial institutions in violation of Section 1 of the Sherman Act. Plaintiffs seek compensatory and treble damages and injunctive relief.

On February 13, 2013, the District Court granted defendants' motion to dismiss. On August 4, 2015, the U.S. Court of Appeals for the District of Columbia Circuit vacated the District Court's decision and remanded the case to the District Court, where proceedings have resumed.

Deposit Insurance Assessment

On January 9, 2017, the FDIC filed suit against BANA in U.S. District Court for the District of Columbia alleging failure to pay a December 15, 2016 invoice for additional deposit insurance assessments and interest in the amount of $542 million for the quarters ending June 30, 2013 through December 31, 2014. On April 7, 2017, the FDIC amended its complaint to add a claim for additional deposit insurance and interest in the amount of $583 million for the quarters ending March 31, 2012 through March 31, 2013. The FDIC asserts these claims based on BANA's alleged underreporting of counterparty exposures that resulted in underpayment of assessments for those quarters. BANA disagrees with the FDIC's interpretation of the regulations as they existed during the relevant time period and is defending itself against the FDIC's claims. Pending final resolution, BANA has pledged security satisfactory to the FDIC related to the disputed additional assessment amounts.

Interchange and Related Litigation

In 2005, a group of merchants filed a series of putative class actions and individual actions directed at interchange fees associated with Visa and MasterCard payment card transactions. These actions, which were consolidated in the U.S. District Court for the Eastern District of New York under the caption *In re Payment Card Interchange Fee and Merchant Discount Anti-Trust Litigation* (Interchange), named Visa, MasterCard and several banks and bank holding companies, including the Corporation, as defendants. Plaintiffs allege that defendants conspired to fix the level of default interchange rates and that certain rules of Visa and MasterCard were unreasonable restraints of trade. Plaintiffs sought compensatory and treble damages and injunctive relief.

On October 19, 2012, defendants reached a proposed settlement that would have provided for, among other things, (i) payments by defendants to the class and individual plaintiffs totaling approximately $6.6 billion, allocated to each defendant based upon various loss-sharing agreements; (ii) distribution to class merchants of an amount equal to 10 basis points (bps) of default interchange across all Visa and MasterCard credit card transactions; and (iii) modifications to certain Visa and MasterCard rules. Although the District Court approved the class settlement agreement, the U.S. Court of Appeals for the Second Circuit reversed the decision on appeal. The Interchange class case was remanded to the District Court, where proceedings have resumed.

In addition to the class actions, a number of merchants filed individual actions against the defendants. The Corporation was named as a defendant in one such individual action. In addition, a number of individual actions were filed that do not name the Corporation as a defendant. As a result of various loss-sharing agreements, however, the Corporation remains liable for any settlement or judgment in these individual suits where it is not named as a defendant.

LIBOR, Other Reference Rates, Foreign Exchange (FX) and Bond Trading Matters

Government authorities in the U.S. and various international jurisdictions continue to conduct investigations, to make inquiries of, and to pursue proceedings against, a significant number of FX market participants, including the Corporation, regarding FX market participants' conduct and systems and controls. Government authorities also continue to conduct investigations concerning conduct and systems and controls of panel banks in connection with the setting of other reference rates as well as the trading of government, sovereign, supranational and agency bonds. The Corporation is responding to and cooperating with these proceedings and investigations.

In addition, the Corporation, BANA and certain Merrill Lynch entities have been named as defendants along with most of the other LIBOR panel banks in a number of individual and putative class actions by persons alleging they sustained losses on U.S. dollar LIBOR-based financial instruments as a result of collusion or manipulation by defendants regarding the setting of U.S. dollar LIBOR. Plaintiffs assert a variety of claims, including antitrust, Commodity Exchange Act (CEA), Racketeer Influenced and Corrupt Organizations (RICO), Securities Exchange Act of 1934 (Exchange Act), common law fraud and breach of contract claims, and seek compensatory, treble and punitive damages, and injunctive relief. All cases naming the Corporation and its affiliates relating to U.S. dollar LIBOR have been consolidated for pre-trial purposes in the U.S. District Court for the Southern District of New York.

In a series of rulings beginning in March 2013, the District Court dismissed antitrust, RICO, Exchange Act and certain state law claims, dismissed all manipulation claims based on alleged trader conduct as to the Corporation and BANA, and substantially limited the scope of CEA and various other claims. On May 23, 2016, the U.S. Court of Appeals for the Second Circuit reversed the District Court's dismissal of the antitrust claims and remanded for further proceedings in the District Court, and on December 20, 2016, the District Court again dismissed certain plaintiffs' antitrust claims in their entirety and substantially limited the scope of the remaining antitrust claims.

Certain antitrust, CEA and state law claims remain pending in the District Court against the Corporation, BANA and certain Merrill Lynch entities, and the Court is continuing to consider motions regarding them. Plaintiffs whose antitrust, Exchange Act and/or state law claims were previously dismissed by the District Court are pursuing appeals in the Second Circuit.

In addition, the Corporation, BANA and MLPF&S were named as defendants along with other FX market participants in a putative class action filed in the U.S. District Court for the Southern District of New York, in which plaintiffs allege that they sustained losses as a result of the defendants' alleged conspiracy to manipulate the prices of over-the-counter FX transactions and FX transactions on an exchange. Plaintiffs assert antitrust claims and claims for violations of the CEA and seek compensatory and treble damages, as well as declaratory and injunctive relief. On October 1, 2015, the Corporation, BANA and MLPF&S executed a final settlement agreement, in which they agreed to pay $187.5 million to settle the litigation. The settlement is subject to final District Court approval.

Mortgage-backed Securities Litigation

The Corporation and its affiliates, Countrywide entities and their affiliates, and Merrill Lynch entities and their affiliates have been named as defendants in cases relating to their various roles in MBS offerings and, in certain instances, have received claims for contractual indemnification related to the MBS securities actions. Plaintiffs in these cases generally sought unspecified compensatory and/or rescissory damages, unspecified costs and legal fees and generally alleged false and misleading statements. The indemnification claims include claims from underwriters of MBS that were issued by these entities, and from underwriters and issuers of MBS backed by loans originated by these entities.

Mortgage Repurchase Litigation

U.S. Bank - Harborview Repurchase Litigation

On August 29, 2011, U.S. Bank, National Association (U.S. Bank), as trustee for the HarborView Mortgage Loan Trust 2005-10 (the Trust), a mortgage pool backed by loans originated by Countrywide Home Loans, Inc. (CHL), filed a complaint in New York Supreme Court, in a case entitled U.S. Bank National Association, as Trustee for HarborView Mortgage Loan Trust, Series 2005-10 v. Countrywide Home Loans, Inc. (dba Bank of America Home Loans), Bank of America Corporation, Countrywide Financial Corporation, Bank of America, N.A. and NB Holdings Corporation, alleging breaches of representations and warranties. This litigation has been stayed since March 23, 2017, pending finalization of the settlement discussed below.

On December 5, 2016, the defendants and certain certificate-holders in the Trust agreed to settle the litigation in an amount not material to the Corporation, subject to acceptance by U.S. Bank. U.S. Bank has initiated a trust instruction proceeding in Minnesota state court relating to the proposed settlement, and that proceeding is ongoing.

U.S. Bank - SURF/OWNIT Repurchase Litigation

On August 29, 2014 and September 2, 2014, U.S. Bank, solely in its capacity as Trustee for seven securitization trusts (the Trusts), served seven summonses with notice commencing actions against First Franklin Financial Corporation, Merrill Lynch Mortgage Lending, Inc., Merrill Lynch Mortgage Investors, Inc. (MLMI) and Ownit Mortgage Solutions Inc. in New York Supreme Court. The summonses advance breach of contract claims alleging that defendants breached representations and warranties related to loans securitized in the Trusts. The summonses allege that defendants failed to repurchase breaching mortgage loans from the Trusts, and seek specific performance of defendants' alleged obligation to repurchase breaching loans, declaratory judgment, compensatory, rescissory and other damages, and indemnity.

On February 25, 2015 and March 11, 2015, U.S. Bank served complaints regarding four of the seven Trusts. On December 7, 2015, the Court granted in part and denied in part defendants' motion to dismiss the complaints. The Court dismissed claims for breach of representations and warranties against MLMI, dismissed U.S. Bank's claims for indemnity and attorneys' fees, and deferred a ruling regarding defendants' alleged failure to provide notice of alleged representations and warranties breaches, but upheld the complaints in all other respects. On December 28, 2016, U.S. Bank filed a complaint with respect to a fifth Trust.

NOTE 13 Shareholders' Equity

Common Stock

Declared Quarterly Cash Dividends on Common Stock [(1)]

Declaration Date	Record Date	Payment Date	Dividend Per Share
January 31, 2018	March 2, 2018	March 30, 2018	$ 0.12
October 25, 2017	December 1, 2017	December 29, 2017	0.12
July 26, 2017	September 1, 2017	September 29, 2017	0.12
April 26, 2017	June 2, 2017	June 30, 2017	0.075
January 26, 2017	March 3, 2017	March 31, 2017	0.075

(1) In 2017 and through February 22, 2018.

The following table summarizes common stock repurchases during 2017, 2016 and 2015.

Common Stock Repurchase Summary

(in millions)	2017	2016	2015
Total share repurchases, including CCAR capital plan repurchases	509	333	140
Purchase price of shares repurchased and retired [(1)]			
CCAR capital plan repurchases	$ 9,347	$ 4,312	$ 2,374
Other authorized repurchases	3,467	800	—
Total shares repurchased	$ 12,814	$ 5,112	$ 2,374

(1) Represents reductions to shareholders' equity due to common stock repurchases.

On June 28, 2017, following the Federal Reserve's non-objection to the Corporation's 2017 Comprehensive Capital Analysis and Review (CCAR) capital plan, the Board of Directors (Board) authorized the repurchase of $12.0 billion of common stock from July 1, 2017 through June 30, 2018, plus repurchases expected to be approximately $900 million to offset the effect of equity-based compensation plans during the same period. The common stock repurchase authorization includes both common stock and warrants. The Corporation's 2017 capital plan also included a request to increase the quarterly common stock dividend from $0.075 per share to $0.12 per share. On December 5, 2017, following approval by the Federal Reserve, the Board authorized the repurchase of an additional $5.0 billion of common stock through June 30, 2018.

In 2017, the Corporation repurchased $12.8 billion of common stock in connection with the 2017 and 2016 CCAR capital plans and pursuant to other repurchases approved by the Board and the Federal Reserve. Other authorized repurchases included $1.8 billion of common stock pursuant to the Corporation's plan announced on January 13, 2017 and $1.7 billion under the authorization announced on December 5, 2017.

At December 31, 2017, the Corporation had warrants outstanding and exercisable to purchase 122 million shares of its common stock expiring on October 28, 2018, and warrants outstanding and exercisable to purchase 143 million shares of common stock expiring on January 16, 2019. These warrants were originally issued in connection with preferred stock issuances to the U.S. Department of the Treasury in 2009 and 2008, and are listed on the New York Stock Exchange. The exercise price of the warrants expiring on January 16, 2019 is subject to continued adjustment each time the quarterly cash dividend is in excess of $0.01 per common share to compensate the holders of the warrants for dilution resulting from an increased dividend. The Corporation had cash dividends of $0.12 per share for the third and fourth quarters of 2017, and cash dividends of $0.075 per share for the first and second quarter of 2017, or $0.39 per share for the year, resulting in an adjustment to the exercise price of these warrants in each quarter. As a result of the Corporation's 2017 dividends of $0.39 per common share, the exercise price of the warrants expiring on January 16, 2019 was adjusted to $12.757 per share. The warrants expiring on October 28, 2018, which have an exercise price of $30.79 per share, also contain this anti-dilution provision except the adjustment is triggered only when the Corporation declares quarterly dividends at a level greater than $0.32 per common share.

On August 24, 2017, the holders of the Corporation's Series T 6% Non-cumulative preferred stock (Series T) exercised warrants to acquire 700 million shares of the Corporation's common stock. The carrying value of the preferred stock was $2.9 billion and, upon conversion, was recorded as additional paid-in capital. For more information, see *Note 15 – Earnings Per Common Share.*

In connection with employee stock plans, in 2017, the Corporation issued approximately 66 million shares and repurchased approximately 27 million shares of its common stock to satisfy tax withholding obligations. At December 31, 2017, the Corporation had reserved 869 million unissued shares of common stock for future issuances under employee stock plans, common stock warrants, convertible notes and preferred stock.

Preferred Stock

The cash dividends declared on preferred stock were $1.6 billion, $1.7 billion and $1.5 billion for 2017, 2016 and 2015, respectively. The following table presents a summary of perpetual preferred stock outstanding at December 31, 2017.

All series of preferred stock in the Preferred Stock Summary table have a par value of $0.01 per share, are not subject to the operation of a sinking fund, have no participation rights, and with the exception of the Series L Preferred Stock, are not convertible. The holders of the Series B Preferred Stock and Series 1 through 5 Preferred Stock have general voting rights and vote together with the common stock. The holders of the other series included in the table have no general voting rights. All outstanding series of preferred stock of the Corporation have preference over the Corporation's common stock with respect to the payment of dividends and distribution of the Corporation's assets in the event of a liquidation or dissolution. With the exception of the Series B, F, G and T Preferred Stock, if any dividend payable on these series is in arrears for three or more semi-annual or six or more quarterly dividend periods, as applicable (whether consecutive or not), the holders of these series and any other class or series of preferred stock ranking equally as to payment of dividends and upon which equivalent voting rights have been conferred and are exercisable (voting as a single class) will be entitled to vote for the election of two additional directors. These voting rights terminate when the Corporation has paid in full dividends on these series for at least two semi-annual or four quarterly dividend periods, as applicable, following the dividend arrearage.

The 7.25% Non-Cumulative Perpetual Convertible Preferred Stock, Series L (Series L Preferred Stock) does not have early redemption/call rights. Each share of the Series L Preferred Stock may be converted at any time, at the option of the holder, into 20 shares of the Corporation's common stock plus cash in lieu of fractional shares. The Corporation may cause some or all of the Series L Preferred Stock, at its option, at any time or from time to time, to be converted into shares of common stock at the then-applicable conversion rate if, for 20 trading days during any period of 30 consecutive trading days, the closing price of common stock exceeds 130 percent of the then-applicable conversion price of the Series L Preferred Stock. If a conversion of Series L Preferred Stock occurs at the option of the holder, subsequent to a dividend record date but prior to the dividend payment date, the Corporation will still pay any accrued dividends payable.

Preferred Stock Summary

(Dollars in millions, except as noted)

Series	Description	Initial Issuance Date	Total Shares Outstanding	Liquidation Preference per Share (in dollars)	Carrying Value [1]	Per Annum Dividend Rate	Redemption Period [2]
Series B	7% Cumulative Redeemable	June 1997	7,110	$ 100	$ 1	7.00%	n/a
Series D [3]	6.204% Non-Cumulative	September 2006	26,174	25,000	654	6.204%	On or after September 14, 2011
Series E [3]	Floating Rate Non-Cumulative	November 2006	12,691	25,000	317	3-mo. LIBOR + 35 bps [4]	On or after November 15, 2011
Series F	Floating Rate Non-Cumulative	March 2012	1,409	100,000	141	3-mo. LIBOR + 40 bps [4]	On or after March 15, 2012
Series G	Adjustable Rate Non-Cumulative	March 2012	4,926	100,000	493	3-mo. LIBOR + 40 bps [4]	On or after March 15, 2012
Series I [3]	6.625% Non-Cumulative	September 2007	14,584	25,000	365	6.625%	On or after October 1, 2017
Series K [5]	Fixed-to-Floating Rate Non-Cumulative	January 2008	61,773	25,000	1,544	8.00% to, but excluding, 1/30/18; 3-mo. LIBOR + 363 bps thereafter	On or after January 30, 2018
Series L	7.25% Non-Cumulative Perpetual Convertible	January 2008	3,080,182	1,000	3,080	7.25%	n/a
Series M [5]	Fixed-to-Floating Rate Non-Cumulative	April 2008	52,399	25,000	1,310	8.125% to, but excluding, 5/15/18; 3-mo. LIBOR + 364 bps thereafter	On or after May 15, 2018
Series T [6]	6% Non-cumulative	September 2011	354	100,000	35	6.00%	After May 7, 2019
Series U [5]	Fixed-to-Floating Rate Non-Cumulative	May 2013	40,000	25,000	1,000	5.2% to, but excluding, 6/1/23; 3-mo. LIBOR + 313.5 bps thereafter	On or after June 1, 2023
Series V [5]	Fixed-to-Floating Rate Non-Cumulative	June 2014	60,000	25,000	1,500	5.125% to, but excluding, 6/17/19; 3-mo. LIBOR + 338.7 bps thereafter	On or after June 17, 2019
Series W [3]	6.625% Non-Cumulative	September 2014	44,000	25,000	1,100	6.625%	On or after September 9, 2019
Series X [5]	Fixed-to-Floating Rate Non-Cumulative	September 2014	80,000	25,000	2,000	6.250% to, but excluding, 9/5/24; 3-mo. LIBOR + 370.5 bps thereafter	On or after September 5, 2024
Series Y [3]	6.500% Non-Cumulative	January 2015	44,000	25,000	1,100	6.500%	On or after January 27, 2020
Series Z [5]	Fixed-to-Floating Rate Non-Cumulative	October 2014	56,000	25,000	1,400	6.500% to, but excluding,10/23/24; 3-mo. LIBOR + 417.4 bps thereafter	On or after October 23, 2024
Series AA [5]	Fixed-to-Floating Rate Non-Cumulative	March 2015	76,000	25,000	1,900	6.100% to, but excluding, 3/17/25; 3-mo. LIBOR + 389.8 bps thereafter	On or after March 17, 2025
Series CC [3]	6.200% Non-Cumulative	January 2016	44,000	25,000	1,100	6.200%	On or after January 29, 2021
Series DD [5]	Fixed-to-Floating Rate Non-Cumulative	March 2016	40,000	25,000	1,000	6.300% to, but excluding, 3/10/26; 3-mo. LIBOR + 455.3 bps thereafter	On or after March 10, 2026
Series EE [3]	6.000% Non-Cumulative	April 2016	36,000	25,000	900	6.000%	On or after April 25, 2021
Series 1 [7]	Floating Rate Non-Cumulative	November 2004	3,275	30,000	98	3-mo. LIBOR + 75 bps [8]	On or after November 28, 2009
Series 2 [7]	Floating Rate Non-Cumulative	March 2005	9,967	30,000	299	3-mo. LIBOR + 65 bps [8]	On or after November 28, 2009
Series 3 [7]	6.375% Non-Cumulative	November 2005	21,773	30,000	653	6.375%	On or after November 28, 2010
Series 4 [7]	Floating Rate Non-Cumulative	November 2005	7,010	30,000	210	3-mo. LIBOR + 75 bps [4]	On or after November 28, 2010
Series 5 [7]	Floating Rate Non-Cumulative	March 2007	14,056	30,000	422	3-mo. LIBOR + 50 bps [4]	On or after May 21, 2012
Total			**3,837,683**		**$ 22,622**		

(1) Amounts shown are before third-party issuance costs and certain book value adjustments of $299 million.
(2) The Corporation may redeem series of preferred stock on or after the redemption date, in whole or in part, at its option, at the liquidation preference plus declared and unpaid dividends. Series B and Series L Preferred Stock do not have early redemption/call rights.
(3) Ownership is held in the form of depositary shares, each representing a 1/1,000th interest in a share of preferred stock, paying a quarterly cash dividend, if and when declared.
(4) Subject to 4.00% minimum rate per annum.
(5) Ownership is held in the form of depositary shares, each representing a 1/25th interest in a share of preferred stock, paying a semi-annual cash dividend, if and when declared, until the first redemption date at which time, it adjusts to a quarterly cash dividend, if and when declared, thereafter.
(6) Represents shares that were not surrendered when the holders of Series T preferred stock exercised warrants to acquire 700 million shares of common stock in the third quarter of 2017.
(7) Ownership is held in the form of depositary shares, each representing a 1/1,200th interest in a share of preferred stock, paying a quarterly cash dividend, if and when declared.
(8) Subject to 3.00% minimum rate per annum.
n/a = not applicable

NOTE 14 Accumulated Other Comprehensive Income (Loss)

The table below presents the changes in accumulated OCI after-tax for 2015, 2016 and 2017.

(Dollars in millions)	Debt Securities	Available-for-Sale Marketable Equity Securities	Debit Valuation Adjustments	Derivatives	Employee Benefit Plans	Foreign Currency [1]	Total
Balance, December 31, 2014	$ 1,641	$ 17	n/a	$ (1,661)	$ (3,350)	$ (669)	$ (4,022)
Cumulative adjustment for accounting change	—	—	$ (1,226)	—	—	—	(1,226)
Net change	(1,625)	45	615	584	394	(123)	(110)
Balance, December 31, 2015	$ 16	$ 62	$ (611)	$ (1,077)	$ (2,956)	$ (792)	$ (5,358)
Net change	(1,315)	(30)	(156)	182	(524)	(87)	(1,930)
Balance, December 31, 2016	$ (1,299)	$ 32	$ (767)	$ (895)	$ (3,480)	$ (879)	$ (7,288)
Net change	**91**	**(30)**	**(293)**	**64**	**288**	**86**	**206**
Balance, December 31, 2017	**$ (1,208)**	**$ 2**	**$ (1,060)**	**$ (831)**	**$ (3,192)**	**$ (793)**	**$ (7,082)**

The table below presents the net change in fair value recorded in accumulated OCI, net realized gains and losses reclassified into earnings and other changes for each component of OCI before- and after-tax for 2017, 2016 and 2015.

Changes in OCI Components Before- and After-tax

(Dollars in millions)	Before-tax	Tax effect	After-tax	Before-tax	Tax effect	After-tax	Before-tax	Tax effect	After-tax
	2017			2016			2015		
Debt securities:									
Net increase in fair value	**$ 202**	**$ 26**	**$ 228**	$ (1,645)	$ 622	$ (1,023)	$ (1,564)	$ 595	$ (969)
Reclassifications into earnings:									
Gains on sales of debt securities	**(255)**	**97**	**(158)**	(490)	186	(304)	(1,138)	432	(706)
Other income	**41**	**(20)**	**21**	19	(7)	12	81	(31)	50
Net realized gains reclassified into earnings	**(214)**	**77**	**(137)**	(471)	179	(292)	(1,057)	401	(656)
Net change	**(12)**	**103**	**91**	(2,116)	801	(1,315)	(2,621)	996	(1,625)
Available-for-sale marketable equity securities:									
Net increase (decrease) in fair value	**38**	**(12)**	**26**	(49)	19	(30)	72	(27)	45
Net realized gains reclassified into earnings [2]	**(90)**	**34**	**(56)**	—	—	—	—	—	—
Net change	**(52)**	**22**	**(30)**	(49)	19	(30)	72	(27)	45
Debit valuation adjustments:									
Net increase (decrease) in fair value	**(490)**	**171**	**(319)**	(271)	104	(167)	436	(166)	270
Net realized losses reclassified into earnings [2]	**42**	**(16)**	**26**	17	(6)	11	556	(211)	345
Net change	**(448)**	**155**	**(293)**	(254)	98	(156)	992	(377)	615
Derivatives:									
Net increase (decrease) in fair value	**(50)**	**1**	**(49)**	(299)	113	(186)	55	(22)	33
Reclassifications into earnings:									
Net interest income	**327**	**(122)**	**205**	553	(205)	348	974	(367)	607
Personnel	**(148)**	**56**	**(92)**	32	(12)	20	(91)	35	(56)
Net realized losses reclassified into earnings	**179**	**(66)**	**113**	585	(217)	368	883	(332)	551
Net change	**129**	**(65)**	**64**	286	(104)	182	938	(354)	584
Employee benefit plans:									
Net increase (decrease) in fair value	**223**	**(55)**	**168**	(921)	329	(592)	408	(121)	287
Reclassifications into earnings:									
Prior service cost	**4**	**(1)**	**3**	5	(2)	3	5	(2)	3
Net actuarial losses	**175**	**(60)**	**115**	92	(34)	58	164	(60)	104
Net realized losses reclassified into earnings [3]	**179**	**(61)**	**118**	97	(36)	61	169	(62)	107
Settlements, curtailments and other	**3**	**(1)**	**2**	15	(8)	7	1	(1)	—
Net change	**405**	**(117)**	**288**	(809)	285	(524)	578	(184)	394
Foreign currency:									
Net increase (decrease) in fair value	**(439)**	**430**	**(9)**	514	(601)	(87)	600	(723)	(123)
Net realized gains reclassified into earnings [1,2]	**(606)**	**701**	**95**	—	—	—	(38)	38	—
Net change	**(1,045)**	**1,131**	**86**	514	(601)	(87)	562	(685)	(123)
Total other comprehensive income (loss)	**$ (1,023)**	**$ 1,229**	**$ 206**	$ (2,428)	$ 498	$ (1,930)	$ 521	$ (631)	$ (110)

(1) During 2017, foreign currency included a pre-tax gain on derivatives and related income tax expense associated with the Corporation's net investment in its non-U.S. consumer credit card business, which was sold in 2017. The derivative gain was partially offset by a loss on the related foreign currency translation adjustment.
(2) Reclassifications of pre-tax AFS marketable equity securities, DVA and foreign currency are recorded in other income in the Consolidated Statement of Income.
(3) Reclassifications of pre-tax employee benefit plan costs are recorded in personnel expense in the Consolidated Statement of Income.
n/a = not applicable

NOTE 15 Earnings Per Common Share

The calculation of EPS and diluted EPS for 2017, 2016 and 2015 is presented below. For more information on the calculation of EPS, see *Note 1 – Summary of Significant Accounting Principles*.

(Dollars in millions, except per share information; shares in thousands)	2017	2016	2015
Earnings per common share			
Net income	**$ 18,232**	$ 17,822	$ 15,910
Preferred stock dividends	**(1,614)**	(1,682)	(1,483)
Net income applicable to common shareholders	**$ 16,618**	$ 16,140	$ 14,427
Average common shares issued and outstanding	**10,195,646**	10,284,147	10,462,282
Earnings per common share	**$ 1.63**	$ 1.57	$ 1.38
Diluted earnings per common share			
Net income applicable to common shareholders	**$ 16,618**	$ 16,140	$ 14,427
Add preferred stock dividends due to assumed conversions (1)	**186**	300	300
Net income allocated to common shareholders	**$ 16,804**	$ 16,440	$ 14,727
Average common shares issued and outstanding	**10,195,646**	10,284,147	10,462,282
Dilutive potential common shares (2)	**582,782**	762,659	773,948
Total diluted average common shares issued and outstanding	**10,778,428**	11,046,806	11,236,230
Diluted earnings per common share	**$ 1.56**	$ 1.49	$ 1.31

(1) Represents the Series T dividends under the "if-converted" method prior to conversion.
(2) Includes incremental dilutive shares from RSUs, restricted stock and warrants.

In connection with an investment in the Corporation's Series T preferred stock in 2011, the Series T holders also received warrants to purchase 700 million shares of the Corporation's common stock at an exercise price of $7.142857 per share. On August 24, 2017, the Series T holders exercised the warrants and acquired the 700 million shares of the Corporation's common stock using the Series T preferred stock as consideration for the exercise price, which increased common shares outstanding, but had no effect on diluted earnings per share as this conversion had been included in the Corporation's diluted earnings per share calculation under the applicable accounting guidance. The use of the Series T preferred stock as consideration represents a non-cash financing activity and, accordingly, is not reflected in the Consolidated Statement of Cash Flows. For 2016 and 2015, the 700 million average dilutive potential common shares were included in the diluted share count under the "if-converted" method.

For 2017, 2016 and 2015, 62 million average dilutive potential common shares associated with the Series L preferred stock were not included in the diluted share count because the result would have been antidilutive under the "if-converted" method. For 2017, 2016 and 2015, average options to purchase 21 million, 45 million and 66 million shares of common stock, respectively, were outstanding but not included in the computation of EPS because the result would have been antidilutive under the treasury stock method. For 2017, 2016 and 2015, average warrants to purchase 122 million shares of common stock were outstanding but not included in the computation of EPS because the result would have been antidilutive under the treasury stock method. For 2017, average warrants to purchase 143 million shares of common stock were included in the diluted EPS calculation under the treasury stock method compared to 150 million shares of common stock in both 2016 and 2015.

NOTE 16 Regulatory Requirements and Restrictions

The Federal Reserve, Office of the Comptroller of the Currency (OCC) and FDIC (collectively, U.S. banking regulators) jointly establish regulatory capital adequacy guidelines for U.S. banking organizations. As a financial holding company, the Corporation is subject to capital adequacy rules issued by the Federal Reserve. The Corporation's banking entity affiliates are subject to capital adequacy rules issued by the OCC.

Basel 3 updated the composition of capital and established a Common equity tier 1 capital ratio. Common equity tier 1 capital primarily includes common stock, retained earnings and accumulated OCI. Basel 3 revised minimum capital ratios and buffer requirements, added a supplementary leverage ratio, and addressed the adequately capitalized minimum requirements under the Prompt Corrective Action (PCA) framework. Finally, Basel 3 established two methods of calculating risk-weighted assets, the Standardized approach and the Advanced approaches.

The Corporation and its primary banking entity affiliate, BANA, are Advanced approaches institutions under Basel 3. As Advanced approaches institutions, the Corporation and its banking entity affiliates are required to report regulatory risk-based capital ratios and risk-weighted assets under both the Standardized and Advanced approaches. The approach that yields the lower ratio is used to assess capital adequacy, including under the PCA framework, and was the Advanced approaches method at December 31, 2017 and 2016.

The following table presents capital ratios and related information in accordance with Basel 3 Standardized and Advanced approaches – Transition as measured at December 31, 2017 and 2016 for the Corporation and BANA.

Regulatory Capital under Basel 3 – Transition [1]

(Dollars in millions, except as noted)	Bank of America Corporation Standardized Approach	Bank of America Corporation Advanced Approaches	Bank of America Corporation Regulatory Minimum [2]	Bank of America, N.A. Standardized Approach	Bank of America, N.A. Advanced Approaches	Bank of America, N.A. Regulatory Minimum [3]
	December 31, 2017					
Risk-based capital metrics:						
Common equity tier 1 capital	**$ 171,063**	**$ 171,063**		**$ 150,552**	**$ 150,552**	
Tier 1 capital	**191,496**	**191,496**		**150,552**	**150,552**	
Total capital [4]	**227,427**	**218,529**		**163,243**	**154,675**	
Risk-weighted assets (in billions) [5]	**1,434**	**1,449**		**1,201**	**1,007**	
Common equity tier 1 capital ratio	**11.9%**	**11.8%**	**7.25%**	**12.5%**	**14.9%**	**6.5%**
Tier 1 capital ratio	**13.4**	**13.2**	**8.75**	**12.5**	**14.9**	**8.0**
Total capital ratio	**15.9**	**15.1**	**10.75**	**13.6**	**15.4**	**10.0**
Leverage-based metrics:						
Adjusted quarterly average assets (in billions) [6]	**$ 2,224**	**$ 2,224**		**$ 1,672**	**$ 1,672**	
Tier 1 leverage ratio	**8.6%**	**8.6%**	**4.0**	**9.0%**	**9.0%**	**5.0**
	December 31, 2016					
Risk-based capital metrics:						
Common equity tier 1 capital	$ 168,866	$ 168,866		$ 149,755	$ 149,755	
Tier 1 capital	190,315	190,315		149,755	149,755	
Total capital [4]	228,187	218,981		163,471	154,697	
Risk-weighted assets (in billions)	1,399	1,530		1,176	1,045	
Common equity tier 1 capital ratio	12.1%	11.0%	5.875%	12.7%	14.3%	6.5%
Tier 1 capital ratio	13.6	12.4	7.375	12.7	14.3	8.0
Total capital ratio	16.3	14.3	9.375	13.9	14.8	10.0
Leverage-based metrics:						
Adjusted quarterly average assets (in billions) [6]	$ 2,131	$ 2,131		$ 1,611	$ 1,611	
Tier 1 leverage ratio	8.9%	8.9%	4.0	9.3%	9.3%	5.0

(1) Under the applicable bank regulatory rules, the Corporation is not required to and, accordingly, will not restate previously-filed regulatory capital metrics and ratios in connection with the change in accounting method as described in *Note 1 – Summary of Significant Accounting Principles* . Therefore, the December 31, 2016 amounts in the table are as originally reported. The cumulative impact of the change in accounting method resulted in an insignificant pro forma change to the Corporation's capital metrics and ratios.
(2) The December 31, 2017 and 2016 amounts include a transition capital conservation buffer of 1.25 percent and 0.625 percent and a transition global systemically important bank surcharge of 1.5 percent and 0.75 percent. The countercyclical capital buffer for both periods is zero.
(3) Percentage required to meet guidelines to be considered "well capitalized" under the PCA framework.
(4) Total capital under the Advanced approaches differs from the Standardized approach due to differences in the amount permitted in Tier 2 capital related to the qualifying allowance for credit losses.
(5) During the fourth quarter of 2017, the Corporation obtained approval from U.S. banking regulators to use its Internal Models Methodology to calculate counterparty credit risk-weighted assets for derivatives under the Advanced approaches.
(6) Reflects adjusted average total assets for the three months ended December 31, 2017 and 2016.

The capital adequacy rules issued by the U.S. banking regulators require institutions to meet the established minimums outlined in the table above. Failure to meet the minimum requirements can lead to certain mandatory and discretionary actions by regulators that could have a material adverse impact on the Corporation's financial position. At December 31, 2017 and 2016, the Corporation and its banking entity affiliates were "well capitalized."

Other Regulatory Matters

The Federal Reserve requires the Corporation's bank subsidiaries to maintain reserve requirements based on a percentage of certain deposit liabilities. The average daily reserve balance requirements, in excess of vault cash, maintained by the Corporation with the Federal Reserve were $8.9 billion and $7.7 billion for 2017 and 2016. At December 31, 2017 and 2016, the Corporation had cash and cash equivalents in the amount of $4.1 billion and $4.8 billion, and securities with a fair value of $17.3 billion and $14.6 billion that were segregated in compliance with securities regulations. In addition, at December 31, 2017 and 2016, the Corporation had cash deposited with clearing organizations of $11.9 billion and $10.2 billion primarily recorded in other assets on the Consolidated Balance Sheet.

The primary sources of funds for cash distributions by the Corporation to its shareholders are capital distributions received from its bank subsidiaries, BANA and Bank of America California, N.A. In 2017, the Corporation received dividends of $22.2 billion from BANA and $275 million from Bank of America California, N.A. The amount of dividends that a subsidiary bank may declare in a calendar year is the subsidiary bank's net profits for that year combined with its retained net profits for the preceding two years. Retained net profits, as defined by the OCC, consist of net income less dividends declared during the period. In 2018, BANA can declare and pay dividends of approximately $6.0 billion to the Corporation plus an additional amount equal to its retained net profits for 2018 up to the date of any such dividend declaration. Bank of America California, N.A. can pay dividends of $195 million in 2018 plus an additional amount equal to its retained net profits for 2018 up to the date of any such dividend declaration.

NOTE 17 Employee Benefit Plans

Pension and Postretirement Plans

The Corporation sponsors a qualified noncontributory trusteed pension plan (Qualified Pension Plan), a number of noncontributory nonqualified pension plans, and postretirement health and life plans that cover eligible employees. Non-U.S. pension plans sponsored by the Corporation vary based on the country and local practices.

The Qualified Pension Plan has a balance guarantee feature for account balances with participant-selected investments, applied at the time a benefit payment is made from the plan that effectively provides principal protection for participant balances transferred and certain compensation credits. The Corporation is responsible for funding any shortfall on the guarantee feature.

Benefits earned under the Qualified Pension Plan have been frozen. Thereafter, the cash balance accounts continue to earn investment credits or interest credits in accordance with the terms of the plan document.

The Corporation has an annuity contract that guarantees the payment of benefits vested under a terminated U.S. pension plan (Other Pension Plan). The Corporation, under a supplemental agreement, may be responsible for, or benefit from actual experience and investment performance of the annuity assets. The Corporation made no contribution under this agreement in 2017 or 2016. Contributions may be required in the future under this agreement.

The Corporation's noncontributory, nonqualified pension plans are unfunded and provide supplemental defined pension benefits to certain eligible employees.

In addition to retirement pension benefits, certain benefits-eligible employees may become eligible to continue participation as retirees in health care and/or life insurance plans sponsored by the Corporation. These plans are referred to as the Postretirement Health and Life Plans. During 2017, the Corporation established and funded a Voluntary Employees' Beneficiary Association trust in the amount of $300 million for the Postretirement Health and Life Plans.

The Pension and Postretirement Plans table summarizes the changes in the fair value of plan assets, changes in the projected benefit obligation (PBO), the funded status of both the accumulated benefit obligation (ABO) and the PBO, and the weighted-average assumptions used to determine benefit obligations for the pension plans and postretirement plans at December 31, 2017 and 2016. The estimate of the Corporation's PBO associated with these plans considers various actuarial assumptions, including assumptions for mortality rates and discount rates. The discount rate assumptions are derived from a cash flow matching technique that utilizes rates that are based on Aa-rated corporate bonds with cash flows that match estimated benefit payments of each of the plans. The decreases in the weighted-average discount rate in 2017 and 2016 resulted in increases to the PBO of approximately $1.1 billion and $1.3 billion at December 31, 2017 and 2016.

Pension and Postretirement Plans [1]

	Qualified Pension Plan		Non-U.S. Pension Plans		Nonqualified and Other Pension Plans		Postretirement Health and Life Plans	
(Dollars in millions)	**2017**	2016	**2017**	2016	**2017**	2016	**2017**	2016
Change in fair value of plan assets								
Fair value, January 1	**$ 18,239**	$ 17,962	**$ 2,789**	$ 2,738	**$ 2,744**	$ 2,805	**$ —**	$ —
Actual return on plan assets	**2,285**	1,075	**118**	541	**128**	74	**—**	—
Company contributions	**—**	—	**23**	48	**98**	104	**393**	104
Plan participant contributions	**—**	—	**1**	1	**—**	—	**125**	125
Settlements and curtailments	**—**	—	**(190)**	(20)	**—**	(6)	**—**	—
Benefits paid	**(816)**	(798)	**(54)**	(118)	**(246)**	(233)	**(230)**	(242)
Federal subsidy on benefits paid	**n/a**	n/a	**n/a**	n/a	**n/a**	n/a	**12**	13
Foreign currency exchange rate changes	**n/a**	n/a	**256**	(401)	**n/a**	n/a	**n/a**	n/a
Fair value, December 31	**$ 19,708**	$ 18,239	**$ 2,943**	$ 2,789	**$ 2,724**	$ 2,744	**$ 300**	$ —
Change in projected benefit obligation								
Projected benefit obligation, January 1	**$ 14,982**	$ 14,461	**$ 2,763**	$ 2,580	**$ 3,047**	$ 3,053	**$ 1,125**	$ 1,152
Service cost	**—**	—	**24**	25	**1**	—	**6**	7
Interest cost	**606**	634	**72**	86	**117**	127	**43**	47
Plan participant contributions	**—**	—	**1**	1	**—**	—	**125**	125
Plan amendments	**—**	—	**—**	—	**—**	—	**(19)**	—
Settlements and curtailments	**—**	—	**(200)**	(31)	**—**	(6)	**—**	—
Actuarial loss (gain)	**934**	685	**(26)**	535	**128**	106	**(7)**	25
Benefits paid	**(816)**	(798)	**(54)**	(118)	**(246)**	(233)	**(230)**	(242)
Federal subsidy on benefits paid	**n/a**	n/a	**n/a**	n/a	**n/a**	n/a	**12**	13
Foreign currency exchange rate changes	**n/a**	n/a	**234**	(315)	**n/a**	n/a	**1**	(2)
Projected benefit obligation, December 31	**$ 15,706**	$ 14,982	**$ 2,814**	$ 2,763	**$ 3,047**	$ 3,047	**$ 1,056**	$ 1,125
Amounts recognized on Consolidated Balance Sheet								
Other assets	**$ 4,002**	$ 3,257	**$ 610**	$ 475	**$ 730**	$ 760	**$ —**	$ —
Accrued expenses and other liabilities	**—**	—	**(481)**	(449)	**(1,053)**	(1,063)	**(756)**	(1,125)
Net amount recognized, December 31	**$ 4,002**	$ 3,257	**$ 129**	$ 26	**$ (323)**	$ (303)	**$ (756)**	$ (1,125)
Funded status, December 31								
Accumulated benefit obligation	**$ 15,706**	$ 14,982	**$ 2,731**	$ 2,645	**$ 3,046**	$ 3,046	**n/a**	n/a
Overfunded (unfunded) status of ABO	**4,002**	3,257	**212**	144	**(322)**	(302)	**n/a**	n/a
Provision for future salaries	**—**	—	**83**	118	**1**	1	**n/a**	n/a
Projected benefit obligation	**15,706**	14,982	**2,814**	2,763	**3,047**	3,047	**$ 1,056**	$ 1,125
Weighted-average assumptions, December 31								
Discount rate	**3.68%**	4.16%	**2.39%**	2.56%	**3.58%**	4.01%	**3.58%**	3.99%
Rate of compensation increase	**n/a**	n/a	**4.31**	4.51	**4.00**	4.00	**n/a**	n/a

[1] The measurement date for the Qualified Pension Plan, Non-U.S. Pension Plans, Nonqualified and Other Pension Plans, and Postretirement Health and Life Plans was December 31 of each year reported.

n/a = not applicable

The Corporation's estimate of its contributions to be made to the Non-U.S. Pension Plans, Nonqualified and Other Pension Plans, and Postretirement Health and Life Plans in 2018 is $17 million, $92 million and $19 million, respectively. The Corporation does not expect to make a contribution to the Qualified Pension Plan in 2018. It is the policy of the Corporation to fund no less than the minimum funding amount required by the Employee Retirement Income Security Act of 1974 (ERISA).

Pension Plans with ABO and PBO in excess of plan assets as of December 31, 2017 and 2016 are presented in the table below. For these plans, funding strategies vary due to legal requirements and local practices.

Plans with PBO and ABO in Excess of Plan Assets

	Non-U.S. Pension Plans		Nonqualified and Other Pension Plans	
(Dollars in millions)	**2017**	2016	**2017**	2016
PBO	**$ 671**	$ 626	**$ 1,054**	$ 1,065
ABO	**644**	594	**1,053**	1,064
Fair value of plan assets	**191**	179	**1**	1

Components of Net Periodic Benefit Cost

	Qualified Pension Plan			Non-U.S. Pension Plans		
(Dollars in millions)	**2017**	2016	2015	**2017**	2016	2015
Components of net periodic benefit cost (income)						
Service cost	**$ —**	$ —	$ —	**$ 24**	$ 25	$ 27
Interest cost	**606**	634	621	**72**	86	93
Expected return on plan assets	**(1,068)**	(1,038)	(1,045)	**(136)**	(123)	(133)
Amortization of net actuarial loss	**154**	139	170	**8**	6	6
Other	**—**	—	—	**(7)**	2	1
Net periodic benefit cost (income)	**$ (308)**	$ (265)	$ (254)	**$ (39)**	$ (4)	$ (6)
Weighted-average assumptions used to determine net cost for years ended December 31						
Discount rate	**4.16%**	4.51%	4.12%	**2.56%**	3.59%	3.56%
Expected return on plan assets	**6.00**	6.00	6.00	**4.73**	4.84	5.27
Rate of compensation increase	**n/a**	n/a	n/a	**4.51**	4.67	4.70

	Nonqualified and Other Pension Plans			Postretirement Health and Life Plans		
(Dollars in millions)	**2017**	2016	2015	**2017**	2016	2015
Components of net periodic benefit cost (income)						
Service cost	**$ 1**	$ —	$ —	**$ 6**	$ 7	$ 8
Interest cost	**117**	127	122	**43**	47	48
Expected return on plan assets	**(95)**	(101)	(92)	**—**	—	(1)
Amortization of net actuarial loss (gain)	**34**	25	34	**(21)**	(81)	(46)
Other	**—**	3	—	**4**	4	4
Net periodic benefit cost (income)	**$ 57**	$ 54	$ 64	**$ 32**	$ (23)	$ 13
Weighted-average assumptions used to determine net cost for years ended December 31						
Discount rate	**4.01%**	4.34%	3.80%	**3.99%**	4.32%	3.75%
Expected return on plan assets	**3.50**	3.66	3.26	**n/a**	n/a	6.00
Rate of compensation increase	**4.00**	4.00	4.00	**n/a**	n/a	n/a

n/a = not applicable

The asset valuation method used to calculate the expected return on plan assets component of net periodic benefit cost for the Qualified Pension Plan recognizes 60 percent of the prior year's market gains or losses at the next measurement date with the remaining 40 percent spread equally over the subsequent four years.

Gains and losses for all benefit plans except postretirement health care are recognized in accordance with the standard amortization provisions of the applicable accounting guidance. Net periodic postretirement health and life expense was determined using the "projected unit credit" actuarial method. For the Postretirement Health and Life Plans, 50 percent of the unrecognized gain or loss at the beginning of the fiscal year (or at subsequent remeasurement) is recognized on a level basis during the year.

Assumed health care cost trend rates affect the postretirement benefit obligation and benefit cost reported for the Postretirement Health and Life Plans. The assumed health care cost trend rate used to measure the expected cost of benefits covered by the Postretirement Health and Life Plans is 7.00 percent for 2018, reducing in steps to 5.00 percent in 2023 and later years. A one-percentage-point increase in assumed health care cost trend rates would have increased the service and interest costs, and the benefit obligation by $1 million and $26 million in 2017. A one-percentage-point decrease in assumed health care cost trend rates would have lowered the service and interest costs, and the benefit obligation by $1 million and $23 million in 2017.

The Corporation's net periodic benefit cost (income) recognized for the plans is sensitive to the discount rate and expected return on plan assets. With all other assumptions held constant, a 25 bp decline in the discount rate and expected return on plan assets assumptions would have resulted in an increase in the net periodic benefit cost for the Qualified Pension Plan of approximately $6 million and $45 million in 2017, and approximately $6 million and $47 million to be recognized in 2018. For the Non-U.S. Pension Plans, Nonqualified and Other Pension Plans, and Postretirement Health and Life Plans, a 25 bp decline in discount rates and expected return on assets would not have a significant impact on the net periodic benefit cost for 2017 and 2018.

Pretax Amounts Included in Accumulated OCI

	Qualified Pension Plan		Non-U.S. Pension Plans		Nonqualified and Other Pension Plans		Postretirement Health and Life Plans		Total	
(Dollars in millions)	**2017**	2016	**2017**	2016	**2017**	2016	**2017**	2016	**2017**	2016
Net actuarial loss (gain)	**$ 3,992**	$ 4,429	**$ 196**	$ 216	**$ 1,014**	$ 953	**$ (30)**	$ (44)	**$ 5,172**	$ 5,554
Prior service cost (credits)	**—**	—	**4**	4	**—**	—	**(11)**	12	**(7)**	16
Amounts recognized in accumulated OCI	**$ 3,992**	$ 4,429	**$ 200**	$ 220	**$ 1,014**	$ 953	**$ (41)**	$ (32)	**$ 5,165**	$ 5,570

Pretax Amounts Recognized in OCI

	Qualified Pension Plan		Non-U.S. Pension Plans		Nonqualified and Other Pension Plans		Postretirement Health and Life Plans		Total [1]	
(Dollars in millions)	**2017**	2016	**2017**	2016	**2017**	2016	**2017**	2016	**2017**	2016
Current year actuarial loss (gain)	**$ (283)**	$ 648	**$ (12)**	$ 100	**$ 95**	$ 133	**$ (7)**	$ 25	**$ (207)**	$ 906
Amortization of actuarial gain (loss)	**(154)**	(139)	**(8)**	(6)	**(34)**	(28)	**21**	81	**(175)**	(92)
Current year prior service cost (credit)	**—**	—	**—**	—	**—**	—	**(19)**	—	**(19)**	—
Amortization of prior service cost	**—**	—	**—**	(1)	**—**	—	**(4)**	(4)	**(4)**	(5)
Amounts recognized in OCI	**$ (437)**	$ 509	**$ (20)**	$ 93	**$ 61**	$ 105	**$ (9)**	$ 102	**$ (405)**	$ 809

[1] Pretax amounts to be amortized from accumulated OCI as period cost during 2018 are estimated to be $176 million.

Plan Assets

The Qualified Pension Plan has been established as a retirement vehicle for participants, and trusts have been established to secure benefits promised under the Qualified Pension Plan. The Corporation's policy is to invest the trust assets in a prudent manner for the exclusive purpose of providing benefits to participants and defraying reasonable expenses of administration. The Corporation's investment strategy is designed to provide a total return that, over the long term, increases the ratio of assets to liabilities. The strategy attempts to maximize the investment return on assets at a level of risk deemed appropriate by the Corporation while complying with ERISA and any applicable regulations and laws. The investment strategy utilizes asset allocation as a principal determinant for establishing the risk/return profile of the assets. Asset allocation ranges are established, periodically reviewed and adjusted as funding levels and liability characteristics change. Active and passive investment managers are employed to help enhance the risk/return profile of the assets. An additional aspect of the investment strategy used to minimize risk (part of the asset allocation plan) includes matching the exposure of participant-selected investment measures. No plan assets are expected to be returned to the Corporation during 2018.

The assets of the Non-U.S. Pension Plans are primarily attributable to a U.K. pension plan. This U.K. pension plan's assets are invested prudently so that the benefits promised to members are provided with consideration given to the nature and the duration of the plan's liabilities. The selected asset allocation strategy is designed to achieve a higher return than the lowest risk strategy.

The expected rate of return on plan assets assumption was developed through analysis of historical market returns, historical asset class volatility and correlations, current market conditions, anticipated future asset allocations, the funds' past experience, and expectations on potential future market returns. The expected return on plan assets assumption is determined using the calculated market-related value for the Qualified Pension Plan and the Other Pension Plan and the fair value for the Non-U.S. Pension Plans and Postretirement Health and Life Plans. The expected return on plan assets assumption represents a long-term average view of the performance of the assets in the Qualified Pension Plan, the Non-U.S. Pension Plans, the Other Pension Plan, and Postretirement Health and Life Plans, a return that may or may not be achieved during any one calendar year. The Other Pension Plan is invested solely in an annuity contract which is primarily invested in fixed-income securities structured such that asset maturities match the duration of the plan's obligations.

The target allocations for 2018 by asset category for the Qualified Pension Plan, Non-U.S. Pension Plans, and Nonqualified and Other Pension Plans are presented in the following table. Equity securities for the Qualified Pension Plan include common stock of the Corporation in the amounts of $261 million (1.33 percent of total plan assets) and $203 million (1.11 percent of total plan assets) at December 31, 2017 and 2016.

2018 Target Allocation

Asset Category	Percentage — Qualified Pension Plan	Percentage — Non-U.S. Pension Plans	Percentage — Nonqualified and Other Pension Plans
Equity securities	30-60	5-35	0-5
Debt securities	40-70	40-80	95-100
Real estate	0-10	0-15	0-5
Other	0-5	0-25	0-5

Fair Value Measurements

For more information on fair value measurements, including descriptions of Level 1, 2 and 3 of the fair value hierarchy and the valuation methods employed by the Corporation, see *Note 1 – Summary of Significant Accounting Principles* and *Note 20 – Fair Value Measurements*. Combined plan investment assets measured at fair value by level and in total at December 31, 2017 and 2016 are summarized in the Fair Value Measurements table.

Fair Value Measurements

(Dollars in millions)	Level 1	Level 2	Level 3	Total
	December 31, 2017			
Cash and short-term investments				
Money market and interest-bearing cash	**$ 2,190**	**$ —**	**$ —**	**$ 2,190**
Cash and cash equivalent commingled/mutual funds	**—**	**1,004**	**—**	**1,004**
Fixed income				
U.S. government and agency securities	**3,331**	**854**	**9**	**4,194**
Corporate debt securities	**—**	**2,417**	**—**	**2,417**
Asset-backed securities	**—**	**1,832**	**—**	**1,832**
Non-U.S. debt securities	**693**	**898**	**—**	**1,591**
Fixed income commingled/mutual funds	**775**	**1,676**	**—**	**2,451**
Equity				
Common and preferred equity securities	**5,833**	**—**	**—**	**5,833**
Equity commingled/mutual funds	**271**	**1,753**	**—**	**2,024**
Public real estate investment trusts	**138**	**—**	**—**	**138**
Real estate				
Private real estate	**—**	**—**	**93**	**93**
Real estate commingled/mutual funds	**—**	**13**	**831**	**844**
Limited partnerships	**—**	**155**	**85**	**240**
Other investments (1)	**101**	**649**	**74**	**824**
Total plan investment assets, at fair value	**$ 13,332**	**$ 11,251**	**$ 1,092**	**$ 25,675**
	December 31, 2016			
Cash and short-term investments				
Money market and interest-bearing cash	$ 776	$ —	$ —	$ 776
Cash and cash equivalent commingled/mutual funds	—	997	—	997
Fixed income				
U.S. government and agency securities	3,125	816	10	3,951
Corporate debt securities	—	1,892	—	1,892
Asset-backed securities	—	2,246	—	2,246
Non-U.S. debt securities	789	705	—	1,494
Fixed income commingled/mutual funds	778	1,503	—	2,281
Equity				
Common and preferred equity securities	6,120	—	—	6,120
Equity commingled/mutual funds	735	1,225	—	1,960
Public real estate investment trusts	145	—	—	145
Real estate				
Private real estate	—	—	150	150
Real estate commingled/mutual funds	—	12	748	760
Limited partnerships	—	132	38	170
Other investments (1)	15	732	83	830
Total plan investment assets, at fair value	$ 12,483	$ 10,260	$ 1,029	$ 23,772

(1) Other investments include interest rate swaps of $156 million and $257 million, participant loans of $20 million and $36 million, commodity and balanced funds of $451 million and $369 million and other various investments of $197 million and $168 million at December 31, 2017 and 2016.

The Level 3 Fair Value Measurements table presents a reconciliation of all plan investment assets measured at fair value using significant unobservable inputs (Level 3) during 2017, 2016 and 2015.

Level 3 Fair Value Measurements

(Dollars in millions)	Balance January 1	Actual Return on Plan Assets Still Held at the Reporting Date	Purchases, Sales and Settlements	Balance December 31
	2017			
Fixed income				
U.S. government and agency securities	**$ 10**	**$ —**	**$ (1)**	**$ 9**
Real estate				
Private real estate	**150**	**8**	**(65)**	**93**
Real estate commingled/mutual funds	**748**	**63**	**20**	**831**
Limited partnerships	**38**	**14**	**33**	**85**
Other investments	**83**	**5**	**(14)**	**74**
Total	**$ 1,029**	**$ 90**	**$ (27)**	**$ 1,092**
	2016			
Fixed income				
U.S. government and agency securities	$ 11	$ —	$ (1)	$ 10
Real estate				
Private real estate	144	1	5	150
Real estate commingled/mutual funds	731	21	(4)	748
Limited partnerships	49	(2)	(9)	38
Other investments	102	4	(23)	83
Total	$ 1,037	$ 24	$ (32)	$ 1,029
	2015			
Fixed income				
U.S. government and agency securities	$ 11	$ —	$ —	$ 11
Real estate				
Private real estate	127	14	3	144
Real estate commingled/mutual funds	632	37	62	731
Limited partnerships	65	(1)	(15)	49
Other investments	127	(5)	(20)	102
Total	$ 962	$ 45	$ 30	$ 1,037

Projected Benefit Payments

Benefit payments projected to be made from the Qualified Pension Plan, Non-U.S. Pension Plans, Nonqualified and Other Pension Plans, and Postretirement Health and Life Plans are presented in the table below.

Projected Benefit Payments

(Dollars in millions)	Qualified Pension Plan (1)	Non-U.S. Pension Plans (2)	Nonqualified and Other Pension Plans (2)	Postretirement Health and Life Plans (3)
2018	$ 927	$ 90	$ 237	$ 92
2019	912	98	239	87
2020	924	104	242	84
2021	912	112	239	81
2022	919	121	232	78
2023 - 2027	4,455	695	1,073	343

(1) Benefit payments expected to be made from the plan's assets.
(2) Benefit payments expected to be made from a combination of the plans' and the Corporation's assets.
(3) Benefit payments (net of retiree contributions) expected to be made from a combination of the plans' and the Corporation's assets.

Defined Contribution Plans

The Corporation maintains qualified and non-qualified defined contribution retirement plans. The Corporation recorded expense of $1.0 billion in each of 2017, 2016 and 2015 related to the qualified defined contribution plans. At December 31, 2017 and 2016, 218 million and 224 million shares of the Corporation's common stock were held by these plans. Payments to the plans for dividends on common stock were $86 million, $60 million and $48 million in 2017, 2016 and 2015, respectively.

Certain non-U.S. employees are covered under defined contribution pension plans that are separately administered in accordance with local laws.

NOTE 18 Stock-based Compensation Plans

The Corporation administers a number of equity compensation plans, with awards being granted predominantly from the Bank of America Key Employee Equity Plan (KEEP). Under this plan, 450 million shares of the Corporation's common stock are authorized to be used for grants of awards.

During 2017 and 2016, the Corporation granted 85 million and 163 million RSU awards to certain employees under the KEEP. Generally, one-third of the RSUs vest on each of the first three anniversaries of the grant date provided that the employee remains continuously employed with the Corporation during that time. The RSUs are authorized to settle predominantly in shares of common stock of the Corporation, and are expensed ratably over the vesting period, net of estimated forfeitures, for non-retirement eligible employees based on the grant-date fair value of the shares. Certain RSUs will be settled in cash or contain settlement provisions that subject these awards to variable accounting whereby compensation expense is adjusted to fair value based on changes in the share price of the Corporation's common stock up to the settlement date. Awards granted in years prior to 2016 were predominantly cash settled.

Effective October 1, 2017, the Corporation changed its accounting method for determining when stock-based compensation awards granted to retirement-eligible employees are deemed authorized, changing from the grant date to the beginning of the year preceding the grant date when the incentive award plans are generally approved. As a result, the estimated value of the awards is now expensed ratably over the year preceding the grant date. The compensation cost for all prior periods presented herein has been restated. For more information, see *Note 1 – Summary of Significant Accounting Principles*.

The compensation cost for the stock-based plans was $2.2 billion, $2.2 billion and $2.1 billion in 2017, 2016 and 2015 and the related income tax benefit was $829 million, $835 million and $792 million for 2017, 2016 and 2015, respectively.

Restricted Stock/Units

The table below presents the status at December 31, 2017 of the share-settled restricted stock/units and changes during 2017.

Stock-settled Restricted Stock/Units

	Shares/Units	Weighted-average Grant Date Fair Value
Outstanding at January 1, 2017	156,492,946	$ 11.99
Granted	81,555,447	24.58
Vested	(52,187,746)	12.01
Canceled	(6,587,404)	16.93
Outstanding at December 31, 2017	**179,273,243**	**17.53**

The table below presents the status at December 31, 2017 of the cash-settled RSUs granted under the KEEP and changes during 2017.

Cash-settled Restricted Units

	Units
Outstanding at January 1, 2017	121,235,489
Granted	3,105,988
Vested	(79,525,864)
Canceled	(2,605,987)
Outstanding at December 31, 2017	**42,209,626**

At December 31, 2017, there was an estimated $1.1 billion of total unrecognized compensation cost related to certain share-based compensation awards that is expected to be recognized over a period of up to four years, with a weighted-average period of 1.7 years. The total fair value of restricted stock vested in 2017, 2016 and 2015 was $1.3 billion, $358 million and $145 million, respectively. In 2017, 2016 and 2015, the amount of cash paid to settle equity-based awards for all equity compensation plans was $1.9 billion, $1.7 billion and $3.0 billion, respectively.

Stock Options

The table below presents the status of all option plans at December 31, 2017 and changes during 2017.

Stock Options

	Options	Weighted-average Exercise Price
Outstanding at January 1, 2017	42,357,282	$ 50.57
Forfeited	(25,769,108)	55.15
Outstanding at December 31, 2017	**16,588,174**	**43.44**

All options outstanding as of December 31, 2017 were vested and exercisable with a weighted-average remaining contractual term of less than one year and have no aggregate intrinsic value. No options have been granted since 2008.

NOTE 19 Income Taxes

On December 22, 2017, the President signed into law the Tax Act which made significant changes to federal income tax law including, among other things, reducing the statutory corporate income tax rate to 21 percent from 35 percent and changing the taxation of the Corporation's non-U.S. business activities. The estimated impact on net income was $2.9 billion, driven by $2.3 billion in income tax expense, largely from a lower valuation of certain U.S. deferred tax assets and liabilities. The change in the statutory tax rate also impacted the Corporation's tax-advantaged energy investments, resulting in a downward valuation adjustment of $946 million recorded in other income and a related income tax benefit of $347 million, which when netted against the $2.3 billion, resulted in a net impact on income tax expense of $1.9 billion. For more information on the Tax Act, see *Note 1 – Summary of Significant Accounting Principles*.

The components of income tax expense for 2017, 2016 and 2015 are presented in the table below.

Income Tax Expense

(Dollars in millions)	2017	2016	2015
Current income tax expense			
U.S. federal	**$ 1,310**	$ 302	$ 2,539
U.S. state and local	**557**	120	210
Non-U.S.	**939**	984	561
Total current expense	**2,806**	1,406	3,310
Deferred income tax expense			
U.S. federal	**7,238**	5,416	1,855
U.S. state and local	**835**	(279)	515
Non-U.S.	**102**	656	597
Total deferred expense	**8,175**	5,793	2,967
Total income tax expense	**$ 10,981**	$ 7,199	$ 6,277

Total income tax expense does not reflect the tax effects of items that are included in OCI each period. For more information, see *Note 14 – Accumulated Other Comprehensive Income (Loss)*. Other tax effects included in OCI each period resulted in a benefit of $1.2 billion and $498 million in 2017 and 2016 and an expense of $631 million in 2015. In addition, prior to 2017, total income tax expense does not reflect tax effects associated with the Corporation's employee stock plans which decreased common stock and additional paid-in capital $41 million and $44 million in 2016 and 2015.

Income tax expense for 2017, 2016 and 2015 varied from the amount computed by applying the statutory income tax rate to income before income taxes. A reconciliation of the expected U.S. federal income tax expense, calculated by applying the federal statutory tax rate of 35 percent, to the Corporation's actual income tax expense, and the effective tax rates for 2017, 2016 and 2015 are presented in the table below.

Reconciliation of Income Tax Expense

	2017		2016		2015	
(Dollars in millions)	Amount	Percent	Amount	Percent	Amount	Percent
Expected U.S. federal income tax expense	**$ 10,225**	**35.0%**	$ 8,757	35.0%	$ 7,765	35.0%
Increase (decrease) in taxes resulting from:						
State tax expense, net of federal benefit	**881**	**3.0**	420	1.7	438	2.0
Tax law changes (1)	**2,281**	**7.8**	348	1.4	289	1.3
Changes in prior-period UTBs, including interest	**133**	**0.5**	(328)	(1.3)	(52)	(0.2)
Nondeductible expenses	**97**	**0.3**	180	0.7	40	0.1
Affordable housing/energy/other credits	**(1,406)**	**(4.8)**	(1,203)	(4.8)	(1,087)	(4.9)
Tax-exempt income, including dividends	**(672)**	**(2.3)**	(562)	(2.2)	(539)	(2.4)
Non-U.S. tax rate differential	**(272)**	**(0.9)**	(307)	(1.2)	(559)	(2.5)
Share-based compensation	**(236)**	**(0.8)**	—	—	—	—
Other	**(50)**	**(0.2)**	(106)	(0.5)	(18)	(0.1)
Total income tax expense	**$ 10,981**	**37.6%**	$ 7,199	28.8%	$ 6,277	28.3%

(1) Amounts for 2016 and 2015 are for Non-U.S. tax law changes.

The reconciliation of the beginning unrecognized tax benefits (UTB) balance to the ending balance is presented in the following table.

Reconciliation of the Change in Unrecognized Tax Benefits

(Dollars in millions)	2017	2016	2015
Balance, January 1	**$ 875**	$ 1,095	$ 1,068
Increases related to positions taken during the current year	**292**	104	36
Increases related to positions taken during prior years	**750**	1,318	187
Decreases related to positions taken during prior years	**(122)**	(1,091)	(177)
Settlements	**(17)**	(503)	(1)
Expiration of statute of limitations	**(5)**	(48)	(18)
Balance, December 31	**$ 1,773**	$ 875	$ 1,095

At December 31, 2017, 2016 and 2015, the balance of the Corporation's UTBs which would, if recognized, affect the Corporation's effective tax rate was $1.2 billion, $0.6 billion and $0.7 billion, respectively. Included in the UTB balance are some items the recognition of which would not affect the effective tax rate, such as the tax effect of certain temporary differences, the portion of gross state UTBs that would be offset by the tax benefit of the associated federal deduction and the portion of gross non-U.S. UTBs that would be offset by tax reductions in other jurisdictions.

The Corporation files income tax returns in more than 100 state and non-U.S. jurisdictions each year. The IRS and other tax authorities in countries and states in which the Corporation has significant business operations examine tax returns periodically (continuously in some jurisdictions). The following table summarizes the status of examinations by major jurisdiction for the Corporation and various subsidiaries at December 31, 2017.

Tax Examination Status

	Years under Examination [1]	Status at December 31 2017
United States	2012 – 2013	IRS Appeals
United States	2014 – 2016	Field examination
New York	2015	Field examination
United Kingdom	2016	To begin in 2018

[1] All tax years subsequent to the years shown remain subject to examination.

It is reasonably possible that the UTB balance may decrease by as much as $0.4 billion during the next 12 months, since resolved items will be removed from the balance whether their resolution results in payment or recognition.

The Corporation recognized expense of $1 million and $56 million in 2017 and 2016 and a benefit of $82 million in 2015 for interest and penalties, net-of-tax, in income tax expense. At December 31, 2017 and 2016, the Corporation's accrual for interest and penalties that related to income taxes, net of taxes and remittances, was $185 million and $167 million.

Significant components of the Corporation's net deferred tax assets and liabilities at December 31, 2017 and 2016 are presented in the following table. Amounts at December 31, 2017 reflect appropriate revaluations as a result of the Tax Act's new 21 percent federal tax rate.

Deferred Tax Assets and Liabilities

	December 31	
(Dollars in millions)	**2017**	2016
Deferred tax assets		
Net operating loss carryforwards	**$ 8,506**	$ 9,199
Security, loan and debt valuations	**2,939**	4,726
Allowance for credit losses	**2,598**	4,362
Accrued expenses	**2,021**	3,016
Tax credit carryforwards	**1,793**	3,125
Employee compensation and retirement benefits	**1,705**	3,042
Available-for-sale securities	**510**	784
Other	**1,034**	1,599
Gross deferred tax assets	**21,106**	29,853
Valuation allowance	**(1,644)**	(1,117)
Total deferred tax assets, net of valuation allowance	**19,462**	28,736
Deferred tax liabilities		
Equipment lease financing	**2,492**	3,489
Tax credit partnerships	**734**	539
Intangibles	**670**	1,171
Fee income	**601**	847
Mortgage servicing rights	**349**	829
Long-term borrowings	**227**	355
Other	**1,764**	1,915
Gross deferred tax liabilities	**6,837**	9,145
Net deferred tax assets, net of valuation allowance	**$ 12,625**	$ 19,591

The table below summarizes the deferred tax assets and related valuation allowances recognized for the net operating loss (NOL) and tax credit carryforwards at December 31, 2017.

Net Operating Loss and Tax Credit Carryforward Deferred Tax Assets

(Dollars in millions)	Deferred Tax Asset	Valuation Allowance	Net Deferred Tax Asset	First Year Expiring
Net operating losses - U.S.	$ 868	$ —	**$ 868**	After 2027
Net operating losses - U.K. [1]	5,347	—	**5,347**	None
Net operating losses - other non-U.S.	657	(578)	**79**	Various
Net operating losses - U.S. states [2]	1,634	(584)	**1,050**	Various
General business credits	1,721	—	**1,721**	After 2036
Foreign tax credits	72	(72)	**—**	n/a

[1] Represents U.K. broker/dealer net operating losses which may be carried forward indefinitely.
[2] The net operating losses and related valuation allowances for U.S. states before considering the benefit of federal deductions were $2.1 billion and $739 million.
n/a = not applicable

Management concluded that no valuation allowance was necessary to reduce the deferred tax assets related to the U.K. NOL carryforwards and U.S. NOL and general business credit carryforwards since estimated future taxable income will be sufficient to utilize these assets prior to their expiration. The majority of the Corporation's U.K. net deferred tax assets, which consist primarily of NOLs, are expected to be realized by certain subsidiaries over an extended number of years. Management's conclusion is supported by financial results, profit forecasts for the relevant entities and the indefinite period to carry forward NOLs. However, a material change in those estimates could lead management to reassess its U.K. valuation allowance conclusions.

At December 31, 2017, U.S. federal income taxes had not been provided on approximately $5 billion of temporary differences associated with investments in non-U.S. subsidiaries that are essentially permanent in duration. If the Corporation were to record the associated deferred tax liability, the amount would be approximately $1 billion.

NOTE 20 Fair Value Measurements

Under applicable accounting standards, fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. The Corporation determines the fair values of its financial instruments under applicable accounting standards that require an entity to maximize the use of observable inputs and minimize the use of unobservable inputs. The Corporation categorizes its financial instruments into three levels based on the established fair value hierarchy. The Corporation conducts a review of its fair value hierarchy classifications on a quarterly basis. Transfers into or out of fair value hierarchy classifications are made if the significant inputs used in the financial models measuring the fair values of the assets and liabilities became unobservable or observable in the current marketplace. These transfers are considered to be effective as of the beginning of the quarter in which they occur. For more information regarding the fair value hierarchy and how the Corporation measures fair value, see *Note 1 – Summary of Significant Accounting Principles*. The Corporation accounts for certain financial instruments under the fair value option. For more information, see *Note 21 – Fair Value Option*.

Valuation Processes and Techniques

The Corporation has various processes and controls in place so that fair value is reasonably estimated. A model validation policy governs the use and control of valuation models used to estimate fair value. This policy requires review and approval of models by personnel who are independent of the front office and periodic reassessments of models so that they are continuing to perform as designed. In addition, detailed reviews of trading gains and losses are conducted on a daily basis by personnel who are independent of the front office. A price verification group, which is also independent of the front office, utilizes available market information including executed trades, market prices and market-observable valuation model inputs so that fair values are reasonably estimated. The Corporation performs due diligence procedures over third-party pricing service providers in order to support their use in the valuation process. Where market information is not available to support internal valuations, independent reviews of the valuations are performed and any material exposures are escalated through a management review process.

While the Corporation believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different estimate of fair value at the reporting date.

During 2017, there were no changes to valuation approaches or techniques that had, or are expected to have, a material impact on the Corporation's consolidated financial position or results of operations.

Trading Account Assets and Liabilities and Debt Securities

The fair values of trading account assets and liabilities are primarily based on actively traded markets where prices are based on either direct market quotes or observed transactions. The fair values of debt securities are generally based on quoted market prices or market prices for similar assets. Liquidity is a significant factor in the determination of the fair values of trading account assets and liabilities and debt securities. Market price quotes may not be readily available for some positions such as positions within a market sector where trading activity has slowed significantly or ceased. Some of these instruments are valued using a discounted cash flow model, which estimates the fair value of the securities using internal credit risk, interest rate and prepayment risk models that incorporate management's best estimate of current key assumptions such as default rates, loss severity and prepayment rates. Principal and interest cash flows are discounted using an observable discount rate for similar instruments with adjustments that management believes a market participant would consider in determining fair value for the specific security. Other instruments are valued using a net asset value approach which considers the value of the underlying securities. Underlying assets are valued using external pricing services, where available, or matrix pricing based on the vintages and ratings. Situations of illiquidity generally are triggered by the market's perception of credit uncertainty regarding a single company or a specific market sector. In these instances, fair value is determined based on limited available market information and other factors, principally from reviewing the issuer's financial statements and changes in credit ratings made by one or more rating agencies.

Derivative Assets and Liabilities

The fair values of derivative assets and liabilities traded in the OTC market are determined using quantitative models that utilize multiple market inputs including interest rates, prices and indices to generate continuous yield or pricing curves and volatility factors to value the position. The majority of market inputs are actively quoted and can be validated through external sources, including brokers, market transactions and third-party pricing services. When third-party pricing services are used, the methods and assumptions are reviewed by the Corporation. Estimation risk is greater for derivative asset and liability positions that are either option-based or have longer maturity dates where observable market inputs are less readily available, or are unobservable, in which case, quantitative-based extrapolations of rate, price or index scenarios are used in determining fair values. The fair values of derivative assets and liabilities include adjustments for market liquidity, counterparty credit quality and other instrument-specific factors, where appropriate. In addition, the Corporation incorporates within its fair value measurements of OTC derivatives a valuation adjustment to reflect the credit risk associated with the net position. Positions are netted by counterparty, and fair value for net long exposures is adjusted for counterparty credit risk while the fair value for net short exposures is adjusted for the Corporation's own credit risk. The Corporation also incorporates FVA within its fair value measurements to include funding costs on uncollateralized derivatives and derivatives where the Corporation is not permitted to use the collateral it receives. An estimate of severity of loss is also used in the determination of fair value, primarily based on market data.

Loans and Loan Commitments

The fair values of loans and loan commitments are based on market prices, where available, or discounted cash flow analyses using market-based credit spreads of comparable debt instruments or credit derivatives of the specific borrower or comparable borrowers. Results of discounted cash flow analyses may be adjusted, as appropriate, to reflect other market conditions or the perceived credit risk of the borrower.

Mortgage Servicing Rights

The fair values of MSRs are primarily determined using an option-adjusted spread (OAS) valuation approach, which factors in prepayment risk to determine the fair value of MSRs. This approach consists of projecting servicing cash flows under multiple interest rate scenarios and discounting these cash flows using risk-adjusted discount rates.

Loans Held-for-sale

The fair values of LHFS are based on quoted market prices, where available, or are determined by discounting estimated cash flows using interest rates approximating the Corporation's current origination rates for similar loans adjusted to reflect the inherent credit risk. The borrower-specific credit risk is embedded within the quoted market prices or is implied by considering loan performance when selecting comparables.

Short-term Borrowings and Long-term Debt

The Corporation issues structured liabilities that have coupons or repayment terms linked to the performance of debt or equity securities, indices, currencies or commodities. The fair values of these structured liabilities are estimated using quantitative models for the combined derivative and debt portions of the notes. These models incorporate observable and, in some instances, unobservable inputs including security prices, interest rate yield curves, option volatility, currency, commodity or equity rates and correlations among these inputs. The Corporation also considers the impact of its own credit spread in determining the discount rate used to value these liabilities. The credit spread is determined by reference to observable spreads in the secondary bond market.

Securities Financing Agreements

The fair values of certain reverse repurchase agreements, repurchase agreements and securities borrowed transactions are determined using quantitative models, including discounted cash flow models that require the use of multiple market inputs including interest rates and spreads to generate continuous yield or pricing curves, and volatility factors. The majority of market inputs are actively quoted and can be validated through external sources, including brokers, market transactions and third-party pricing services.

Deposits

The fair values of deposits are determined using quantitative models, including discounted cash flow models that require the use of multiple market inputs including interest rates and spreads to generate continuous yield or pricing curves, and volatility factors. The majority of market inputs are actively quoted and can be validated through external sources, including brokers, market transactions and third-party pricing services. The Corporation considers the impact of its own credit spread in the valuation of these liabilities. The credit risk is determined by reference to observable credit spreads in the secondary cash market.

Asset-backed Secured Financings

The fair values of asset-backed secured financings are based on external broker bids, where available, or are determined by discounting estimated cash flows using interest rates approximating the Corporation's current origination rates for similar loans adjusted to reflect the inherent credit risk.

Recurring Fair Value

Assets and liabilities carried at fair value on a recurring basis at December 31, 2017 and 2016, including financial instruments which the Corporation accounts for under the fair value option, are summarized in the following tables.

	December 31, 2017				
	Fair Value Measurements				
(Dollars in millions)	Level 1	Level 2	Level 3	Netting Adjustments (1)	Assets/Liabilities at Fair Value
Assets					
Federal funds sold and securities borrowed or purchased under agreements to resell	$ —	$ 52,906	$ —	$ —	$ 52,906
Trading account assets:					
U.S. Treasury and agency securities (2, 3)	38,720	1,922	—	—	40,642
Corporate securities, trading loans and other	—	28,714	1,864	—	30,578
Equity securities (3)	60,747	23,958	235	—	84,940
Non-U.S. sovereign debt (3)	6,545	15,839	556	—	22,940
Mortgage trading loans, MBS and ABS:					
U.S. government-sponsored agency guaranteed (2)	—	20,586	—	—	20,586
Mortgage trading loans, ABS and other MBS	—	8,174	1,498	—	9,672
Total trading account assets (4)	106,012	99,193	4,153	—	209,358
Derivative assets (3, 5)	6,305	341,178	4,067	(313,788)	37,762
AFS debt securities:					
U.S. Treasury and agency securities	51,915	1,608	—	—	53,523
Mortgage-backed securities:					
Agency	—	192,929	—	—	192,929
Agency-collateralized mortgage obligations	—	6,804	—	—	6,804
Non-agency residential	—	2,669	—	—	2,669
Commercial	—	13,684	—	—	13,684
Non-U.S. securities	772	5,880	25	—	6,677
Other taxable securities	—	5,261	509	—	5,770
Tax-exempt securities	—	20,106	469	—	20,575
Total AFS debt securities	52,687	248,941	1,003	—	302,631
Other debt securities carried at fair value:					
Mortgage-backed securities:					
Agency-collateralized mortgage obligations	—	5	—	—	5
Non-agency residential	—	2,764	—	—	2,764
Non-U.S. securities	8,191	1,297	—	—	9,488
Other taxable securities	—	229	—	—	229
Total other debt securities carried at fair value	8,191	4,295	—	—	12,486
Loans and leases	—	5,139	571	—	5,710
Mortgage servicing rights (6)	—	—	2,302	—	2,302
Loans held-for-sale	—	1,466	690	—	2,156
Other assets	19,367	789	123	—	20,279
Total assets	$ 192,562	$ 753,907	$ 12,909	$ (313,788)	$ 645,590
Liabilities					
Interest-bearing deposits in U.S. offices	$ —	$ 449	$ —	$ —	$ 449
Federal funds purchased and securities loaned or sold under agreements to repurchase	—	36,182	—	—	36,182
Trading account liabilities:					
U.S. Treasury and agency securities	17,266	734	—	—	18,000
Equity securities (3)	33,019	3,885	—	—	36,904
Non-U.S. sovereign debt (3)	11,976	7,382	—	—	19,358
Corporate securities and other	—	6,901	24	—	6,925
Total trading account liabilities	62,261	18,902	24	—	81,187
Derivative liabilities (3, 5)	6,029	334,261	5,781	(311,771)	34,300
Short-term borrowings	—	1,494	—	—	1,494
Accrued expenses and other liabilities	21,887	945	8	—	22,840
Long-term debt	—	29,923	1,863	—	31,786
Total liabilities	$ 90,177	$ 422,156	$ 7,676	$ (311,771)	$ 208,238

(1) Amounts represent the impact of legally enforceable master netting agreements and also cash collateral held or placed with the same counterparties.

(2) Includes $21.3 billion of GSE obligations.

(3) During 2017, for trading account assets and liabilities, $1.1 billion of U.S. Treasury and agency securities assets, $5.3 billion of equity securities assets, $3.1 billion of equity securities liabilities, $3.3 billion of non-U.S. sovereign debt assets and $1.5 billion of non-U.S. sovereign debt liabilities were transferred from Level 1 to Level 2 based on the liquidity of the positions. In addition, $14.1 billion of equity securities assets and $4.3 billion of equity securities liabilities were transferred from Level 2 to Level 1. Also in 2017, $4.2 billion of derivative assets and $3.0 billion of derivative liabilities were transferred from Level 1 to Level 2 and $758 million of derivative assets and $608 million of derivative liabilities were transferred from Level 2 to Level 1 based on the observability of inputs used to measure fair value. For further disaggregation of derivative assets and liabilities, see *Note 2 – Derivatives*.

(4) Includes securities with a fair value of $16.8 billion that were segregated in compliance with securities regulations or deposited with clearing organizations. This amount is included in the parenthetical disclosure on the Consolidated Balance Sheet.

(5) Derivative assets and liabilities reflect the effects of contractual amendments by two central clearing counterparties to legally re-characterize daily cash variation margin from collateral, which secures an outstanding exposure, to settlement, which discharges an outstanding exposure. One of these central clearing counterparties amended its governing documents, which became effective in January 2017. In addition, the Corporation elected to transfer its existing positions to the settlement platform for the other central clearing counterparty in September 2017.

(6) MSRs include the $1.7 billion core MSR portfolio held in *Consumer Banking*, the $135 million non-core MSR portfolio held in *All Other* and the $510 million non-U.S. MSR portfolio held in *Global Markets*.

	December 31, 2016				
	Fair Value Measurements				
(Dollars in millions)	Level 1	Level 2	Level 3	Netting Adjustments (1)	Assets/Liabilities at Fair Value
Assets					
Federal funds sold and securities borrowed or purchased under agreements to resell	$ —	$ 49,750	$ —	$ —	$ 49,750
Trading account assets:					
U.S. Treasury and agency securities (2)	34,587	1,927	—	—	36,514
Corporate securities, trading loans and other	171	22,861	2,777	—	25,809
Equity securities	50,169	21,601	281	—	72,051
Non-U.S. sovereign debt	9,578	9,940	510	—	20,028
Mortgage trading loans, MBS and ABS:					
U.S. government-sponsored agency guaranteed (2)	—	15,799	—	—	15,799
Mortgage trading loans, ABS and other MBS	—	8,797	1,211	—	10,008
Total trading account assets (3)	94,505	80,925	4,779	—	180,209
Derivative assets (4)	7,337	619,848	3,931	(588,604)	42,512
AFS debt securities:					
U.S. Treasury and agency securities	46,787	1,465	—	—	48,252
Mortgage-backed securities:					
Agency	—	189,486	—	—	189,486
Agency-collateralized mortgage obligations	—	8,330	—	—	8,330
Non-agency residential	—	2,013	—	—	2,013
Commercial	—	12,322	—	—	12,322
Non-U.S. securities	1,934	3,600	229	—	5,763
Other taxable securities	—	10,020	594	—	10,614
Tax-exempt securities	—	16,618	542	—	17,160
Total AFS debt securities	48,721	243,854	1,365	—	293,940
Other debt securities carried at fair value:					
Mortgage-backed securities:					
Agency-collateralized mortgage obligations	—	5	—	—	5
Non-agency residential	—	3,114	25	—	3,139
Non-U.S. securities	15,109	1,227	—	—	16,336
Other taxable securities	—	240	—	—	240
Total other debt securities carried at fair value	15,109	4,586	25	—	19,720
Loans and leases	—	6,365	720	—	7,085
Mortgage servicing rights (5)	—	—	2,747	—	2,747
Loans held-for-sale	—	3,370	656	—	4,026
Debt securities in assets of business held for sale	619	—	—	—	619
Other assets	11,824	1,739	239	—	13,802
Total assets	$ 178,115	$ 1,010,437	$ 14,462	$ (588,604)	$ 614,410
Liabilities					
Interest-bearing deposits in U.S. offices	$ —	$ 731	$ —	$ —	$ 731
Federal funds purchased and securities loaned or sold under agreements to repurchase	—	35,407	359	—	35,766
Trading account liabilities:					
U.S. Treasury and agency securities	15,854	197	—	—	16,051
Equity securities	25,884	3,014	—	—	28,898
Non-U.S. sovereign debt	9,409	2,103	—	—	11,512
Corporate securities and other	163	6,380	27	—	6,570
Total trading account liabilities	51,310	11,694	27	—	63,031
Derivative liabilities (4)	7,173	615,896	5,244	(588,833)	39,480
Short-term borrowings	—	2,024	—	—	2,024
Accrued expenses and other liabilities	12,978	1,643	9	—	14,630
Long-term debt	—	28,523	1,514	—	30,037
Total liabilities	$ 71,461	$ 695,918	$ 7,153	$ (588,833)	$ 185,699

(1) Amounts represent the impact of legally enforceable master netting agreements and also cash collateral held or placed with the same counterparties.
(2) Includes $17.5 billion of GSE obligations.
(3) Includes securities with a fair value of $14.6 billion that were segregated in compliance with securities regulations or deposited with clearing organizations. This amount is included in the parenthetical disclosure on the Consolidated Balance Sheet.
(4) During 2016, $2.3 billion of derivative assets and $2.4 billion of derivative liabilities were transferred from Level 1 to Level 2 and $2.0 billion of derivative assets and $1.8 billion of derivative liabilities were transferred from Level 2 to Level 1 based on the observability of inputs used to measure fair value. For further disaggregation of derivative assets and liabilities, see *Note 2 – Derivatives.*
(5) MSRs include the $2.1 billion core MSR portfolio held in *Consumer Banking*, the $212 million non-core MSR portfolio held in *All Other* and the $469 million non-U.S. MSR portfolio held in *Global Markets.*

The following tables present a reconciliation of all assets and liabilities measured at fair value on a recurring basis using significant unobservable inputs (Level 3) during 2017, 2016 and 2015, including net realized and unrealized gains (losses) included in earnings and accumulated OCI.

Level 3 – Fair Value Measurements in 2017 (1)

(Dollars in millions)	Balance January 1 2017	Total Realized/ Unrealized Gains/ (Losses) (2)	Gains/ (Losses) in OCI (3)	Gross Purchases	Gross Sales	Gross Issuances	Gross Settlements	Gross Transfers into Level 3	Gross Transfers out of Level 3	Balance December 31 2017	Change in Unrealized Gains/ (Losses) Related to Financial Instruments Still Held (2)
Trading account assets:											
Corporate securities, trading loans and other	$ 2,777	$ 229	$ —	$ 547	$ (702)	$ 5	$ (666)	$ 728	$(1,054)	$ 1,864	$ 2
Equity securities	281	18	—	55	(70)	—	(10)	146	(185)	235	(1)
Non-U.S. sovereign debt	510	74	(8)	53	(59)	—	(73)	72	(13)	556	70
Mortgage trading loans, ABS and other MBS	1,211	165	(2)	1,210	(990)	—	(233)	218	(81)	1,498	72
Total trading account assets	4,779	486	(10)	1,865	(1,821)	5	(982)	1,164	(1,333)	4,153	143
Net derivative assets (4)	(1,313)	(984)	—	664	(979)	—	949	48	(99)	(1,714)	(409)
AFS debt securities:											
Non-U.S. securities	229	2	16	49	—	—	(271)	—	—	25	—
Other taxable securities	594	4	8	5	—	—	(42)	34	(94)	509	—
Tax-exempt securities	542	1	3	14	(70)	—	(11)	35	(45)	469	—
Total AFS debt securities	1,365	7	27	68	(70)	—	(324)	69	(139)	1,003	—
Other debt securities carried at fair value – Non-agency residential MBS	25	(1)	—	—	(21)	—	(3)	—	—	—	—
Loans and leases (5, 6)	720	15	—	3	(34)	—	(126)	—	(7)	571	11
Mortgage servicing rights (6, 7)	2,747	70	—	—	(25)	258	(748)	—	—	2,302	(248)
Loans held-for-sale (5)	656	100	(3)	3	(189)	—	(346)	501	(32)	690	14
Other assets	239	74	(57)	2	(189)	—	(10)	64	—	123	22
Federal funds purchased and securities loaned or sold under agreements to repurchase (5)	(359)	(5)	—	—	—	(12)	171	(58)	263	—	—
Trading account liabilities – Corporate securities and other	(27)	14	—	8	(17)	(2)	—	—	—	(24)	2
Accrued expenses and other liabilities (5)	(9)	—	—	—	—	—	1	—	—	(8)	—
Long-term debt (5)	(1,514)	(135)	(31)	84	—	(288)	514	(711)	218	(1,863)	(196)

(1) Assets (liabilities). For assets, increase (decrease) to Level 3 and for liabilities, (increase) decrease to Level 3.
(2) Includes gains/losses reported in earnings in the following income statement line items: Trading account assets/liabilities - primarily trading account profits; Net derivative assets - primarily trading account profits and mortgage banking income; MSRs - primarily mortgage banking income; Long-term debt - primarily trading account profits. For MSRs, the amounts reflect the changes in modeled MSR fair value due to observed changes in interest rates, volatility, spreads and the shape of the forward swap curve, and periodic adjustments to the valuation model to reflect changes in the modeled relationships between inputs and projected cash flows, as well as changes in cash flow assumptions including cost to service.
(3) Includes unrealized gains/losses in OCI on AFS securities, foreign currency translation adjustments and the impact of changes in the Corporation's credit spreads on long-term debt accounted for under the fair value option. For more information, see *Note 1 – Summary of Significant Accounting Principles.*
(4) Net derivatives include derivative assets of $4.1 billion and derivative liabilities of $5.8 billion.
(5) Amounts represent instruments that are accounted for under the fair value option.
(6) Issuances represent loan originations and MSRs recognized following securitizations or whole-loan sales.
(7) Settlements represent the net change in fair value of the MSR asset due to the recognition of modeled cash flows and the passage of time.

Significant transfers into Level 3, primarily due to decreased price observability, during 2017 included $1.2 billion of trading account assets, $501 million of LHFS and $711 million of long-term debt. Transfers occur on a regular basis for long-term debt instruments due to changes in the impact of unobservable inputs on the value of the embedded derivative in relation to the instrument as a whole.

Significant transfers out of Level 3, primarily due to increased price observability, during 2017 included $1.3 billion of trading account assets, $139 million of AFS debt securities, $263 million of federal funds purchased and securities loaned or sold under agreements to repurchase and $218 million of long-term debt.

Level 3 – Fair Value Measurements in 2016 [(1)]

(Dollars in millions)	Balance January 1 2016	Total Realized/ Unrealized Gains/ (Losses) [(2)]	Gains/ (Losses) in OCI [(3)]	Gross Purchases	Gross Sales	Gross Issuances	Gross Settlements	Gross Transfers into Level 3	Gross Transfers out of Level 3	Balance December 31 2016	Change in Unrealized Gains/ (Losses) Related to Financial Instruments Still Held [(2)]
Trading account assets:											
Corporate securities, trading loans and other	$ 2,838	$ 78	$ 2	$ 1,508	$ (847)	$ —	$ (725)	$ 728	$ (805)	$ 2,777	$ (82)
Equity securities	407	74	—	73	(169)	—	(82)	70	(92)	281	(59)
Non-U.S. sovereign debt	521	122	91	12	(146)	—	(90)	—	—	510	120
Mortgage trading loans, ABS and other MBS	1,868	188	(2)	988	(1,491)	—	(344)	158	(154)	1,211	64
Total trading account assets	5,634	462	91	2,581	(2,653)	—	(1,241)	956	(1,051)	4,779	43
Net derivative assets [(4)]	(441)	285	—	470	(1,155)	—	76	(186)	(362)	(1,313)	(376)
AFS debt securities:											
Non-agency residential MBS	106	—	—	—	(106)	—	—	—	—	—	—
Non-U.S. securities	—	—	(6)	584	(92)	—	(263)	6	—	229	—
Other taxable securities	757	4	(2)	—	—	—	(83)	—	(82)	594	—
Tax-exempt securities	569	—	(1)	1	—	—	(2)	10	(35)	542	—
Total AFS debt securities	1,432	4	(9)	585	(198)	—	(348)	16	(117)	1,365	—
Other debt securities carried at fair value – Non-agency residential MBS	30	(5)	—	—	—	—	—	—	—	25	—
Loans and leases [(5, 6)]	1,620	(44)	—	69	(553)	50	(194)	6	(234)	720	17
Mortgage servicing rights [(6, 7)]	3,087	149	—	—	(80)	411	(820)	—	—	2,747	(107)
Loans held-for-sale [(5)]	787	79	50	22	(256)	—	(93)	173	(106)	656	70
Other assets	374	(13)	—	38	(111)	—	(52)	3	—	239	(36)
Federal funds purchased and securities loaned or sold under agreements to repurchase [(5)]	(335)	(11)	—	—	—	(22)	27	(19)	1	(359)	4
Trading account liabilities – Corporate securities and other	(21)	5	—	—	(11)	—	—	—	—	(27)	4
Short-term borrowings [(5)]	(30)	1	—	—	—	—	29	—	—	—	—
Accrued expenses and other liabilities [(5)]	(9)	—	—	—	—	—	—	—	—	(9)	—
Long-term debt [(5)]	(1,513)	(74)	(20)	140	—	(521)	948	(939)	465	(1,514)	(184)

(1) Assets (liabilities). For assets, increase (decrease) to Level 3 and for liabilities, (increase) decrease to Level 3.
(2) Includes gains/losses reported in earnings in the following income statement line items: Trading account assets/liabilities - trading account profits; Net derivative assets - primarily trading account profits and mortgage banking income; MSRs - primarily mortgage banking income; Long-term debt - primarily trading account profits. For MSRs, the amounts reflect the changes in modeled MSR fair value due principally to observed changes in interest rates, volatility, spreads and the shape of the forward swap curve.
(3) Includes unrealized gains/losses in OCI on AFS securities, foreign currency translation adjustments and the impact of changes in the Corporation's credit spreads on long-term debt accounted for under the fair value option. For more information, see *Note 1 – Summary of Significant Accounting Principles*.
(4) Net derivatives include derivative assets of $3.9 billion and derivative liabilities of $5.2 billion.
(5) Amounts represent instruments that are accounted for under the fair value option.
(6) Issuances represent loan originations and MSRs recognized following securitizations or whole-loan sales.
(7) Settlements represent the net change in fair value of the MSR asset due to the recognition of modeled cash flows and the passage of time.

Significant transfers into Level 3, primarily due to decreased price observability, during 2016 included $956 million of trading account assets, $186 million of net derivative assets, $173 million of LHFS and $939 million of long-term debt. Transfers occur on a regular basis for long-term debt instruments due to changes in the impact of unobservable inputs on the value of the embedded derivative in relation to the instrument as a whole.

Significant transfers out of Level 3, primarily due to increased price observability, during 2016 included $1.1 billion of trading account assets, $362 million of net derivative assets, $117 million of AFS debt securities, $234 million of loans and leases, $106 million of LHFS and $465 million of long-term debt.

Level 3 – Fair Value Measurements in 2015 (1)

(Dollars in millions)	Balance January 1 2015	Total Realized/ Unrealized Gains/ (Losses) (2)	Gains/ (Losses) in OCI (3)	Gross				Gross Transfers into Level 3	Gross Transfers out of Level 3	Balance December 31 2015	Change in Unrealized Gains/ (Losses) Related to Financial Instruments Still Held (2)
				Purchases	Sales	Issuances	Settlements				
Trading account assets:											
Corporate securities, trading loans and other	$ 3,270	$ (31)	$ (11)	$ 1,540	$ (1,616)	$ —	$ (1,122)	$ 1,570	$ (762)	$ 2,838	$ (123)
Equity securities	352	9	—	49	(11)	—	(11)	41	(22)	407	3
Non-U.S. sovereign debt	574	114	(179)	185	(1)	—	(145)	—	(27)	521	74
Mortgage trading loans, ABS and other MBS	2,063	154	1	1,250	(1,117)	—	(493)	50	(40)	1,868	(93)
Total trading account assets	6,259	246	(189)	3,024	(2,745)	—	(1,771)	1,661	(851)	5,634	(139)
Net derivative assets (4)	(920)	1,335	(7)	273	(863)	—	(261)	(40)	42	(441)	605
AFS debt securities:											
Non-agency residential MBS	279	(12)	—	134	—	—	(425)	167	(37)	106	—
Non-U.S. securities	10	—	—	—	—	—	(10)	—	—	—	—
Other taxable securities	1,667	—	—	189	—	—	(160)	—	(939)	757	—
Tax-exempt securities	599	—	—	—	—	—	(30)	—	—	569	—
Total AFS debt securities	2,555	(12)	—	323	—	—	(625)	167	(976)	1,432	—
Other debt securities carried at fair value – Non-agency residential MBS	—	(3)	—	33	—	—	—	—	—	30	—
Loans and leases (5, 6)	1,983	(23)	—	—	(4)	57	(237)	144	(300)	1,620	13
Mortgage servicing rights (6, 7)	3,530	187	—	—	(393)	637	(874)	—	—	3,087	(85)
Loans held-for-sale (5)	173	(51)	(8)	771	(203)	61	(61)	203	(98)	787	(39)
Other assets	911	(55)	—	11	(130)	—	(51)	10	(322)	374	(61)
Federal funds purchased and securities loaned or sold under agreements to repurchase (5)	—	(11)	—	—	—	(131)	217	(411)	1	(335)	—
Trading account liabilities – Corporate securities and other	(36)	19	—	30	(34)	—	—	—	—	(21)	(3)
Short-term borrowings (5)	—	17	—	—	—	(52)	10	(24)	19	(30)	1
Accrued expenses and other liabilities (5)	(10)	1	—	—	—	—	—	—	—	(9)	1
Long-term debt (5)	(2,362)	287	19	616	—	(188)	273	(1,592)	1,434	(1,513)	255

(1) Assets (liabilities). For assets, increase (decrease) to Level 3 and for liabilities, (increase) decrease to Level 3.
(2) Includes gains/losses reported in earnings in the following income statement line items: Trading account assets/liabilities - trading account profits; Net derivative assets - primarily trading account profits and mortgage banking income; MSRs - primarily mortgage banking income; Long-term debt - primarily trading account profits. For MSRs, the amounts reflect the changes in modeled MSR fair value due principally to observed changes in interest rates, volatility, spreads and the shape of the forward swap curve.
(3) Includes unrealized gains/losses in OCI on AFS securities, foreign currency translation adjustments and the impact of changes in the Corporation's credit spreads on long-term debt accounted for under the fair value option. For more information, see *Note 1 – Summary of Significant Accounting Principles.*
(4) Net derivatives include derivative assets of $5.1 billion and derivative liabilities of $5.6 billion.
(5) Amounts represent instruments that are accounted for under the fair value option.
(6) Issuances represent loan originations and MSRs recognized following securitizations or whole-loan sales.
(7) Settlements represent the net change in fair value of the MSR asset due to the recognition of modeled cash flows and the passage of time.

Significant transfers into Level 3, primarily due to decreased price observability, during 2015 included $1.7 billion of trading account assets, $167 million of AFS debt securities, $144 million of loans and leases, $203 million of LHFS, $411 million of federal funds purchased and securities loaned or sold under agreements to repurchase and $1.6 billion of long-term debt. Transfers occur on a regular basis for these long-term debt instruments due to changes in the impact of unobservable inputs on the value of the embedded derivative in relation to the instrument as a whole.

Significant transfers out of Level 3, primarily due to increased price observability, unless otherwise noted, during 2015 included $851 million of trading account assets, as a result of increased market liquidity, $976 million of AFS debt securities, $300 million of loans and leases, $322 million of other assets and $1.4 billion of long-term debt.

The following tables present information about significant unobservable inputs related to the Corporation's material categories of Level 3 financial assets and liabilities at December 31, 2017 and 2016.

Quantitative Information about Level 3 Fair Value Measurements at December 31, 2017

(Dollars in millions)

			Inputs		
Financial Instrument	**Fair Value**	**Valuation Technique**	**Significant Unobservable Inputs**	**Ranges of Inputs**	**Weighted Average**
Loans and Securities [1]					
Instruments backed by residential real estate assets	**$ 871**	Discounted cash flow	Yield	0% to 25%	6%
Trading account assets – Mortgage trading loans, ABS and other MBS	298		Prepayment speed	0% to 22% CPR	12%
Loans and leases	570		Default rate	0% to 3% CDR	1%
Loans held-for-sale	3		Loss severity	0% to 53%	17%
Instruments backed by commercial real estate assets	**$ 286**	Discounted cash flow	Yield	0% to 25%	9%
Trading account assets – Corporate securities, trading loans and other	244		Price	$0 to $100	$67
Trading account assets – Mortgage trading loans, ABS and other MBS	42				
Commercial loans, debt securities and other	**$ 4,023**	Discounted cash flow, Market comparables	Yield	0% to 12%	5%
Trading account assets – Corporate securities, trading loans and other	1,613		Prepayment speed	10% to 20%	16%
Trading account assets – Non-U.S. sovereign debt	556		Default rate	3% to 4%	4%
Trading account assets – Mortgage trading loans, ABS and other MBS	1,158		Loss severity	35% to 40%	37%
AFS debt securities – Other taxable securities	8		Price	$0 to $145	$63
Loans and leases	1				
Loans held-for-sale	687				
Auction rate securities	**$ 977**	Discounted cash flow, Market comparables	Price	$10 to $100	$94
Trading account assets – Corporate securities, trading loans and other	7				
AFS debt securities – Other taxable securities	501				
AFS debt securities – Tax-exempt securities	469				
MSRs	**$ 2,302**	Discounted cash flow	Weighted-average life, fixed rate [4]	0 to 14 years	5 years
			Weighted-average life, variable rate [4]	0 to 10 years	3 years
			Option Adjusted Spread, fixed rate	9% to 14%	10%
			Option Adjusted Spread, variable rate	9% to 15%	12%
Structured liabilities					
Long-term debt	**$ (1,863)**	Discounted cash flow, Market comparables, Industry standard derivative pricing [2]	Equity correlation	15% to 100%	63%
			Long-dated equity volatilities	4% to 84%	22%
			Yield	7.5%	n/a
			Price	$0 to $100	$66
Net derivative assets					
Credit derivatives	**$ (282)**	Discounted cash flow, Stochastic recovery correlation model	Yield	1% to 5%	3%
			Upfront points	0 points to 100 points	71 points
			Credit correlation	35% to 83%	42%
			Prepayment speed	15% to 20% CPR	16%
			Default rate	1% to 4% CDR	2%
			Loss severity	35%	n/a
			Price	$0 to $102	$82
Equity derivatives	**$ (2,059)**	Industry standard derivative pricing [2]	Equity correlation	15% to 100%	63%
			Long-dated equity volatilities	4% to 84%	22%
Commodity derivatives	**$ (3)**	Discounted cash flow, Industry standard derivative pricing [2]	Natural gas forward price	$1/MMBtu to $5/MMBtu	$3/MMBtu
			Correlation	71% to 87%	81%
			Volatilities	26% to 132%	57%
Interest rate derivatives	**$ 630**	Industry standard derivative pricing [3]	Correlation (IR/IR)	15% to 92%	50%
			Correlation (FX/IR)	0% to 46%	1%
			Long-dated inflation rates	-14% to 38%	4%
			Long-dated inflation volatilities	0% to 1%	1%
Total net derivative assets	**$ (1,714)**				

(1) The categories are aggregated based upon product type which differs from financial statement classification. The following is a reconciliation to the line items in the table on page 191: Trading account assets – Corporate securities, trading loans and other of $1.9 billion, Trading account assets – Non-U.S. sovereign debt of $556 million, Trading account assets – Mortgage trading loans, ABS and other MBS of $1.5 billion, AFS debt securities – Other taxable securities of $509 million, AFS debt securities – Tax-exempt securities of $469 million, Loans and leases of $571 million and LHFS of $690 million.

(2) Includes models such as Monte Carlo simulation and Black-Scholes.

(3) Includes models such as Monte Carlo simulation, Black-Scholes and other methods that model the joint dynamics of interest, inflation and foreign exchange rates.

(4) The weighted-average life is a product of changes in market rates of interest, prepayment rates and other model and cash flow assumptions.

CPR = Constant Prepayment Rate
CDR = Constant Default Rate
MMBtu = Million British thermal units
IR = Interest Rate
FX = Foreign Exchange
n/a = not applicable

Quantitative Information about Level 3 Fair Value Measurements at December 31, 2016

(Dollars in millions)

Financial Instrument	Fair Value	Valuation Technique	Inputs: Significant Unobservable Inputs	Ranges of Inputs	Weighted Average
Loans and Securities [1]					
Instruments backed by residential real estate assets	$ 1,066	Discounted cash flow, Market comparables	Yield	0% to 50%	7%
Trading account assets – Mortgage trading loans, ABS and other MBS	337		Prepayment speed	0% to 27% CPR	14%
Loans and leases	718		Default rate	0% to 3% CDR	2%
Loans held-for-sale	11		Loss severity	0% to 54%	18%
Instruments backed by commercial real estate assets	$ 317	Discounted cash flow, Market comparables	Yield	0% to 39%	11%
Trading account assets – Corporate securities, trading loans and other	178		Price	$0 to $100	$65
Trading account assets – Mortgage trading loans, ABS and other MBS	53				
Loans held-for-sale	86				
Commercial loans, debt securities and other	$ 4,486	Discounted cash flow, Market comparables	Yield	1% to 37%	14%
Trading account assets – Corporate securities, trading loans and other	2,565		Prepayment speed	5% to 20%	19%
Trading account assets – Non-U.S. sovereign debt	510		Default rate	3% to 4%	4%
Trading account assets – Mortgage trading loans, ABS and other MBS	821		Loss severity	0% to 50%	19%
AFS debt securities – Other taxable securities	29		Price	$0 to $292	$68
Loans and leases	2		Duration	0 to 5 years	3 years
Loans held-for-sale	559		Enterprise value/EBITDA multiple	34x	n/a
Auction rate securities	$ 1,141	Discounted cash flow, Market comparables	Price	$10 to $100	$94
Trading account assets – Corporate securities, trading loans and other	34				
AFS debt securities – Other taxable securities	565				
AFS debt securities – Tax-exempt securities	542				
MSRs	$ 2,747	Discounted cash flow	Weighted-average life, fixed rate [4]	0 to 15 years	6 years
			Weighted-average life, variable rate [4]	0 to 14 years	4 years
			Option Adjusted Spread, fixed rate	9% to 14%	10%
			Option Adjusted Spread, variable rate	9% to 15%	12%
Structured liabilities					
Long-term debt	$ (1,514)	Discounted cash flow, Market comparables, Industry standard derivative pricing [2]	Equity correlation	13% to 100%	68%
			Long-dated equity volatilities	4% to 76%	26%
			Yield	6% to 37%	20%
			Price	$12 to $87	$73
			Duration	0 to 5 years	3 years
Net derivative assets					
Credit derivatives	$ (129)	Discounted cash flow, Stochastic recovery correlation model	Yield	0% to 24%	13%
			Upfront points	0 to 100 points	72 points
			Credit spreads	17 bps to 814 bps	248 bps
			Credit correlation	21% to 80%	44%
			Prepayment speed	10% to 20% CPR	18%
			Default rate	1% to 4% CDR	3%
			Loss severity	35%	n/a
Equity derivatives	$ (1,690)	Industry standard derivative pricing [2]	Equity correlation	13% to 100%	68%
			Long-dated equity volatilities	4% to 76%	26%
Commodity derivatives	$ 6	Discounted cash flow, Industry standard derivative pricing [2]	Natural gas forward price	$2/MMBtu to $6/MMBtu	$4/MMBtu
			Correlation	66% to 95%	85%
			Volatilities	23% to 96%	36%
Interest rate derivatives	$ 500	Industry standard derivative pricing [3]	Correlation (IR/IR)	15% to 99%	56%
			Correlation (FX/IR)	0% to 40%	2%
			Illiquid IR and long-dated inflation rates	-12% to 35%	5%
			Long-dated inflation volatilities	0% to 2%	1%
Total net derivative assets	$ (1,313)				

(1) The categories are aggregated based upon product type which differs from financial statement classification. The following is a reconciliation to the line items in the table on page 192: Trading account assets – Corporate securities, trading loans and other of $2.8 billion, Trading account assets – Non-U.S. sovereign debt of $510 million, Trading account assets – Mortgage trading loans, ABS and other MBS of $1.2 billion, AFS debt securities – Other taxable securities of $594 million, AFS debt securities – Tax-exempt securities of $542 million, Loans and leases of $720 million and LHFS of $656 million.

(2) Includes models such as Monte Carlo simulation and Black-Scholes.

(3) Includes models such as Monte Carlo simulation, Black-Scholes and other methods that model the joint dynamics of interest, inflation and foreign exchange rates.

(4) The weighted-average life is a product of changes in market rates of interest, prepayment rates and other model and cash flow assumptions.

CPR = Constant Prepayment Rate
CDR = Constant Default Rate
EBITDA = Earnings before interest, taxes, depreciation and amortization
MMBtu = Million British thermal units
IR = Interest Rate
FX = Foreign Exchange
n/a = not applicable

In the previous tables, instruments backed by residential and commercial real estate assets include RMBS, commercial MBS, whole loans and mortgage CDOs. Commercial loans, debt securities and other include corporate CLOs and CDOs, commercial loans and bonds, and securities backed by non-real estate assets. Structured liabilities primarily include equity-linked notes that are accounted for under the fair value option.

The Corporation uses multiple market approaches in valuing certain of its Level 3 financial instruments. For example, market comparables and discounted cash flows are used together. For a given product, such as corporate debt securities, market comparables may be used to estimate some of the unobservable inputs and then these inputs are incorporated into a discounted cash flow model. Therefore, the balances disclosed encompass both of these techniques.

The level of aggregation and diversity within the products disclosed in the tables results in certain ranges of inputs being wide and unevenly distributed across asset and liability categories.

Sensitivity of Fair Value Measurements to Changes in Unobservable Inputs

Loans and Securities

A significant increase in market yields, default rates, loss severities or duration would result in a significantly lower fair value for long positions. Short positions would be impacted in a directionally opposite way. The impact of changes in prepayment speeds would have differing impacts depending on the seniority of the instrument and, in the case of CLOs, whether prepayments can be reinvested. A significant increase in price would result in a significantly higher fair value for long positions, and short positions would be impacted in a directionally opposite way.

Mortgage Servicing Rights

The weighted-average lives and fair value of MSRs are sensitive to changes in modeled assumptions. The weighted-average life is a product of changes in market rates of interest, prepayment rates and other model and cash flow assumptions. The weighted-average life represents the average period of time that the MSRs' cash flows are expected to be received. Absent other changes, an increase (decrease) to the weighted-average life would generally result in an increase (decrease) in the fair value of the MSRs. For example, a 10 percent or 20 percent decrease in prepayment rates, which impacts the weighted-average life, could result in an increase in fair value of $83 million or $172 million, while a 10 percent or 20 percent increase in prepayment rates could result in a decrease in fair value of $76 million or $147 million. A 100 bp or 200 bp decrease in OAS levels could result in an increase in fair value of $69 million or $143 million, while a 100 bp or 200 bp increase in OAS levels could result in a decrease in fair value of $65 million or $125 million. These sensitivities are hypothetical and actual amounts may vary materially. As the amounts indicate, changes in fair value based on variations in assumptions generally cannot be extrapolated because the relationship of the change in assumption to the change in fair value may not be linear. Also, the effect of a variation in a particular assumption on the fair value of MSRs that continue to be held by the Corporation is calculated without changing any other assumption. In reality, changes in one factor may result in changes in another, which might magnify or counteract the sensitivities. In addition, these sensitivities do not reflect any hedge strategies that may be undertaken to mitigate such risk. The Corporation manages the risk in MSRs with derivatives such as options and interest rate swaps, which are not designated as accounting hedges, as well as securities including MBS and U.S. Treasury securities. The securities used to manage the risk in the MSRs are classified in other assets on the Consolidated Balance Sheet.

Structured Liabilities and Derivatives

For credit derivatives, a significant increase in market yield, upfront points (i.e., a single upfront payment made by a protection buyer at inception), credit spreads, default rates or loss severities would result in a significantly lower fair value for protection sellers and higher fair value for protection buyers. The impact of changes in prepayment speeds would have differing impacts depending on the seniority of the instrument.

Structured credit derivatives are impacted by credit correlation. Default correlation is a parameter that describes the degree of dependence among credit default rates within a credit portfolio that underlies a credit derivative instrument. The sensitivity of this input on the fair value varies depending on the level of subordination of the tranche. For senior tranches that are net purchases of protection, a significant increase in default correlation would result in a significantly higher fair value. Net short protection positions would be impacted in a directionally opposite way.

For equity derivatives, commodity derivatives, interest rate derivatives and structured liabilities, a significant change in long-dated rates and volatilities and correlation inputs (i.e., the degree of correlation between an equity security and an index, between two different commodities, between two different interest rates, or between interest rates and foreign exchange rates) would result in a significant impact to the fair value; however, the magnitude and direction of the impact depend on whether the Corporation is long or short the exposure. For structured liabilities, a significant increase in yield or decrease in price would result in a significantly lower fair value. A significant decrease in duration may result in a significantly higher fair value.

Nonrecurring Fair Value

The Corporation holds certain assets that are measured at fair value, but only in certain situations (e.g., impairment) and these measurements are referred to herein as nonrecurring. The amounts below represent assets still held as of the reporting date for which a nonrecurring fair value adjustment was recorded during 2017, 2016 and 2015.

Assets Measured at Fair Value on a Nonrecurring Basis

	December 31, 2017		December 31, 2016	
(Dollars in millions)	**Level 2**	**Level 3**	Level 2	Level 3
Assets				
Loans held-for-sale	**$ —**	**$ 2**	$ 193	$ 44
Loans and leases [(1)]	**—**	**894**	—	1,416
Foreclosed properties [(2, 3)]	**—**	**83**	—	77
Other assets	**425**	**—**	358	—

	Gains (Losses)		
	2017	2016	2015
Assets			
Loans held-for-sale	**$ (6)**	$ (54)	$ (8)
Loans and leases [(1)]	**(336)**	(458)	(993)
Foreclosed properties	**(41)**	(41)	(57)
Other assets	**(124)**	(74)	(28)

(1) Includes $135 million of losses on loans that were written down to a collateral value of zero during 2017 compared to losses of $150 million and $174 million for 2016 and 2015.
(2) Amounts are included in other assets on the Consolidated Balance Sheet and represent the carrying value of foreclosed properties that were written down subsequent to their initial classification as foreclosed properties. Losses on foreclosed properties include losses recorded during the first 90 days after transfer of a loan to foreclosed properties.
(3) Excludes $801 million and $1.2 billion of properties acquired upon foreclosure of certain government-guaranteed loans (principally FHA-insured loans) at December 31, 2017 and 2016.

The table below presents information about significant unobservable inputs related to the Corporation's nonrecurring Level 3 financial assets and liabilities at December 31, 2017 and 2016. Loans and leases backed by residential real estate assets represent residential mortgages where the loan has been written down to the fair value of the underlying collateral.

Quantitative Information about Nonrecurring Level 3 Fair Value Measurements

(Dollars in millions)			Inputs		
Financial Instrument	**Fair Value**	**Valuation Technique**	**Significant Unobservable Inputs**	**Ranges of Inputs**	**Weighted Average**
			December 31, 2017		
Loans and leases backed by residential real estate assets	$ 894	Market comparables	OREO discount	15% to 58%	23%
			Costs to sell	5% to 49%	7%
			December 31, 2016		
Loans and leases backed by residential real estate assets	$ 1,416	Market comparables	OREO discount	8% to 56%	21%
			Costs to sell	7% to 45%	9%

NOTE 21 Fair Value Option

Loans and Loan Commitments

The Corporation elects to account for certain consumer and commercial loans and loan commitments that exceed the Corporation's single-name credit risk concentration guidelines under the fair value option. Lending commitments, both funded and unfunded, are actively managed and monitored and, as appropriate, credit risk for these lending relationships may be mitigated through the use of credit derivatives, with the Corporation's public side credit view and market perspectives determining the size and timing of the hedging activity. These credit derivatives do not meet the requirements for designation as accounting hedges and therefore are carried at fair value with changes in fair value recorded in other income. Electing the fair value option allows the Corporation to carry these loans and loan commitments at fair value, which is more consistent with management's view of the underlying economics and the manner in which they are managed. In addition, election of the fair value option allows the Corporation to reduce the accounting volatility that would otherwise result from the asymmetry created by accounting for the financial instruments at historical cost and the credit derivatives at fair value. The Corporation also elected the fair value option for certain loans held in consolidated VIEs.

Loans Held-for-sale

The Corporation elects to account for residential mortgage LHFS, commercial mortgage LHFS and certain other LHFS under the fair value option with interest income on these LHFS recorded in other interest income. These loans are actively managed and monitored and, as appropriate, certain market risks of the loans may be mitigated through the use of derivatives. The Corporation has elected not to designate the derivatives as qualifying accounting hedges and therefore they are carried at fair value with changes in fair value recorded in other income. The changes in fair value of the loans are largely offset by changes in the fair value of the derivatives. Election of the fair value option allows the Corporation to reduce the accounting volatility that would otherwise result from the asymmetry created by accounting for the financial instruments at the lower of cost or fair value and the derivatives at fair value. The Corporation has not elected to account for certain other LHFS under the fair value option primarily because these loans are floating-rate loans that are not hedged using derivative instruments.

Loans Reported as Trading Account Assets

The Corporation elects to account for certain loans that are held for the purpose of trading and are risk-managed on a fair value basis under the fair value option.

Other Assets

The Corporation elects to account for certain long-term fixed-rate margin loans that are hedged with derivatives under the fair value option. Election of the fair value option allows the Corporation to reduce the accounting volatility that would otherwise result from the asymmetry created by accounting for the financial instruments at historical cost and the derivatives at fair value.

Securities Financing Agreements

The Corporation elects to account for certain securities financing agreements, including resale and repurchase agreements, under the fair value option based on the tenor of the agreements, which reflects the magnitude of the interest rate risk. The majority of securities financing agreements collateralized by U.S. government securities are not accounted for under the fair value option as these contracts are generally short-dated and therefore the interest rate risk is not significant.

Long-term Deposits

The Corporation elects to account for certain long-term fixed-rate and rate-linked deposits that are hedged with derivatives that do not qualify for hedge accounting under the fair value option. Election of the fair value option allows the Corporation to reduce the accounting volatility that would otherwise result from the asymmetry created by accounting for the financial instruments at historical cost and the derivatives at fair value. The Corporation has not elected to carry other long-term deposits at fair value because they are not hedged using derivatives.

Short-term Borrowings

The Corporation elects to account for certain short-term borrowings, primarily short-term structured liabilities, under the fair value option because this debt is risk-managed on a fair value basis.

The Corporation elects to account for certain asset-backed secured financings, which are also classified in short-term borrowings, under the fair value option. Election of the fair value option allows the Corporation to reduce the accounting volatility that would otherwise result from the asymmetry created by accounting for the asset-backed secured financings at historical cost and the corresponding mortgage LHFS securing these financings at fair value.

Long-term Debt

The Corporation elects to account for certain long-term debt, primarily structured liabilities, under the fair value option. This long-term debt is either risk-managed on a fair value basis or the related hedges do not qualify for hedge accounting.

Fair Value Option Elections

The table below provides information about the fair value carrying amount and the contractual principal outstanding of assets and liabilities accounted for under the fair value option at December 31, 2017 and 2016.

Fair Value Option Elections

	Fair Value Carrying Amount	Contractual Principal Outstanding	Fair Value Carrying Amount Less Unpaid Principal	Fair Value Carrying Amount	Contractual Principal Outstanding	Fair Value Carrying Amount Less Unpaid Principal
	December 31, 2017			December 31, 2016		
(Dollars in millions)						
Federal funds sold and securities borrowed or purchased under agreements to resell	$ 52,906	$ 52,907	$ (1)	$ 49,750	$ 49,615	$ 135
Loans reported as trading account assets [1]	5,735	11,804	(6,069)	6,215	11,557	(5,342)
Trading inventory – other	12,027	n/a	n/a	8,206	n/a	n/a
Consumer and commercial loans	5,710	5,744	(34)	7,085	7,190	(105)
Loans held-for-sale	2,156	3,717	(1,561)	4,026	5,595	(1,569)
Customer receivables and other assets	3	n/a	n/a	253	250	3
Long-term deposits	449	421	28	731	672	59
Federal funds purchased and securities loaned or sold under agreements to repurchase	36,182	36,187	(5)	35,766	35,929	(163)
Short-term borrowings	1,494	1,494	—	2,024	2,024	—
Unfunded loan commitments	120	n/a	n/a	173	n/a	n/a
Long-term debt [2]	31,786	31,512	274	30,037	29,862	175

(1) A significant portion of the loans reported as trading account assets are distressed loans that trade and were purchased at a deep discount to par, and the remainder are loans with a fair value near contractual principal outstanding.

(2) Includes structured liabilities with a fair value of $31.4 billion and $29.7 billion, and contractual principal outstanding of $31.1 billion and $29.5 billion at December 31, 2017 and 2016.

n/a = not applicable

The following tables provide information about where changes in the fair value of assets and liabilities accounted for under the fair value option are included in the Consolidated Statement of Income for 2017, 2016 and 2015.

Gains (Losses) Relating to Assets and Liabilities Accounted for Under the Fair Value Option

(Dollars in millions)	Trading Account Profits	Mortgage Banking Income	Other Income	Total
		2017		
Federal funds sold and securities borrowed or purchased under agreements to resell	**$ (57)**	**$ —**	**$ —**	**$ (57)**
Loans reported as trading account assets	**318**	**—**	**—**	**318**
Trading inventory – other [1]	**3,821**	**—**	**—**	**3,821**
Consumer and commercial loans	**(9)**	**—**	**35**	**26**
Loans held-for-sale [2]	**—**	**211**	**87**	**298**
Unfunded loan commitments	**—**	**—**	**36**	**36**
Long-term debt [3, 4]	**(1,044)**	**—**	**(146)**	**(1,190)**
Other [5]	**(36)**	**—**	**13**	**(23)**
Total	**$ 2,993**	**$ 211**	**$ 25**	**$ 3,229**
		2016		
Federal funds sold and securities borrowed or purchased under agreements to resell	$ (64)	$ —	$ 1	$ (63)
Loans reported as trading account assets	301	—	—	301
Trading inventory – other [1]	57	—	—	57
Consumer and commercial loans	49	—	(37)	12
Loans held-for-sale [2]	11	518	6	535
Unfunded loan commitments	—	—	487	487
Long-term debt [3, 4]	(489)	—	(97)	(586)
Other [5]	(21)	—	52	31
Total	$ (156)	$ 518	$ 412	$ 774
		2015		
Federal funds sold and securities borrowed or purchased under agreements to resell	$ (195)	$ —	$ —	$ (195)
Loans reported as trading account assets	(199)	—	—	(199)
Trading inventory – other [1]	1,284	—	—	1,284
Consumer and commercial loans	52	—	(295)	(243)
Loans held-for-sale [2]	(36)	673	63	700
Unfunded loan commitments	—	—	(210)	(210)
Long-term debt [3, 4]	2,107	—	(633)	1,474
Other [5]	37	—	23	60
Total	$ 3,050	$ 673	$ (1,052)	$ 2,671

(1) The gains in trading account profits are primarily offset by losses on trading liabilities that hedge these assets.
(2) Includes the value of IRLCs on funded loans, including those sold during the period.
(3) The majority of the net gains (losses) in trading account profits relate to the embedded derivative in structured liabilities and are offset by gains (losses) on derivatives and securities that hedge these liabilities.
(4) For the cumulative impact of changes in the Corporation's own credit spreads and the amount recognized in OCI, see *Note 14 – Accumulated Other Comprehensive Income (Loss)*. For more information on how the Corporation's own credit spread is determined, see *Note 20 – Fair Value Measurements*.
(5) Includes gains (losses) on other assets, long-term deposits, federal funds purchased and securities loaned or sold under agreements to repurchase and short-term borrowings.

Gains (Losses) Related to Borrower-specific Credit Risk for Assets Accounted for Under the Fair Value Option

(Dollars in millions)	**2017**	2016	2015
Loans reported as trading account assets	**$ 24**	$ 7	$ 37
Consumer and commercial loans	**36**	(53)	(200)
Loans held-for-sale	**(22)**	(34)	37

NOTE 22 Fair Value of Financial Instruments

Financial instruments are classified within the fair value hierarchy using the methodologies described in *Note 20 – Fair Value Measurements*. The following disclosures include financial instruments that are not carried at fair value or only a portion of the ending balance is carried at fair value on the Consolidated Balance Sheet.

Short-term Financial Instruments

The carrying value of short-term financial instruments, including cash and cash equivalents, time deposits placed and other short-term investments, federal funds sold and purchased, certain resale and repurchase agreements, customer and other receivables, customer payables (within accrued expenses and other liabilities on the Consolidated Balance Sheet), and short-term borrowings, approximates the fair value of these instruments. These financial instruments generally expose the Corporation to limited credit risk and have no stated maturities or have short-term maturities and carry interest rates that approximate market. The Corporation accounts for certain resale and repurchase agreements under the fair value option.

Under the fair value hierarchy, cash and cash equivalents are classified as Level 1. Time deposits placed and other short-term investments, such as U.S. government securities and short-term commercial paper, are classified as Level 1 or Level 2. Federal funds sold and purchased are classified as Level 2. Resale and repurchase agreements are classified as Level 2 because they are generally short-dated and/or variable-rate instruments collateralized by U.S. government or agency securities. Customer and other receivables primarily consist of margin loans, servicing advances and other accounts receivable and are classified as Level 2 or Level 3. Customer payables and short-term borrowings are classified as Level 2.

Held-to-maturity Debt Securities

HTM debt securities, which consist primarily of U.S. agency debt securities, are classified as Level 2 using the same methodologies as AFS U.S. agency debt securities. For more information on HTM debt securities, see *Note 3 – Securities*.

Loans

The fair values for commercial and consumer loans are generally determined by discounting both principal and interest cash flows expected to be collected using a discount rate for similar instruments with adjustments that the Corporation believes a market participant would consider in determining fair value. The Corporation estimates the cash flows expected to be collected using internal credit risk, interest rate and prepayment risk models that incorporate the Corporation's best estimate of current key assumptions, such as default rates, loss severity and prepayment speeds for the life of the loan. The carrying value of loans is presented net of the applicable allowance for loan losses and excludes leases. The Corporation accounts for certain commercial loans and residential mortgage loans under the fair value option.

Deposits

The fair value for certain deposits with stated maturities is determined by discounting contractual cash flows using current market rates for instruments with similar maturities. The carrying value of non-U.S. time deposits approximates fair value. For deposits with no stated maturities, the carrying value is considered to approximate fair value and does not take into account the significant value of the cost advantage and stability of the Corporation's long-term relationships with depositors. The Corporation accounts for certain long-term fixed-rate deposits under the fair value option.

Long-term Debt

The Corporation uses quoted market prices, when available, to estimate fair value for its long-term debt. When quoted market prices are not available, fair value is estimated based on current market interest rates and credit spreads for debt with similar terms and maturities. The Corporation accounts for certain structured liabilities under the fair value option.

Fair Value of Financial Instruments

The carrying values and fair values by fair value hierarchy of certain financial instruments where only a portion of the ending balance was carried at fair value at December 31, 2017 and 2016 are presented in the following table.

Fair Value of Financial Instruments

	Carrying Value	Fair Value		
		Level 2	Level 3	Total
(Dollars in millions)	December 31, 2017			
Financial assets				
Loans	**$ 904,399**	**$ 68,586**	**$ 849,576**	**$ 918,162**
Loans held-for-sale	**11,430**	**10,521**	**909**	**11,430**
Financial liabilities				
Deposits	**1,309,545**	**1,309,398**	**—**	**1,309,398**
Long-term debt	**227,402**	**235,126**	**1,863**	**236,989**
	December 31, 2016			
Financial assets				
Loans	$ 873,209	$ 71,793	$ 815,329	$ 887,122
Loans held-for-sale	9,066	8,082	984	9,066
Financial liabilities				
Deposits	1,260,934	1,261,086	—	1,261,086
Long-term debt	216,823	220,071	1,514	221,585

Commercial Unfunded Lending Commitments

Fair values are generally determined using a discounted cash flow valuation approach which is applied using market-based CDS or internally developed benchmark credit curves. The Corporation accounts for certain loan commitments under the fair value option. The carrying values and fair values of the Corporation's commercial unfunded lending commitments were $897 million and $4.0 billion at December 31, 2017, and $937 million and $4.9 billion at December 31, 2016. Substantially all commercial unfunded lending commitments are classified as Level 3. The carrying value of these commitments is included in accrued expenses and other liabilities on the Consolidated Balance Sheet.

The Corporation does not estimate the fair values of consumer unfunded lending commitments because, in many instances, the Corporation can reduce or cancel these commitments by providing notice to the borrower. For more information on commitments, see *Note 12 – Commitments and Contingencies*.

NOTE 23 Business Segment Information

The Corporation reports its results of operations through the following four business segments: *Consumer Banking*, *GWIM*, *Global Banking* and *Global Markets*, with the remaining operations recorded in *All Other*.

Consumer Banking

Consumer Banking offers a diversified range of credit, banking and investment products and services to consumers and small businesses. *Consumer Banking* product offerings include traditional savings accounts, money market savings accounts, CDs and IRAs, checking accounts, and investment accounts and products, as well as credit and debit cards, residential mortgages and home equity loans, and direct and indirect loans to consumers and small businesses in the U.S. *Consumer Banking* includes the impact of servicing residential mortgages and home equity loans in the core portfolio.

Global Wealth & Investment Management

GWIM provides a high-touch client experience through a network of financial advisors focused on clients with over $250,000 in total investable assets, including tailored solutions to meet clients' needs through a full set of investment management, brokerage, banking and retirement products. *GWIM* also provides comprehensive wealth management solutions targeted to high net worth and ultra high net worth clients, as well as customized solutions to meet clients' wealth structuring, investment management, trust and banking needs, including specialty asset management services.

Global Banking

Global Banking provides a wide range of lending-related products and services, integrated working capital management and treasury solutions, and underwriting and advisory services through the Corporation's network of offices and client relationship teams. *Global Banking* also provides investment banking products to clients. The economics of certain investment banking and underwriting activities are shared primarily between *Global Banking* and *Global Markets* under an internal revenue-sharing arrangement. *Global Banking* clients generally include middle-market companies, commercial real estate firms, not-for-profit companies, large global corporations, financial institutions, leasing clients, and mid-sized U.S.-based businesses requiring customized and integrated financial advice and solutions.

Global Markets

Global Markets offers sales and trading services, including research, to institutional clients across fixed-income, credit, currency, commodity and equity businesses. *Global Markets* provides market-making, financing, securities clearing, settlement and custody services globally to institutional investor clients in support of their investing and trading activities. *Global Markets* also works with commercial and corporate clients to provide risk management products. As a result of market-making activities, *Global Markets* may be required to manage risk in a broad range of financial products. In addition, the economics of certain investment banking and underwriting activities are shared primarily between *Global Markets* and *Global Banking* under an internal revenue-sharing arrangement.

All Other

All Other consists of ALM activities, equity investments, non-core mortgage loans and servicing activities, the net impact of periodic revisions to the MSR valuation model for both core and non-core MSRs and the related economic hedge results and ineffectiveness, liquidating businesses, and residual expense allocations. ALM activities encompass certain residential mortgages, debt securities, interest rate and foreign currency risk management activities, the impact of certain allocation methodologies and accounting hedge ineffectiveness. The results of certain ALM activities are allocated to the business segments. Equity investments include the merchant services joint venture as well as a portfolio of equity, real estate and other alternative investments. The initial impact of the Tax Act was recorded in *All Other*.

Basis of Presentation

The management accounting and reporting process derives segment and business results by utilizing allocation methodologies for revenue and expense. The net income derived for the businesses is dependent upon revenue and cost allocations using an activity-based costing model, funds transfer pricing, and other methodologies and assumptions management believes are appropriate to reflect the results of the business.

Total revenue, net of interest expense, includes net interest income on an FTE basis and noninterest income. The adjustment of net interest income to an FTE basis results in a corresponding increase in income tax expense. The segment results also reflect certain revenue and expense methodologies that are utilized to determine net income. The net interest income of the businesses includes the results of a funds transfer pricing process that matches assets and liabilities with similar interest rate sensitivity and maturity characteristics. In segments where the total of liabilities and equity exceeds assets, which are generally deposit-taking segments, the Corporation allocates assets to match liabilities. Net interest income of the business segments also includes an allocation of net interest income generated by certain of the Corporation's ALM activities.

In addition, the business segments are impacted by the migration of customers and clients and their deposit, loan and brokerage balances between businesses. Subsequent to the date of migration, the associated net interest income, noninterest income and noninterest expense are recorded in the business to which the customers or clients migrated.

The Corporation's ALM activities include an overall interest rate risk management strategy that incorporates the use of various derivatives and cash instruments to manage fluctuations in earnings and capital that are caused by interest rate volatility. The Corporation's goal is to manage interest rate sensitivity so that movements in interest rates do not significantly adversely affect earnings and capital. The results of a majority of the Corporation's ALM activities are allocated to the business segments and fluctuate based on the performance of the ALM activities. ALM activities include external product pricing decisions including deposit pricing strategies, the effects of the Corporation's internal funds transfer pricing process and the net effects of other ALM activities.

Certain expenses not directly attributable to a specific business segment are allocated to the segments. The costs of certain centralized or shared functions are allocated based on methodologies that reflect utilization.

The tables below present net income (loss) and the components thereto (with net interest income on an FTE basis) for 2017, 2016 and 2015, and total assets at December 31, 2017 and 2016 for each business segment, as well as *All Other,* including a reconciliation of the four business segments' total revenue, net of interest expense, on an FTE basis, and net income to the Consolidated Statement of Income, and total assets to the Consolidated Balance Sheet.

Results of Business Segments and All Other

At and for the year ended December 31 (Dollars in millions)	Total Corporation [1] 2017	2016	2015	Consumer Banking 2017	2016	2015
Net interest income (FTE basis)	**$ 45,592**	$ 41,996	$ 39,847	**$ 24,307**	$ 21,290	$ 20,428
Noninterest income	**42,685**	42,605	44,007	**10,214**	10,441	11,091
Total revenue, net of interest expense (FTE basis)	**88,277**	84,601	83,854	**34,521**	31,731	31,519
Provision for credit losses	**3,396**	3,597	3,161	**3,525**	2,715	2,346
Noninterest expense	**54,743**	55,083	57,617	**17,787**	17,654	18,710
Income before income taxes (FTE basis)	**30,138**	25,921	23,076	**13,209**	11,362	10,463
Income tax expense (FTE basis)	**11,906**	8,099	7,166	**5,002**	4,190	3,814
Net income	**$ 18,232**	$ 17,822	$ 15,910	**$ 8,207**	$ 7,172	$ 6,649
Period-end total assets	**$ 2,281,234**	$ 2,188,067		**$ 749,325**	$ 702,333	

	Global Wealth & Investment Management 2017	2016	2015	Global Banking 2017	2016	2015
Net interest income (FTE basis)	**$ 6,173**	$ 5,759	$ 5,527	**$ 10,504**	$ 9,471	$ 9,244
Noninterest income	**12,417**	11,891	12,507	**9,495**	8,974	8,377
Total revenue, net of interest expense (FTE basis)	**18,590**	17,650	18,034	**19,999**	18,445	17,621
Provision for credit losses	**56**	68	51	**212**	883	686
Noninterest expense	**13,564**	13,175	13,938	**8,596**	8,486	8,482
Income before income taxes (FTE basis)	**4,970**	4,407	4,045	**11,191**	9,076	8,453
Income tax expense (FTE basis)	**1,882**	1,632	1,475	**4,238**	3,347	3,114
Net income	**$ 3,088**	$ 2,775	$ 2,570	**$ 6,953**	$ 5,729	$ 5,339
Period-end total assets	**$ 284,321**	$ 298,931		**$ 424,533**	$ 408,330	

	Global Markets 2017	2016	2015	All Other 2017	2016	2015
Net interest income (FTE basis)	**$ 3,744**	$ 4,558	$ 4,191	**$ 864**	$ 918	$ 457
Noninterest income (loss)	**12,207**	11,532	10,822	**(1,648)**	(233)	1,210
Total revenue, net of interest expense (FTE basis)	**15,951**	16,090	15,013	**(784)**	685	1,667
Provision for credit losses	**164**	31	99	**(561)**	(100)	(21)
Noninterest expense	**10,731**	10,169	11,374	**4,065**	5,599	5,113
Income (loss) before income taxes (FTE basis)	**5,056**	5,890	3,540	**(4,288)**	(4,814)	(3,425)
Income tax expense (benefit) (FTE basis)	**1,763**	2,072	1,117	**(979)**	(3,142)	(2,354)
Net income (loss)	**$ 3,293**	$ 3,818	$ 2,423	**$ (3,309)**	$ (1,672)	$ (1,071)
Period-end total assets	**$ 629,007**	$ 566,060		**$ 194,048**	$ 212,413	

Business Segment Reconciliations

	2017	2016	2015
Segments' total revenue, net of interest expense (FTE basis)	**$ 89,061**	$ 83,916	$ 82,187
Adjustments [2]:			
ALM activities	**312**	(300)	(208)
Liquidating businesses and other	**(1,096)**	985	1,875
FTE basis adjustment	**(925)**	(900)	(889)
Consolidated revenue, net of interest expense	**$ 87,352**	$ 83,701	$ 82,965
Segments' total net income	**21,541**	19,494	16,981
Adjustments, net-of-taxes [2]:			
ALM activities	**(355)**	(651)	(694)
Liquidating businesses and other	**(2,954)**	(1,021)	(377)
Consolidated net income	**$ 18,232**	$ 17,822	$ 15,910

	December 31 2017	2016
Segments' total assets	**$ 2,087,186**	$ 1,975,654
Adjustments [2]:		
ALM activities, including securities portfolio	**625,488**	612,996
Liquidating businesses and other [3]	**89,008**	118,073
Elimination of segment asset allocations to match liabilities	**(520,448)**	(518,656)
Consolidated total assets	**$ 2,281,234**	$ 2,188,067

(1) There were no material intersegment revenues.
(2) Adjustments include consolidated income, expense and asset amounts not specifically allocated to individual business segments.
(3) At December 31, 2016, includes assets of the non-U.S. consumer credit card business which were included in assets of business held for sale on the Consolidated Balance Sheet.

NOTE 24 Parent Company Information

The following tables present the Parent Company-only financial information. This financial information is presented in accordance with bank regulatory reporting requirements.

Condensed Statement of Income

(Dollars in millions)	2017	2016	2015
Income			
Dividends from subsidiaries:			
Bank holding companies and related subsidiaries	$ 12,088	$ 4,127	$ 18,970
Nonbank companies and related subsidiaries	202	77	53
Interest from subsidiaries	7,043	2,996	2,004
Other income (loss)	28	111	(623)
Total income	19,361	7,311	20,404
Expense			
Interest on borrowed funds from related subsidiaries	189	969	1,169
Other interest expense	5,555	5,096	5,098
Noninterest expense	1,672	2,704	4,631
Total expense	7,416	8,769	10,898
Income (loss) before income taxes and equity in undistributed earnings of subsidiaries	11,945	(1,458)	9,506
Income tax expense (benefit)	950	(2,311)	(3,532)
Income before equity in undistributed earnings of subsidiaries	10,995	853	13,038
Equity in undistributed earnings (losses) of subsidiaries:			
Bank holding companies and related subsidiaries	8,725	16,817	3,068
Nonbank companies and related subsidiaries	(1,488)	152	(196)
Total equity in undistributed earnings (losses) of subsidiaries	7,237	16,969	2,872
Net income	$ 18,232	$ 17,822	$ 15,910

Condensed Balance Sheet

	December 31	
(Dollars in millions)	2017	2016
Assets		
Cash held at bank subsidiaries [1]	$ 4,747	$ 20,248
Securities	596	909
Receivables from subsidiaries:		
Bank holding companies and related subsidiaries	146,566	117,072
Banks and related subsidiaries	146	171
Nonbank companies and related subsidiaries	4,745	26,500
Investments in subsidiaries:		
Bank holding companies and related subsidiaries	296,506	287,416
Nonbank companies and related subsidiaries	5,225	6,875
Other assets	14,554	11,038
Total assets [2]	$ 473,085	$ 470,229
Liabilities and shareholders' equity		
Accrued expenses and other liabilities	$ 10,286	$ 14,284
Payables to subsidiaries:		
Banks and related subsidiaries	359	352
Bank holding companies and related subsidiaries	1	4,013
Nonbank companies and related subsidiaries	9,340	12,010
Long-term debt	185,953	173,375
Total liabilities	205,939	204,034
Shareholders' equity	267,146	266,195
Total liabilities and shareholders' equity	$ 473,085	$ 470,229

(1) Balance includes third-party cash held of $193 million and $342 million at December 31, 2017 and 2016.

(2) During 2016, the Corporation entered into intercompany arrangements with certain key subsidiaries under which the Corporation transferred certain parent company assets to NB Holdings Corporation.

Condensed Statement of Cash Flows

(Dollars in millions)	2017	2016	2015
Operating activities			
Net income	**$ 18,232**	$ 17,822	$ 15,910
Reconciliation of net income to net cash provided by (used in) operating activities:			
Equity in undistributed (earnings) losses of subsidiaries	**(7,237)**	(16,969)	(2,872)
Other operating activities, net	**(2,593)**	(2,860)	(2,583)
Net cash provided by (used in) operating activities	**8,402**	(2,007)	10,455
Investing activities			
Net sales of securities	**312**	—	15
Net payments to subsidiaries	**(7,087)**	(65,481)	(7,944)
Other investing activities, net	**(1)**	(308)	70
Net cash used in investing activities	**(6,776)**	(65,789)	(7,859)
Financing activities			
Net decrease in short-term borrowings	**—**	(136)	(221)
Net decrease in other advances	**(6,672)**	(44)	(770)
Proceeds from issuance of long-term debt	**37,704**	27,363	26,492
Retirement of long-term debt	**(29,645)**	(30,804)	(27,393)
Proceeds from issuance of preferred stock	**—**	2,947	2,964
Common stock repurchased	**(12,814)**	(5,112)	(2,374)
Cash dividends paid	**(5,700)**	(4,194)	(3,574)
Net cash used in financing activities	**(17,127)**	(9,980)	(4,876)
Net decrease in cash held at bank subsidiaries	**(15,501)**	(77,776)	(2,280)
Cash held at bank subsidiaries at January 1	**20,248**	98,024	100,304
Cash held at bank subsidiaries at December 31	**$ 4,747**	$ 20,248	$ 98,024

NOTE 25 Performance by Geographical Area

Since the Corporation's operations are highly integrated, certain asset, liability, income and expense amounts must be allocated to arrive at total assets, total revenue, net of interest expense, income before income taxes and net income by geographic area. The Corporation identifies its geographic performance based on the business unit structure used to manage the capital or expense deployed in the region as applicable. This requires certain judgments related to the allocation of revenue so that revenue can be appropriately matched with the related capital or expense deployed in the region.

(Dollars in millions)		Total Assets at Year End [1]	Total Revenue, Net of Interest Expense [2]	Income Before Income Taxes	Net Income
U.S. [3]	**2017**	**$ 1,965,490**	**$ 74,830**	**$ 25,108**	**$ 15,550**
	2016	1,901,043	72,418	22,282	16,183
	2015		72,117	20,181	14,711
Asia	**2017**	**103,255**	**3,405**	**676**	**464**
	2016	85,410	3,365	674	488
	2015		3,524	726	457
Europe, Middle East and Africa	**2017**	**189,661**	**7,907**	**2,990**	**1,926**
	2016	174,934	6,608	1,705	925
	2015		6,081	938	516
Latin America and the Caribbean	**2017**	**22,828**	**1,210**	**439**	**292**
	2016	26,680	1,310	360	226
	2015		1,243	342	226
Total Non-U.S.	**2017**	**315,744**	**12,522**	**4,105**	**2,682**
	2016	287,024	11,283	2,739	1,639
	2015		10,848	2,006	1,199
Total Consolidated	**2017**	**$ 2,281,234**	**$ 87,352**	**$ 29,213**	**$ 18,232**
	2016	2,188,067	83,701	25,021	17,822
	2015		82,965	22,187	15,910

(1) Total assets include long-lived assets, which are primarily located in the U.S.
(2) There were no material intercompany revenues between geographic regions for any of the periods presented.
(3) Substantially reflects the U.S.

Glossary

Alt-A Mortgage – A type of U.S. mortgage that is considered riskier than A-paper, or "prime," and less risky than "subprime," the riskiest category. Typically, Alt-A mortgages are characterized by borrowers with less than full documentation, lower credit scores and higher LTVs.

Assets in Custody – Consist largely of custodial and non-discretionary trust assets excluding brokerage assets administered for clients.

Assets Under Management (AUM) – The total market value of assets under the investment advisory and/or discretion of GWIM which generate asset management fees based on a percentage of the assets' market values. AUM reflects assets that are generally managed for institutional, high net worth and retail clients, and are distributed through various investment products including mutual funds, other commingled vehicles and separate accounts.

Banking Book – All on- and off-balance sheet financial instruments of the Corporation except for those positions that are held for trading purposes.

Client Brokerage Assets – Client assets which are held in brokerage accounts.

Committed Credit Exposure – Any funded portion of a facility plus the unfunded portion of a facility on which the lender is legally bound to advance funds during a specified period under prescribed conditions.

Credit Derivatives – Contractual agreements that provide protection against a specified credit event on one or more referenced obligations.

Credit Valuation Adjustment (CVA) – A portfolio adjustment required to properly reflect the counterparty credit risk exposure as part of the fair value of derivative instruments.

Debit Valuation Adjustment (DVA) – A portfolio adjustment required to properly reflect the Corporation's own credit risk exposure as part of the fair value of derivative instruments and/or structured liabilities.

Funding Valuation Adjustment (FVA) – A portfolio adjustment required to include funding costs on uncollateralized derivatives and derivatives where the Corporation is not permitted to use the collateral it receives.

Interest Rate Lock Commitment (IRLC) – Commitment with a loan applicant in which the loan terms are guaranteed for a designated period of time subject to credit approval.

Letter of Credit – A document issued on behalf of a customer to a third party promising to pay the third party upon presentation of specified documents. A letter of credit effectively substitutes the issuer's credit for that of the customer.

Loan-to-value (LTV) – A commonly used credit quality metric. LTV is calculated as the outstanding carrying value of the loan divided by the estimated value of the property securing the loan.

Margin Receivable – An extension of credit secured by eligible securities in certain brokerage accounts.

Matched Book – Repurchase and resale agreements or securities borrowed and loaned transactions where the overall asset and liability position is similar in size and/or maturity. Generally, these are entered into to accommodate customers where the Corporation earns the interest rate spread.

Mortgage Servicing Rights (MSR) – The right to service a mortgage loan when the underlying loan is sold or securitized. Servicing includes collections for principal, interest and escrow payments from borrowers and accounting for and remitting principal and interest payments to investors.

Net Interest Yield – Net interest income divided by average total interest-earning assets.

Nonperforming Loans and Leases – Includes loans and leases that have been placed on nonaccrual status, including nonaccruing loans whose contractual terms have been restructured in a manner that grants a concession to a borrower experiencing financial difficulties.

Operating Margin – Income before income taxes divided by total revenue, net of interest expense.

Prompt Corrective Action (PCA) – A framework established by the U.S. banking regulators requiring banks to maintain certain levels of regulatory capital ratios, comprised of five categories of capitalization: "well capitalized," "adequately capitalized," "undercapitalized," "significantly undercapitalized" and "critically undercapitalized." Insured depository institutions that fail to meet certain of these capital levels are subject to increasingly strict limits on their activities, including their ability to make capital distributions, pay management compensation, grow assets and take other actions.

Subprime Loans – Although a standard industry definition for subprime loans (including subprime mortgage loans) does not exist, the Corporation defines subprime loans as specific product offerings for higher risk borrowers.

Troubled Debt Restructurings (TDRs) – Loans whose contractual terms have been restructured in a manner that grants a concession to a borrower experiencing financial difficulties. Certain consumer loans for which a binding offer to restructure has been extended are also classified as TDRs.

Value-at-Risk (VaR) – VaR is a model that simulates the value of a portfolio under a range of hypothetical scenarios in order to generate a distribution of potential gains and losses. VaR represents the loss the portfolio is expected to experience with a given confidence level based on historical data. A VaR model is an effective tool in estimating ranges of potential gains and losses on our trading portfolios.

Acronyms

ABS	Asset-backed securities
AFS	Available-for-sale
ALM	Asset and liability management
AUM	Assets under management
AVM	Automated valuation model
BANA	Bank of America, National Association
BHC	Bank holding company
bps	basis points
CCAR	Comprehensive Capital Analysis and Review
CDO	Collateralized debt obligation
CDS	Credit default swap
CGA	Corporate General Auditor
CLO	Collateralized loan obligation
CLTV	Combined loan-to-value
CVA	Credit valuation adjustment
DIF	Deposit Insurance Fund
DVA	Debit valuation adjustment
EAD	Exposure at Default
EPS	Earnings per common share
ERC	Enterprise Risk Committee
FASB	Financial Accounting Standards Board
FCA	Financial Conduct Authority
FDIC	Federal Deposit Insurance Corporation
FHA	Federal Housing Administration
FHLB	Federal Home Loan Bank
FHLMC	Freddie Mac
FICC	Fixed-income, currencies and commodities
FICO	Fair Isaac Corporation (credit score)
FLUs	Front line units
FNMA	Fannie Mae
FTE	Fully taxable-equivalent
FVA	Funding valuation adjustment
GAAP	Accounting principles generally accepted in the United States of America
GLS	Global Liquidity Sources
GM&CA	Global Marketing and Corporate Affairs
GNMA	Government National Mortgage Association
GSE	Government-sponsored enterprise
G-SIB	Global systemically important bank
GWIM	Global Wealth & Investment Management
HELOC	Home equity line of credit
HQLA	High Quality Liquid Assets
HTM	Held-to-maturity
ICAAP	Internal Capital Adequacy Assessment Process
IMM	Internal models methodology
IRLC	Interest rate lock commitment
IRM	Independent risk management
ISDA	International Swaps and Derivatives Association, Inc.
LCR	Liquidity Coverage Ratio
LGD	Loss given default
LHFS	Loans held-for-sale
LIBOR	London InterBank Offered Rate
LTV	Loan-to-value
MBS	Mortgage-backed securities
MD&A	Management's Discussion and Analysis of Financial Condition and Results of Operations
MLGWM	Merrill Lynch Global Wealth Management
MLI	Merrill Lynch International
MLPCC	Merrill Lynch Professional Clearing Corp
MLPF&S	Merrill Lynch, Pierce, Fenner & Smith Incorporated
MRC	Management Risk Committee
MSA	Metropolitan Statistical Area
MSR	Mortgage servicing right
NSFR	Net Stable Funding Ratio
OAS	Option-adjusted spread
OCC	Office of the Comptroller of the Currency
OCI	Other comprehensive income
OREO	Other real estate owned
OTC	Over-the-counter
OTTI	Other-than-temporary impairment
PCA	Prompt Corrective Action
PCI	Purchased credit-impaired
PPI	Payment protection insurance
RMBS	Residential mortgage-backed securities
RSU	Restricted stock unit
SBLC	Standby letter of credit
SEC	Securities and Exchange Commission
SLR	Supplementary leverage ratio
TDR	Troubled debt restructurings
TLAC	Total loss-absorbing capacity
TTF	Time-to-required funding
VA	U.S. Department of Veterans Affairs
VaR	Value-at-Risk
VIE	Variable interest entity

Disclosure Controls and Procedures

Bank of America Corporation and Subsidiaries

As of the end of the period covered by this report and pursuant to Rule 13a-15 of the Securities Exchange Act of 1934 (Exchange Act), Bank of America's management, including the Chief Executive Officer and Chief Financial Officer, conducted an evaluation of the effectiveness and design of our disclosure controls and procedures (as that term is defined in Rule 13a-15(e) of the Exchange Act). Based upon that evaluation, Bank of America's Chief Executive Officer and Chief Financial Officer concluded that Bank of America's disclosure controls and procedures were effective, as of the end of the period covered by this report, in recording, processing, summarizing and reporting information required to be disclosed by the Corporation in reports that it files or submits under the Exchange Act, within the time periods specified in the Securities and Exchange Commission's rules and forms.

Executive Management Team and Board of Directors

Bank of America Corporation

Executive Management Team

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Chairman of the Board and
Chief Executive Officer

Dean C. Athanasia*
President, Preferred and
Small Business Banking, and
Co-head, Consumer Banking

Catherine P. Bessant*
Chief Operations and Technology Officer

Sheri B. Bronstein
Global Human Resources Executive

Paul M. Donofrio*
Chief Financial Officer

Anne M. Finucane
Vice Chairman

Geoffrey S. Greener*
Chief Risk Officer

Christine P. Katziff
Corporate General Auditor

Terrence P. Laughlin*
Vice Chairman and Head of
Global Wealth & Investment
Management

David G. Leitch*
Global General Counsel

Thomas K. Montag*
Chief Operating Officer

Thong M. Nguyen*
President, Retail Banking,
and Co-head, Consumer Banking

Andrea B. Smith*
Chief Administrative Officer

Bruce R. Thompson
Vice Chairman

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Chairman of the Board and
Chief Executive Officer,
Bank of America Corporation

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Lead Independent Director,
Bank of America Corporation;
Former Chairman
and Chief Executive Officer,
HCA Inc.

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R. David Yost
Former Chief Executive Officer,
AmerisourceBergen Corporation

Maria T. Zuber
Vice President for Research and E. A.
Griswold Professor of Geophysics,
Massachusetts Institute of Technology

* Executive Officer

Corporate Information

Bank of America Corporation

Headquarters

The principal executive offices of Bank of America Corporation (the Corporation) are located in the Bank of America Corporate Center, 100 North Tryon Street, Charlotte, NC 28255.

Stock Listing

The Corporation's common stock is listed on the New York Stock Exchange (NYSE) under the symbol BAC. The stock is typically listed as BankAm in newspapers. As of December 31, 2017, there were 175,958 registered holders of the Corporation's common stock.

Investor Relations

Analysts, portfolio managers and other investors seeking additional information about Bank of America stock should contact our Equity Investor Relations group at 1.704.386.5681 or i_r@bankofamerica.com. For additional information about Bank of America from a credit perspective, including debt and preferred securities, contact our Fixed Income Investor Relations group at 1.866.607.1234 or fixedincomeir@bankofamerica.com. Visit the Investor Relations area of the Bank of America website, http://investor.bankofamerica.com, for stock and dividend information, financial news releases, links to Bank of America SEC filings, electronic versions of our annual reports and other items of interest to the Corporation's shareholders.

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News Media

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Annual Report on Form 10-K

The Corporation's 2017 Annual Report on Form 10-K is available at http://investor.bankofamerica.com. The Corporation also will provide a copy of the 2017 Annual Report on Form 10-K (without exhibits) upon written request addressed to:

Bank of America Corporation
Office of the Corporate Secretary
Hearst Tower, 214 North Tryon Street
NC1-027-20-05
Charlotte, NC 28255

Shareholder Inquiries

For inquiries concerning dividend checks, electronic deposit of dividends, dividend reinvestment, tax statements, electronic delivery, transferring ownership, address changes or lost or stolen stock certificates, contact Bank of America Shareholder Services at Computershare Trust Company, N.A. via the Internet at www.computershare.com/bac; call 1.800.642.9855; or write to P.O. Box 505005, Louisville, KY 40233. For general shareholder information, contact Bank of America Office of the Corporate Secretary at 1.800.521.3984. Shareholders outside of the United States and Canada may call 1.781.575.2621.

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