FIVE-YEAR SUMMARY OF CONSOLIDATED FINANCIAL HIGHLIGHTS

(unaudited) As of or for the year ended December 31, (in millions, except per share, ratio, headcount data and where otherwise noted)	**2017**	2016	2015	2014	2013
Selected income statement data					
Total net revenue	**$ 99,624**	$ 95,668	$ 93,543	$ 95,112	$ 97,367
Total noninterest expense	**58,434**	55,771	59,014	61,274	70,467
Pre-provision profit	**41,190**	39,897	34,529	33,838	26,900
Provision for credit losses	**5,290**	5,361	3,827	3,139	225
Income before income tax expense	**35,900**	34,536	30,702	30,699	26,675
Income tax expense	**11,459**	9,803	6,260	8,954	8,789
Net income[a]	**$ 24,441**	$ 24,733	$ 24,442	$ 21,745	$ 17,886
Earnings per share data					
Net income: Basic	**$ 6.35**	$ 6.24	$ 6.05	$ 5.33	$ 4.38
Diluted	**6.31**	6.19	6.00	5.29	4.34
Average shares: Basic	**3,551.6**	3,658.8	3,741.2	3,808.3	3,832.4
Diluted	**3,576.8**	3,690.0	3,773.6	3,842.3	3,864.9
Market and per common share data					
Market capitalization	**$ 366,301**	$ 307,295	$ 241,899	$ 232,472	$ 219,657
Common shares at period-end	**3,425.3**	3,561.2	3,663.5	3,714.8	3,756.1
Share price:[b]					
High	**$ 108.46**	$ 87.39	$ 70.61	$ 63.49	$ 58.55
Low	**81.64**	52.50	50.07	52.97	44.20
Close	**106.94**	86.29	66.03	62.58	58.48
Book value per share	**67.04**	64.06	60.46	56.98	53.17
Tangible book value per share ("TBVPS")[c]	**53.56**	51.44	48.13	44.60	40.72
Cash dividends declared per share	**2.12**	1.88	1.72	1.58	1.44
Selected ratios and metrics					
Return on common equity ("ROE")	**10%**	10%	11%	10%	9%
Return on tangible common equity ("ROTCE")[c]	**12**	13	13	13	11
Return on assets ("ROA")	**0.96**	1.00	0.99	0.89	0.75
Overhead ratio	**59**	58	63	64	72
Loans-to-deposits ratio	**64**	65	65	56	57
High quality liquid assets ("HQLA") (in billions)[d]	**$ 556**	$ 524	$ 496	$ 600	$ 522
Common equity tier 1 ("CET1") capital ratio[e]	**12.2%**	12.3% [i]	11.8%	10.2%	10.7%
Tier 1 capital ratio[e]	**13.9**	14.0 [i]	13.5	11.6	11.9
Total capital ratio[e]	**15.9**	15.5	15.1	13.1	14.3
Tier 1 leverage ratio[e]	**8.3**	8.4	8.5	7.6	7.1
Selected balance sheet data (period-end)					
Trading assets	**$ 381,844**	$ 372,130	$ 343,839	$ 398,988	$ 374,664
Securities	**249,958**	289,059	290,827	348,004	354,003
Loans	**930,697**	894,765	837,299	757,336	738,418
Core Loans	**863,683**	806,152	732,093	628,785	583,751
Average core loans	**829,558**	769,385	670,757	596,823	563,809
Total assets	**2,533,600**	2,490,972	2,351,698	2,572,274	2,414,879
Deposits	**1,443,982**	1,375,179	1,279,715	1,363,427	1,287,765
Long-term debt[f]	**284,080**	295,245	288,651	276,379	267,446
Common stockholders' equity	**229,625**	228,122	221,505	211,664	199,699
Total stockholders' equity	**255,693**	254,190	247,573	231,727	210,857
Headcount	**252,539**	243,355	234,598	241,359	251,196
Credit quality metrics					
Allowance for credit losses	**$ 14,672**	$ 14,854	$ 14,341	$ 14,807	$ 16,969
Allowance for loan losses to total retained loans	**1.47%**	1.55%	1.63%	1.90%	2.25%
Allowance for loan losses to retained loans excluding purchased credit-impaired loans[g]	**1.27**	1.34	1.37	1.55	1.80
Nonperforming assets	**$ 6,426**	$ 7,535	$ 7,034	$ 7,967	$ 9,706
Net charge-offs[h]	**5,387**	4,692	4,086	4,759	5,802
Net charge-off rate[h]	**0.60%**	0.54%	0.52%	0.65%	0.81%

(a) On December 22, 2017, the Tax Cuts and Jobs Act ("TCJA") was signed into law. The Firm's results included a $2.4 billion decrease to net income as a result of the enactment of the TCJA. For additional information related to the impact of the TCJA, see Note 24.
(b) Based on daily prices reported by the New York Stock Exchange.
(c) TBVPS and ROTCE are non-GAAP financial measures. For further discussion of these measures, see Explanation and Reconciliation of the Firm's Use of Non-GAAP Financial Measures and Key Financial Performance Measures on pages 52–54.
(d) HQLA represents the amount of assets that qualify for inclusion in the liquidity coverage ratio. For December 31, 2017, the balance represents the average of quarterly reported results per the U.S. LCR public disclosure requirements effective April 1, 2017. Prior periods represent period-end balances under the final U.S. rule ("U.S. LCR") for December 31, 2016 and 2015, and the Firm's estimated amount for December 31, 2014 prior to the effective date of the final rule, and under the Basel III liquidity coverage ratio ("Basel III LCR") for December 31, 2013. For additional information, see LCR and HQLA on page 93.
(e) Ratios presented are calculated under the Basel III Transitional rules, which became effective on January 1, 2014, and for the capital ratios, represent the Collins Floor. Prior to 2014, the ratios were calculated under the Basel I rules. See Capital Risk Management on pages 82–91 for additional information on Basel III.
(f) Included unsecured long-term debt of $218.8 billion, $212.6 billion, $211.8 billion, $207.0 billion and $198.9 billion respectively, as of December 31, of each year presented.
(g) Excluded the impact of residential real estate purchased credit-impaired ("PCI") loans, a non-GAAP financial measure. For further discussion of these measures, see Explanation and Reconciliation of the Firm's Use of Non-GAAP Financial Measures and Key Performance Measures on pages 52–54, and the Allowance for credit losses on pages 117–119.
(h) Excluding net charge-offs of $467 million related to the student loan portfolio sale, the net charge-off rate for the year ended December 31, 2017 would have been 0.55%.
(i) The prior period ratios have been revised to conform with the current period presentation.

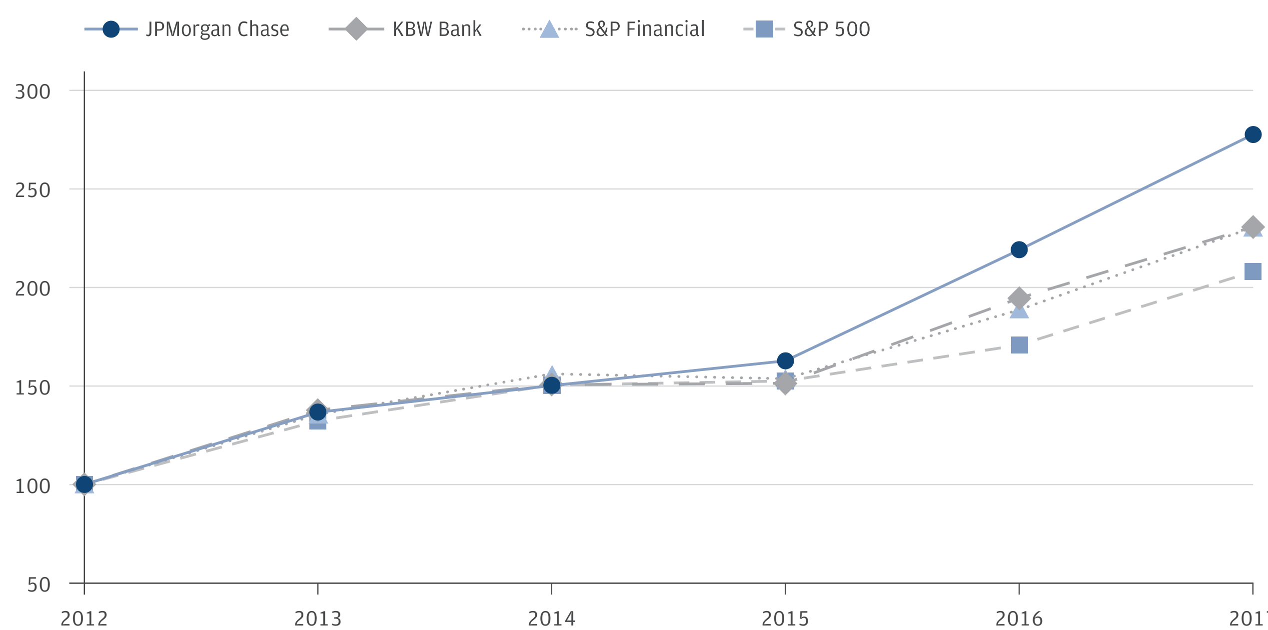
FIVE-YEAR STOCK PERFORMANCE

The following table and graph compare the five-year cumulative total return for JPMorgan Chase & Co. ("JPMorgan Chase" or the "Firm") common stock with the cumulative return of the S&P 500 Index, the KBW Bank Index and the S&P Financial Index. The S&P 500 Index is a commonly referenced equity benchmark in the United States of America ("U.S."), consisting of leading companies from different economic sectors. The KBW Bank Index seeks to reflect the performance of banks and thrifts that are publicly traded in the U.S. and is composed of leading national money center and regional banks and thrifts. The S&P Financial Index is an index of financial companies, all of which are components of the S&P 500. The Firm is a component of all three industry indices.

The following table and graph assume simultaneous investments of $100 on December 31, 2012, in JPMorgan Chase common stock and in each of the above indices. The comparison assumes that all dividends are reinvested.

December 31, (in dollars)	2012	2013	2014	2015	2016	**2017**
JPMorgan Chase	$ 100.00	$ 136.71	$ 150.22	$ 162.79	$ 219.06	**$ 277.62**
KBW Bank Index	100.00	137.76	150.66	151.39	194.55	**230.72**
S&P Financial Index	100.00	135.59	156.17	153.72	188.69	**230.47**
S&P 500 Index	100.00	132.37	150.48	152.55	170.78	**208.05**

December 31,
(in dollars)



This section of JPMorgan Chase's Annual Report for the year ended December 31, 2017 ("Annual Report"), provides Management's discussion and analysis of financial condition and results of operations ("MD&A") of JPMorgan Chase. See the Glossary of Terms and Acronyms on pages 283-289 for definitions of terms used throughout this Annual Report. The MD&A included in this Annual Report contains statements that are forward-looking within the meaning of the Private Securities Litigation Reform Act of 1995. Such statements are based on the current beliefs and expectations of JPMorgan Chase's management and are subject to significant risks and uncertainties. These risks and uncertainties could cause the Firm's actual results to differ materially from those set forth in such forward-looking statements. Certain of such risks and uncertainties are described herein (see Forward-looking Statements on page 145) and in JPMorgan Chase's Annual Report on Form 10-K for the year ended December 31, 2017 ("2017 Form 10-K"), in Part I, Item 1A: Risk factors; reference is hereby made to both.

INTRODUCTION

JPMorgan Chase & Co., a financial holding company incorporated under Delaware law in 1968, is a leading global financial services firm and one of the largest banking institutions in the United States of America ("U.S."), with operations worldwide; the Firm had $2.5 trillion in assets and $255.7 billion in stockholders' equity as of December 31, 2017. The Firm is a leader in investment banking, financial services for consumers and small businesses, commercial banking, financial transaction processing and asset management. Under the J.P. Morgan and Chase brands, the Firm serves millions of customers in the U.S. and many of the world's most prominent corporate, institutional and government clients.

JPMorgan Chase's principal bank subsidiaries are JPMorgan Chase Bank, National Association ("JPMorgan Chase Bank, N.A."), a national banking association with U.S. branches in 23 states, and Chase Bank USA, National Association ("Chase Bank USA, N.A."), a national banking association that is the Firm's principal credit card-issuing bank. JPMorgan Chase's principal nonbank subsidiary is J.P. Morgan Securities LLC ("JPMorgan Securities"), a U.S. broker-dealer. The bank and non-bank subsidiaries of JPMorgan Chase operate nationally as well as through overseas branches and subsidiaries, representative offices and subsidiary foreign banks. The Firm's principal operating subsidiary in the U.K. is J.P. Morgan Securities plc, a subsidiary of JPMorgan Chase Bank, N.A.

For management reporting purposes, the Firm's activities are organized into four major reportable business segments, as well as a Corporate segment. The Firm's consumer business is the Consumer & Community Banking ("CCB") segment. The Firm's wholesale business segments are Corporate & Investment Bank ("CIB"), Commercial Banking ("CB"), and Asset & Wealth Management ("AWM"). For a description of the Firm's business segments, and the products and services they provide to their respective client bases, refer to Business Segment Results on pages 55–74, and Note 31.

This executive overview of the MD&A highlights selected information and may not contain all of the information that is important to readers of this Annual Report. For a complete description of the trends and uncertainties, as well as the risks and critical accounting estimates affecting the Firm and its various lines of business, this Annual Report should be read in its entirety.

Financial performance of JPMorgan Chase

Year ended December 31, (in millions, except per share data and ratios)	2017	2016	Change
Selected income statement data			
Total net revenue	**$ 99,624**	$ 95,668	4%
Total noninterest expense	**58,434**	55,771	5
Pre-provision profit	**41,190**	39,897	3
Provision for credit losses	**5,290**	5,361	(1)
Net income	**24,441**	24,733	(1)
Diluted earnings per share	**6.31**	6.19	2
Selected ratios and metrics			
Return on common equity	**10%**	10%	
Return on tangible common equity	**12**	13	
Book value per share	**$ 67.04**	$ 64.06	5
Tangible book value per share	**53.56**	51.44	4
Capital ratios[(a)]			
CET1	**12.2%**	12.3% [(b)]	
Tier 1 capital	**13.9**	14.0 [(b)]	
Total capital	**15.9**	15.5	

(a) Ratios presented are calculated under the Basel III Transitional rules and represent the Collins Floor. See Capital Risk Management on pages 82–91 for additional information on Basel III.
(b) The prior period ratios have been revised to conform with the current period presentation.

Comparisons noted in the sections below are calculated for the full year of 2017 versus the full year of 2016, unless otherwise specified.

Summary of 2017 results

JPMorgan Chase reported strong results for full year 2017 with net income of $24.4 billion, or $6.31 per share, on net revenue of $99.6 billion. The Firm reported ROE of 10% and ROTCE of 12%. The Firm's results included a $2.4 billion decrease to net income as a result of the enactment of the Tax Cuts and Jobs Act ("TCJA"), driven by a deemed repatriation charge and adjustments to the value of the Firm's tax-oriented investments, partially offset by a benefit from the revaluation of the Firm's net deferred tax liability. For additional information related to the impact of the TCJA, refer to Note 24.

- Net income decreased 1% driven by higher noninterest expense and income tax expense, predominantly offset by higher net interest income.
- Total net revenue increased by 4% driven by higher net interest income and investment banking fees, partially offset by lower Fixed Income Markets and Home Lending noninterest revenue.
- Noninterest expense was $58.4 billion, up 5%, driven by higher compensation expense, auto lease depreciation expense and continued investments across the businesses.
- The provision for credit losses was $5.3 billion, relatively flat compared with the prior year, reflecting a decrease in the wholesale provision driven by credit quality improvements in the Oil & Gas, Natural Gas Pipelines and Metals & Mining portfolios, offset by an increase in the consumer provision. The increase in the consumer provision was driven by higher net charge-offs and a higher addition to the allowance for loan losses in the credit card portfolio, and the impact of the sale of the student loan portfolio.
- The total allowance for credit losses was $14.7 billion at December 31, 2017, and the Firm had a loan loss coverage ratio, excluding the PCI portfolio, of 1.27%, compared with 1.34% in the prior year. The Firm's nonperforming assets totaled $6.4 billion, a decrease from the prior-year level of $7.5 billion.
- Firmwide average core loans increased 8%.

Selected capital-related metrics

- The Firm's Basel III Fully Phased-In CET1 capital was $183 billion, and the Standardized and Advanced CET1 ratios were 12.1% and 12.7%, respectively.
- The Firm's Fully Phased-In supplementary leverage ratio ("SLR") was 6.5%.
- The Firm continued to grow tangible book value per share ("TBVPS"), ending 2017 at $53.56, up 4%.

ROTCE and TBVPS are non-GAAP financial measures. Core loans and each of the Fully Phased-In capital and leverage measures are considered key performance measures. For a further discussion of each of these measures, see Explanation and Reconciliation of the Firm's Use of Non-GAAP Financial Measures and Key Performance Measures on pages 52–54, and Capital Risk Management on pages 82–91.

Lines of business highlights

Selected business metrics for each of the Firm's four lines of business are presented below for the full year of 2017.

CCB ROE 17%

- Average core loans up 9%; average deposits of $640 billion, up 9%
- Client investment assets of $273 billion, up 17%
- Credit card sales volume up 14% and merchant processing volume up 12%

CIB ROE 14%

- Maintained #1 ranking for Global Investment Banking fees with 8.1% wallet share
- Investment Banking revenue up 12%; Treasury Services revenue up 15%; and Securities Services revenue up 9%

CB ROE 17%

- Record revenue of $8.6 billion, up 15%; record net income of $3.5 billion, up 33%
- Average loan balances of $198 billion, up 10%

AWM ROE 25%

- Record revenue of $12.9 billion, up 7%; record net income of $2.3 billion, up 4%
- Average loan balances of $123 billion, up 9%
- Record assets under management ("AUM") of $2.0 trillion, up 15%

For a detailed discussion of results by line of business, refer to the Business Segment Results on pages 55–56.

Credit provided and capital raised

JPMorgan Chase continues to support consumers, businesses and communities around the globe. The Firm provided credit and raised capital of $2.3 trillion for wholesale and consumer clients during 2017:

- $258 billion of credit for consumers
- $22 billion of credit for U.S. small businesses
- $817 billion of credit for corporations
- $1.1 trillion of capital raised for corporate clients and non-U.S. government entities
- $92 billion of credit and capital raised for U.S. government and nonprofit entities, including states, municipalities, hospitals and universities.

Recent events

- On February 21, 2018, the Firm announced its intent to pursue building a new 2.5 million square foot headquarters at its 270 Park Avenue location in New York City. The project will be subject to various approvals, and the Firm will work closely with the New York City Council and State officials to complete the project in a manner that benefits all constituencies. Once the project's approvals are granted, redevelopment and construction are expected to begin in 2019 and take approximately five years to complete. The project is not expected to have a material impact on the company's financial results.

- On January 30, 2018, Amazon, Berkshire Hathaway, and JPMorgan Chase announced that they are partnering on ways to address healthcare for their U.S. employees, with the aim of improving employee satisfaction and reducing costs. Through a new independent company, the initial focus will be on technology solutions that will provide U.S. employees and their families with simplified, high-quality and transparent healthcare at a reasonable cost.

- On January 29, 2018, JPMorgan Chase announced that Daniel Pinto, Chief Executive Officer ("CEO") of CIB, and Gordon Smith, CEO of CCB, have been appointed Co-Presidents and Co-Chief Operating Officers ("COO") of the Firm, effective January 30, 2018, and will continue to report to Jamie Dimon, Chairman and CEO. In addition to their current roles, Mr. Pinto and Mr. Smith will work closely with Mr. Dimon to help drive critical Firmwide opportunities. Responsibilities for the rest of the Firm's Operating Committee will remain unchanged, with its members continuing to report to Mr. Dimon.

- On January 23, 2018, the Firm announced a $20 billion, five-year comprehensive investment to help its employees and support job and economic growth in the U.S. Through these new investments, the Firm plans to develop hundreds of new branches in several new U.S. markets, increase wages and benefits for hourly U.S. employees, make increased small business and mortgage lending commitments, add approximately 4,000 jobs throughout the country, and increase philanthropic investments.

- On December 22, 2017, the TCJA was signed into law. The Firm's results included a $2.4 billion decrease to net income as a result of the enactment of the TCJA. For additional information related to the impact of the TCJA, see Note 24.

- During the second half of 2017, natural disasters caused significant disruptions to individuals and businesses, and damage to homes and communities in several regions where the Firm conducts business. The Firm continues to provide assistance to customers, clients, communities and employees who have been affected by these disasters. These events did not have a material impact on the Firm's 2017 financial results.

2018 outlook

These current expectations are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements are based on the current beliefs and expectations of JPMorgan Chase's management and are subject to significant risks and uncertainties. These risks and uncertainties could cause the Firm's actual results to differ materially from those set forth in such forward-looking statements. See Forward-Looking Statements on page 145 *and the Risk Factors section on* pages 8–26. *There is no assurance that actual results for the full year of 2018 will be in line with the outlook set forth below, and the Firm does not undertake to update any forward-looking statements.*

JPMorgan Chase's outlook for 2018 should be viewed against the backdrop of the global and U.S. economies, financial markets activity, the geopolitical environment, the competitive environment, client and customer activity levels, and regulatory and legislative developments in the U.S. and other countries where the Firm does business. Each of these interrelated factors will affect the performance of the Firm and its lines of business. The Firm expects that it will continue to make appropriate adjustments to its businesses and operations in response to ongoing developments in the legal, regulatory, business and economic environments in which it operates.

Firmwide

- As a result of the change in tax rate due to the TCJA, management expects a reduction in tax-equivalent adjustments, decreasing both revenue and income tax expense, on a managed basis, by approximately $1.2 billion on an annual run-rate basis.
- Management expects the new revenue recognition accounting standard to increase both noninterest revenue and expense for full-year 2018 by approximately $1.2 billion, with most of the impact in the AWM business. For additional information on the new accounting standard, see Accounting and Reporting Developments on page 141.
- Management expects first-quarter 2018 net interest income, on a managed basis, to be down modestly compared with the fourth quarter of 2017, driven by the impact of the TCJA and a lower day count. For full-year 2018, management expects net interest income, on a managed basis, to be in the $54 to $55 billion range, market dependent, and assuming expected core loan growth. Management expects Firmwide average core loan growth to be in the 6% to 7% range in 2018, excluding CIB loans.
- Excluding the impact of the new revenue recognition accounting standard, management expects Firmwide noninterest revenue for full-year 2018, on a managed basis, to be up approximately 7%, depending on market conditions.
- The Firm continues to take a disciplined approach to managing its expenses, while investing for growth and innovation. As a result, management expects Firmwide adjusted expense for full-year 2018 to be less than $62 billion, excluding the impact of the new revenue recognition accounting standard.
- Management estimates the full-year 2018 effective income tax rate to be in the 19% to 20% range, depending upon several factors, including the geographic mix of taxable income and refinements to estimates of the impacts of the TCJA.
- Management expects net charge-off rates to remain relatively flat across the wholesale and consumer portfolios, with the exception of Card.

CCB

- Management expects the full-year 2018 Card Services net revenue rate to be approximately 11.25%.
- In Card, management expects the net charge-off rate to increase to approximately 3.25% in 2018.

CIB

- Markets revenue in the first-quarter 2018 is expected to be up by mid to high single digit percentage points when compared with the prior-year quarter; actual Markets revenue results will continue to be affected by market conditions, which can be volatile.

CONSOLIDATED RESULTS OF OPERATIONS

This section provides a comparative discussion of JPMorgan Chase's Consolidated Results of Operations on a reported basis for the three-year period ended December 31, 2017, unless otherwise specified. Factors that relate primarily to a single business segment are discussed in more detail within that business segment. For a discussion of the Critical Accounting Estimates Used by the Firm that affect the Consolidated Results of Operations, see pages 138-140.

Revenue

Year ended December 31, (in millions)	2017	2016	2015
Investment banking fees	**$ 7,248**	$ 6,448	$ 6,751
Principal transactions	**11,347**	11,566	10,408
Lending- and deposit-related fees	**5,933**	5,774	5,694
Asset management, administration and commissions	**15,377**	14,591	15,509
Securities gains/(losses)	**(66)**	141	202
Mortgage fees and related income	**1,616**	2,491	2,513
Card income	**4,433**	4,779	5,924
Other income[(a)]	**3,639**	3,795	3,032
Noninterest revenue	**49,527**	49,585	50,033
Net interest income	**50,097**	46,083	43,510
Total net revenue	**$ 99,624**	$ 95,668	$ 93,543

(a) Included operating lease income of $3.6 billion, $2.7 billion and $2.1 billion for the years ended December 31, 2017, 2016 and 2015, respectively.

2017 compared with 2016

Investment banking fees increased reflecting higher debt and equity underwriting fees in CIB. The increase in debt underwriting fees was driven by a higher share of fees and an overall increase in industry-wide fees; and the increase in equity underwriting fees was driven by growth in industry-wide issuance, including a strong initial public offering ("IPO") market. For additional information, see CIB segment results on pages 62-66 and Note 6.

Principal transactions revenue decreased compared with a strong prior year in CIB, primarily reflecting:

- lower Fixed Income-related revenue driven by sustained low volatility and tighter credit spreads

partially offset by

- higher Equity-related revenue primarily in Prime Services, and
- higher Lending-related revenue reflecting lower fair value losses on hedges of accrual loans.

For additional information, see CIB and Corporate segment results on pages 62-66 and pages 73-74, respectively, and Note 6.

Asset management, administration and commissions revenue increased as a result of higher asset management fees in AWM and CCB, and higher asset-based fees in CIB, both driven by higher market levels. For additional information, see AWM, CCB and CIB segment results on pages 70-72, pages 57-61 and pages 62-66, respectively, and Note 6.

For information on lending- and deposit-related fees, see the segment results for CCB on pages 57-61, CIB on pages 62-66, and CB on pages 67-69 and Note 6; on securities gains, see the Corporate segment discussion on pages 73-74.

Mortgage fees and related income decreased driven by lower MSR risk management results, lower net production revenue on lower margins and volumes, and lower servicing revenue on lower average third-party loans serviced. For further information, see CCB segment results on pages 57-61, Note 6 and 15.

Card income decreased predominantly driven by higher credit card new account origination costs, largely offset by higher card-related fees, primarily annual fees. For further information, see CCB segment results on pages 57-61 .

Other income decreased primarily due to:

- lower other income in CIB largely driven by a $520 million impact related to the enactment of the TCJA, which reduced the value of certain of CIB's tax-oriented investments, and
- the absence in the current year of gains from
  - the sale of Visa Europe interests in CCB,
  - the redemption of guaranteed capital debt securities ("trust preferred securities"), and
  - the disposal of an asset in AWM

partially offset by

- higher operating lease income reflecting growth in auto operating lease volume in CCB, and
- a legal benefit of $645 million recorded in the second quarter of 2017 in Corporate related to a settlement with the FDIC receivership for Washington Mutual and with Deutsche Bank as trustee of certain Washington Mutual trusts.

For further information, see Note 6.

Net interest income increased primarily driven by the net impact of higher rates and loan growth across the businesses, partially offset by declines in Markets net interest income in CIB. The Firm's average interest-earning assets were $2.2 trillion, up $79 billion from the prior year, and the net interest yield on these assets, on a fully taxable equivalent ("FTE") basis, was 2.36%, an increase of 11 basis points from the prior year.

2016 compared with 2015

Investment banking fees decreased predominantly due to lower equity underwriting fees driven by declines in industry-wide fee levels.

Principal transactions revenue increased reflecting broad-based strength across products in CIB's Fixed Income Markets business. Rates performance was strong, with increased client activity driven by high issuance-based flows, global political developments, and central bank actions. Credit revenue improved driven by higher market-making revenue from the secondary market as clients' appetite for risk recovered.

Asset management, administration and commissions revenue decreased reflecting lower asset management fees in AWM driven by a reduction in revenue related to the disposal of assets at the beginning of 2016, the impact of lower average equity market levels and lower performance fees, as well as due to lower brokerage commissions and other fees in CIB and AWM.

Mortgage fees and related income were relatively flat, as lower mortgage servicing revenue related to lower average third-party loans serviced was predominantly offset by higher MSR risk management results.

Card income decreased predominantly driven by higher new account origination costs and the impact of renegotiated co-brand partnership agreements, partially offset by higher card sales volume and other card-related fees.

Other income increased primarily reflecting:

- higher operating lease income from growth in auto operating lease assets in CCB
- a gain on the sale of Visa Europe interests in CCB
- a gain related to the redemption of guaranteed capital debt securities
- the absence of losses recognized in 2015 related to the accelerated amortization of cash flow hedges associated with the exit of certain non-operating deposits
- a gain on disposal of an asset in AWM

partially offset by

- a $514 million benefit recorded in the prior year from a legal settlement in Corporate.

Net interest income increased primarily driven by loan growth across the businesses and the net impact of higher rates, partially offset by lower investment securities balances and higher interest expense on long-term debt. The Firm's average interest-earning assets were $2.1 trillion in 2016, up $13 billion from the prior year, and the net interest yield on these assets, on a FTE basis, was 2.25%, an increase of 11 basis points from the prior year.

Provision for credit losses

Year ended December 31, (in millions)	2017	2016	2015
Consumer, excluding credit card	$ 620	$ 467	$ (81)
Credit card	4,973	4,042	3,122
Total consumer	5,593	4,509	3,041
Wholesale	(303)	852	786
Total provision for credit losses	$ 5,290	$ 5,361	$ 3,827

2017 compared with 2016

The **provision for credit losses** decreased as a result of:

- a net $422 million reduction in the wholesale allowance for credit losses, reflecting credit quality improvements in the Oil & Gas, Natural Gas Pipelines, and Metals & Mining portfolios, compared with an addition of $511 million in the prior year driven by downgrades in the same portfolios

predominantly offset by

- a higher consumer provision driven by
  - $450 million of higher net charge-offs, primarily in the credit card portfolio due to growth in newer vintages which, as anticipated, have higher loss rates than the more seasoned portion of the portfolio, partially offset by a decrease in net charge-offs in the residential real estate portfolio reflecting continued improvement in home prices and delinquencies,
  - a $416 million higher addition to the allowance for credit losses related to the credit card portfolio driven by higher loss rates and loan growth, and a lower reduction in the allowance for the residential real estate portfolio predominantly driven by continued improvement in home prices and delinquencies, and
  - a $218 million impact in connection with the sale of the student loan portfolio.

For a more detailed discussion of the credit portfolio, the student loan sale and the allowance for credit losses, see the segment discussions of CCB on pages 57-61, CIB on pages 62-66, CB on pages 67-69, the Allowance for Credit Losses on pages 117-119 and Note 13.

2016 compared with 2015

The **provision for credit losses** reflected an increase in the consumer provision and, to a lesser extent, the wholesale provision. The increase in the consumer provision was predominantly driven by:

- a $920 million increase related to the credit card portfolio, due to a $600 million addition in the allowance for loan losses, as well as $320 million of higher net charge-offs, driven by loan growth (including growth in newer vintages which, as anticipated, have higher loss rates compared to the overall portfolio), and

- a $470 million lower benefit related to the residential real estate portfolio, as the reduction in the allowance for loan losses in 2016 was lower than the prior year. The reduction in both periods reflected continued improvements in home prices and lower delinquencies.

The increase in the wholesale provision was largely driven by the impact of downgrades in the Oil & Gas and Natural Gas Pipelines portfolios.

Noninterest expense

Year ended December 31, (in millions)	2017	2016	2015
Compensation expense	**$31,009**	$29,979	$29,750
Noncompensation expense:			
Occupancy	**3,723**	3,638	3,768
Technology, communications and equipment	**7,706**	6,846	6,193
Professional and outside services	**6,840**	6,655	7,002
Marketing	**2,900**	2,897	2,708
Other[(a)(b)]	**6,256**	5,756	9,593
Total noncompensation expense	**27,425**	25,792	29,264
Total noninterest expense	**$58,434**	$55,771	$59,014

(a) Included Firmwide legal expense/(benefit) of $(35) million, $(317) million and $3.0 billion for the years ended December 31, 2017, 2016 and 2015, respectively.
(b) Included FDIC-related expense of $1.5 billion, $1.3 billion and $1.2 billion for the years ended December 31, 2017, 2016 and 2015, respectively.

2017 compared with 2016

Compensation expense increased predominantly driven by investments in headcount in most businesses, including bankers and business-related support staff, and higher performance-based compensation expense, predominantly in AWM.

Noncompensation expense increased as a result of:

- higher depreciation expense from growth in auto operating lease volume in CCB
- contributions to the Firm's Foundation
- a lower legal net benefit compared to the prior year
- higher FDIC-related expense, and
- an impairment in CB on certain leased equipment, the majority of which was sold subsequent to year-end

partially offset by

- the absence in the current year of two items totaling $175 million in CCB related to liabilities from a merchant in bankruptcy and mortgage servicing reserves.

For a discussion of legal expense, see Note 29.

2016 compared with 2015

Compensation expense was relatively flat predominantly driven by higher performance-based compensation expense and investments in several businesses, offset by the impact of continued expense reduction initiatives, including lower headcount in certain businesses.

Noncompensation expense decreased as a result of lower legal expense (including lower legal professional services expense), the impact of efficiencies, and reduced non-U.S. tax surcharges. These factors were partially offset by higher depreciation expense from growth in auto operating lease assets and higher investments in marketing.

Income tax expense

Year ended December 31, (in millions, except rate)	2017	2016	2015
Income before income tax expense	**$35,900**	$ 34,536	$ 30,702
Income tax expense	**11,459**	9,803	6,260
Effective tax rate	**31.9%**	28.4%	20.4%

2017 compared with 2016

The **effective tax rate** increased in 2017 driven by:

- a $1.9 billion increase to income tax expense representing the impact of the enactment of the TCJA. The increase was driven by the deemed repatriation of the Firm's unremitted non-U.S. earnings and adjustments to the value of certain tax-oriented investments, partially offset by a benefit from the revaluation of the Firm's net deferred tax liability. The incremental expense resulted in a 5.4 percentage point increase to the Firm's effective tax rate

partially offset by

- benefits resulting from the vesting of employee share-based awards related to the appreciation of the Firm's stock price upon vesting above their original grant price, and the release of a valuation allowance.

For further information, see Note 24.

2016 compared with 2015

The **effective tax rate** in 2016 was affected by changes in the mix of income and expense subject to U.S. federal and state and local taxes, tax benefits related to the utilization of certain deferred tax assets, as well as the adoption of new accounting guidance related to employee share-based incentive payments. These tax benefits were partially offset by higher income tax expense from tax audits. The lower effective tax rate in 2015 was predominantly driven by $2.9 billion of tax benefits, which reduced the Firm's effective tax rate by 9.4 percentage points. The recognition of tax benefits in 2015 resulted from the resolution of various tax audits, as well as the release of U.S. deferred taxes associated with the restructuring of certain non-U.S. entities.

Consolidated Balance Sheets Analysis

The following is a discussion of the significant changes between December 31, 2017 and 2016.

Selected Consolidated balance sheets data

December 31, (in millions)	**2017**	2016	Change
Assets			
Cash and due from banks	$ **25,827**	$ 23,873	8%
Deposits with banks	**404,294**	365,762	11
Federal funds sold and securities purchased under resale agreements	**198,422**	229,967	(14)
Securities borrowed	**105,112**	96,409	9
Trading assets:			
Debt and equity instruments	**325,321**	308,052	6
Derivative receivables	**56,523**	64,078	(12)
Securities	**249,958**	289,059	(14)
Loans	**930,697**	894,765	4
Allowance for loan losses	**(13,604)**	(13,776)	(1)
Loans, net of allowance for loan losses	**917,093**	880,989	4
Accrued interest and accounts receivable	**67,729**	52,330	29
Premises and equipment	**14,159**	14,131	–
Goodwill, MSRs and other intangible assets	**54,392**	54,246	–
Other assets	**114,770**	112,076	2
Total assets	$ **2,533,600**	$ 2,490,972	2%

Cash and due from banks and deposits with banks increased primarily driven by deposit growth and a shift in the deployment of excess cash from securities purchased under resale agreements and investment securities into deposits with banks. The Firm's excess cash is placed with various central banks, predominantly Federal Reserve Banks.

Federal funds sold and securities purchased under resale agreements decreased primarily due to the shift in the deployment of excess cash to deposits with banks and lower client activity in CIB. For additional information on the Firm's Liquidity Risk Management, see pages 92–97.

Securities borrowed increased driven by higher demand for securities to cover short positions related to client-driven market-making activities in CIB.

Trading assets–debt and equity instruments increased predominantly as a result of client-driven market-making activities in CIB, primarily in Fixed Income Markets and Prime Services, partially offset by lower equity instruments in Equity Markets. For additional information, refer to Note 2.

Trading assets and trading liabilities–derivative receivables and payables decreased predominantly as a result of client-driven market-making activities in CIB Markets, which reduced foreign exchange and interest rate derivative receivables and payables, and increased equity derivative receivables, driven by market movements. For additional information, refer to Derivative contracts on pages 114–115, and Notes 2 and 5.

Securities decreased primarily reflecting net sales, maturities and paydowns of U.S. Treasuries, non-U.S. government securities and collateralized loan obligations. For additional information, see Notes 2 and 10.

Loans increased reflecting:

- higher wholesale loans driven by new originations in CB and higher loans to Private Banking clients in AWM
- higher consumer loans driven by higher retention of originated high-quality prime mortgages in CCB and AWM, and higher credit card loans, largely offset by the sale of the student loan portfolio, lower home equity loans and the run-off of PCI loans.

The **allowance for loan losses** decreased driven by:

- a net reduction in the wholesale allowance, reflecting credit quality improvements in the Oil & Gas, Natural Gas Pipelines and Metals & Mining portfolios (compared with additions to the allowance in the prior year driven by downgrades in the same portfolios)

largely offset by

- a net increase in the consumer allowance, reflecting additions to the allowance for the credit card and business banking portfolios, driven by loan growth in both of these portfolios and higher loss rates in the credit card portfolio, largely offset by a reduction in the allowance for the residential real estate portfolio, predominantly driven by continued improvement in home prices and delinquencies, and the utilization of the allowance in connection with the sale of the student loan portfolio.

For a more detailed discussion of loans and the allowance for loan losses, refer to Credit and Investment Risk Management on pages 99–120, and Notes 2, 3, 12 and 13.

Accrued interest and accounts receivable increased primarily reflecting higher held-for-investment margin loans related to client-driven financing activities in Prime Services.

Other assets increased slightly as a result of higher auto operating lease assets from growth in business volume in CCB.

For information on Goodwill and MSRs, see Note 15.

Selected Consolidated balance sheets data

December 31, (in millions)	2017	2016	Change
Liabilities			
Deposits	**$ 1,443,982**	$ 1,375,179	5
Federal funds purchased and securities loaned or sold under repurchase agreements	**158,916**	165,666	(4)
Short-term borrowings	**51,802**	34,443	50
Trading liabilities:			
Debt and equity instruments	**85,886**	87,428	(2)
Derivative payables	**37,777**	49,231	(23)
Accounts payable and other liabilities	**189,383**	190,543	(1)
Beneficial interests issued by consolidated variable interest entities ("VIEs")	**26,081**	39,047	(33)
Long-term debt	**284,080**	295,245	(4)
Total liabilities	**2,277,907**	2,236,782	2
Stockholders' equity	**255,693**	254,190	1
Total liabilities and stockholders' equity	**$ 2,533,600**	$ 2,490,972	2%

Deposits increased due to:

- higher consumer deposits reflecting the continuation of strong growth from new and existing customers, and low attrition rates
- higher wholesale deposits largely driven by growth in client cash management activity in CIB's Securities Services business, partially offset by lower balances in AWM reflecting balance migration predominantly into the Firm's investment-related products.

For more information, refer to the Liquidity Risk Management discussion on pages 92–97; and Notes 2 and 17.

Short-term borrowings increased primarily due to higher issuance of commercial paper reflecting in part a change in the mix of funding from securities sold under repurchase agreements for CIB Markets activities. For additional information, see Liquidity Risk Management on pages 92–97.

Beneficial interests issued by consolidated VIEs decreased due to net maturities of credit card securitizations and the deconsolidation of the student loan securitization entities in connection with the portfolio's sale. For further information on Firm-sponsored VIEs and loan securitization trusts, see Off-Balance Sheet Arrangements on pages 50–51 and Note 14 and 27; and for the sale of the student loan portfolio, see CCB segment results on pages 57-61.

Long-term debt decreased reflecting lower Federal Home Loan Bank ("FHLB") advances, partially offset by the net issuance of senior debt and the net issuance of structured notes in CIB driven by client demand. For additional information on the Firm's long-term debt activities, see Liquidity Risk Management on pages 92–97 and Note 19.

For information on changes in stockholders' equity, see page 151, and on the Firm's capital actions, see Capital actions on pages 89-90.

Consolidated Cash Flows Analysis

	Year ended December 31,		
(in millions)	**2017**	2016	2015
Net cash provided by/(used in)			
Operating activities	**$ (2,501)**	$ 20,196	$ 73,466
Investing activities	**(10,283)**	(114,949)	106,980
Financing activities	**14,642**	98,271	(187,511)
Effect of exchange rate changes on cash	**96**	(135)	(276)
Net increase/(decrease) in cash and due from banks	**$ 1,954**	$ 3,383	$ (7,341)

Operating activities

JPMorgan Chase's operating assets and liabilities support the Firm's lending and capital markets activities. These assets and liabilities can vary significantly in the normal course of business due to the amount and timing of cash flows, which are affected by client-driven and risk management activities and market conditions. The Firm believes cash flows from operations, available cash and other liquidity sources, and its capacity to generate cash through secured and unsecured sources are sufficient to meet operating liquidity needs.

- In 2017, cash used reflected an increase in held-for-investment margin loans in accrued interest and accounts receivable and a decrease in trading liabilities.
- In 2016, cash provided reflected increases in accounts payable and trading liabilities, partially offset by cash used reflecting an increase in trading assets, an increase in accounts receivable from merchants and higher client receivables.
- In 2015, cash provided reflected decreases in trading assets and in accounts receivable, partially offset by cash used due to a decrease in accounts payable and other liabilities.

Investing activities

The Firm's investing activities predominantly include originating held-for-investment loans and investing in the securities portfolio and other short-term interest-earning assets.

- In 2017, cash used primarily reflected net originations of loans and a net increase in short-term interest-earning assets, partially offset by net proceeds from paydowns, maturities, sales and purchases of investment securities.
- In 2016, cash used reflected net originations of loans, an increase in short-term interest-earning assets, an increase in securities purchased under resale agreements, and the deployment of excess cash.
- In 2015, cash provided predominantly reflected lower short-term interest-earning assets, and net proceeds from lower investment securities, partially offset by cash used for net originations of loans.

Financing activities

The Firm's financing activities include acquiring customer deposits and issuing long-term debt, as well as preferred and common stock.

- In 2017, cash provided reflected higher deposits and short-term borrowings, partially offset by a decrease in long-term borrowings.
- In 2016, cash provided reflected higher deposits, and an increase in securities loaned or sold under repurchase agreements, and net proceeds from long term borrowings.
- In 2015, cash used reflected lower deposits and short-term borrowings, partially offset by net proceeds from long-term borrowings. Additionally, in 2015 cash outflows reflected a decrease in securities loaned or sold under repurchase agreements.
- For all periods, cash was used for repurchases of common stock and cash dividends on common and preferred stock.

* * *

For a further discussion of the activities affecting the Firm's cash flows, see Consolidated Balance Sheets Analysis on pages 47-48 , Capital Risk Management on pages 82–91, and Liquidity Risk Management on pages 92–97.

OFF-BALANCE SHEET ARRANGEMENTS AND CONTRACTUAL CASH OBLIGATIONS

In the normal course of business, the Firm enters into various contractual obligations that may require future cash payments. Certain obligations are recognized on-balance sheet, while others are off-balance sheet under accounting principles generally accepted in the U.S. ("U.S. GAAP").

The Firm is involved with several types of off–balance sheet arrangements, including through nonconsolidated SPEs, which are a type of VIE, and through lending-related financial instruments (e.g., commitments and guarantees).

The Firm holds capital, as deemed appropriate, against all SPE-related transactions and related exposures, such as derivative transactions and lending-related commitments and guarantees.

The Firm has no commitments to issue its own stock to support any SPE transaction, and its policies require that transactions with SPEs be conducted at arm's length and reflect market pricing. Consistent with this policy, no JPMorgan Chase employee is permitted to invest in SPEs with which the Firm is involved where such investment would violate the Firm's Code of Conduct.

The table below provides an index of where in this Annual Report a discussion of the Firm's various off-balance sheet arrangements can be found. In addition, see Note 1 for information about the Firm's consolidation policies.

Type of off-balance sheet arrangement	Location of disclosure	Page references
Special-purpose entities: variable interests and other obligations, including contingent obligations, arising from variable interests in nonconsolidated VIEs	See Note 14	236–243
Off-balance sheet lending-related financial instruments, guarantees, and other commitments	See Note 27	261–266

Contractual cash obligations

The accompanying table summarizes, by remaining maturity, JPMorgan Chase's significant contractual cash obligations at December 31, 2017. The contractual cash obligations included in the table below reflect the minimum contractual obligation under legally enforceable contracts with terms that are both fixed and determinable. Excluded from the below table are certain liabilities with variable cash flows and/or no obligation to return a stated amount of principal at maturity.

The carrying amount of on-balance sheet obligations on the Consolidated balance sheets may differ from the minimum contractual amount of the obligations reported below. For a discussion of mortgage repurchase liabilities and other obligations, see Note 27.

Contractual cash obligations

By remaining maturity at December 31, (in millions)	2017					2016
	2018	2019-2020	2021-2022	After 2022	**Total**	Total
On-balance sheet obligations						
Deposits[a]	**$ 1,421,174**	**$ 5,276**	**$ 4,810**	**$ 6,204**	**$ 1,437,464**	$ 1,368,866
Federal funds purchased and securities loaned or sold under repurchase agreements	**133,779**	**4,198**	**4,958**	**15,981**	**158,916**	165,666
Short-term borrowings[a]	**42,664**	**–**	**–**	**–**	**42,664**	26,497
Beneficial interests issued by consolidated VIEs	**13,636**	**9,542**	**2,544**	**314**	**26,036**	38,927
Long-term debt[a]	**37,211**	**63,685**	**43,180**	**116,819**	**260,895**	288,315
Other[b]	**4,726**	**2,146**	**2,080**	**4,573**	**13,525**	8,980
Total on-balance sheet obligations	**1,653,190**	**84,847**	**57,572**	**143,891**	**1,939,500**	1,897,251
Off-balance sheet obligations						
Unsettled reverse repurchase and securities borrowing agreements[c]	**76,859**	**–**	**–**	**–**	**76,859**	50,722
Contractual interest payments[d]	**9,248**	**11,046**	**7,471**	**26,338**	**54,103**	48,862
Operating leases[e]	**1,526**	**2,750**	**1,844**	**3,757**	**9,877**	10,115
Equity investment commitments[f]	**174**	**46**	**19**	**515**	**754**	1,068
Contractual purchases and capital expenditures	**1,923**	**937**	**439**	**204**	**3,503**	2,566
Obligations under co-brand programs	**249**	**500**	**478**	**207**	**1,434**	868
Total off-balance sheet obligations	**89,979**	**15,279**	**10,251**	**31,021**	**146,530**	114,201
Total contractual cash obligations	**$ 1,743,169**	**$ 100,126**	**$ 67,823**	**$ 174,912**	**$ 2,086,030**	$ 2,011,452

(a) Excludes structured notes on which the Firm is not obligated to return a stated amount of principal at the maturity of the notes, but is obligated to return an amount based on the performance of the structured notes.
(b) Primarily includes dividends declared on preferred and common stock, deferred annuity contracts, pension and other postretirement employee benefit obligations, insurance liabilities and income taxes payable associated with the deemed repatriation under the TCJA.
(c) For further information, refer to unsettled reverse repurchase and securities borrowing agreements in Note 27.
(d) Includes accrued interest and future contractual interest obligations. Excludes interest related to structured notes for which the Firm's payment obligation is based on the performance of certain benchmarks.
(e) Includes noncancelable operating leases for premises and equipment used primarily for banking purposes. Excludes the benefit of noncancelable sublease rentals of $1.0 billion and $1.4 billion at December 31, 2017 and 2016, respectively. See Note 28 for more information on lease commitments.
(f) At December 31, 2017 and 2016, included unfunded commitments of $40 million and $48 million, respectively, to third-party private equity funds, and $714 million and $1.0 billion of unfunded commitments, respectively, to other equity investments.

EXPLANATION AND RECONCILIATION OF THE FIRM'S USE OF NON-GAAP FINANCIAL MEASURES AND KEY PERFORMANCE MEASURES

Non-GAAP financial measures

The Firm prepares its Consolidated Financial Statements using U.S. GAAP; these financial statements appear on pages 148–152. That presentation, which is referred to as "reported" basis, provides the reader with an understanding of the Firm's results that can be tracked consistently from year-to-year and enables a comparison of the Firm's performance with other companies' U.S. GAAP financial statements.

In addition to analyzing the Firm's results on a reported basis, management reviews Firmwide results, including the overhead ratio, on a "managed" basis; these Firmwide managed basis results are non-GAAP financial measures. The Firm also reviews the results of the lines of business on a managed basis. The Firm's definition of managed basis starts, in each case, with the reported U.S. GAAP results and includes certain reclassifications to present total net revenue for the Firm (and each of the reportable business segments) on a FTE basis. Accordingly, revenue from investments that receive tax credits and tax-exempt securities is presented in the managed results on a basis comparable to taxable investments and securities. These financial measures allow management to assess the comparability of revenue from year-to-year arising from both taxable and tax-exempt sources. The corresponding income tax impact related to tax-exempt items is recorded within income tax expense. These adjustments have no impact on net income as reported by the Firm as a whole or by the lines of business.

Management also uses certain non-GAAP financial measures at the Firm and business-segment level, because these other non-GAAP financial measures provide information to investors about the underlying operational performance and trends of the Firm or of the particular business segment, as the case may be, and, therefore, facilitate a comparison of the Firm or the business segment with the performance of its relevant competitors. For additional information on these non-GAAP measures, see Business Segment Results on pages 55–74.

Additionally, certain credit metrics and ratios disclosed by the Firm exclude PCI loans, and are therefore non-GAAP measures. For additional information on these non-GAAP measures, see Credit and Investment Risk Management on pages 99–120.

Non-GAAP financial measures used by the Firm may not be comparable to similarly named non-GAAP financial measures used by other companies.

The following summary table provides a reconciliation from the Firm's reported U.S. GAAP results to managed basis.

	2017			2016			2015		
Year ended December 31, (in millions, except ratios)	Reported Results	Fully taxable-equivalent adjustments[(a)]	Managed basis	Reported Results	Fully taxable-equivalent adjustments[(a)]	Managed basis	Reported Results	Fully taxable-equivalent adjustments[(a)]	Managed basis
Other income	**$ 3,639**	**$ 2,704** [(b)]	**$ 6,343**	$ 3,795	$ 2,265	$ 6,060	$ 3,032	$ 1,980	$ 5,012
Total noninterest revenue	**49,527**	**2,704**	**52,231**	49,585	2,265	51,850	50,033	1,980	52,013
Net interest income	**50,097**	**1,313**	**51,410**	46,083	1,209	47,292	43,510	1,110	44,620
Total net revenue	**99,624**	**4,017**	**103,641**	95,668	3,474	99,142	93,543	3,090	96,633
Pre-provision profit	**41,190**	**4,017**	**45,207**	39,897	3,474	43,371	34,529	3,090	37,619
Income before income tax expense	**35,900**	**4,017**	**39,917**	34,536	3,474	38,010	30,702	3,090	33,792
Income tax expense	**11,459**	**4,017** [(b)]	**15,476**	9,803	3,474	13,277	6,260	3,090	9,350
Overhead ratio	**59%**	**NM**	**56%**	58%	NM	56%	63%	NM	61%

(a) Predominantly recognized in CIB and CB business segments and Corporate.
(b) Included $375 million related to tax-oriented investments as a result of the enactment of the TCJA.

Net interest income excluding CIB's Markets businesses

In addition to reviewing net interest income on a managed basis, management also reviews net interest income excluding net interest income arising from CIB's Markets businesses to assess the performance of the Firm's lending, investing (including asset-liability management) and deposit-raising activities. This net interest income is referred to as non-markets related net interest income. CIB's Markets businesses are Fixed Income Markets and Equity Markets. Management believes that disclosure of non-markets related net interest income provides investors and analysts with another measure by which to analyze the non-markets-related business trends of the Firm and provides a comparable measure to other financial institutions that are primarily focused on lending, investing and deposit-raising activities.

The data presented below are non-GAAP financial measures due to the exclusion of markets related net interest income arising from CIB.

Year ended December 31, (in millions, except rates)	2017	2016	2015
Net interest income – managed basis[(a)(b)]	**$ 51,410**	$ 47,292	$ 44,620
Less: CIB Markets net interest income[(c)]	**4,630**	6,334	5,298
Net interest income excluding CIB Markets[(a)]	**$ 46,780**	$ 40,958	$ 39,322
Average interest-earning assets	**$2,180,592**	$2,101,604	$ 2,088,242
Less: Average CIB Markets interest-earning assets[(c)]	**540,835**	520,307	510,292
Average interest-earning assets excluding CIB Markets	**$1,639,757**	$1,581,297	$ 1,577,950
Net interest yield on average interest-earning assets – managed basis	2.36%	2.25%	2.14%
Net interest yield on average CIB Markets interest-earning assets[(c)]	0.86	1.22	1.04
Net interest yield on average interest-earning assets excluding CIB Markets	2.85%	2.59%	2.49%

(a) Interest includes the effect of related hedges. Taxable-equivalent amounts are used where applicable.
(b) For a reconciliation of net interest income on a reported and managed basis, see reconciliation from the Firm's reported U.S. GAAP results to managed basis on page 52.
(c) The amounts in this table differ from the prior-period presentation to align with CIB's Markets businesses. For further information on CIB's Markets businesses, see page 65.

Calculation of certain U.S. GAAP and non-GAAP financial measures

Certain U.S. GAAP and non-GAAP financial measures are calculated as follows:

Book value per share ("BVPS")
Common stockholders' equity at period-end /
Common shares at period-end

Overhead ratio
Total noninterest expense / Total net revenue

Return on assets ("ROA")
Reported net income / Total average assets

Return on common equity ("ROE")
Net income* / Average common stockholders' equity

Return on tangible common equity ("ROTCE")
Net income* / Average tangible common equity

Tangible book value per share ("TBVPS")
Tangible common equity at period-end / Common shares at period-end

* Represents net income applicable to common equity

Tangible common equity, ROTCE and TBVPS

Tangible common equity ("TCE"), ROTCE and TBVPS are each non-GAAP financial measures. TCE represents the Firm's common stockholders' equity (i.e., total stockholders' equity less preferred stock) less goodwill and identifiable intangible assets (other than MSRs), net of related deferred tax liabilities. ROTCE measures the Firm's net income applicable to common equity as a percentage of average TCE. TBVPS represents the Firm's TCE at period-end divided by common shares at period-end. TCE, ROTCE and TBVPS are utilized by the Firm, as well as investors and analysts, in assessing the Firm's use of equity.

The following summary table provides a reconciliation from the Firm's common stockholders' equity to TCE.

	Period-end		Average		
			Year ended December 31,		
(in millions, except per share and ratio data)	**Dec 31, 2017**	Dec 31, 2016	**2017**	2016	2015
Common stockholders' equity	**$ 229,625**	$ 228,122	**$ 230,350**	$ 224,631	$ 215,690
Less: Goodwill	**47,507**	47,288	**47,317**	47,310	47,445
Less: Other intangible assets	**855**	862	**832**	922	1,092
Add: Certain Deferred tax liabilities(a)(b)	**2,204**	3,230	**3,116**	3,212	2,964
Tangible common equity	**$ 183,467**	$ 183,202	**$ 185,317**	$ 179,611	$ 170,117
Return on tangible common equity	**NA**	NA	**12%**	13%	13%
Tangible book value per share	**$ 53.56**	$ 51.44	**NA**	NA	NA

(a) Represents deferred tax liabilities related to tax-deductible goodwill and to identifiable intangibles created in nontaxable transactions, which are netted against goodwill and other intangibles when calculating TCE.
(b) Includes the effect from the revaluation of the Firm's net deferred tax liability as a result of the enactment of the TCJA.

Key performance measures

The Firm considers the following to be key regulatory capital measures:

- Capital, risk-weighted assets ("RWA"), and capital and leverage ratios presented under Basel III Standardized and Advanced Fully Phased-In rules, and
- SLR calculated under Basel III Advanced Fully Phased-In rules.

The Firm, as well as banking regulators, investors and analysts, use these measures to assess the Firm's regulatory capital position and to compare the Firm's regulatory capital to that of other financial services companies.

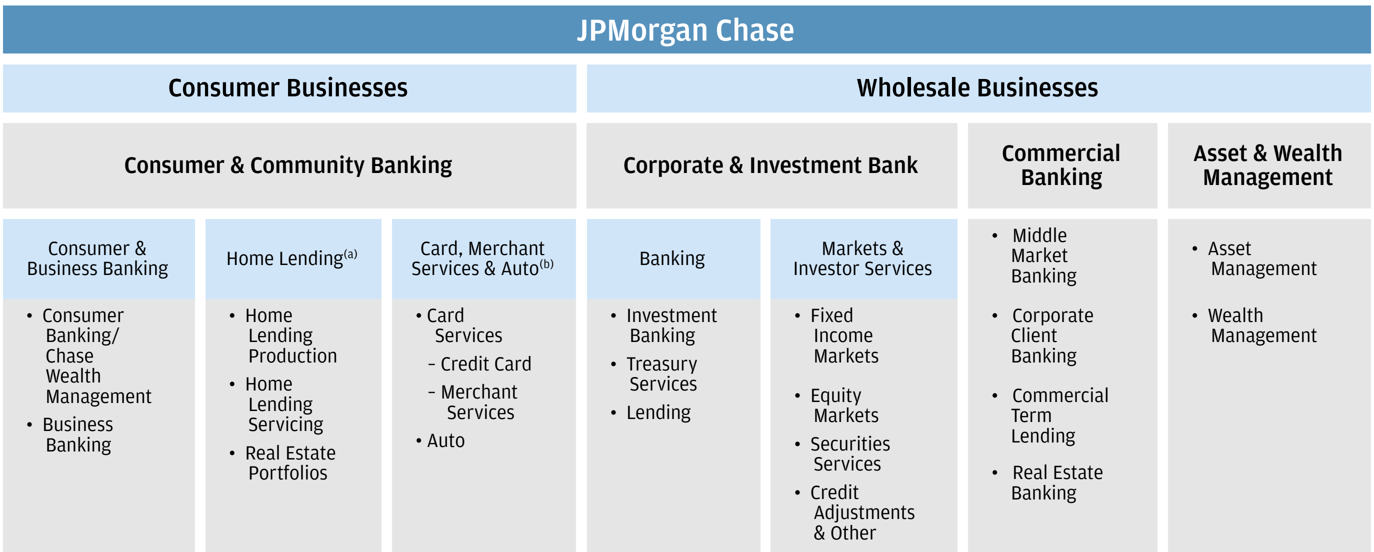
For additional information on these measures, see Capital Risk Management on pages 82-91.

Core loans are also considered a key performance measure. Core loans represent loans considered central to the Firm's ongoing businesses; and exclude loans classified as trading assets, runoff portfolios, discontinued portfolios and portfolios the Firm has an intent to exit. Core loans is a measure utilized by the Firm and its investors and analysts in assessing actual growth in the loan portfolio.

BUSINESS SEGMENT RESULTS

The Firm is managed on a line of business basis. There are four major reportable business segments – Consumer & Community Banking, Corporate & Investment Bank, Commercial Banking and Asset & Wealth Management. In addition, there is a Corporate segment.

The business segments are determined based on the products and services provided, or the type of customer served, and they reflect the manner in which financial information is currently evaluated by management. Results of these lines of business are presented on a managed basis. For a definition of managed basis, see Explanation and Reconciliation of the Firm's use of Non-GAAP Financial Measures, on pages 52–54.



(a) Formerly Mortgage Banking
(b) Formerly Card, Commerce Solutions & Auto

Description of business segment reporting methodology

Results of the business segments are intended to reflect each segment as if it were essentially a stand-alone business. The management reporting process that derives business segment results includes the allocation of certain income and expense items described in more detail below. The Firm also assesses the level of capital required for each line of business on at least an annual basis.

The Firm periodically assesses the assumptions, methodologies and reporting classifications used for segment reporting, and further refinements may be implemented in future periods.

Revenue sharing
When business segments join efforts to sell products and services to the Firm's clients, the participating business segments agree to share revenue from those transactions. The segment results reflect these revenue-sharing agreements.

Funds transfer pricing
Funds transfer pricing is used to assign interest income and expense to each business segment and to transfer the primary interest rate risk and liquidity risk exposures to Treasury and CIO within Corporate. The funds transfer pricing process considers the interest rate risk, liquidity risk and regulatory requirements of a business segment as if it were operating independently. This process is overseen by senior management and reviewed by the Firm's Asset-Liability Committee ("ALCO").

Debt expense and preferred stock dividend allocation
As part of the funds transfer pricing process, almost all of the cost of the credit spread component of outstanding unsecured long-term debt and preferred stock dividends is allocated to the reportable business segments, while the balance of the cost is retained in Corporate. The methodology to allocate the cost of unsecured long-term debt and preferred stock dividends to the business segments is aligned with the Firm's process to allocate capital. The allocated cost of unsecured long-term debt is included in a business segment's net interest income, and net income is reduced by preferred stock dividends to arrive at a business segment's net income applicable to common equity.

Business segment capital allocation
The amount of capital assigned to each business is referred to as equity. On at least an annual basis, the Firm assesses the level of capital required for each line of business as well as the assumptions and methodologies used to allocate capital. For additional information on business segment capital allocation, see Line of business equity on page 89.

Expense allocation
Where business segments use services provided by corporate support units, or another business segment, the costs of those services are allocated to the respective business segments. The expense is generally allocated based on the actual cost and use of services provided. In contrast, certain other costs related to corporate support units, or to certain technology and operations, are not allocated to the business segments and are retained in Corporate. Expense retained in Corporate generally includes parent company costs that would not be incurred if the segments were stand-alone businesses; adjustments to align corporate support units; and other items not aligned with a particular business segment.

Segment Results – Managed Basis

The following tables summarize the business segment results for the periods indicated.

Year ended December 31,	Total net revenue			Total noninterest expense			Pre-provision profit/(loss)		
(in millions)	**2017**	2016	2015	**2017**	2016	2015	**2017**	2016	2015
Consumer & Community Banking	**$ 46,485**	$ 44,915	$ 43,820	**$ 26,062**	$ 24,905	$ 24,909	**$ 20,423**	$ 20,010	$ 18,911
Corporate & Investment Bank	**34,493**	35,216	33,542	**19,243**	18,992	21,361	**15,250**	16,224	12,181
Commercial Banking	**8,605**	7,453	6,885	**3,327**	2,934	2,881	**5,278**	4,519	4,004
Asset & Wealth Management	**12,918**	12,045	12,119	**9,301**	8,478	8,886	**3,617**	3,567	3,233
Corporate	**1,140**	(487)	267	**501**	462	977	**639**	(949)	(710)
Total	**$103,641**	$ 99,142	$ 96,633	**$ 58,434**	$ 55,771	$ 59,014	**$ 45,207**	$ 43,371	$ 37,619

Year ended December 31,	Provision for credit losses			Net income/(loss)			Return on equity		
(in millions, except ratios)	**2017**	2016	2015	**2017**	2016	2015	**2017**	2016	2015
Consumer & Community Banking	**$ 5,572**	$ 4,494	$ 3,059	**$ 9,395**	$ 9,714	$ 9,789	**17%**	18%	18%
Corporate & Investment Bank	**(45)**	563	332	**10,813**	10,815	8,090	**14**	16	12
Commercial Banking	**(276)**	282	442	**3,539**	2,657	2,191	**17**	16	15
Asset & Wealth Management	**39**	26	4	**2,337**	2,251	1,935	**25**	24	21
Corporate	**—**	(4)	(10)	**(1,643)**	(704)	2,437	**NM**	NM	NM
Total	**$ 5,290**	$ 5,361	$ 3,827	**$ 24,441**	$ 24,733	$ 24,442	**10%**	10%	11%

The following sections provide a comparative discussion of business segment results as of or for the years ended December 31, 2017, 2016 and 2015.

Consumer & Community Banking offers services to consumers and businesses through bank branches, ATMs, online, mobile and telephone banking. CCB is organized into Consumer & Business Banking (including Consumer Banking/Chase Wealth Management and Business Banking), Home Lending (including Home Lending Production, Home Lending Servicing and Real Estate Portfolios) and Card, Merchant Services & Auto. Consumer & Business Banking offers deposit and investment products and services to consumers, and lending, deposit, and cash management and payment solutions to small businesses. Home Lending includes mortgage origination and servicing activities, as well as portfolios consisting of residential mortgages and home equity loans. Card, Merchant Services & Auto issues credit cards to consumers and small businesses, offers payment processing services to merchants, and originates and services auto loans and leases.

Selected income statement data

Year ended December 31, (in millions, except ratios)	2017	2016	2015
Revenue			
Lending- and deposit-related fees	**$ 3,431**	$ 3,231	$ 3,137
Asset management, administration and commissions	**2,212**	2,093	2,172
Mortgage fees and related income	**1,613**	2,490	2,511
Card income	**4,024**	4,364	5,491
All other income	**3,430**	3,077	2,281
Noninterest revenue	**14,710**	15,255	15,592
Net interest income	**31,775**	29,660	28,228
Total net revenue	**46,485**	44,915	43,820
Provision for credit losses	**5,572**	4,494	3,059
Noninterest expense			
Compensation expense	**10,159**	9,723	9,770
Noncompensation expense[(a)]	**15,903**	15,182	15,139
Total noninterest expense	**26,062**	24,905	24,909
Income before income tax expense	**14,851**	15,516	15,852
Income tax expense	**5,456**	5,802	6,063
Net income	**$ 9,395**	$ 9,714	$ 9,789
Revenue by line of business			
Consumer & Business Banking	**$ 21,104**	$ 18,659	$ 17,983
Home Lending	**5,955**	7,361	6,817
Card, Merchant Services & Auto	**19,426**	18,895	19,020
Mortgage fees and related income details:			
Net production revenue	**636**	853	769
Net mortgage servicing revenue[(b)]	**977**	1,637	1,742
Mortgage fees and related income	**$ 1,613**	$ 2,490	$ 2,511
Financial ratios			
Return on equity	**17%**	18%	18%
Overhead ratio	**56**	55	57

Note: In the discussion and the tables which follow, CCB presents certain financial measures which exclude the impact of PCI loans; these are non-GAAP financial measures.

(a) Included operating lease depreciation expense of $2.7 billion, $1.9 billion and $1.4 billion for the years ended December 31, 2017, 2016 and 2015, respectively.

(b) Included MSR risk management results of $(242) million, $217 million and $(117) million for the years ended December 31, 2017, 2016 and 2015, respectively.

2017 compared with 2016

Net income was $9.4 billion, a decrease of 3%, driven by higher noninterest expense and provision for credit losses, largely offset by higher net revenue.

Net revenue was $46.5 billion, an increase of 3%.

Net interest income was $31.8 billion, up 7%, driven by higher deposit balances, deposit margin expansion, and higher loan balances in Card, partially offset by loan spread compression from higher rates, including the impact of higher funding costs in Home Lending and Auto and the impact of the sale of the student loan portfolio.

Noninterest revenue was $14.7 billion, down 4%, driven by:

- higher new account origination costs in Card,
- lower MSR risk management results,
- the absence in the current year of a gain on the sale of Visa Europe interests,
- lower net production revenue reflecting lower mortgage production margins and volumes, and
- lower mortgage servicing revenue as a result of a lower level of third-party loans serviced

largely offset by

- higher auto lease volume and
- higher card- and deposit-related fees.

See Note 15 for further information regarding changes in value of the MSR asset and related hedges, and mortgage fees and related income.

Noninterest expense was $26.1 billion, an increase of 5%, driven by:

- higher auto lease depreciation, and
- continued business growth

partially offset by

- two items totaling $175 million included in the prior year related to liabilities from a merchant bankruptcy and mortgage servicing reserves.

The provision for credit losses was $5.6 billion, an increase of 24%, reflecting:

- $445 million of higher net charge-offs, primarily in the credit card portfolio due to growth in newer vintages which, as anticipated, have higher loss rates than the more seasoned portion of the portfolio, partially offset by a decrease in net charge-offs in the residential real estate portfolio reflecting continued improvement in home prices and delinquencies,
- a $415 million higher addition to the allowance for credit losses related to the credit card portfolio driven by higher loss rates and loan growth, and a lower reduction in the allowance for the residential real estate portfolio predominantly driven by continued improvement in home prices and delinquencies, and
- a $218 million impact in connection with the sale of the student loan portfolio.

The sale of the student loan portfolio during 2017 did not have a material impact on the Firm's Consolidated Financial Statements.

2016 compared with 2015

Net income was $9.7 billion, a decrease of 1%, driven by higher provision for credit losses, predominantly offset by higher net revenue.

Net revenue was $44.9 billion, an increase of 2%.

Net interest income was $29.7 billion, up 5%, driven by higher deposit balances and higher loan balances, partially offset by deposit spread compression and an increase in the reserve for uncollectible interest and fees in Card.

Noninterest revenue was $15.3 billion, down 2%, driven by higher new account origination costs and the impact of renegotiated co-brand partnership agreements in Card and lower mortgage servicing revenue predominantly as a result of a lower level of third-party loans serviced; these factors were predominantly offset by higher auto lease and card sales volume, higher card- and deposit-related fees, higher MSR risk management results and a gain on the sale of Visa Europe interests. See Note 15 for further information regarding changes in value of the MSR asset and related hedges, and mortgage fees and related income.

Noninterest expense of $24.9 billion was flat, driven by:

- lower legal expense and branch efficiencies

offset by

- higher auto lease depreciation, and
- higher investment in marketing.

The provision for credit losses was $4.5 billion, an increase of 47%, reflecting:

- a $920 million increase related to the credit card portfolio, due to a $600 million addition in the allowance for loan losses, as well as $320 million of higher net charge-offs, driven by loan growth, including growth in newer vintages which, as anticipated, have higher loss rates compared to the overall portfolio,
- a $450 million lower benefit related to the residential real estate portfolio, as the current year reduction in the allowance for loan losses was lower than the prior year. The reduction in both periods reflected continued improvements in home prices and lower delinquencies, and
- a $150 million increase related to the auto and business banking portfolio, due to additions to the allowance for loan losses and higher net charge-offs, reflecting loan growth in the portfolios.

Selected metrics

As of or for the year ended December 31, (in millions, except headcount)	2017	2016	2015
Selected balance sheet data (period-end)			
Total assets	**$552,601**	$535,310	$502,652
Loans:			
Consumer & Business Banking	**25,789**	24,307	22,730
Home equity	**42,751**	50,296	58,734
Residential mortgage	**197,339**	181,196	164,500
Home Lending	**240,090**	231,492	223,234
Card	**149,511**	141,816	131,463
Auto	**66,242**	65,814	60,255
Student	**—**	7,057	8,176
Total loans	**481,632**	470,486	445,858
Core loans	**415,167**	382,608	341,881
Deposits	**659,885**	618,337	557,645
Equity	**51,000**	51,000	51,000
Selected balance sheet data (average)			
Total assets	**$532,756**	$516,354	$472,972
Loans:			
Consumer & Business Banking	**24,875**	23,431	21,894
Home equity	**46,398**	54,545	63,261
Residential mortgage	**190,242**	177,010	140,294
Home Lending	**236,640**	231,555	203,555
Card	**140,024**	131,165	125,881
Auto	**65,395**	63,573	56,487
Student	**2,880**	7,623	8,763
Total loans	**469,814**	457,347	416,580
Core loans	**393,598**	361,316	301,700
Deposits	**640,219**	586,637	530,938
Equity	**51,000**	51,000	51,000
Headcount	**134,117**	132,802	127,094

Selected metrics

As of or for the year ended December 31, (in millions, except ratio data)	2017	2016	2015
Credit data and quality statistics			
Nonaccrual loans[(a)(b)]	**$ 4,084**	$ 4,708	$ 5,313
Net charge-offs/(recoveries)[(c)]			
Consumer & Business Banking	**257**	257	253
Home equity	**63**	184	283
Residential mortgage	**(16)**	14	2
Home Lending	**47**	198	285
Card	**4,123**	3,442	3,122
Auto	**331**	285	214
Student	**498**	162	210
Total net charge-offs/ (recoveries)	**$ 5,256**	$ 4,344	$ 4,084
Net charge-off/(recovery) rate[(c)]			
Consumer & Business Banking	**1.03%**	1.10 %	1.16%
Home equity[(d)]	**0.18**	0.45	0.60
Residential mortgage[(d)]	**(0.01)**	0.01	—
Home Lending[(d)]	**0.02**	0.10	0.18
Card	**2.95**	2.63	2.51
Auto	**0.51**	0.45	0.38
Student	**NM**	2.13	2.40
Total net charge-offs/(recovery) rate[(d)]	**1.21**	1.04	1.10
30+ day delinquency rate			
Home Lending[(e)(f)]	**1.19%**	1.23%	1.57%
Card	**1.80**	1.61	1.43
Auto	**0.89**	1.19	1.35
Student[(g)]	**—**	1.60	1.81
90+ day delinquency rate - Card	**0.92**	0.81	0.72
Allowance for loan losses			
Consumer & Business Banking	**$ 796**	$ 753	$ 703
Home Lending, excluding PCI loans	**1,003**	1,328	1,588
Home Lending – PCI loans[(c)]	**2,225**	2,311	2,742
Card	**4,884**	4,034	3,434
Auto	**464**	474	399
Student	**—**	249	299
Total allowance for loan losses[(c)]	**$ 9,372**	$ 9,149	$ 9,165

(a) Excludes PCI loans. The Firm is recognizing interest income on each pool of PCI loans as each of the pools is performing.
(b) At December 31, 2017, 2016 and 2015, nonaccrual loans excluded loans 90 or more days past due as follows: (1) mortgage loans insured by U.S. government agencies of $4.3 billion, $5.0 billion and $6.3 billion, respectively; and (2) student loans insured by U.S. government agencies under the Federal Family Education Loan Program ("FFELP") of zero, $263 million and $290 million, respectively. These amounts have been excluded based upon the government guarantee.
(c) Net charge-offs and the net charge-off rates for the years ended December 31, 2017, 2016 and 2015, excluded $86 million, $156 million and $208 million, respectively, of write-offs in the PCI portfolio. These write-offs decreased the allowance for loan losses for PCI loans. For further information on PCI write-offs, see summary of changes in the allowance on page 118.
(d) Excludes the impact of PCI loans. For the years ended December 31, 2017, 2016 and 2015, the net charge-off rates including the impact of PCI loans were as follows: (1) home equity of 0.14%, 0.34% and 0.45%, respectively; (2) residential mortgage of (0.01)%, 0.01% and –%, respectively; (3) Home Lending of 0.02%, 0.09% and 0.14%, respectively; and (4) total CCB of 1.12%, 0.95% and 0.99%, respectively.

(e) At December 31, 2017, 2016 and 2015, excluded mortgage loans insured by U.S. government agencies of $6.2 billion, $7.0 billion and $8.4 billion, respectively, that are 30 or more days past due. These amounts have been excluded based upon the government guarantee.
(f) Excludes PCI loans. The 30+ day delinquency rate for PCI loans was 10.13%, 9.82% and 11.21% at December 31, 2017, 2016 and 2015, respectively.
(g) Excluded student loans insured by U.S. government agencies under FFELP of $468 million and $526 million at December 31, 2016 and 2015, respectively, that are 30 or more days past due. These amounts have been excluded based upon the government guarantee.

Selected metrics

As of or for the year ended December 31, (in billions, except ratios and where otherwise noted)	**2017**	2016	2015
Business Metrics			
CCB households (in millions)[a]	**61.0**	60.4	58.1
Number of branches	**5,130**	5,258	5,413
Active digital customers (in thousands)[b]	**46,694**	43,836	39,242
Active mobile customers (in thousands)[c]	**30,056**	26,536	22,810
Debit and credit card sales volume[a]	**$ 916.9**	$ 821.6	$ 754.1
Consumer & Business Banking			
Average deposits	**$ 625.6**	$ 570.8	$ 515.2
Deposit margin	**1.98%**	1.81%	1.90%
Business banking origination volume	**$ 7.3**	$ 7.3	$ 6.8
Client investment assets	**273.3**	234.5	218.6
Home Lending			
Mortgage origination volume by channel			
Retail	**$ 40.3**	$ 44.3	$ 36.1
Correspondent	**57.3**	59.3	70.3
Total mortgage origination volume[d]	**$ 97.6**	$ 103.6	$ 106.4
Total loans serviced (period-end)	**$ 816.1**	$ 846.6	$ 910.1
Third-party mortgage loans serviced (period-end)	**553.5**	591.5	674.0
MSR carrying value (period-end)	**6.0**	6.1	6.6
Ratio of MSR carrying value (period-end) to third-party mortgage loans serviced (period-end)	**1.08%**	1.03%	0.98%
MSR revenue multiple[e]	**3.09x**	2.94x	2.80x
Card, excluding Commercial Card			
Credit card sales volume	**$ 622.2**	$ 545.4	$ 495.9
New accounts opened (in millions)	**8.4**	10.4	8.7
Card Services			
Net revenue rate	**10.57%**	11.29%	12.33%
Merchant Services			
Merchant processing volume	**$1,191.7**	$1,063.4	$ 949.3
Auto			
Loan and lease origination volume	**$ 33.3**	$ 35.4	$ 32.4
Average Auto operating lease assets	**15.2**	11.0	7.8

(a) The prior period amounts have been revised to conform with the current period presentation.
(b) Users of all web and/or mobile platforms who have logged in within the past 90 days.
(c) Users of all mobile platforms who have logged in within the past 90 days.
(d) Firmwide mortgage origination volume was $107.6 billion, $117.4 billion and $115.2 billion for the years ended December 31, 2017, 2016 and 2015, respectively.
(e) Represents the ratio of MSR carrying value (period-end) to third-party mortgage loans serviced (period-end) divided by the ratio of loan servicing-related revenue to third-party mortgage loans serviced (average).

Mortgage servicing-related matters

The Firm has resolved the majority of the consent orders and settlements into which it entered with federal and state governmental agencies and private parties related to mortgage servicing, origination, and residential mortgage-backed securities activities. On January 12, 2018, the Board of Governors of the Federal Reserve System terminated its mortgage servicing-related Consent Order with the Firm, which had been outstanding since April 2011.

Some of the remaining obligations are overseen by an independent reviewer, who publishes periodic reports detailing the Firm's compliance with the obligations.

CORPORATE & INVESTMENT BANK

The Corporate & Investment Bank, which consists of Banking and Markets & Investor Services, offers a broad suite of investment banking, market-making, prime brokerage, and treasury and securities products and services to a global client base of corporations, investors, financial institutions, government and municipal entities. Banking offers a full range of investment banking products and services in all major capital markets, including advising on corporate strategy and structure, capital-raising in equity and debt markets, as well as loan origination and syndication. Banking also includes Treasury Services, which provides transaction services, consisting of cash management and liquidity solutions. Markets & Investor Services is a global market-maker in cash securities and derivative instruments, and also offers sophisticated risk management solutions, prime brokerage, and research. Markets & Investor Services also includes Securities Services, a leading global custodian which provides custody, fund accounting and administration, and securities lending products principally for asset managers, insurance companies and public and private investment funds.

Selected income statement data

Year ended December 31, (in millions)	2017	2016	2015
Revenue			
Investment banking fees	**$ 7,192**	$ 6,424	$ 6,736
Principal transactions	**10,873**	11,089	9,905
Lending- and deposit-related fees	**1,531**	1,581	1,573
Asset management, administration and commissions	**4,207**	4,062	4,467
All other income	**572**	1,169	1,012
Noninterest revenue	**24,375**	24,325	23,693
Net interest income	**10,118**	10,891	9,849
Total net revenue[(a)(b)]	**34,493**	35,216	33,542
Provision for credit losses	**(45)**	563	332
Noninterest expense			
Compensation expense	**9,535**	9,546	9,973
Noncompensation expense	**9,708**	9,446	11,388
Total noninterest expense	**19,243**	18,992	21,361
Income before income tax expense	**15,295**	15,661	11,849
Income tax expense	**4,482**	4,846	3,759
Net income[(a)]	**$ 10,813**	$ 10,815	$ 8,090

(a) The full year 2017 results reflect the impact of the enactment of the TCJA including a decrease to net revenue of $259 million and a benefit to net income of $141 million. For additional information related to the impact of the TCJA, see Note 24.

(b) Included tax-equivalent adjustments, predominantly due to income tax credits related to alternative energy investments; income tax credits and amortization of the cost of investments in affordable housing projects; and tax-exempt income from municipal bonds of $2.4 billion, $2.0 billion and $1.7 billion for the years ended December 31, 2017, 2016 and 2015, respectively.

Selected income statement data

Year ended December 31, (in millions, except ratios)	2017	2016	2015
Financial ratios			
Return on equity	**14%**	16%	12%
Overhead ratio	**56**	54	64
Compensation expense as percentage of total net revenue	**28**	27	30
Revenue by business			
Investment Banking	**$ 6,688**	$ 5,950	$ 6,376
Treasury Services	**4,172**	3,643	3,631
Lending	**1,429**	1,208	1,461
Total Banking	**12,289**	10,801	11,468
Fixed Income Markets	**12,812**	15,259	12,592
Equity Markets	**5,703**	5,740	5,694
Securities Services	**3,917**	3,591	3,777
Credit Adjustments & Other[(a)]	**(228)**	(175)	11
Total Markets & Investor Services	**22,204**	24,415	22,074
Total net revenue	**$34,493**	$35,216	$33,542

(a) Consists primarily of credit valuation adjustments ("CVA") managed centrally within CIB, funding valuation adjustments ("FVA") and debit valuation adjustments ("DVA") on derivatives. Results are primarily reported in principal transactions revenue. Results are presented net of associated hedging activities and net of CVA and FVA amounts allocated to Fixed Income Markets and Equity Markets. For additional information, see Accounting and Reporting Developments on pages 141-144 and Notes 2, 3 and 23.

2017 compared with 2016

Net income was $10.8 billion, flat compared with the prior year, reflecting lower net revenue and higher noninterest expense, offset by a lower provision for credit losses, and a tax benefit resulting from the vesting of employee share-based awards. The current year included a $141 million benefit to net income as a result of the enactment of the TCJA.

Net revenue was $34.5 billion, down 2%.

Banking revenue was $12.3 billion, up 14% compared with the prior year. Investment banking revenue was $6.7 billion, up 12% from the prior year, driven by higher debt and equity underwriting fees. The Firm maintained its #1 ranking for Global Investment Banking fees, according to Dealogic. Debt underwriting fees were $3.6 billion, up 16% driven by a higher share of fees and an overall increase in industry-wide fees; the Firm maintained its #1 ranking globally in fees across high-grade, high-yield, and loan products. Equity underwriting fees were $1.4 billion, up 20% driven by growth in industry-wide issuance including a strong IPO market; the Firm ranked #2 in equity underwriting fees globally. Advisory fees were $2.2 billion, up 2%; the Firm maintained its #2 ranking for M&A. Treasury Services revenue was $4.2 billion, up 15%, driven by the impact of higher interest rates and growth in operating deposits. Lending revenue was $1.4 billion, up

18% from the prior year, reflecting lower fair value losses on hedges of accrual loans.

Markets & Investor Services revenue was $22.2 billion, down 9% from the prior year. Fixed Income Markets revenue was $12.8 billion, down 16%, as lower revenue across products was driven by sustained low volatility, tighter credit spreads, and the impact from the TCJA on tax-oriented investments of $259 million, against a strong prior year. Equity Markets revenue was $5.7 billion, down 1% from the prior year, and included a fair value loss of $143 million on a margin loan to a single client. Excluding the fair value loss, Equity Markets revenue was higher driven by higher revenue in Prime Services and Cash Equities, partially offset by lower revenue in derivatives. Securities Services revenue was $3.9 billion, up 9%, driven by the impact of higher interest rates and deposit growth, as well as higher asset-based fees driven by higher market levels. Credit Adjustments & Other was a loss of $228 million, driven by valuation adjustments.

The provision for credit losses was a benefit of $45 million, which included a net reduction in the allowance for credit losses driven by the Oil & Gas and Metals & Mining portfolios partially offset by a net increase in the allowance for credit losses for a single client. The prior year was an expense of $563 million, which included an addition to the allowance for credit losses driven by the Oil & Gas and Metals & Mining portfolios.

Noninterest expense was $19.2 billion, up 1% compared with the prior year.

2016 compared with 2015

Net income was $10.8 billion, up 34% compared with the prior year, driven by lower noninterest expense and higher net revenue, partially offset by a higher provision for credit losses.

Banking revenue was $10.8 billion, down 6% compared with the prior year. Investment banking revenue was $6.0 billion, down 7% from the prior year, largely driven by lower equity underwriting fees. The Firm maintained its #1 ranking for Global Investment Banking fees, according to Dealogic. Equity underwriting fees were $1.2 billion, down 19% driven by lower industry-wide fee levels; however, the Firm improved its market share and maintained its #1 ranking in equity underwriting fees globally as well as in both North America and Europe and its #1 ranking by volumes across all products, according to Dealogic. Advisory fees were $2.1 billion, down 1%; the Firm maintained its #2 ranking for M&A, according to Dealogic. Debt underwriting fees were $3.2 billion; the Firm maintained its #1 ranking globally in fees across high grade, high yield, and loan products, according to Dealogic. Treasury Services revenue was $3.6 billion. Lending revenue was $1.2 billion, down 17% from the prior year, reflecting fair value losses on hedges of accrual loans.

Markets & Investor Services revenue was $24.4 billion, up 11% from the prior year. Fixed Income Markets revenue was $15.3 billion, up 21% from the prior year, driven by broad strength across products. Rates performance was strong, with increased client activity driven by high issuance-based flows, global political developments, and central bank actions. Credit and Securitized Products revenue improved driven by higher market-making revenue from the secondary market as clients' risk appetite recovered, and due to increased financing activity. Equity Markets revenue was $5.7 billion, up 1%, compared to a strong prior-year. Securities Services revenue was $3.6 billion, down 5% from the prior year, largely driven by lower fees and commissions. Credit Adjustments and Other was a loss of $175 million driven by valuation adjustments, compared with an $11 million gain in the prior-year, which included funding spread gains on fair value option elected liabilities.

The provision for credit losses was $563 million, compared to $332 million in the prior year, reflecting a higher allowance for credit losses, including the impact of select downgrades within the Oil & Gas portfolio.

Noninterest expense was $19.0 billion, down 11% compared with the prior year, driven by lower legal and compensation expenses.

Selected metrics

As of or for the year ended December 31, (in millions, except headcount)	2017	2016	2015
Selected balance sheet data (period-end)			
Assets	**$ 826,384**	$ 803,511	$ 748,691
Loans:			
Loans retained[(a)]	**108,765**	111,872	106,908
Loans held-for-sale and loans at fair value	**4,321**	3,781	3,698
Total loans	**113,086**	115,653	110,606
Core loans	**112,754**	115,243	110,084
Equity	**70,000**	64,000	62,000
Selected balance sheet data (average)			
Assets	**$ 857,060**	$ 815,321	$ 824,208
Trading assets-debt and equity instruments	**342,124**	300,606	302,514
Trading assets-derivative receivables	**56,466**	63,387	67,263
Loans:			
Loans retained[(a)]	**108,368**	111,082	98,331
Loans held-for-sale and loans at fair value	**4,995**	3,812	4,572
Total loans	**113,363**	114,894	102,903
Core loans	**113,006**	114,455	102,142
Equity	**70,000**	64,000	62,000
Headcount	**51,181**	48,748	49,067

(a) Loans retained includes credit portfolio loans, loans held by consolidated Firm-administered multi-seller conduits, trade finance loans, other held-for-investment loans and overdrafts.

Selected metrics

As of or for the year ended December 31, (in millions, except ratios)	2017	2016	2015
Credit data and quality statistics			
Net charge-offs/(recoveries)	**$ 71**	$ 168	$ (19)
Nonperforming assets:			
Nonaccrual loans:			
Nonaccrual loans retained[(a)]	**812**	467	428
Nonaccrual loans held-for-sale and loans at fair value	**–**	109	10
Total nonaccrual loans	**812**	576	438
Derivative receivables	**130**	223	204
Assets acquired in loan satisfactions	**85**	79	62
Total nonperforming assets	**1,027**	878	704
Allowance for credit losses:			
Allowance for loan losses	**1,379**	1,420	1,258
Allowance for lending-related commitments	**727**	801	569
Total allowance for credit losses	**2,106**	2,221	1,827
Net charge-off/(recovery) rate[(b)]	**0.07%**	0.15%	(0.02)%
Allowance for loan losses to period-end loans retained	**1.27**	1.27	1.18
Allowance for loan losses to period-end loans retained, excluding trade finance and conduits[(c)]	**1.92**	1.86	1.88
Allowance for loan losses to nonaccrual loans retained[(a)]	**170**	304	294
Nonaccrual loans to total period-end loans	**0.72**	0.50	0.40

(a) Allowance for loan losses of $316 million, $113 million and $177 million were held against these nonaccrual loans at December 31, 2017, 2016 and 2015, respectively.
(b) Loans held-for-sale and loans at fair value were excluded when calculating the net charge-off/(recovery) rate.
(c) Management uses allowance for loan losses to period-end loans retained, excluding trade finance and conduits, a non-GAAP financial measure, to provide a more meaningful assessment of CIB's allowance coverage ratio.

Investment banking fees

	Year ended December 31,		
(in millions)	2017	2016	2015
Advisory	**$ 2,150**	$ 2,110	$ 2,133
Equity underwriting	**1,396**	1,159	1,434
Debt underwriting[(a)]	**3,646**	3,155	3,169
Total investment banking fees	**$ 7,192**	$ 6,424	$ 6,736

(a) Includes loans syndication.

League table results – wallet share

Year ended December 31,	2017 Rank	2017 Share	2016 Rank	2016 Share	2015 Rank	2015 Share
Based on fees[a]						
Debt, equity and equity-related						
Global	**#1**	**7.4%**	#1	7.0%	#1	7.6%
U.S.	**1**	**11.2**	1	11.9	1	11.5
Long-term debt[b]						
Global	**1**	**7.6**	1	6.7	1	8.1
U.S.	**2**	**10.9**	2	11.1	1	11.7
Equity and equity-related						
Global[c]	**2**	**7.1**	1	7.4	2	6.9
U.S.	**1**	**11.7**	1	13.3	1	11.3
M&A[d]						
Global	**2**	**8.6**	2	8.3	2	8.4
U.S.	**2**	**9.2**	2	9.8	2	9.9
Loan syndications						
Global	**1**	**9.5**	1	9.3	1	7.5
U.S.	**1**	**11.3**	2	11.9	2	10.8
Global investment banking fees[e]	**#1**	**8.1%**	#1	7.9%	#1	7.8%

(a) Source: Dealogic as of January 1, 2018. Reflects the ranking of revenue wallet and market share.
(b) Long-term debt rankings include investment-grade, high-yield, supranationals, sovereigns, agencies, covered bonds, asset-backed securities ("ABS") and mortgage-backed securities ("MBS"); and exclude money market, short-term debt, and U.S. municipal securities.
(c) Global equity and equity-related ranking includes rights offerings and Chinese A-Shares.
(d) Global M&A reflect the removal of any withdrawn transactions. U.S. M&A revenue wallet represents wallet from client parents based in the U.S.
(e) Global investment banking fees exclude money market, short-term debt and shelf deals.

Markets revenue

The following table summarizes select income statement data for the Markets businesses. Markets includes both Fixed Income Markets and Equity Markets. Markets revenue consists of principal transactions, fees, commissions and other income, as well as net interest income. The Firm assesses its Markets business performance on a total revenue basis, as offsets may occur across revenue line items. For example, securities that generate net interest income may be risk-managed by derivatives that are recorded in principal transactions. For a description of the composition of these income statement line items, see Notes 6 and 7.

Principal transactions reflects revenue on financial instruments and commodities transactions that arise from client-driven market making activity. Principal transactions revenue includes amounts recognized upon executing new transactions with market participants, as well as "inventory-related revenue", which is revenue recognized from gains and losses on derivatives and other instruments that the Firm has been holding in anticipation of, or in response to, client demand, and changes in the fair value of instruments used by the Firm to actively manage the risk exposure arising from such inventory. Principal transactions revenue recognized upon executing new transactions with market participants is driven by many factors including the level of client activity, the bid-offer spread (which is the difference between the price at which a market participant is willing to sell an instrument to the Firm and the price at which another market participant is willing to buy it from the Firm, and vice versa), market liquidity and volatility. These factors are interrelated and sensitive to the same factors that drive inventory-related revenue, which include general market conditions, such as interest rates, foreign exchange rates, credit spreads, and equity and commodity prices, as well as other macroeconomic conditions.

For the periods presented below, the predominant source of principal transactions revenue was the amount recognized upon executing new transactions.

Year ended December 31, (in millions, except where otherwise noted)	2017 Fixed Income Markets	2017 Equity Markets	2017 Total Markets	2016 Fixed Income Markets	2016 Equity Markets	2016 Total Markets	2015 Fixed Income Markets	2015 Equity Markets	2015 Total Markets
Principal transactions	**$ 7,393**	**$ 3,855**	**$ 11,248**	$ 8,347	$ 3,130	$ 11,477	$ 6,899	$ 3,038	$ 9,937
Lending- and deposit-related fees	**191**	**6**	**197**	220	2	222	194	–	194
Asset management, administration and commissions	**390**	**1,635**	**2,025**	388	1,551	1,939	383	1,704	2,087
All other income	**436**	**(21)**	**415**	1,014	13	1,027	854	(84)	770
Noninterest revenue	**8,410**	**5,475**	**13,885**	9,969	4,696	14,665	8,330	4,658	12,988
Net interest income[a]	**4,402**	**228**	**4,630**	5,290	1,044	6,334	4,262	1,036	5,298
Total net revenue	**$ 12,812**	**$ 5,703**	**$ 18,515**	$ 15,259	$ 5,740	$ 20,999	$ 12,592	$ 5,694	$ 18,286
Loss days[b]			**4**			0			2

(a) Declines in Markets net interest income in 2017 were driven by higher funding costs.
(b) Loss days represent the number of days for which Markets posted losses. The loss days determined under this measure differ from the disclosure of daily market risk-related gains and losses for the Firm in the value-at-risk ("VaR") back-testing discussion on pages 123–125.

Selected metrics

As of or for the year ended December 31, (in millions, except where otherwise noted)	2017	2016	2015
Assets under custody ("AUC") by asset class (period-end) (in billions):			
Fixed Income	**$ 13,043**	$ 12,166	$ 12,042
Equity	**7,863**	6,428	6,194
Other[(a)]	**2,563**	1,926	1,707
Total AUC	**$ 23,469**	$ 20,520	$ 19,943
Client deposits and other third party liabilities (average)[(b)]	**$ 408,911**	$ 376,287	$ 395,297
Trade finance loans (period-end)	**17,947**	15,923	19,255

(a) Consists of mutual funds, unit investment trusts, currencies, annuities, insurance contracts, options and other contracts.
(b) Client deposits and other third party liabilities pertain to the Treasury Services and Securities Services businesses.

International metrics

Year ended December 31, (in millions, except where otherwise noted)	2017	2016	2015
Total net revenue[(a)]			
Europe/Middle East/Africa	**$ 11,328**	$ 10,786	$ 10,894
Asia/Pacific	**4,525**	4,915	4,901
Latin America/Caribbean	**1,125**	1,225	1,096
Total international net revenue	**16,978**	16,926	16,891
North America	**17,515**	18,290	16,651
Total net revenue	**$ 34,493**	$ 35,216	$ 33,542
Loans retained (period-end)[(a)]			
Europe/Middle East/Africa	**$ 25,931**	$ 26,696	$ 24,622
Asia/Pacific	**15,248**	14,508	17,108
Latin America/Caribbean	**6,546**	7,607	8,609
Total international loans	**47,725**	48,811	50,339
North America	**61,040**	63,061	56,569
Total loans retained	**$ 108,765**	$ 111,872	$ 106,908
Client deposits and other third-party liabilities (average)[(a)(b)]			
Europe/Middle East/Africa	**$ 154,582**	$ 135,979	$ 141,062
Asia/Pacific	**76,744**	68,110	67,111
Latin America/Caribbean	**25,419**	22,914	23,070
Total international	**$ 256,745**	$ 227,003	$ 231,243
North America	**152,166**	149,284	164,054
Total client deposits and other third-party liabilities	**$ 408,911**	$ 376,287	$ 395,297
AUC (period-end) (in billions)[(a)]			
North America	**$ 13,971**	$ 12,290	$ 12,034
All other regions	**9,498**	8,230	7,909
Total AUC	**$ 23,469**	$ 20,520	$ 19,943

(a) Total net revenue is based predominantly on the domicile of the client or location of the trading desk, as applicable. Loans outstanding (excluding loans held-for-sale and loans at fair value), client deposits and other third-party liabilities, and AUC are based predominantly on the domicile of the client.
(b) Client deposits and other third party liabilities pertain to the Treasury Services and Securities Services businesses.

Commercial Banking delivers extensive industry knowledge, local expertise and dedicated service to U.S. and U.S. multinational clients, including corporations, municipalities, financial institutions and nonprofit entities with annual revenue generally ranging from $20 million to $2 billion. In addition, CB provides financing to real estate investors and owners. Partnering with the Firm's other businesses, CB provides comprehensive financial solutions, including lending, treasury services, investment banking and asset management to meet its clients' domestic and international financial needs.

Selected income statement data

Year ended December 31, (in millions)	2017	2016	2015
Revenue			
Lending- and deposit-related fees	**$ 919**	$ 917	$ 944
Asset management, administration and commissions	**68**	69	88
All other income[(a)]	**1,535**	1,334	1,333
Noninterest revenue	**2,522**	2,320	2,365
Net interest income	**6,083**	5,133	4,520
Total net revenue[(b)]	**8,605**	7,453	6,885
Provision for credit losses	**(276)**	282	442
Noninterest expense			
Compensation expense	**1,470**	1,332	1,238
Noncompensation expense	**1,857**	1,602	1,643
Total noninterest expense	**3,327**	2,934	2,881
Income before income tax expense	**5,554**	4,237	3,562
Income tax expense	**2,015**	1,580	1,371
Net income	**$ 3,539**	$ 2,657	$ 2,191

(a) Includes revenue from investment banking products and commercial card transactions.

(b) Total net revenue included tax-equivalent adjustments from income tax credits related to equity investments in designated community development entities that provide loans to qualified businesses in low-income communities, as well as tax-exempt income related to municipal financing activities of $699 million, $505 million and $493 million for the years ended December 31, 2017, 2016 and 2015, respectively. The 2017 results reflect the impact of the enactment of the TCJA including a benefit to all other income of $115 million on certain investments in the Community Development Banking business. For additional information related to the impact of the TCJA, see Note 24.

2017 compared with 2016

Net income was $3.5 billion, an increase of 33% compared with the prior year, driven by higher net revenue and a lower provision for credit losses, partially offset by higher noninterest expense.

Net revenue was $8.6 billion, an increase of 15% compared with the prior year. Net interest income was $6.1 billion, an increase of 19% compared with the prior year, driven by higher deposit spreads and loan growth. Noninterest revenue was $2.5 billion, an increase of 9% compared with the prior year, predominantly driven by higher Community Development Banking revenue, including a $115 million benefit for the impact of the TCJA on certain investments, and higher investment banking revenue.

Noninterest expense was $3.3 billion, an increase of 13% driven by hiring of bankers and business-related support staff, investments in technology, and an impairment of approximately $130 million on certain leased equipment, the majority of which was sold subsequent to year-end.

The provision for credit losses was a benefit of $276 million, driven by net reductions in the allowance for credit losses, including in the Oil & Gas, Natural Gas Pipelines and Metals & Mining portfolios. The prior year provision for credit losses was $282 million driven by downgrades in the Oil & Gas portfolio and select client downgrades in other industries.

2016 compared with 2015

Net income was $2.7 billion, an increase of 21% compared with the prior year, driven by higher net revenue and a lower provision for credit losses, partially offset by higher noninterest expense.

Net revenue was $7.5 billion, an increase of 8% compared with the prior year. Net interest income was $5.1 billion, an increase of 14% compared with the prior year, driven by higher loan balances and deposit spreads. Noninterest revenue was $2.3 billion, a decrease of 2% compared with the prior year, largely driven by lower lending-and-deposit-related fees and other revenue, partially offset by higher investment banking revenue.

Noninterest expense was $2.9 billion, an increase of 2% compared with the prior year, reflecting increased hiring of bankers and business-related support staff and investments in technology.

The provision for credit losses was $282 million and $442 million for 2016 and 2015, respectively, with both periods driven by downgrades in the Oil & Gas portfolio and select client downgrades in other industries.

CB product revenue consists of the following:

Lending includes a variety of financing alternatives, which are primarily provided on a secured basis; collateral includes receivables, inventory, equipment, real estate or other assets. Products include term loans, revolving lines of credit, bridge financing, asset-based structures, leases, and standby letters of credit.

Treasury services includes revenue from a broad range of products and services that enable CB clients to manage payments and receipts, as well as invest and manage funds.

Investment banking includes revenue from a range of products providing CB clients with sophisticated capital-raising alternatives, as well as balance sheet and risk management tools through advisory, equity underwriting, and loan syndications. Revenue from Fixed Income and Equity Markets products used by CB clients is also included.

Other product revenue primarily includes tax-equivalent adjustments generated from Community Development Banking activities and certain income derived from principal transactions.

CB is divided into four primary client segments: Middle Market Banking, Corporate Client Banking, Commercial Term Lending, and Real Estate Banking.

Middle Market Banking covers corporate, municipal and nonprofit clients, with annual revenue generally ranging between $20 million and $500 million.

Corporate Client Banking covers clients with annual revenue generally ranging between $500 million and $2 billion and focuses on clients that have broader investment banking needs.

Commercial Term Lending primarily provides term financing to real estate investors/owners for multifamily properties as well as office, retail and industrial properties.

Real Estate Banking provides full-service banking to investors and developers of institutional-grade real estate investment properties.

Other primarily includes lending and investment-related activities within the Community Development Banking business.

Selected income statement data (continued)

Year ended December 31, (in millions, except ratios)	2017	2016	2015
Revenue by product			
Lending	**$ 4,094**	$ 3,795	$ 3,429
Treasury services	**3,444**	2,797	2,581
Investment banking[a]	**805**	785	730
Other[b]	**262**	76	145
Total Commercial Banking net revenue	**$ 8,605**	$ 7,453	$ 6,885
Investment banking revenue, gross[c]	**$ 2,327**	$ 2,286	$ 2,179
Revenue by client segment			
Middle Market Banking[d]	**$ 3,341**	$ 2,848	$ 2,685
Corporate Client Banking[d]	**2,727**	2,429	2,205
Commercial Term Lending	**1,454**	1,408	1,275
Real Estate Banking	**604**	456	358
Other[b]	**479**	312	362
Total Commercial Banking net revenue	**$ 8,605**	$ 7,453	$ 6,885
Financial ratios			
Return on equity	**17%**	16%	15%
Overhead ratio	**39**	39	42

(a) Includes total Firm revenue from investment banking products sold to CB clients, net of revenue sharing with the CIB.
(b) The 2017 results reflect the impact of the enactment of the TCJA including a benefit of $115 million on certain investments in the Community Development Banking business. For additional information related to the impact of the TCJA, see Note 24.
(c) Represents total Firm revenue from investment banking products sold to CB clients.
(d) Certain clients were transferred from Middle Market Banking to Corporate Client Banking in the second quarter of 2017. The prior period amounts have been revised to conform with the current period presentation.

Selected metrics

As of or for the year ended December 31, (in millions, except headcount)	2017	2016	2015
Selected balance sheet data (period-end)			
Total assets	**$ 221,228**	$ 214,341	$ 200,700
Loans:			
Loans retained	**202,400**	188,261	167,374
Loans held-for-sale and loans at fair value	**1,286**	734	267
Total loans	**$ 203,686**	$ 188,995	$ 167,641
Core loans	**203,469**	188,673	166,939
Equity	**20,000**	16,000	14,000
Period-end loans by client segment			
Middle Market Banking[a]	**$ 56,965**	$ 53,929	$ 50,501
Corporate Client Banking[a]	**46,963**	43,027	37,709
Commercial Term Lending	**74,901**	71,249	62,860
Real Estate Banking	**17,796**	14,722	11,234
Other	**7,061**	6,068	5,337
Total Commercial Banking loans	**$ 203,686**	$ 188,995	$ 167,641
Selected balance sheet data (average)			
Total assets	**$ 217,047**	$ 207,532	$ 198,076
Loans:			
Loans retained	**197,203**	178,670	157,389
Loans held-for-sale and loans at fair value	**909**	723	492
Total loans	**$ 198,112**	$ 179,393	$ 157,881
Core loans	**197,846**	178,875	156,975
Client deposits and other third-party liabilities	**177,018**	174,396	191,529
Equity	**20,000**	16,000	14,000
Average loans by client segment			
Middle Market Banking[a]	**$ 55,474**	$ 52,242	$ 50,334
Corporate Client Banking[a]	**46,037**	41,756	34,497
Commercial Term Lending	**73,428**	66,700	58,138
Real Estate Banking	**16,525**	13,063	9,917
Other	**6,648**	5,632	4,995
Total Commercial Banking loans	**$ 198,112**	$ 179,393	$ 157,881
Headcount	**9,005**	8,365	7,845

(a) Certain clients were transferred from Middle Market Banking to Corporate Client Banking in the second quarter of 2017. The prior period amounts have been revised to conform with the current period presentation.

Selected metrics

As of or for the year ended December 31, (in millions, except ratios)	2017	2016	2015
Credit data and quality statistics			
Net charge-offs/(recoveries)	**$ 39**	$ 163	$ 21
Nonperforming assets			
Nonaccrual loans:			
Nonaccrual loans retained[a]	**617**	1,149	375
Nonaccrual loans held-for-sale and loans at fair value	**—**	—	18
Total nonaccrual loans	**617**	1,149	393
Assets acquired in loan satisfactions	**3**	1	8
Total nonperforming assets	**620**	1,150	401
Allowance for credit losses:			
Allowance for loan losses	**2,558**	2,925	2,855
Allowance for lending-related commitments	**300**	248	198
Total allowance for credit losses	**2,858**	3,173	3,053
Net charge-off/(recovery) rate[b]	**0.02%**	0.09%	0.01%
Allowance for loan losses to period-end loans retained	**1.26**	1.55	1.71
Allowance for loan losses to nonaccrual loans retained[a]	**415**	255	761
Nonaccrual loans to period-end total loans	**0.30**	0.61	0.23

(a) Allowance for loan losses of $92 million, $155 million and $64 million was held against nonaccrual loans retained at December 31, 2017, 2016 and 2015, respectively.
(b) Loans held-for-sale and loans at fair value were excluded when calculating the net charge-off/(recovery) rate.

ASSET & WEALTH MANAGEMENT

Asset & Wealth Management, with client assets of $2.8 trillion, is a global leader in investment and wealth management. AWM clients include institutions, high-net-worth individuals and retail investors in many major markets throughout the world. AWM offers investment management across most major asset classes including equities, fixed income, alternatives and money market funds. AWM also offers multi-asset investment management, providing solutions for a broad range of clients' investment needs. For Wealth Management clients, AWM also provides retirement products and services, brokerage and banking services including trusts and estates, loans, mortgages and deposits. The majority of AWM's client assets are in actively managed portfolios.

Selected income statement data

Year ended December 31, (in millions, except ratios and headcount)	2017	2016	2015
Revenue			
Asset management, administration and commissions	**$ 8,946**	$ 8,414	$ 9,175
All other income	**593**	598	388
Noninterest revenue	**9,539**	9,012	9,563
Net interest income	**3,379**	3,033	2,556
Total net revenue	**12,918**	12,045	12,119
Provision for credit losses	**39**	26	4
Noninterest expense			
Compensation expense	**5,318**	5,065	5,113
Noncompensation expense	**3,983**	3,413	3,773
Total noninterest expense	**9,301**	8,478	8,886
Income before income tax expense	**3,578**	3,541	3,229
Income tax expense	**1,241**	1,290	1,294
Net income	**$ 2,337**	$ 2,251	$ 1,935
Revenue by line of business			
Asset Management	**$ 6,340**	$ 5,970	$ 6,301
Wealth Management	**6,578**	6,075	5,818
Total net revenue	**$12,918**	$12,045	$12,119
Financial ratios			
Return on common equity	**25%**	24%	21%
Overhead ratio	**72**	70	73
Pre-tax margin ratio:			
Asset Management	**25**	31	31
Wealth Management	**30**	28	22
Asset & Wealth Management	**28**	29	27
Headcount	**22,975**	21,082	20,975
Number of Wealth Management client advisors	**2,605**	2,504	2,778

2017 compared with 2016

Net income was $2.3 billion, an increase of 4% compared with the prior year, reflecting higher revenue and a tax benefit resulting from the vesting of employee share-based awards, offset by higher noninterest expense.

Net revenue was $12.9 billion, an increase of 7%. Net interest income was $3.4 billion, up 11%, driven by higher deposit spreads. Noninterest revenue was $9.5 billion, up 6%, driven by higher market levels, partially offset by the absence of a gain in the prior year on the disposal of an asset.

Revenue from Asset Management was $6.3 billion, up 6% from the prior year, driven by higher market levels, partially offset by the absence of a gain in prior year on the disposal of an asset. Revenue from Wealth Management was $6.6 billion, up 8% from the prior year, reflecting higher net interest income from higher deposit spreads.

Noninterest expense was $9.3 billion, an increase of 10%, predominantly driven by higher legal expense and compensation expense on higher revenue and headcount.

2016 compared with 2015

Net income was $2.3 billion, a decrease of 16% compared with the prior year, reflecting lower noninterest expense, predominantly offset by lower net revenue.

Net revenue was $12.0 billion, a decrease of 1%. Net interest income was $3.0 billion, up 19%, driven by higher loan balances and spreads. Noninterest revenue was $9.0 billion, a decrease of 6%, reflecting the impact of lower average equity market levels, a reduction in revenue related to the disposal of assets at the beginning of 2016, and lower performance fees and placement fees.

Revenue from Asset Management was $6.0 billion, down 5% from the prior year, driven by a reduction in revenue related to the disposal of assets at the beginning of 2016, the impact of lower average equity market levels and lower performance fees. Revenue from Wealth Management was $6.1 billion, up 4% from the prior year, reflecting higher net interest income from higher deposit and loan spreads and continued loan growth, partially offset by the impact of lower average equity market levels and lower placement fees.

Noninterest expense was $8.5 billion, a decrease of 5%, predominantly due to a reduction in expense related to the disposal of assets at the beginning of 2016 and lower legal expense.

AWM’s lines of business consist of the following:

Asset Management provides comprehensive global investment services, including asset management, pension analytics, asset-liability management and active risk-budgeting strategies.

Wealth Management offers investment advice and wealth management, including investment management, capital markets and risk management, tax and estate planning, banking, lending and specialty-wealth advisory services.

AWM’s client segments consist of the following:

Private Banking clients include high- and ultra-high-net-worth individuals, families, money managers, business owners and small corporations worldwide.

Institutional clients include both corporate and public institutions, endowments, foundations, nonprofit organizations and governments worldwide.

Retail clients include financial intermediaries and individual investors.

Asset Management has two high-level measures of its overall fund performance.

- **Percentage of mutual fund assets under management in funds rated 4- or 5-star:** Mutual fund rating services rank funds based on their risk-adjusted performance over various periods. A 5-star rating is the best rating and represents the top 10% of industry-wide ranked funds. A 4-star rating represents the next 22.5% of industry-wide ranked funds. A 3-star rating represents the next 35% of industry-wide ranked funds. A 2-star rating represents the next 22.5% of industry-wide ranked funds. A 1-star rating is the worst rating and represents the bottom 10% of industry-wide ranked funds. The “overall Morningstar rating” is derived from a weighted average of the performance associated with a fund’s three-, five- and ten-year (if applicable) Morningstar Rating metrics. For U.S. domiciled funds, separate star ratings are given at the individual share class level. The Nomura “star rating” is based on three-year risk-adjusted performance only. Funds with fewer than three years of history are not rated and hence excluded from this analysis. All ratings, the assigned peer categories and the asset values used to derive this analysis are sourced from these fund rating providers mentioned in footnote (a). The data providers re-denominate the asset values into U.S. dollars. This % of AUM is based on star ratings at the share class level for U.S. domiciled funds, and at a “primary share class” level to represent the star rating of all other funds except for Japan where Nomura provides ratings at the fund level. The “primary share class”, as defined by Morningstar, denotes the share class recommended as being the best proxy for the portfolio and in most cases will be the most retail version (based upon annual management charge, minimum investment, currency and other factors). The performance data could have been different if all funds/accounts would have been included. Past performance is not indicative of future results.
- **Percentage of mutual fund assets under management in funds ranked in the 1st or 2nd quartile (one, three and five years)**: All quartile rankings, the assigned peer categories and the asset values used to derive this analysis are sourced from the fund ranking providers mentioned in footnote (c). Quartile rankings are done on the net-of-fee absolute return of each fund. The data providers re-denominate the asset values into U.S. dollars. This % of AUM is based on fund performance and associated peer rankings at the share class level for U.S. domiciled funds, at a “primary share class” level to represent the quartile ranking of the U.K., Luxembourg and Hong Kong funds and at the fund level for all other funds. The “primary share class”, as defined by Morningstar, denotes the share class recommended as being the best proxy for the portfolio and in most cases will be the most retail version (based upon annual management charge, minimum investment, currency and other factors). Where peer group rankings given for a fund are in more than one “primary share class” territory both rankings are included to reflect local market competitiveness (applies to “Offshore Territories” and “HK SFC Authorized” funds only). The performance data could have been different if all funds/accounts would have been included. Past performance is not indicative of future results.

Selected metrics

As of or for the year ended December 31, (in millions, except ranking data and ratios)	**2017**	2016	2015
% of JPM mutual fund assets rated as 4- or 5-star[(a)(b)]	**60%**	63%	52%
% of JPM mutual fund assets ranked in 1st or 2nd quartile:[(c)]			
1 year	**64**	54	62
3 years	**75**	72	78
5 years[(b)]	**83**	79	79
Selected balance sheet data (period-end)			
Total assets	**$ 151,909**	$ 138,384	$ 131,451
Loans	**130,640**	118,039	111,007
Core loans	**130,640**	118,039	111,007
Deposits	**146,407**	161,577	146,766
Equity	**9,000**	9,000	9,000
Selected balance sheet data (average)			
Total assets	**$ 144,206**	$ 132,875	$ 129,743
Loans	**123,464**	112,876	107,418
Core loans	**123,464**	112,876	107,418
Deposits	**148,982**	153,334	149,525
Equity	**9,000**	9,000	9,000
Credit data and quality statistics			
Net charge-offs	**$ 14**	$ 16	$ 12
Nonaccrual loans	**375**	390	218
Allowance for credit losses:			
Allowance for loan losses	**290**	274	266
Allowance for lending-related commitments	**10**	4	5
Total allowance for credit losses	**300**	278	271
Net charge-off rate	**0.01%**	0.01%	0.01%
Allowance for loan losses to period-end loans	**0.22**	0.23	0.24
Allowance for loan losses to nonaccrual loans	**77**	70	122
Nonaccrual loans to period-end loans	**0.29**	0.33	0.20

(a) Represents the “overall star rating” derived from Morningstar for the U.S., the U.K., Luxembourg, Hong Kong and Taiwan domiciled funds; and Nomura “star rating” for Japan domiciled funds. Includes only Asset Management retail open-ended mutual funds that have a rating. Excludes money market funds, Undiscovered Managers Fund, and Brazil domiciled funds.

(b) The prior period amounts have been revised to conform with the current period presentation.

(c) Quartile ranking sourced from: Lipper for the U.S. and Taiwan domiciled funds; Morningstar for the U.K., Luxembourg and Hong Kong domiciled funds; Nomura for Japan domiciled funds and Fund Doctor for South Korea domiciled funds. Includes only Asset Management retail open-ended mutual funds that are ranked by the aforementioned sources. Excludes money market funds, Undiscovered Managers Fund, and Brazil domiciled funds.

Client assets

2017 compared with 2016

Client assets were $2.8 trillion, an increase of 14% compared with the prior year. Assets under management were $2.0 trillion, an increase of 15% from the prior year reflecting higher market levels, and net inflows into long-term and liquidity products.

2016 compared with 2015

Client assets were $2.5 trillion, an increase of 4% compared with the prior year. Assets under management were $1.8 trillion, an increase of 3% from the prior year reflecting inflows into both liquidity and long-term products and the effect of higher market levels, partially offset by asset sales at the beginning of 2016.

Client assets

December 31, (in billions)	2017	2016	2015
Assets by asset class			
Liquidity[a]	$ 459	$ 436	$ 430
Fixed income[a]	474	420	376
Equity	428	351	353
Multi-asset and alternatives	673	564	564
Total assets under management	2,034	1,771	1,723
Custody/brokerage/ administration/deposits	755	682	627
Total client assets	$ 2,789	$ 2,453	$ 2,350
Memo:			
Alternatives client assets[b]	$ 166	$ 154	$ 172
Assets by client segment			
Private Banking	$ 526	$ 435	$ 437
Institutional	968	869	816
Retail	540	467	470
Total assets under management	$ 2,034	$ 1,771	$ 1,723
Private Banking	$ 1,256	$ 1,098	$ 1,050
Institutional	990	886	824
Retail	543	469	476
Total client assets	$ 2,789	$ 2,453	$ 2,350

(a) The prior period amounts have been revised to conform with the current period presentation.
(b) Represents assets under management, as well as client balances in brokerage accounts.

Client assets (continued)

Year ended December 31, (in billions)	2017	2016	2015
Assets under management rollforward			
Beginning balance	$ 1,771	$ 1,723	$ 1,744
Net asset flows:			
Liquidity	9	24	–
Fixed income	36	30	(8)
Equity	(11)	(29)	1
Multi-asset and alternatives	43	22	22
Market/performance/other impacts	186	1	(36)
Ending balance, December 31	$ 2,034	$ 1,771	$ 1,723
Client assets rollforward			
Beginning balance	$ 2,453	$ 2,350	$ 2,387
Net asset flows	93	63	27
Market/performance/other impacts	243	40	(64)
Ending balance, December 31	$ 2,789	$ 2,453	$ 2,350

International metrics

Year ended December 31, (in billions, except where otherwise noted)	2017	2016	2015
Total net revenue (in millions)[a]			
Europe/Middle East/Africa	$ 2,021	$ 1,849	$ 1,946
Asia/Pacific	1,162	1,077	1,130
Latin America/Caribbean	844	726	795
Total international net revenue	4,027	3,652	3,871
North America	8,891	8,393	8,248
Total net revenue	$ 12,918	$ 12,045	$ 12,119
Assets under management			
Europe/Middle East/Africa	$ 384	$ 309	$ 302
Asia/Pacific	160	123	123
Latin America/Caribbean	61	45	45
Total international assets under management	605	477	470
North America	1,429	1,294	1,253
Total assets under management	$ 2,034	$ 1,771	$ 1,723
Client assets			
Europe/Middle East/Africa	$ 441	$ 359	$ 351
Asia/Pacific	225	177	173
Latin America/Caribbean	154	114	110
Total international client assets	820	650	634
North America	1,969	1,803	1,716
Total client assets	$ 2,789	$ 2,453	$ 2,350

(a) Regional revenue is based on the domicile of the client.

The Corporate segment consists of Treasury and Chief Investment Office and Other Corporate, which includes corporate staff units and expense that is centrally managed. Treasury and CIO is predominantly responsible for measuring, monitoring, reporting and managing the Firm's liquidity, funding and structural interest rate and foreign exchange risks, as well as executing the Firm's capital plan. The major Other Corporate units include Real Estate, Enterprise Technology, Legal, Finance, Human Resources, Internal Audit, Risk Management, Compliance, Oversight & Controls, Corporate Responsibility and various Other Corporate groups.

Selected income statement data

Year ended December 31, (in millions, except headcount)	2017	2016	2015
Revenue			
Principal transactions	**$ 284**	$ 210	$ 41
Securities gains/(losses)	**(66)**	140	190
All other income/(loss)[a]	**867**	588	569
Noninterest revenue	**1,085**	938	800
Net interest income	**55**	(1,425)	(533)
Total net revenue[b]	**1,140**	(487)	267
Provision for credit losses	**—**	(4)	(10)
Noninterest expense[c]	**501**	462	977
Income/(loss) before income tax benefit	**639**	(945)	(700)
Income tax expense/(benefit)	**2,282**	(241)	(3,137)
Net income/(loss)	**$ (1,643)**	$ (704)	$ 2,437
Total net revenue			
Treasury and CIO	**566**	(787)	(493)
Other Corporate	**574**	300	760
Total net revenue	**$ 1,140**	$ (487)	$ 267
Net income/(loss)			
Treasury and CIO	**60**	(715)	(235)
Other Corporate	**(1,703)**	11	2,672
Total net income/(loss)	**$ (1,643)**	$ (704)	$ 2,437
Total assets (period-end)	**$781,478**	$ 799,426	$ 768,204
Loans (period-end)	**1,653**	1,592	2,187
Core loans[d]	**1,653**	1,589	2,182
Headcount	**35,261**	32,358	29,617

(a) Included revenue related to a legal settlement of $645 million for the year ended December 31, 2017.
(b) Included tax-equivalent adjustments, predominantly due to tax-exempt income from municipal bond investments of $905 million, $885 million and $839 million for the years ended December 31, 2017, 2016 and 2015, respectively.
(c) Included legal expense/(benefit) of $(593) million, $(385) million and $832 million for the years ended December 31, 2017, 2016 and 2015, respectively.
(d) Average core loans were $1.6 billion, $1.9 billion and $2.5 billion for the years ended December 31, 2017, 2016 and 2015, respectively.

2017 compared with 2016

Net loss was $1.6 billion, compared with a net loss of $704 million in the prior year. The current year net loss included a $2.7 billion increase to income tax expense related to the impact of the TCJA.

Net revenue was $1.1 billion, compared with a loss of $487 million in the prior year. The increase in current year net revenue was driven by a $645 million benefit from a legal settlement with the FDIC receivership for Washington Mutual and with Deutsche Bank as trustee of certain Washington Mutual trusts and by the net impact of higher interest rates.

Net interest income was $55 million, compared with a loss of $1.4 billion in the prior year. The gain in the current year was primarily driven by higher interest income on deposits with banks due to higher interest rates and balances, partially offset by higher interest expense on long-term debt primarily driven by higher interest rates.

2016 compared with 2015

Net loss was $704 million, compared with net income of $2.4 billion in the prior year.

Net revenue was a loss of $487 million, compared with a gain of $267 million in the prior year. The prior year included a $514 million benefit from a legal settlement.

Net interest income was a loss of $1.4 billion, compared with a loss of $533 million in the prior year. The loss in the current year was primarily driven by higher interest expense on long-term debt and lower investment securities balances during the year, partially offset by higher interest income on deposits with banks and securities purchased under resale agreements as a result of higher interest rates.

Noninterest expense was $462 million, a decrease of $515 million from the prior year driven by lower legal expense, partially offset by higher compensation expense.

The prior year reflected tax benefits of $2.6 billion predominantly from the resolution of various tax audits.

Treasury and CIO overview

Treasury and CIO is predominantly responsible for measuring, monitoring, reporting and managing the Firm's liquidity, funding and structural interest rate and foreign exchange risks, as well as executing the Firm's capital plan. The risks managed by Treasury and CIO arise from the activities undertaken by the Firm's four major reportable business segments to serve their respective client bases, which generate both on- and off-balance sheet assets and liabilities.

Treasury and CIO seek to achieve the Firm's asset-liability management objectives generally by investing in high-quality securities that are managed for the longer-term as part of the Firm's investment securities portfolio. Treasury and CIO also use derivatives to meet the Firm's asset-liability management objectives. For further information on derivatives, see Note 5. The investment securities portfolio primarily consists of agency and nonagency mortgage-backed securities, U.S. and non-U.S. government securities, obligations of U.S. states and municipalities, other ABS and corporate debt securities. At December 31, 2017, the investment securities portfolio was $248.0 billion, and the average credit rating of the securities comprising the portfolio was AA+ (based upon external ratings where available and where not available, based primarily upon internal ratings that correspond to ratings as defined by S&P and Moody's). See Note 10 for further information on the details of the Firm's investment securities portfolio. For further information on liquidity and funding risk, see Liquidity Risk Management on pages 92–97. For information on interest rate, foreign exchange and other risks, see Market Risk Management on pages 121-128.

Selected income statement and balance sheet data

As of or for the year ended December 31, (in millions)	**2017**	2016	2015
Securities gains/(losses)	**$ (78)**	$ 132	$ 190
AFS investment securities (average)	**219,345**	226,892	264,758
HTM investment securities (average)	**47,927**	51,358	50,044
Investment securities portfolio (average)	**267,272**	278,250	314,802
AFS investment securities (period-end)	**200,247**	236,670	238,704
HTM investment securities (period-end)	**47,733**	50,168	49,073
Investment securities portfolio (period-end)	**247,980**	286,838	287,777

Risk is an inherent part of JPMorgan Chase's business activities. When the Firm extends a consumer or wholesale loan, advises customers on their investment decisions, makes markets in securities, or offers other products or services, the Firm takes on some degree of risk. The Firm's overall objective is to manage its businesses, and the associated risks, in a manner that balances serving the interests of its clients, customers and investors and protects the safety and soundness of the Firm.

The Firm believes that effective risk management requires:

- Acceptance of responsibility, including identification and escalation of risk issues, by all individuals within the Firm;
- Ownership of risk identification, assessment, data and management within each of the lines of business and corporate functions; and
- Firmwide structures for risk governance.

The Firm strives for continual improvement through efforts to enhance controls, ongoing employee training and development, talent retention, and other measures. The Firm follows a disciplined and balanced compensation framework with strong internal governance and independent Board oversight. The impact of risk and control issues are carefully considered in the Firm's performance evaluation and incentive compensation processes.

Firmwide Risk Management is overseen and managed on an enterprise-wide basis. The Firm's approach to risk management involves understanding drivers of risks, risk types, and impacts of risks.

Drivers of risk include, but are not limited to, the economic environment, regulatory or government policy, competitor or market evolution, business decisions, process or judgment error, deliberate wrongdoing, dysfunctional markets, and natural disasters.

The Firm's risks are generally categorized in the following four risk types:

- Strategic risk is the risk associated with the Firm's current and future business plans and objectives, including capital risk, liquidity risk, and the impact to the Firm's reputation.
- Credit and investment risk is the risk associated with the default or change in credit profile of a client, counterparty or customer; or loss of principal or a reduction in expected returns on investments, including consumer credit risk, wholesale credit risk, and investment portfolio risk.
- Market risk is the risk associated with the effect of changes in market factors, such as interest and foreign exchange rates, equity and commodity prices, credit spreads or implied volatilities, on the value of assets and liabilities held for both the short and long term.
- Operational risk is the risk associated with inadequate or failed internal processes, people and systems, or from external events and includes compliance risk, conduct risk, legal risk, and estimations and model risk.

There may be many consequences of risks manifesting, including quantitative impacts such as reduction in earnings and capital, liquidity outflows, and fines or penalties, or qualitative impacts, such as reputation damage, loss of clients, and regulatory and enforcement actions.

The Firm has established Firmwide risk management functions to manage different risk types. The scope of a particular risk management function may include multiple risk types. For example, the Firm's Country Risk Management function oversees country risk which may be a driver of risk or an aggregation of exposures that could give rise to multiple risk types such as credit or market risk. The following sections discuss how the Firm manages the key risks that are inherent in its business activities.

Risk Oversight	Definition	Page references
Strategic risk	The risk associated with the Firm's current and future business plans and objectives.	81
Capital risk	The risk that the Firm has an insufficient level and composition of capital to support the Firm's business activities and associated risks during normal economic environments and under stressed conditions.	82–91
Liquidity risk	The risk that the Firm will be unable to meet its contractual and contingent financial obligations as they arise or that it does not have the appropriate amount, composition and tenor of funding and liquidity to support its assets and liabilities.	92–97
Reputation risk	The potential that an action, inaction, transaction, investment or event will reduce trust in the Firm's integrity or competence by its various constituents, including clients, counterparties, investors, regulators, employees and the broader public.	98
Consumer credit risk	The risk associated with the default or change in credit profile of a customer.	102–107
Wholesale credit risk	The risk associated with the default or change in credit profile of a client or counterparty.	108–116
Investment portfolio risk	The risk associated with the loss of principal or a reduction in expected returns on investments arising from the investment securities portfolio held by Treasury and CIO in connection with the Firm's balance sheet or asset-liability management objectives or from principal investments managed in various lines of business in predominantly privately-held financial assets and instruments.	120
Market risk	The risk associated with the effect of changes in market factors, such as interest and foreign exchange rates, equity and commodity prices, credit spreads or implied volatilities, on the value of assets and liabilities held for both the short and long term.	121–128
Country risk	The framework for monitoring and assessing how financial, economic, political or other significant developments adversely affect the value of the Firm's exposures related to a particular country or set of countries.	129–130
Operational risk	The risk associated with inadequate or failed internal processes, people and systems, or from external events.	131–133
Compliance risk	The risk of failure to comply with applicable laws, rules, and regulations.	134
Conduct risk	The risk that any action or inaction by an employee of the Firm could lead to unfair client/customer outcomes, compromise the Firm's reputation, impact the integrity of the markets in which the Firm operates, or reflect poorly on the Firm's culture.	135
Legal risk	The risk of loss primarily caused by the actual or alleged failure to meet legal obligations that arise from the rule of law in jurisdictions in which the Firm operates, agreements with clients and customers, and products and services offered by the Firm.	136
Estimations and Model risk	The risk of the potential for adverse consequences from decisions based on incorrect or misused estimation outputs.	137

Governance and oversight

The Firm's overall appetite for risk is governed by a "Risk Appetite" framework. The framework and the Firm's risk appetite are set and approved by the Firm's Chief Executive Officer ("CEO"), Chief Financial Officer ("CFO") and Chief Risk Officer ("CRO"). LOB-level risk appetite is set by the respective LOB CEO, CFO and CRO and is approved by the Firm's CEO, CFO and CRO. Quantitative parameters and qualitative factors are used to monitor and measure the Firm's capacity to take risk consistent with its stated risk appetite. Quantitative parameters have been established to assess select strategic risks, credit risks and market risks. Qualitative factors have been established for select operational risks, and for reputation risks. Risk Appetite results are reported quarterly to the Board of Directors' Risk Policy Committee ("DRPC").

The Firm has an Independent Risk Management ("IRM") function, which consists of the Risk Management and Compliance organizations. The CEO appoints, subject to DRPC approval, the Firm's CRO to lead the IRM organization and manage the risk governance framework of the Firm. The framework is subject to approval by the DRPC in the form of the primary risk management policies. The Chief Compliance Officer ("CCO"), who reports to the CRO, is also responsible for reporting to the Audit Committee for the Global Compliance Program. The Firm's Global Compliance Program focuses on overseeing compliance with laws, rules and regulations applicable to the Firm's products and services to clients and counterparties.

The Firm places reliance on each of its LOBs and other functional areas giving rise to risk. Each LOB and other functional area giving rise to risk is expected to operate within the parameters identified by the IRM function, and within its own management-identified risk and control standards. The LOBs, inclusive of LOB aligned Operations, Technology and Oversight & Controls, are the "first line of defense" in identifying and managing the risk in their activities, including but not limited to applicable laws, rules and regulations.

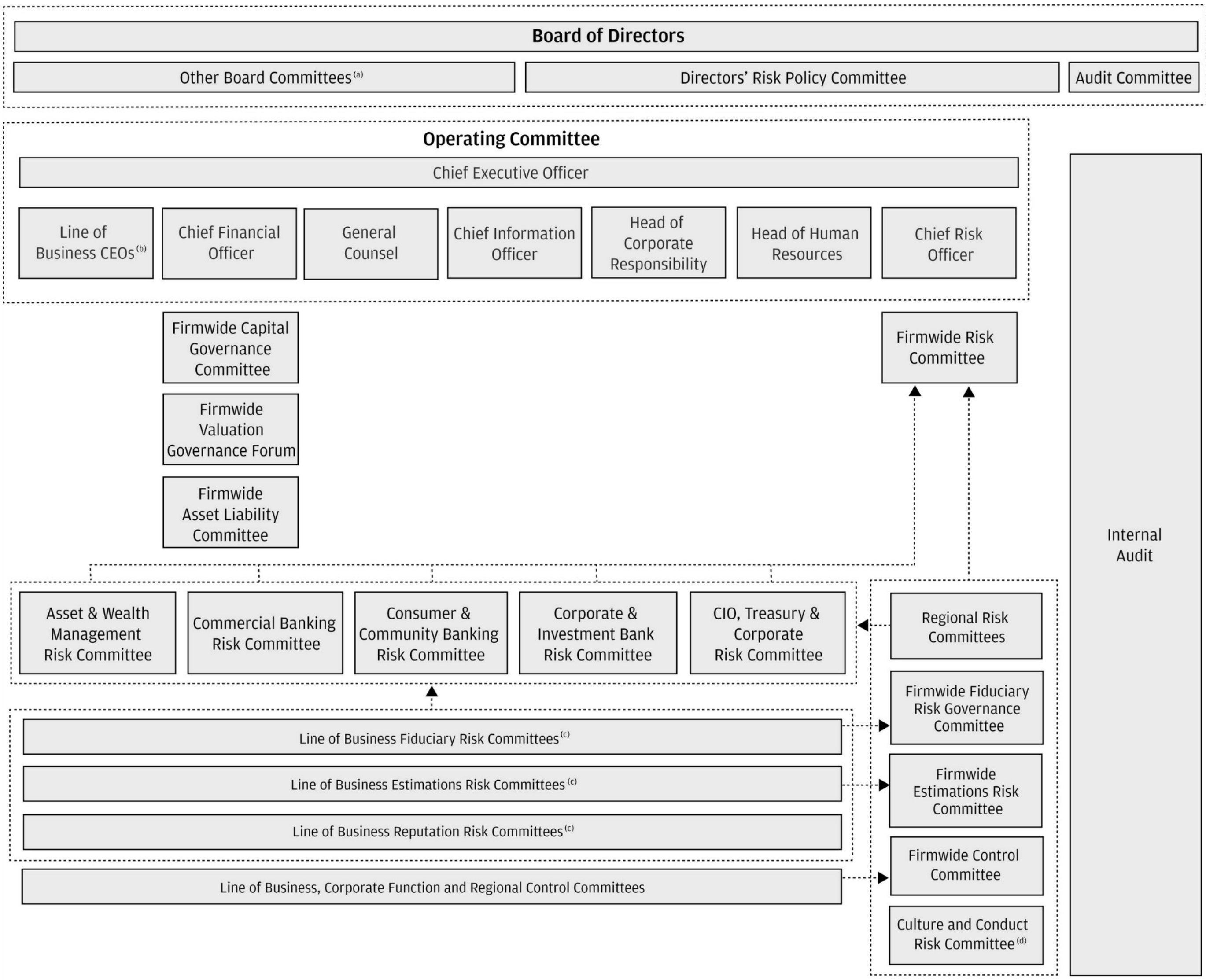
The IRM function is independent of the businesses and forms "the second line of defense". The IRM function sets and oversees various standards for the risk governance framework, including risk policy, identification, measurement, assessment, testing, limit setting, monitoring and reporting, and conducts independent challenge of adherence to such standards.

The Internal Audit function operates independently from other parts of the Firm and performs independent testing and evaluation of firmwide processes and controls across the entire enterprise as the Firm's "third line of defense" in managing risk. The Internal Audit Function is headed by the General Auditor, who reports to the Audit Committee.

In addition, there are other functions that contribute to the firmwide control environment including Finance, Human Resources, Legal, and Corporate Oversight & Control.

The independent status of the IRM function is supported by a governance structure that provides for escalation of risk issues to senior management, the Firmwide Risk Committee, and the Board of Directors, as appropriate.

The chart below illustrates the Board of Directors and key senior management level committees in the Firm's risk governance structure. In addition, there are other committees, forums and paths of escalation that support the oversight of risk, not shown in the chart below.



(a) Other Board Committees include the Compensation & Management Development Committee, Corporate Governance & Nominating Committee and Public Responsibility Committee.
(b) The Line of Business CEOs for CIB and CCB are also the Firm's Co-Presidents and Co-Chief Operating Officers.
(c) As applicable.
(d) Each Board committee oversees conduct risk within the scope of its responsibilities.

The Firm's Operating Committee, which consists of the Firm's CEO, CRO, CFO and other senior executives, is the ultimate management escalation point in the Firm and may refer matters to the Firm's Board of Directors. The Operating Committee is accountable to the Firm's Board of Directors.

The Board of Directors provides oversight of risk principally through the DRPC, the Audit Committee and, with respect to compensation and other management-related matters, the Compensation & Management Development Committee. Each committee of the Board oversees reputation risk and conduct risk issues within its scope of responsibility.

The Directors' Risk Policy Committee of the Board oversees the Firm's global risk management framework and approves the primary risk management policies of the Firm. The Committee's responsibilities include oversight of management's exercise of its responsibility to assess and manage the Firm's risks, and its capital and liquidity planning and analysis. Breaches in risk appetite, liquidity issues that may have a material adverse impact on the Firm and other significant risk-related matters are escalated to the DRPC.

The Audit Committee of the Board assists the Board in its oversight of management's responsibilities to assure that there is an effective system of controls reasonably designed to safeguard the assets and income of the Firm, assure the integrity of the Firm's financial statements and maintain compliance with the Firm's ethical standards, policies, plans and procedures, and with laws and regulations. In addition, the Audit Committee assists the Board in its oversight of the Firm's independent registered public accounting firm's qualifications, independence and performance, and of the performance of the Firm's Internal Audit function.

The Compensation & Management Development Committee ("CMDC") assists the Board in its oversight of the Firm's compensation programs and reviews and approves the Firm's overall compensation philosophy, incentive compensation pools, and compensation practices consistent with key business objectives and safety and soundness. The CMDC reviews Operating Committee members' performance against their goals, and approves their compensation awards. The CMDC also periodically reviews the Firm's diversity programs and management development and succession planning, and provides oversight of the Firm's culture and conduct programs.

Among the Firm's senior management-level committees that are primarily responsible for key risk-related functions are:

The Firmwide Risk Committee ("FRC") is the Firm's highest management-level risk committee. It provides oversight of the risks inherent in the Firm's businesses. The FRC is co-chaired by the Firm's CEO and CRO. The FRC serves as an escalation point for risk topics and issues raised by its members, the Line of Business Risk Committees, Firmwide Control Committee, Firmwide Fiduciary Risk Governance Committee, Firmwide Estimations Risk Committee, Culture and Conduct Risk Committee and regional Risk Committees, as appropriate. The FRC escalates significant issues to the DRPC, as appropriate.

The Firmwide Control Committee ("FCC") provides a forum for senior management to review and discuss firmwide operational risks, including existing and emerging issues and operational risk metrics, and to review operational risk management execution in the context of the Operational Risk Management Framework ("ORMF"). The ORMF provides the framework for the governance, risk identification and assessment, measurement, monitoring and reporting of operational risk. The FCC is co-chaired by the Chief Control Officer and the Firmwide Risk Executive for Operational Risk Governance. The FCC relies on the prompt escalation of operational risk and control issues from businesses and functions as the primary owners of the operational risk. Operational risk and control issues may be escalated by business or function control committees to the FCC, which in turn, may escalate to the FRC, as appropriate.

The Firmwide Fiduciary Risk Governance Committee ("FFRGC") is a forum for risk matters related to the Firm's fiduciary activities. The FFRGC oversees the firmwide fiduciary risk governance framework, which supports the consistent identification and escalation of fiduciary risk issues by the relevant lines of business; approves risk or compliance policy exceptions requiring FFRGC approval; approves the scope and/or expansion of the Firm's fiduciary framework; and reviews metrics to track fiduciary activity and issue resolution Firmwide. The FFRGC is co-chaired by the Asset Management CEO and the Asset & Wealth Management CRO. The FFRGC escalates significant fiduciary issues to the FRC, the DRPC and the Audit Committee, as appropriate.

The Firmwide Estimations Risk Committee ("FERC") reviews and oversees governance and execution activities related to models and certain analytical and judgment based estimations, such as those used in risk management, budget forecasting and capital planning and analysis. The FERC is chaired by the Firmwide Risk Executive for Model Risk Governance and Review. The FERC serves as an escalation channel for relevant topics and issues raised by its members and the Line of Business Estimation Risk Committees. The FERC escalates significant issues to the FRC, as appropriate.

The Culture and Conduct Risk Committee ("CCRC") provides oversight of culture and conduct initiatives to develop a more holistic view of conduct risks and to connect key programs across the Firm to identify opportunities and emerging areas for focus. The CCRC is co-chaired by the Chief Culture & Conduct Officer and the Conduct Risk Compliance Executive. The CCRC escalates significant issues to the FRC, as appropriate.

Line of Business and Regional Risk Committees review the ways in which the particular line of business or the business operating in a particular region could be exposed to adverse outcomes with a focus on identifying, accepting, escalating and/or requiring remediation of matters brought to these committees. These committees may escalate to the FRC, as appropriate. LOB risk committees are co-chaired by the LOB CEO and the LOB CRO. Each LOB risk committee may create sub-committees with requirements for escalation. The regional committees are established similarly, as appropriate, for the region.

In addition, each line of business and function is required to have a Control Committee. These control committees oversee the control environment of their respective business or function. As part of that mandate, they are responsible for reviewing data which indicates the quality and stability of the processes in a business or function, reviewing key operational risk issues and focusing on processes with shortcomings and overseeing process remediation. These committees escalate issues to the FCC, as appropriate.

The Firmwide Asset Liability Committee ("ALCO"), chaired by the Firm's Treasurer and Chief Investment Officer under the direction of the CFO, monitors the Firm's balance sheet, liquidity risk and structural interest rate risk. ALCO reviews the Firm's overall structural interest rate risk position, and the Firm's funding requirements and strategy. ALCO is responsible for reviewing and approving the Firm's Funds Transfer Pricing Policy (through which lines of business "transfer" interest rate risk and liquidity risk to Treasury and CIO), the Firm's Intercompany Funding and Liquidity Policy and the Firm's Contingency Funding Plan.

The Firmwide Capital Governance Committee, chaired by the Head of the Regulatory Capital Management Office, is responsible for reviewing the Firm's Capital Management Policy and the principles underlying capital issuance and distribution alternatives and decisions. The Committee oversees the capital adequacy assessment process, including the overall design, scenario development and macro assumptions, and ensures that capital stress test programs are designed to adequately capture the risks specific to the Firm's businesses.

The Firmwide Valuation Governance Forum ("VGF") is composed of senior finance and risk executives and is responsible for overseeing the management of risks arising from valuation activities conducted across the Firm. The VGF is chaired by the Firmwide head of the Valuation Control Group ("VCG") under the direction of the Firm's Controller, and includes sub-forums covering the Corporate & Investment Bank, Consumer & Community Banking, Commercial Banking, Asset & Wealth Management and certain corporate functions, including Treasury and CIO.

In addition, the JPMorgan Chase Bank, N.A. Board of Directors is responsible for the oversight of management of the Bank. The JPMorgan Chase Bank, N.A. Board accomplishes this function acting directly and through the principal standing committees of the Firm's Board of Directors. Risk and control oversight on behalf of JPMorgan Chase Bank N.A. is primarily the responsibility of the DRPC and the Audit Committee of the Firm's Board of Directors, respectively, and, with respect to compensation and other management-related matters, the Compensation & Management Development Committee of the Firm's Board of Directors.

Risk Identification

The Firm has a Risk Identification process in which the first line of defense identifies material risks inherent to the Firm, catalogs them in a central repository and reviews the most material risks on a regular basis. The second line of defense, at a firmwide level, establishes the risk identification framework, coordinates the process, maintains the central repository and reviews and challenges the first line's identification of risks.

Strategic risk is the risk associated with the Firm's current and future business plans and objectives. Strategic risk includes the risk to current or anticipated earnings, capital, liquidity, enterprise value, or the Firm's reputation arising from adverse business decisions, poor implementation of business decisions, or lack of responsiveness to changes in the industry or external environment.

Overview

The Operating Committee and the senior leadership of each LOB are responsible for managing the Firm's most significant strategic risks. Strategic risks are overseen by IRM through participation in business reviews, LOB senior management committees, ongoing management of the Firm's risk appetite and limit framework, and other relevant governance forums. The Board of Directors oversees management's strategic decisions, and the DRPC oversees IRM and the Firm's risk management framework.

The Firm's strategic planning process, which includes the development and execution of strategic priorities and initiatives by the Operating Committee and the management teams of the lines of business, is an important process for managing the Firm's strategic risk. Guided by the Firm's How We Do Business ("HWDB") principles, the strategic priorities and initiatives are updated annually and include evaluating performance against prior year initiatives, assessment of the operating environment, refinement of existing strategies and development of new strategies.

These strategic priorities and initiatives are then incorporated in the Firm's budget, and are reviewed by the Board of Directors.

In the process of developing the strategic initiatives, line of business leadership identify the strategic risks associated with their strategic initiatives and those risks are incorporated into the Firmwide Risk Identification process and monitored and assessed as part of the Firmwide Risk Appetite framework. For further information on Risk Identification, see Enterprise-Wide Risk Management on page 75. For further information on the Risk Appetite framework see, Enterprise-Wide Risk Management on page 77.

The Firm's balance sheet strategy, which focuses on risk-adjusted returns, strong capital and robust liquidity, is key to management of strategic risk. For further information on capital risk, see Capital Risk Management on pages 82–91. For further information on liquidity risk see, Liquidity Risk Management on pages 92–97

For further information on reputation risk, see Reputation Risk Management on page 98.

Governance and oversight

The Firm's Operating Committee defines the most significant strategic priorities and initiatives, including those of the Firm, the LOBs and the Corporate functions, for the coming year and evaluates performance against the prior year. As part of the strategic planning process, IRM conducts a qualitative assessment of those significant initiatives to determine the impact on the risk profile of the Firm. The Firm's priorities, initiatives and IRM's assessment are provided to the Board for its review.

As part of its ongoing oversight and management of risk across the Firm, IRM is regularly engaged in significant discussions and decision-making across the Firm, including decisions to pursue new business opportunities or modify or exit existing businesses.

CAPITAL RISK MANAGEMENT

Capital risk is the risk the Firm has an insufficient level and composition of capital to support the Firm's business activities and associated risks during normal economic environments and under stressed conditions.

A strong capital position is essential to the Firm's business strategy and competitive position. Maintaining a strong balance sheet to manage through economic volatility is considered a strategic imperative of the Firm's Board of Directors, CEO and Operating Committee. The Firm's fortress balance sheet philosophy focuses on risk-adjusted returns, strong capital and robust liquidity. The Firm's capital risk management strategy focuses on maintaining long-term stability to enable it to build and invest in market-leading businesses, even in a highly stressed environment. Senior management considers the implications on the Firm's capital prior to making decisions that could impact future business activities. In addition to considering the Firm's earnings outlook, senior management evaluates all sources and uses of capital with a view to preserving the Firm's capital strength.

The Firm's capital risk management objectives are to hold capital sufficient to:

- Maintain "well-capitalized" status for the Firm and its insured depository institution ("IDI") subsidiaries;
- Support risks underlying business activities;
- Maintain sufficient capital in order to continue to build and invest in its businesses through the cycle and in stressed environments;
- Retain flexibility to take advantage of future investment opportunities;
- Serve as a source of strength to its subsidiaries;
- Meet capital distribution objectives; and
- Maintain sufficient capital resources to operate throughout a resolution period in accordance with the Firm's preferred resolution strategy.

These objectives are achieved through the establishment of minimum capital targets and a strong capital governance framework. Capital risk management is intended to be flexible in order to react to a range of potential events. The Firm's minimum capital targets are based on the most binding of three pillars: an internal assessment of the Firm's capital needs; an estimate of required capital under the CCAR and Dodd-Frank Act stress testing requirements; and Basel III Fully Phased-In regulatory minimums. Where necessary, each pillar may include a management-established buffer. The capital governance framework requires regular monitoring of the Firm's capital positions, stress testing and defining escalation protocols, both at the Firm and material legal entity levels.

The following tables present the Firm's Transitional and Fully Phased-In risk-based and leverage-based capital metrics under both the Basel III Standardized and Advanced Approaches. The Firm's Basel III ratios exceed both the Transitional and Fully Phased-In regulatory minimums as of December 31, 2017 and 2016. For further discussion of these capital metrics, including regulatory minimums, and the Standardized and Advanced Approaches, refer to Strategy and Governance on pages 84–88.

December 31, 2017 (in millions, except ratios)	Transitional			Fully Phased-In		
	Standardized	Advanced	Minimum capital ratios	Standardized	Advanced	Minimum capital ratios
Risk-based capital metrics:						
CET1 capital	**$ 183,300**	**$ 183,300**		**$ 183,244**	**$ 183,244**	
Tier 1 capital	**208,644**	**208,644**		**208,564**	**208,564**	
Total capital	**238,395**	**227,933**		**237,960**	**227,498**	
Risk-weighted assets	**1,499,506**	**1,435,825**		**1,509,762**	**1,446,696**	
CET1 capital ratio	**12.2%**	**12.8%**	7.5%	**12.1%**	**12.7%**	10.5%
Tier 1 capital ratio	**13.9**	**14.5**	9.0	**13.8**	**14.4**	12.0
Total capital ratio	**15.9**	**15.9**	11.0	**15.8**	**15.7**	14.0
Leverage-based capital metrics:						
Adjusted average assets[a]	**$ 2,514,270**	**$ 2,514,270**		**$ 2,514,822**	**$ 2,514,822**	
Tier 1 leverage ratio[b]	**8.3%**	**8.3%**	4.0%	**8.3%**	**8.3%**	4.0%
Total leverage exposure	**NA**	**$ 3,204,463**		**NA**	**$ 3,205,015**	
SLR[c]	**NA**	**6.5%**	NA	**NA**	**6.5%**	5.0% [e]

December 31, 2016 (in millions, except ratios)	Transitional			Fully Phased-In		
	Standardized	Advanced	Minimum capital ratios	Standardized	Advanced	Minimum capital ratios
Risk-based capital metrics:						
CET1 capital	$ 182,967	$ 182,967		$ 181,734	$ 181,734	
Tier 1 capital	208,112	208,112		207,474	207,474	
Total capital	239,553	228,592		237,487	226,526	
Risk-weighted assets	1,483,132 [d]	1,476,915		1,492,816 [d]	1,487,180	
CET1 capital ratio	12.3% [d]	12.4%	6.25%	12.2% [d]	12.2%	10.5%
Tier 1 capital ratio	14.0 [d]	14.1	7.75	13.9 [d]	14.0	12.0
Total capital ratio	16.2 [d]	15.5	9.75	15.9 [d]	15.2	14.0
Leverage-based capital metrics:						
Adjusted average assets[a]	$ 2,484,631	$ 2,484,631		$ 2,485,480	$ 2,485,480	
Tier 1 leverage ratio[b]	8.4%	8.4%	4.0%	8.3%	8.3%	4.0%
Total leverage exposure	NA	$ 3,191,990		NA	$ 3,192,839	
SLR[c]	NA	6.5%	NA	NA	6.5%	5.0% [e]

Note: As of December 31, 2017 and 2016, the lower of the Standardized or Advanced capital ratios under each of the Transitional and Fully Phased-In Approaches in the table above represents the Firm's Collins Floor, as discussed in Risk-based capital regulatory minimums on page 85.

(a) Adjusted average assets, for purposes of calculating the Tier 1 leverage ratio, includes total quarterly average assets adjusted for unrealized gains/(losses) on available-for-sale ("AFS") securities, less deductions for goodwill and other intangible assets, defined benefit pension plan assets, and deferred tax assets related to tax attributes, including net operating losses ("NOLs").
(b) The Tier 1 leverage ratio is calculated by dividing Tier 1 capital by adjusted total average assets.
(c) The SLR leverage ratio is calculated by dividing Tier 1 capital by total leverage exposure. For additional information on total leverage exposure, see SLR on page 88.
(d) The prior period amounts have been revised to conform with the current period presentation.
(e) In the case of the SLR, the Fully Phased-In minimum ratio is effective January 1, 2018.

Strategy and governance

The Firm's CEO, together with the Board of Directors and the Operating Committee, establishes principles and guidelines for capital planning, issuance, usage and distributions, and minimum capital targets for the level and composition of capital in business-as-usual and highly stressed environments. The DRPC reviews and approves the capital management and governance policy of the Firm. The Firm's Audit Committee is responsible for reviewing and approving the capital stress testing control framework.

The Capital Governance Committee and the Regulatory Capital Management Office ("RCMO") support the Firm's strategic capital decision-making. The Capital Governance Committee oversees the capital adequacy assessment process, including the overall design, scenario development and macro assumptions, and ensures that capital stress test programs are designed to adequately capture the risks specific to the Firm's businesses. RCMO, which reports to the Firm's CFO, is responsible for designing and monitoring the Firm's execution of its capital policies and strategies once approved by the Board, as well as reviewing and monitoring the execution of its capital adequacy assessment process. The Basel Independent Review function ("BIR"), which reports to the RCMO, conducts independent assessments of the Firm's regulatory capital framework to ensure compliance with the applicable U.S. Basel rules in support of senior management's responsibility for assessing and managing capital and for the DRPC's oversight of management in executing that responsibility. For additional discussion on the DRPC, see Enterprise-wide Risk Management on pages 75–137.

Monitoring and management of capital

In its monitoring and management of capital, the Firm takes into consideration an assessment of economic risk and all regulatory capital requirements to determine the level of capital needed to meet and maintain the objectives discussed above, as well as to support the framework for allocating capital to its business segments. While economic risk is considered prior to making decisions on future business activities, in most cases the Firm considers risk-based regulatory capital to be a proxy for economic risk capital.

Regulatory capital

The Federal Reserve establishes capital requirements, including well-capitalized standards, for the consolidated financial holding company. The OCC establishes similar minimum capital requirements for the Firm's national banks, including JPMorgan Chase Bank, N.A. and Chase Bank USA, N.A. The U.S. capital requirements generally follow the Capital Accord of the Basel Committee, as amended from time to time.

Basel III overview

Capital rules under Basel III establish minimum capital ratios and overall capital adequacy standards for large and internationally active U.S. bank holding companies ("BHC") and banks, including the Firm and its IDI subsidiaries. Basel III sets forth two comprehensive approaches for calculating RWA: a standardized approach ("Basel III Standardized"), and an advanced approach ("Basel III Advanced"). Certain of the requirements of Basel III are subject to phase-in periods that began on January 1, 2014 and continue through the end of 2018 ("transitional period").

Basel III establishes capital requirements for calculating credit risk RWA and market risk RWA, and in the case of Basel III Advanced, operational risk RWA. Key differences in the calculation of credit risk RWA between the Standardized and Advanced approaches are that for Basel III Advanced, credit risk RWA is based on risk-sensitive approaches which largely rely on the use of internal credit models and parameters, whereas for Basel III Standardized, credit risk RWA is generally based on supervisory risk-weightings which vary primarily by counterparty type and asset class. Market risk RWA is calculated on a generally consistent basis between Basel III Standardized and Basel III Advanced. In addition to the RWA calculated under these methodologies, the Firm may supplement such amounts to incorporate management judgment and feedback from its regulators.

Basel III also includes a requirement for Advanced Approach banking organizations, including the Firm, to calculate the SLR. For additional information on the SLR, see page 88.

On December 7, 2017, the Basel Committee issued the Basel III Reforms. Potential changes to the requirements for U.S. financial institutions are being considered by the U.S. banking regulators. For additional information on Basel III reforms, refer to Supervision & Regulation on pages 1–8.

Basel III Fully Phased-In

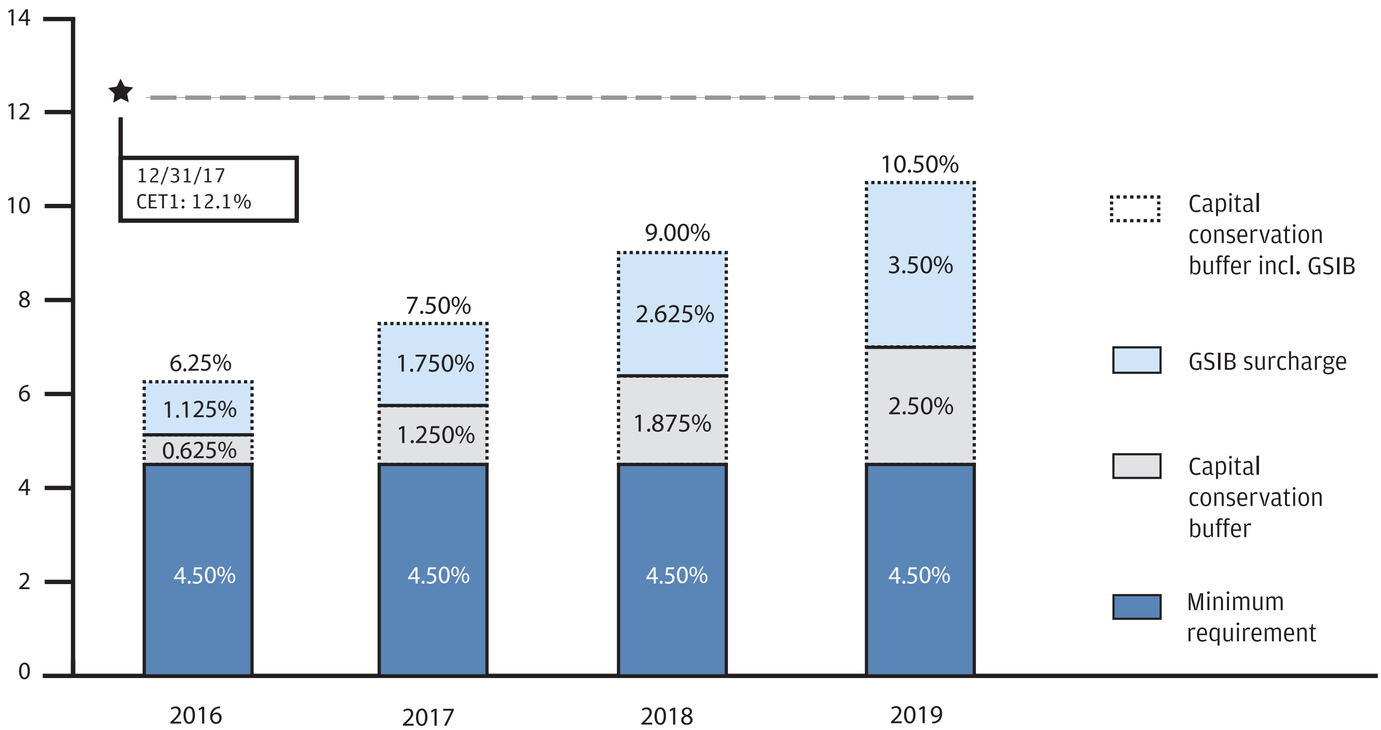
The Basel III transitional period will end on December 31, 2018, at which point the Firm will calculate its capital ratios under both the Basel III Standardized and Advanced Approaches on a Fully Phased–In basis. In the case of the SLR, the Fully Phased-In well-capitalized ratio is effective January 1, 2018. The Firm manages each of its lines of business, as well as the corporate functions, primarily on a Basel III Fully Phased-In basis.

For additional information on the Firm, JPMorgan Chase Bank, N.A. and Chase Bank USA, N.A.'s capital, RWA and capital ratios under Basel III Standardized and Advanced Fully Phased-In rules and the SLR calculated under the Basel III Advanced Fully Phased-In rules, all of which are considered key regulatory capital measures, see Explanation and Reconciliation of the Firm's Use of Non-GAAP Financial Measures and Key Performance Measures on pages 52–54.

The Basel III Standardized and Advanced Fully Phased-In capital, RWA and capital ratios, and SLRs for the Firm, JPMorgan Chase Bank, N.A. and Chase Bank USA, N.A. are based on the current published U.S. Basel III rules.

Risk-based capital regulatory minimums

The following chart presents the Basel III minimum CET1 capital ratio during the transitional periods and on a fully phased-in basis under the Basel III rules currently in effect.



The Basel III rules include minimum capital ratio requirements that are subject to phase-in periods through the end of 2018. The capital adequacy of the Firm and its IDI subsidiaries, both during the transitional period and upon full phase-in, is evaluated against the Basel III approach (Standardized or Advanced) which, for each quarter, results in the lower ratio as required by the Collins Amendment of the Dodd-Frank Act (the "Collins Floor"). The Basel III Standardized Fully Phased-In CET1 ratio is the Firm's current binding constraint, and the Firm expects that this will remain its binding constraint for the foreseeable future.

Additional information regarding the Firm's capital ratios, as well as the U.S. federal regulatory capital standards to which the Firm is subject, is presented in Note 26. For further information on the Firm's Basel III measures, see the Firm's Pillar 3 Regulatory Capital Disclosures reports, which are available on the Firm's website (http://investor.shareholder.com/jpmorganchase/basel.cfm).

All banking institutions are currently required to have a minimum capital ratio of 4.5% of risk weighted assets. Certain banking organizations, including the Firm, are required to hold additional amounts of capital to serve as a "capital conservation buffer". The capital conservation buffer is intended to be used to absorb potential losses in times of financial or economic stress. If not maintained, the Firm could be limited in the amount of capital that may be distributed, including dividends and common equity repurchases. The capital conservation buffer is subject to a phase-in period that began January 1, 2016 and continues through the end of 2018.

As an expansion of the capital conservation buffer, the Firm is also required to hold additional levels of capital in the form of a GSIB surcharge and a countercyclical capital buffer.

Under the Federal Reserve's final rule, the Firm is required to calculate its GSIB surcharge on an annual basis under two separately prescribed methods, and is subject to the higher of the two. The first ("Method 1"), reflects the GSIB surcharge as prescribed by the Basel Committee's assessment methodology, and is calculated across five criteria: size, cross-jurisdictional activity, interconnectedness, complexity and substitutability. The second ("Method 2"), modifies the Method 1 requirements to include a measure of short-term wholesale funding in place of substitutability, and introduces a GSIB score "multiplication factor". The following table represents the Firm's GSIB surcharge.

	2017	2016
Fully Phased-In:		
Method 1	2.50%	2.50%
Method 2	3.50%	4.50%
Transitional[(a)]	1.75%	1.125%

(a) The GSIB surcharge is subject to transition provisions (in 25% increments) through the end of 2018.

The Firm's effective GSIB surcharge for 2018 is anticipated to be 3.5%.

The countercyclical capital buffer takes into account the macro financial environment in which large, internationally active banks function. On September 8, 2016 the Federal Reserve published the framework that will apply to the setting of the countercyclical capital buffer. As of December 1, 2017, the Federal Reserve reaffirmed setting the U.S. countercyclical capital buffer at 0%, and stated that it will review the amount at least annually. The countercyclical capital buffer can be increased if the Federal Reserve, FDIC and OCC determine that credit growth in the economy has become excessive and can be set at up to an additional 2.5% of RWA subject to a 12-month implementation period.

The Firm believes that it will operate with a Basel III CET1 capital ratio between 11% and 12% over the medium term. It is the Firm's intention that its capital ratios will continue to meet regulatory minimums as they are fully phased in 2019 and thereafter.

In addition to meeting the capital ratio requirements of Basel III, the Firm also must maintain minimum capital and leverage ratios in order to be "well-capitalized." The following table represents the ratios that the Firm and its IDI subsidiaries must maintain in order to meet the definition of "well-capitalized" under the regulations issued by the Federal Reserve and the Prompt Corrective Action ("PCA") requirements of the FDIC Improvement Act ("FDICIA"), respectively.

	Well-capitalized ratios	
	BHC	IDI
Capital ratios		
CET1	–%	6.5%
Tier 1 capital	6.0	8.0
Total capital	10.0	10.0
Tier 1 leverage	–	5.0
SLR[(a)]	5.0	6.0

(a) In the case of the SLR, the Fully Phased-In well-capitalized ratio is effective January 1, 2018.

Capital

The following table presents reconciliations of total stockholders' equity to Basel III Fully Phased-In CET1 capital, Tier 1 capital and Basel III Advanced and Standardized Fully Phased-In Total capital as of December 31, 2017 and 2016. For additional information on the components of regulatory capital, see Note 26.

Capital components

(in millions)	December 31, 2017	December 31, 2016
Total stockholders' equity	**$ 255,693**	**$ 254,190**
Less: Preferred stock	26,068	26,068
Common stockholders' equity	**229,625**	**228,122**
Less:		
Goodwill	47,507	47,288
Other intangible assets	855	862
Add:		
Certain Deferred tax liabilities[(a)(b)]	2,204	3,230
Less: Other CET1 capital adjustments[(b)]	223	1,468
Standardized/Advanced Fully Phased-In CET1 capital	**183,244**	**181,734**
Preferred stock	26,068	26,068
Less:		
Other Tier 1 adjustments[(c)]	748	328
Standardized/Advanced Fully Phased-In Tier 1 capital	**$ 208,564**	**$ 207,474**
Long-term debt and other instruments qualifying as Tier 2 capital	$ 14,827	$ 15,253
Qualifying allowance for credit losses	14,672	14,854
Other	(103)	(94)
Standardized Fully Phased-In Tier 2 capital	**$ 29,396**	**$ 30,013**
Standardized Fully Phased-in Total capital	**$ 237,960**	**$ 237,487**
Adjustment in qualifying allowance for credit losses for Advanced Tier 2 capital	(10,462)	(10,961)
Advanced Fully Phased-In Tier 2 capital	**$ 18,934**	**$ 19,052**
Advanced Fully Phased-In Total capital	**$ 227,498**	**$ 226,526**

(a) Represents deferred tax liabilities related to tax-deductible goodwill and identifiable intangibles created in nontaxable transactions, which are netted against goodwill and other intangibles when calculating TCE.
(b) Includes the effect from the revaluation of the Firm's net deferred tax liability as a result of the enactment of the TCJA.
(c) Includes the deduction associated with the permissible holdings of covered funds (as defined by the Volcker Rule). The deduction was not material as of December 31, 2017 and 2016.

The following table presents reconciliations of the Firm's Basel III Transitional CET1 capital to the Firm's Basel III Fully Phased-In CET1 capital as of December 31, 2017 and 2016.

(in millions)	December 31, 2017	December 31, 2016
Transitional CET1 capital	**$ 183,300**	**$ 182,967**
AOCI phase-in[(a)]	128	(156)
CET1 capital deduction phase-in[(b)]	(20)	(695)
Intangible assets deduction phase-in[(c)]	(160)	(312)
Other adjustments to CET1 capital[(d)]	(4)	(70)
Fully Phased-In CET1 capital	**$ 183,244**	**$ 181,734**

(a) Includes the remaining balance of accumulated other comprehensive income ("AOCI") related to AFS debt securities and defined benefit pension and other postretirement employee benefit ("OPEB") plans that will qualify as Basel III CET1 capital upon full phase-in.
(b) Predominantly includes regulatory adjustments related to changes in DVA, as well as CET1 deductions for defined benefit pension plan assets and deferred tax assets related to tax attributes, including NOLs.
(c) Relates to intangible assets, other than goodwill and MSRs, that are required to be deducted from CET1 capital upon full phase-in.
(d) Includes minority interest and the Firm's investments in its own CET1 capital instruments.

Capital rollforward

The following table presents the changes in Basel III Fully Phased-In CET1 capital, Tier 1 capital and Tier 2 capital for the year ended December 31, 2017.

Year Ended December 31, (in millions)	2017
Standardized/Advanced CET1 capital at December 31, 2016	$ 181,734
Net income applicable to common equity[(a)]	22,778
Dividends declared on common stock	(7,542)
Net purchase of treasury stock	(13,741)
Changes in additional paid-in capital	(1,048)
Changes related to AOCI	536
Adjustment related to DVA[(b)]	468
Changes related to other CET1 capital adjustments[(c)]	59
Increase in Standardized/Advanced CET1 capital	1,510
Standardized/Advanced CET1 capital at December 31, 2017	**$ 183,244**
Standardized/Advanced Tier 1 capital at December 31, 2016	$ 207,474
Change in CET1 capital	1,510
Net issuance of noncumulative perpetual preferred stock	–
Other	(420)
Increase in Standardized/Advanced Tier 1 capital	1,090
Standardized/Advanced Tier 1 capital at December 31, 2017	**$ 208,564**
Standardized Tier 2 capital at December 31, 2016	$ 30,013
Change in long-term debt and other instruments qualifying as Tier 2	(426)
Change in qualifying allowance for credit losses	(182)
Other	(9)
Decrease in Standardized Tier 2 capital	(617)
Standardized Tier 2 capital at December 31, 2017	**$ 29,396**
Standardized Total capital at December 31, 2017	**$ 237,960**
Advanced Tier 2 capital at December 31, 2016	$ 19,052
Change in long-term debt and other instruments qualifying as Tier 2	(426)
Change in qualifying allowance for credit losses	317
Other	(9)
Decrease in Advanced Tier 2 capital	(118)
Advanced Tier 2 capital at December 31, 2017	**$ 18,934**
Advanced Total capital at December 31, 2017	**$ 227,498**

(a) Includes a $2.4 billion decrease to net income as a result of the enactment of the TCJA. For additional information related to the impact of the TCJA, see Note 24.
(b) Includes DVA related to structured notes recorded in AOCI.
(c) Includes the effect from the revaluation of the Firm's net deferred tax liability as a result of the enactment of the TCJA.

RWA rollforward

The following table presents changes in the components of RWA under Basel III Standardized and Advanced Fully Phased-In for the year ended December 31, 2017. The amounts in the rollforward categories are estimates, based on the predominant driver of the change.

	Standardized			Advanced			
Year ended December 31, 2017 (in millions)	Credit risk RWA	Market risk RWA	**Total RWA**	Credit risk RWA	Market risk RWA	Operational risk	**Total RWA**
December 31, 2016	$ 1,365,137 [d]	$ 127,679	**$ 1,492,816** [d]	$ 959,523	$ 127,657	$ 400,000	**$ 1,487,180**
Model & data changes[a]	(8,214)	1,739	**(6,475)**	(14,189)	1,739	–	**(12,450)**
Portfolio runoff[b]	(13,600)	–	**(13,600)**	(16,100)	–	–	**(16,100)**
Movement in portfolio levels[c]	42,737	(5,716)	**37,021**	(6,329)	(5,605)	–	**(11,934)**
Changes in RWA	20,923	(3,977)	**16,946**	(36,618)	(3,866)	–	**(40,484)**
December 31, 2017	**$ 1,386,060**	**$ 123,702**	**$ 1,509,762**	**$ 922,905**	**$ 123,791**	**$ 400,000**	**$ 1,446,696**

(a) Model & data changes refer to material movements in levels of RWA as a result of revised methodologies and/or treatment per regulatory guidance (exclusive of rule changes).
(b) Portfolio runoff for credit risk RWA primarily reflects (under both the Standardized and Advanced approaches) reduced risk from position rolloffs in legacy portfolios in Home Lending, the sale of the student loan portfolio during the second quarter of 2017, and the sale of reverse mortgages in CIB during the third quarter of 2017.
(c) Movement in portfolio levels for credit risk RWA refers to changes primarily in book size, composition, credit quality, and market movements; and for market risk RWA refers to changes in position and market movements.
(d) The prior period amounts have been revised to conform with the current period presentation.

Supplementary leverage ratio

The SLR is defined as Tier 1 capital under Basel III divided by the Firm's total leverage exposure. Total leverage exposure is calculated by taking the Firm's total average on-balance sheet assets, less amounts permitted to be deducted for Tier 1 capital, and adding certain off-balance sheet exposures, such as undrawn commitments and derivatives potential future exposure.

The following table presents the components of the Firm's Fully Phased-In SLR as of December 31, 2017 and 2016.

(in millions, except ratio)	**December 31, 2017**	December 31, 2016
Tier 1 capital	**$ 208,564**	$ 207,474
Total average assets	2,562,155	2,532,457
Less: Adjustments for deductions from Tier 1 capital	47,333	46,977
Total adjusted average assets[a]	2,514,822	2,485,480
Off-balance sheet exposures[b]	690,193	707,359
Total leverage exposure	**$ 3,205,015**	$ 3,192,839
SLR	**6.5%**	6.5%

(a) Adjusted average assets, for purposes of calculating the SLR, includes total quarterly average assets adjusted for on-balance sheet assets that are subject to deduction from Tier 1 capital, predominantly goodwill and other intangible assets.
(b) Off-balance sheet exposures are calculated as the average of the three month-end spot balances during the reporting quarter.

As of December 31, 2017, JPMorgan Chase Bank, N.A.'s and Chase Bank USA, N.A.'s Fully Phased-In SLRs are approximately 6.7% and 11.8%, respectively.

Line of business equity

Each business segment is allocated capital by taking into consideration stand-alone peer comparisons and regulatory capital requirements. For 2016, capital was allocated to each business segment for, among other things, goodwill and other intangibles associated with acquisitions effected by the line of business. ROE is measured and internal targets for expected returns are established as key measures of a business segment's performance.

On at least an annual basis, the Firm assesses the level of capital required for each line of business as well as the assumptions and methodologies used to allocate capital. Through the end of 2016, capital was allocated to the lines of business based on a single measure, Basel III Advanced Fully Phased-In RWA. Effective January 1, 2017, the Firm's methodology used to allocate capital to the Firm's business segments was updated. The new methodology incorporates Basel III Standardized Fully Phased-In RWA (as well as Basel III Advanced Fully Phased-In RWA), leverage, the GSIB surcharge, and a simulation of capital in a severe stress environment. The methodology will continue to be weighted towards Basel III Advanced Fully Phased-In RWA because the Firm believes it to be the best proxy for economic risk. The Firm will consider further changes to its capital allocation methodology as the regulatory framework evolves. In addition, under the new methodology, capital is no longer allocated to each line of business for goodwill and other intangibles associated with acquisitions effected by the line of business. The Firm will continue to establish internal ROE targets for its business segments, against which they will be measured, as a key performance indicator.

The table below reflects the Firm's assessed level of capital allocated to each line of business as of the dates indicated.

Line of business equity (Allocated capital)

(in billions)	January 1, 2018	December 31, 2017	December 31, 2016
Consumer & Community Banking	**$ 51.0**	$ 51.0	$ 51.0
Corporate & Investment Bank	**70.0**	70.0	64.0
Commercial Banking	**20.0**	20.0	16.0
Asset & Wealth Management	**9.0**	9.0	9.0
Corporate	**79.6**	79.6	88.1
Total common stockholders' equity	**$ 229.6**	$229.6	$228.1

Planning and stress testing

Comprehensive Capital Analysis and Review
The Federal Reserve requires large bank holding companies, including the Firm, to submit a capital plan on an annual basis. The Federal Reserve uses the CCAR and Dodd-Frank Act stress test processes to ensure that large BHCs have sufficient capital during periods of economic and financial stress, and have robust, forward-looking capital assessment and planning processes in place that address each BHC's unique risks to enable it to absorb losses under certain stress scenarios. Through the CCAR, the Federal Reserve evaluates each BHC's capital adequacy and internal capital adequacy assessment processes ("ICAAP"), as well as its plans to make capital distributions, such as dividend payments or stock repurchases.

On June 28, 2017, the Federal Reserve informed the Firm that it did not object, on either a quantitative or qualitative basis, to the Firm's 2017 capital plan. For information on actions taken by the Firm's Board of Directors following the 2017 CCAR results, see Capital actions on pages 89-90.

The Firm's CCAR process is integrated into and employs the same methodologies utilized in the Firm's ICAAP process, as discussed below.

Internal Capital Adequacy Assessment Process
Semiannually, the Firm completes the ICAAP, which provides management with a view of the impact of severe and unexpected events on earnings, balance sheet positions, reserves and capital. The Firm's ICAAP integrates stress testing protocols with capital planning.

The process assesses the potential impact of alternative economic and business scenarios on the Firm's earnings and capital. Economic scenarios, and the parameters underlying those scenarios, are defined centrally and applied uniformly across the businesses. These scenarios are articulated in terms of macroeconomic factors, which are key drivers of business results; global market shocks, which generate short-term but severe trading losses; and idiosyncratic operational risk events. The scenarios are intended to capture and stress key vulnerabilities and idiosyncratic risks facing the Firm. However, when defining a broad range of scenarios, actual events can always be worse. Accordingly, management considers additional stresses outside these scenarios, as necessary. ICAAP results are reviewed by management and the Audit Committee.

Capital actions

Preferred stock
Preferred stock dividends declared were $1.7 billion for the year ended December 31, 2017.

On October 20, 2017, the Firm issued $1.3 billion of fixed-to-floating rate non-cumulative preferred stock, Series CC, with an initial dividend rate of 4.625%. On December 1, 2017, the Firm redeemed all $1.3 billion of its outstanding 5.50% non-cumulative preferred stock, Series O.

For additional information on the Firm's preferred stock, see Note 20.

Trust preferred securities
On December 18, 2017, the Delaware trusts that issued seven series of outstanding trust preferred securities were liquidated, $1.6 billion of trust preferred and $56 million of common securities originally issued by those trusts were cancelled, and the junior subordinated debentures previously held by each trust issuer were distributed pro rata to the holders of the corresponding series of trust preferred and common securities.

The Firm redeemed $1.6 billion of trust preferred securities in the year ended December 31, 2016.

Common stock dividends
The Firm's common stock dividend policy reflects JPMorgan Chase's earnings outlook, desired dividend payout ratio, capital objectives, and alternative investment opportunities.

On September 19, 2017, the Firm announced that its Board of Directors increased the quarterly common stock dividend to $0.56 per share, effective with the dividend paid on October 31, 2017. The Firm's dividends are subject to the Board of Directors' approval on a quarterly basis.

For information regarding dividend restrictions, see Note 20 and Note 25.

The following table shows the common dividend payout ratio based on net income applicable to common equity.

Year ended December 31,	**2017**	2016	2015
Common dividend payout ratio	**33%**	30%	28%

Common equity

During the year ended December 31, 2017, warrant holders exercised their right to purchase 9.9 million shares of the Firm's common stock. The Firm issued from treasury stock 5.4 million shares of its common stock as a result of these exercises. As of December 31, 2017, 15.0 million warrants remained outstanding, compared with 24.9 million outstanding as of December 31, 2016.

Effective June 28, 2017, the Firm's Board of Directors authorized the repurchase of up to $19.4 billion of common equity (common stock and warrants) between July 1, 2017 and June 30, 2018, as part of its annual capital plan.

As of December 31, 2017, $9.8 billion of authorized repurchase capacity remained under the common equity repurchase program.

The following table sets forth the Firm's repurchases of common equity for the years ended December 31, 2017, 2016 and 2015. There were no repurchases of warrants during the years ended December 31, 2017, 2016 and 2015.

Year ended December 31, (in millions)	**2017**	2016	2015
Total number of shares of common stock repurchased	**166.6**	140.4	89.8
Aggregate purchase price of common stock repurchases	**$15,410**	$ 9,082	$ 5,616

The Firm may, from time to time, enter into written trading plans under Rule 10b5-1 of the Securities Exchange Act of 1934 to facilitate repurchases in accordance with the common equity repurchase program. A Rule 10b5-1 repurchase plan allows the Firm to repurchase its equity during periods when it would not otherwise be repurchasing common equity – for example, during internal trading blackout periods. All purchases under Rule 10b5-1 plans must be made according to predefined schedules established when the Firm is not aware of material nonpublic information.

The authorization to repurchase common equity will be utilized at management's discretion, and the timing of purchases and the exact amount of common equity that may be repurchased is subject to various factors, including market conditions; legal and regulatory considerations affecting the amount and timing of repurchase activity; the Firm's capital position (taking into account goodwill and intangibles); internal capital generation; and alternative investment opportunities. The repurchase program does not include specific price targets or timetables; may be executed through open market purchases or privately negotiated transactions, or utilizing Rule 10b5-1 plans; and may be suspended by management at any time.

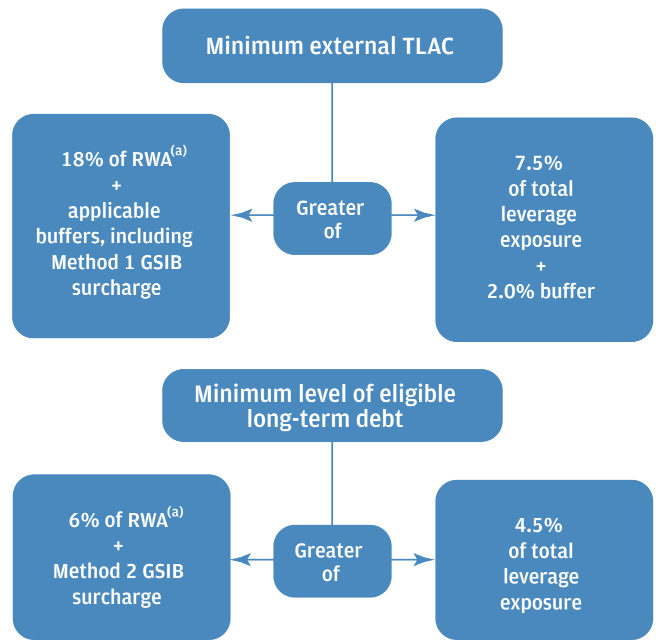
For additional information regarding repurchases of the Firm's equity securities, see Part II, Item 5: Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities on page 28.

Other capital requirements

TLAC

On December 15, 2016, the Federal Reserve issued its final TLAC rule which requires the top-tier holding companies of eight U.S. GSIB holding companies, including the Firm, to maintain minimum levels of external TLAC and external long-term debt that satisfies certain eligibility criteria ("eligible LTD"), effective January 1, 2019.

The minimum external TLAC and the minimum level of eligible long-term debt requirements are shown below:



(a) RWA is the greater of Standardized and Advanced.

The final TLAC rule permanently grandfathered all long-term debt issued before December 31, 2016, to the extent these securities would be ineligible because they contained impermissible acceleration rights or were governed by non-U.S. law. As of December 31, 2017, the Firm was compliant with the requirements under the current rule to which it will be subject on January 1, 2019.

Broker-dealer regulatory capital

JPMorgan Securities

JPMorgan Chase's principal U.S. broker-dealer subsidiary is JPMorgan Securities. JPMorgan Securities is subject to Rule 15c3-1 under the Securities Exchange Act of 1934 (the "Net Capital Rule"). JPMorgan Securities is also registered as a futures commission merchant and subject to Rule 1.17 of the CFTC.

JPMorgan Securities has elected to compute its minimum net capital requirements in accordance with the "Alternative Net Capital Requirements" of the Net Capital Rule.

In accordance with the market and credit risk standards of Appendix E of the Net Capital Rule, JPMorgan Securities is eligible to use the alternative method of computing net capital if, in addition to meeting its minimum net capital requirements, it maintains tentative net capital of at least $1.0 billion and is also required to notify the SEC in the event that tentative net capital is less than $5.0 billion. As of December 31, 2017, JPMorgan Securities had tentative net capital in excess of the minimum and notification requirements. The following table presents JPMorgan Securities' net capital information:

December 31, 2017	Net capital	
(in billions)	Actual	Minimum
JPMorgan Securities	**$ 13.6**	**$ 2.8**

J.P. Morgan Securities plc

J.P. Morgan Securities plc is a wholly owned subsidiary of JPMorgan Chase Bank, N.A. and is the Firm's principal operating subsidiary in the U.K. It has authority to engage in banking, investment banking and broker-dealer activities.
J.P. Morgan Securities plc is jointly regulated by the U.K. PRA and the FCA. J.P. Morgan Securities plc is subject to the European Union Capital Requirements Regulation and the U.K. PRA capital rules, each of which implemented Basel III and thereby subject J.P. Morgan Securities plc to its requirements.

The following table presents J.P. Morgan Securities plc's capital information:

December 31, 2017	Total capital	CET1 ratio		Total capital ratio	
(in billions, except ratios)	Estimated	Estimated	Minimum	Estimated	Minimum
J.P. Morgan Securities plc	**$ 39.6**	**15.9%**	**4.5%**	**15.9%**	**8.0%**

LIQUIDITY RISK MANAGEMENT

Liquidity risk is the risk that the Firm will be unable to meet its contractual and contingent financial obligations as they arise or that it does not have the appropriate amount, composition and tenor of funding and liquidity to support its assets and liabilities.

Liquidity risk oversight

The Firm has a liquidity risk oversight function whose primary objective is to provide assessment, measurement, monitoring, and control of liquidity risk across the Firm. Liquidity risk oversight is managed through a dedicated firmwide Liquidity Risk Oversight group. The CIO, Treasury and Corporate ("CTC") CRO, who reports to the Firm's CRO, as part of the IRM function, is responsible for firmwide Liquidity Risk Oversight. Liquidity Risk Oversight's responsibilities include:

- Establishing and monitoring limits, indicators, and thresholds, including liquidity risk appetite tolerances;
- Monitoring internal firmwide and material legal entity liquidity stress tests, and monitoring and reporting regulatory defined liquidity stress testing;
- Approving or escalating for review liquidity stress assumptions;
- Monitoring liquidity positions, balance sheet variances and funding activities, and
- Conducting ad hoc analysis to identify potential emerging liquidity risks.

Liquidity management

Treasury and CIO is responsible for liquidity management. The primary objectives of effective liquidity management are to:

- Ensure that the Firm's core businesses and material legal entities are able to operate in support of client needs and meet contractual and contingent financial obligations through normal economic cycles as well as during stress events, and
- Manage an optimal funding mix and availability of liquidity sources.

The Firm manages liquidity and funding using a centralized, global approach across its entities, taking into consideration both their current liquidity profile and any potential changes over time, in order to optimize liquidity sources and uses.

In the context of the Firm's liquidity management, Treasury and CIO is responsible for:

- Analyzing and understanding the liquidity characteristics of the assets and liabilities of the Firm, lines of business and legal entities, taking into account legal, regulatory, and operational restrictions;
- Developing internal liquidity stress testing assumptions;
- Defining and monitoring firmwide and legal entity-specific liquidity strategies, policies, guidelines, reporting and contingency funding plans;
- Managing liquidity within the Firm's approved liquidity risk appetite tolerances and limits;
- Managing compliance with regulatory requirements related to funding and liquidity risk, and
- Setting transfer pricing in accordance with underlying liquidity characteristics of balance sheet assets and liabilities as well as certain off-balance sheet items.

Risk governance and measurement

Specific committees responsible for liquidity governance include the firmwide ALCO as well as line of business and regional ALCOs, and the CTC Risk Committee. In addition, the DRPC reviews and recommends to the Board of Directors, for formal approval, the Firm's liquidity risk tolerances, liquidity strategy, and liquidity policy at least annually. For further discussion of ALCO and other risk-related committees, see Enterprise-wide Risk Management on pages 75–137.

Internal stress testing

Liquidity stress tests are intended to ensure that the Firm has sufficient liquidity under a variety of adverse scenarios, including scenarios analyzed as part of the Firm's resolution and recovery planning. Stress scenarios are produced for JPMorgan Chase & Co. ("Parent Company") and the Firm's material legal entities on a regular basis, and ad hoc stress tests are performed, as needed, in response to specific market events or concerns. Liquidity stress tests assume all of the Firm's contractual financial obligations are met and take into consideration:

- Varying levels of access to unsecured and secured funding markets,
- Estimated non-contractual and contingent cash outflows, and
- Potential impediments to the availability and transferability of liquidity between jurisdictions and material legal entities such as regulatory, legal or other restrictions.

Liquidity outflow assumptions are modeled across a range of time horizons and currency dimensions and contemplate both market and idiosyncratic stresses.

Results of stress tests are considered in the formulation of the Firm's funding plan and assessment of its liquidity position. The Parent Company acts as a source of funding for the Firm through equity and long-term debt issuances, and the IHC provides funding support to the ongoing operations of the Parent Company and its subsidiaries, as necessary. The Firm maintains liquidity at the Parent Company and the IHC, in addition to liquidity held at the operating subsidiaries, at levels sufficient to comply with liquidity risk tolerances and minimum liquidity requirements, and to manage through periods of stress where access to normal funding sources is disrupted.

Contingency funding plan

The Firm's contingency funding plan ("CFP"), which is approved by the firmwide ALCO and the DRPC, is a compilation of procedures and action plans for managing liquidity through stress events. The CFP incorporates the limits and indicators set by the Liquidity Risk Oversight group. These limits and indicators are reviewed regularly to identify the emergence of risks or vulnerabilities in the Firm's liquidity position. The CFP identifies the alternative contingent funding and liquidity resources available to the Firm and its legal entities in a period of stress.

LCR and HQLA

The LCR rule requires the Firm to maintain an amount of unencumbered HQLA that is sufficient to meet its estimated total net cash outflows over a prospective 30 calendar-day period of significant stress. HQLA is the amount of liquid assets that qualify for inclusion in the LCR. HQLA primarily consist of unencumbered cash and certain high quality liquid securities as defined in the LCR rule.

Under the LCR rule, the amount of HQLA held by JPMorgan Chase Bank N.A. and Chase Bank USA, N.A that are in excess of each entity's standalone 100% minimum LCR requirement, and that are not transferable to non-bank affiliates, must be excluded from the Firm's reported HQLA. Effective January 1, 2017, the LCR is required to be a minimum of 100%.

On December 19, 2016, the Federal Reserve published final LCR public disclosure requirements for certain BHCs and non-bank financial companies. Beginning with the second quarter of 2017, the Firm disclosed its average LCR for the quarter and the key quantitative components of the average LCR, along with a qualitative discussion of material drivers of the ratio, changes over time, and causes of such changes. The Firm will continue to make available its U.S. LCR Disclosure report on a quarterly basis on the Firm's website at: (https://investor.shareholder.com/jpmorganchase/basel.cfm)

The following table summarizes the Firm's average LCR for the three months ended December 31, 2017 based on the Firm's current interpretation of the finalized LCR framework.

Average amount (in millions)		Three months ended December 31, 2017
HQLA		
Eligible cash[(a)]	$	370,126
Eligible securities[(b)(c)]		189,955
Total HQLA[(d)]	$	560,081
Net cash outflows	$	472,078
LCR		119%
Net excess HQLA[(d)]	$	88,003

(a) Represents cash on deposit at central banks, primarily Federal Reserve Banks.
(b) Predominantly U.S. Agency MBS, U.S. Treasuries, and sovereign bonds net of applicable haircuts under the LCR rules
(c) HQLA eligible securities may be reported in securities borrowed or purchased under resale agreements, trading assets, or securities on the Firm's Consolidated balance sheets.
(d) Excludes average excess HQLA at JPMorgan Chase Bank, N.A. and Chase Bank USA, N.A. that are not transferable to non-bank affiliates.

For the three months ended December 31, 2017, the Firm's average LCR was 119%, compared with an average of 120% for the three months ended September 30, 2017. The decrease in the ratio was largely attributable to a decrease in average HQLA, driven primarily by long-term debt maturities. The Firm's average LCR may fluctuate from period to period, due to changes in its HQLA and estimated net cash outflows under the LCR as a result of ongoing business activity. The Firm's HQLA are expected to be available to meet its liquidity needs in a time of stress.

Other liquidity sources

As of December 31, 2017, in addition to assets reported in the Firm's HQLA under the LCR rule, the Firm had approximately $208 billion of unencumbered marketable securities, such as equity securities and fixed income debt securities, available to raise liquidity, if required. This includes HQLA-eligible securities included as part of the excess liquidity at JPMorgan Chase Bank, N.A. that are not transferable to non-bank affiliates.

As of December 31, 2017, the Firm also had approximately $277 billion of available borrowing capacity at various Federal Home Loan Banks ("FHLBs"), discount windows at Federal Reserve Banks and various other central banks as a result of collateral pledged by the Firm to such banks. This borrowing capacity excludes the benefit of securities reported in the Firm's HQLA or other unencumbered securities that are currently pledged at Federal Reserve Bank discount windows. Although available, the Firm does not view the borrowing capacity at Federal Reserve Bank discount windows and the various other central banks as a primary source of liquidity.

NSFR

The net stable funding ratio ("NSFR") is intended to measure the adequacy of "available" and "required" amounts of stable funding over a one-year horizon. On April 26, 2016, the U.S. NSFR proposal was released for large banks and BHCs and was largely consistent with the Basel Committee's final standard.

While the final U.S. NSFR rule has yet to be released, as of December 31, 2017 the Firm estimates that it was compliant with the proposed 100% minimum NSFR based on its current understanding of the proposed rule.

Funding

Sources of funds

Management believes that the Firm's unsecured and secured funding capacity is sufficient to meet its on- and off-balance sheet obligations.

The Firm funds its global balance sheet through diverse sources of funding including a stable deposit franchise as well as secured and unsecured funding in the capital markets. The Firm's loan portfolio is funded with a portion of the Firm's deposits, through securitizations and, with respect to a portion of the Firm's real estate-related loans, with secured borrowings from the FHLBs. Deposits in excess of the amount utilized to fund loans are primarily invested in the Firm's investment securities portfolio or deployed in cash or other short-term liquid investments based on their interest rate and liquidity risk characteristics. Securities borrowed or purchased under resale agreements and trading assets-debt and equity instruments are primarily funded by the Firm's securities loaned or sold under agreements to repurchase, trading liabilities–debt and equity instruments, and a portion of the Firm's long-term debt and stockholders' equity. In addition to funding securities borrowed or purchased under resale agreements and trading assets-debt and equity instruments, proceeds from the Firm's debt and equity issuances are used to fund certain loans and other financial and non-financial assets, or may be invested in the Firm's investment securities portfolio. See the discussion below for additional information relating to Deposits, Short-term funding, and Long-term funding and issuance.

Deposits

The table below summarizes, by line of business, the period-end and average deposit balances as of and for the years ended December 31, 2017 and 2016.

Deposits As of or for the year ended December 31, (in millions)			Year ended December 31, Average	
	2017	2016	**2017**	2016
Consumer & Community Banking	**$ 659,885**	$ 618,337	**$ 640,219**	$ 586,637
Corporate & Investment Bank	**455,883**	412,434	**447,697**	409,680
Commercial Banking	**181,512**	179,532	**176,884**	172,835
Asset & Wealth Management	**146,407**	161,577	**148,982**	153,334
Corporate	**295**	3,299	**3,604**	5,482
Total Firm	**$ 1,443,982**	$ 1,375,179	**$ 1,417,386**	$ 1,327,968

A key strength of the Firm is its diversified deposit franchise, through each of its lines of business, which provides a stable source of funding and limits reliance on the wholesale funding markets. A significant portion of the Firm's deposits are consumer and wholesale operating deposits, which are both considered to be stable sources of liquidity. Wholesale operating deposits are considered to be stable sources of liquidity because they are generated from customers that maintain operating service relationships with the Firm.

The table below shows the loan and deposit balances, the loans-to-deposits ratios, and deposits as a percentage of total liabilities, as of December 31, 2017 and 2016.

As of December 31, (in billions except ratios)	**2017**	2016
Deposits	**$ 1,444.0**	$ 1,375.2
Deposits as a % of total liabilities	**63%**	61%
Loans	**930.7**	894.8
Loans-to-deposits ratio	**64%**	65%

Deposits increased due to both higher consumer and wholesale deposits. The higher consumer deposits reflect the continuation of strong growth from new and existing customers, and low attrition rates. The higher wholesale deposits largely were driven by growth in client cash management activity in CIB's Securities Services business, partially offset by lower balances in AWM reflecting balance migration predominantly into the Firm's investment-related products.

The Firm believes average deposit balances are generally more representative of deposit trends than period-end deposit balances. The increase in average deposits for the year ended December 31, 2017 compared with the year ended December 31, 2016, was driven by an increase in both consumer and wholesale deposits. For further discussions of deposit and liability balance trends, see the discussion of the Firm's business segments results and the Consolidated Balance Sheet Analysis on pages 55–74 and pages 47-48, respectively.

The following table summarizes short-term and long-term funding, excluding deposits, as of December 31, 2017 and 2016, and average balances for the years ended December 31, 2017 and 2016. For additional information, see the Consolidated Balance Sheets Analysis on pages 47-48 and Note 19.

Sources of funds (excluding deposits)

As of or for the year ended December 31, (in millions)	2017	2016	Average 2017	Average 2016
Commercial paper	**$ 24,186**	$ 11,738	**$ 19,920**	$ 15,001
Other borrowed funds	**27,616**	22,705	**26,612**	21,139
Total short-term borrowings	**$ 51,802**	$ 34,443	**$ 46,532**	$ 36,140
Obligations of Firm-administered multi-seller conduits[a]	**$ 3,045**	$ 2,719	**$ 3,206**	$ 5,153
Securities loaned or sold under agreements to repurchase:				
Securities sold under agreements to repurchase[b]	**$ 146,432**	$ 149,826	**$ 171,973**	$ 160,458
Securities loaned[c]	**7,910**	12,137	**11,526**	13,195
Total securities loaned or sold under agreements to repurchase[d]	**$ 154,342**	$ 161,963	**$ 183,499**	$ 173,653
Senior notes	**$ 155,852**	$ 151,042	**$ 154,352**	$ 153,768
Trust preferred securities[e]	**690**	2,345	**2,276**	3,724
Subordinated debt[e]	**16,553**	21,940	**18,832**	24,224
Structured notes	**45,727**	37,292	**42,918**	35,978
Total long-term unsecured funding	**$ 218,822**	$ 212,619	**$ 218,378**	$ 217,694
Credit card securitization[a]	**$ 21,278**	$ 31,181	**$ 25,933**	$ 29,428
Other securitizations[a][f]	**—**	1,527	**626**	1,669
FHLB advances	**60,617**	79,519	**69,916**	73,260
Other long-term secured funding[g]	**4,641**	3,107	**3,195**	4,619
Total long-term secured funding	**$ 86,536**	$ 115,334	**$ 99,670**	$ 108,976
Preferred stock[h]	**$ 26,068**	$ 26,068	**26,212**	$ 26,068
Common stockholders' equity[h]	**$ 229,625**	$ 228,122	**230,350**	$ 224,631

(a) Included in beneficial interest issued by consolidated variable interest entities on the Firm's Consolidated balance sheets.
(b) Excludes long-term structured repurchase agreements of $1.3 billion and $1.8 billion as of December 31, 2017 and 2016, respectively, and average balances of $1.5 billion and $2.9 billion for the years ended December 31, 2017 and 2016, respectively.
(c) Excludes long-term securities loaned of $1.3 billion and $1.2 billion as of December 31, 2017 and 2016, respectively, and average balances of $1.3 billion for both the years ended December 31, 2017 and 2016.
(d) Excludes federal funds purchased.
(e) Subordinated debt includes $1.6 billion of junior subordinated debentures distributed pro rata to the holders of the $1.6 billion of trust preferred securities which were cancelled on December 18, 2017. For further information see Note 19 .
(f) Other securitizations includes securitizations of student loans. The Firm deconsolidated the student loan securitization entities in the second quarter of 2017 as it no longer had a controlling financial interest in these entities as a result of the sale of the student loan portfolio. The Firm's wholesale businesses also securitize loans for client-driven transactions, which are not considered to be a source of funding for the Firm and are not included in the table.
(g) Includes long-term structured notes which are secured.
(h) For additional information on preferred stock and common stockholders' equity see Capital Risk Management on pages 82–91, Consolidated statements of changes in stockholders' equity, Note 20 and Note 21.

Short-term funding

The Firm's sources of short-term secured funding primarily consist of securities loaned or sold under agreements to repurchase. These instruments are secured predominantly by high-quality securities collateral, including government-issued debt and agency MBS, and constitute a significant portion of the federal funds purchased and securities loaned or sold under repurchase agreements on the Consolidated balance sheets. The increase in the average balance of securities loaned or sold under agreements to repurchase for the year ended December 31, 2017, compared to December 31, 2016, was largely due to client activities in CIB. The balances associated with securities loaned or sold under agreements to repurchase fluctuate over time due to customers' investment and financing activities; the Firm's demand for financing; the ongoing management of the mix of the Firm's liabilities, including its secured and unsecured financing (for both the investment securities and market-making portfolios); and other market and portfolio factors.

The Firm's sources of short-term unsecured funding primarily consist of issuances of wholesale commercial paper. The increase in short-term unsecured funding was primarily due to higher issuance of commercial paper reflecting in part a change in the mix of funding from securities sold under repurchase agreements for CIB Markets activities.

Long-term funding and issuance

Long-term funding provides additional sources of stable funding and liquidity for the Firm. The Firm's long-term funding plan is driven primarily by expected client activity, liquidity considerations, and regulatory requirements, including TLAC. Long-term funding objectives include maintaining diversification, maximizing market access and optimizing funding costs. The Firm evaluates various funding markets, tenors and currencies in creating its optimal long-term funding plan.

The significant majority of the Firm's long-term unsecured funding is issued by the Parent Company to provide maximum flexibility in support of both bank and non-bank subsidiary funding needs. The Parent Company advances substantially all net funding proceeds to its subsidiary, the IHC. The IHC does not issue debt to external counterparties. The following table summarizes long-term unsecured issuance and maturities or redemptions for the years ended December 31, 2017 and 2016. For additional information, see Note 19.

Long-term unsecured funding

Year ended December 31, (in millions)	2017	2016
Issuance		
Senior notes issued in the U.S. market	**$ 21,192**	$ 25,639
Senior notes issued in non-U.S. markets	**2,210**	7,063
Total senior notes	**23,402**	32,702
Subordinated debt	**—**	1,093
Structured notes	**29,040**	22,865
Total long-term unsecured funding – issuance	**$ 52,442**	$ 56,660
Maturities/redemptions		
Senior notes	**$ 22,337**	$ 29,989
Trust preferred securities	**—**	1,630
Subordinated debt	**6,901**	3,596
Structured notes	**22,581**	15,925
Total long-term unsecured funding – maturities/redemptions	**$ 51,819**	$ 51,140

The Firm raises secured long-term funding through securitization of consumer credit card loans and advances from the FHLBs.

The following table summarizes the securitization issuance and FHLB advances and their respective maturities or redemption for the years ended December 31, 2017 and 2016.

Long-term secured funding

Year ended December 31,	Issuance		Maturities/Redemptions	
(in millions)	**2017**	2016	**2017**	2016
Credit card securitization	**$ 1,545**	$ 8,277	**$ 11,470**	$ 5,025
Other securitizations[(a)]		—	**55**	233
FHLB advances	**—**	17,150	**18,900**	9,209
Other long-term secured funding[(b)]	**2,354**	455	**731**	2,645
Total long-term secured funding	**$ 3,899**	$ 25,882	**$ 31,156**	$ 17,112

(a) Other securitizations includes securitizations of student loans. The Firm deconsolidated the student loan securitization entities in the second quarter of 2017 as it no longer had a controlling financial interest in these entities as a result of the sale of the student loan portfolio.
(b) Includes long-term structured notes which are secured.

The Firm's wholesale businesses also securitize loans for client-driven transactions; those client-driven loan securitizations are not considered to be a source of funding for the Firm and are not included in the table above. For further description of the client-driven loan securitizations, see Note 14.

Credit ratings

The cost and availability of financing are influenced by credit ratings. Reductions in these ratings could have an adverse effect on the Firm's access to liquidity sources, increase the cost of funds, trigger additional collateral or funding requirements and decrease the number of investors and counterparties willing to lend to the Firm. Additionally, the Firm's funding requirements for VIEs and other third-party commitments may be adversely affected by a decline in credit ratings. For additional information on the impact of a credit ratings downgrade on the funding requirements for VIEs, and on derivatives and collateral agreements, see SPEs on page 50, and credit risk, liquidity risk and credit-related contingent features in Note 5 on page 186.

The credit ratings of the Parent Company and the Firm's principal bank and non-bank subsidiaries as of December 31, 2017, were as follows.

	JPMorgan Chase & Co.			JPMorgan Chase Bank, N.A. Chase Bank USA, N.A.			J.P. Morgan Securities LLC J.P. Morgan Securities plc		
December 31, 2017	Long-term issuer	Short-term issuer	Outlook	Long-term issuer	Short-term issuer	Outlook	Long-term issuer	Short-term issuer	Outlook
Moody's Investors Service	A3	P-2	Stable	Aa3	P-1	Stable	A1	P-1	Stable
Standard & Poor's	A-	A-2	Stable	A+	A-1	Stable	A+	A-1	Stable
Fitch Ratings	A+	F1	Stable	AA-	F1+	Stable	AA-	F1+	Stable

On February 22, 2017, Moody's published its updated rating methodologies for securities firms. As a result of this methodology change, J.P. Morgan Securities LLC's long-term issuer rating was downgraded by one notch from Aa3 to A1; the short-term issuer rating was unchanged and the outlook remained stable.

On June 1, 2017, JPMorgan Chase Bank, N.A. terminated its guarantee of the payment of all obligations of J.P. Morgan Securities plc arising after such termination. J.P. Morgan Securities plc, whose credit ratings previously reflected the benefit of this guarantee, is now rated on a stand-alone, non-guaranteed basis.

Downgrades of the Firm's long-term ratings by one or two notches could result in an increase in its cost of funds, and access to certain funding markets could be reduced as noted above. The nature and magnitude of the impact of ratings downgrades depends on numerous contractual and behavioral factors which the Firm believes are incorporated in its liquidity risk and stress testing metrics. The Firm believes that it maintains sufficient liquidity to withstand a potential decrease in funding capacity due to ratings downgrades.

JPMorgan Chase's unsecured debt does not contain requirements that would call for an acceleration of payments, maturities or changes in the structure of the existing debt, provide any limitations on future borrowings or require additional collateral, based on unfavorable changes in the Firm's credit ratings, financial ratios, earnings, or stock price.

Critical factors in maintaining high credit ratings include a stable and diverse earnings stream, strong capital ratios, strong credit quality and risk management controls, diverse funding sources, and disciplined liquidity monitoring procedures. Rating agencies continue to evaluate economic and geopolitical trends, regulatory developments, future profitability, risk management practices, and litigation matters, as well as their broader ratings methodologies. Changes in any of these factors could lead to changes in the Firm's credit ratings.

REPUTATION RISK MANAGEMENT

Reputation risk is the potential that an action, inaction, transaction, investment or event will reduce trust in the Firm's integrity or competence by its various constituents, including clients, counterparties, investors, regulators, employees and the broader public. Maintaining the Firm's reputation is the responsibility of each individual employee of the Firm. The Firm's Reputation Risk Governance policy explicitly vests each employee with the responsibility to consider the reputation of the Firm when engaging in any activity. Because the types of events that could harm the Firm's reputation are so varied across the Firm's lines of business, each line of business has a separate reputation risk governance infrastructure in place, which consists of three key elements: clear, documented escalation criteria appropriate to the business; a designated primary discussion forum — in most cases, one or more dedicated reputation risk committees; and a list of designated contacts to whom questions relating to reputation risk should be referred. Any matter giving rise to reputation risk that originates in a corporate function is required to be escalated directly to Firmwide Reputation Risk Governance ("FRRG") or to the relevant Risk Committee. Reputation risk governance is overseen by FRRG, which provides oversight of the governance infrastructure and process to support the consistent identification, escalation, management and monitoring of reputation risk issues firmwide.

Credit and investment risk is the risk associated with the default or change in credit profile of a client, counterparty or customer; or loss of principal or a reduction in expected returns on investments.

Credit risk management

Credit risk is the risk associated with the default or change in credit profile of a client, counterparty or customer. The Firm provides credit to a variety of customers, ranging from large corporate and institutional clients to individual consumers and small businesses. In its consumer businesses, the Firm is exposed to credit risk primarily through its home lending, credit card, auto, and business banking businesses. In its wholesale businesses, the Firm is exposed to credit risk through its underwriting, lending, market-making, and hedging activities with and for clients and counterparties, as well as through its operating services activities (such as cash management and clearing activities), securities financing activities, investment securities portfolio, and cash placed with banks.

Credit risk management is an independent risk management function that monitors, measures and manages credit risk throughout the Firm and defines credit risk policies and procedures. The credit risk function reports to the Firm's CRO. The Firm's credit risk management governance includes the following activities:

- Establishing a comprehensive credit risk policy framework
- Monitoring, measuring and managing credit risk across all portfolio segments, including transaction and exposure approval
- Setting industry concentration limits and establishing underwriting guidelines
- Assigning and managing credit authorities in connection with the approval of all credit exposure
- Managing criticized exposures and delinquent loans
- Estimating credit losses and ensuring appropriate credit risk-based capital management

Risk identification and measurement

The Credit Risk Management function monitors, measures, manages and limits credit risk across the Firm's businesses. To measure credit risk, the Firm employs several methodologies for estimating the likelihood of obligor or counterparty default. Methodologies for measuring credit risk vary depending on several factors, including type of asset (e.g., consumer versus wholesale), risk measurement parameters (e.g., delinquency status and borrower's credit score versus wholesale risk-rating) and risk management and collection processes (e.g., retail collection center versus centrally managed workout groups). Credit risk measurement is based on the probability of default of an obligor or counterparty, the loss severity given a default event and the exposure at default.

Based on these factors and related market-based inputs, the Firm estimates credit losses for its exposures. Probable credit losses inherent in the consumer and wholesale held-for-investment loan portfolios are reflected in the allowance for loan losses, and probable credit losses inherent in lending-related commitments are reflected in the allowance for lending-related commitments. These losses are estimated using statistical analyses and other factors as described in Note 13. In addition, potential and unexpected credit losses are reflected in the allocation of credit risk capital and represent the potential volatility of actual losses relative to the established allowances for loan losses and lending-related commitments. The analyses for these losses include stress testing that considers alternative economic scenarios as described in the Stress testing section below. For further information, see Critical Accounting Estimates used by the Firm on pages 138–140.

The methodologies used to estimate credit losses depend on the characteristics of the credit exposure, as described below.

Scored exposure

The scored portfolio is generally held in CCB and predominantly includes residential real estate loans, credit card loans, and certain auto and business banking loans. For the scored portfolio, credit loss estimates are based on statistical analysis of credit losses over discrete periods of time. The statistical analysis uses portfolio modeling, credit scoring, and decision-support tools, which consider loan-level factors such as delinquency status, credit scores, collateral values, and other risk factors. Credit loss analyses also consider, as appropriate, uncertainties and other factors, including those related to current macroeconomic and political conditions, the quality of underwriting standards, and other internal and external factors. The factors and analysis are updated on a quarterly basis or more frequently as market conditions dictate.

Risk-rated exposure

Risk-rated portfolios are generally held in CIB, CB and AWM, but also include certain business banking and auto dealer loans held in CCB that are risk-rated because they have characteristics similar to commercial loans. For the risk-rated portfolio, credit loss estimates are based on estimates of the probability of default ("PD") and loss severity given a default. The probability of default is the likelihood that a borrower will default on its obligation; the loss given default ("LGD") is the estimated loss on the loan that would be realized upon the default and takes into consideration collateral and structural support for each credit facility. The estimation process includes assigning risk ratings to each borrower and credit facility to differentiate risk within the portfolio. These risk ratings are reviewed regularly by Credit Risk Management and revised as needed to reflect the borrower's current financial position, risk profile and related collateral. The calculations and assumptions are based on both internal and external historical experience and management judgment and are reviewed regularly.

Stress testing

Stress testing is important in measuring and managing credit risk in the Firm's credit portfolio. The process assesses the potential impact of alternative economic and business scenarios on estimated credit losses for the Firm. Economic scenarios and the underlying parameters are defined centrally, articulated in terms of macroeconomic factors and applied across the businesses. The stress test results may indicate credit migration, changes in delinquency trends and potential losses in the credit portfolio. In addition to the periodic stress testing processes, management also considers additional stresses outside these scenarios, including industry and country-specific stress scenarios, as necessary. The Firm uses stress testing to inform decisions on setting risk appetite both at a Firm and LOB level, as well as to assess the impact of stress on individual counterparties.

Risk monitoring and management

The Firm has developed policies and practices that are designed to preserve the independence and integrity of the approval and decision-making process of extending credit to ensure credit risks are assessed accurately, approved properly, monitored regularly and managed actively at both the transaction and portfolio levels. The policy framework establishes credit approval authorities, concentration limits, risk-rating methodologies, portfolio review parameters and guidelines for management of distressed exposures. In addition, certain models, assumptions and inputs used in evaluating and monitoring credit risk are independently validated by groups that are separate from the line of businesses.

Consumer credit risk is monitored for delinquency and other trends, including any concentrations at the portfolio level, as certain of these trends can be modified through changes in underwriting policies and portfolio guidelines. Consumer Risk Management evaluates delinquency and other trends against business expectations, current and forecasted economic conditions, and industry benchmarks. Historical and forecasted economic performance and trends are incorporated into the modeling of estimated consumer credit losses and are part of the monitoring of the credit risk profile of the portfolio.

Wholesale credit risk is monitored regularly at an aggregate portfolio, industry, and individual client and counterparty level with established concentration limits that are reviewed and revised as deemed appropriate by management, typically on an annual basis. Industry and counterparty limits, as measured in terms of exposure and economic risk appetite, are subject to stress-based loss constraints. In addition, wrong-way risk — the risk that exposure to a counterparty is positively correlated with the impact of a default by the same counterparty, which could cause exposure to increase at the same time as the counterparty's capacity to meet its obligations is decreasing — is actively monitored as this risk could result in greater exposure at default compared with a transaction with another counterparty that does not have this risk.

Management of the Firm's wholesale credit risk exposure is accomplished through a number of means, including:

- Loan underwriting and credit approval process
- Loan syndications and participations
- Loan sales and securitizations
- Credit derivatives
- Master netting agreements
- Collateral and other risk-reduction techniques

In addition to Credit Risk Management, an independent Credit Review function is responsible for:

- Independently validating or changing the risk grades assigned to exposures in the Firm's wholesale and commercial-oriented retail credit portfolios, and assessing the timeliness of risk grade changes initiated by responsible business units; and
- Evaluating the effectiveness of business units' credit management processes, including the adequacy of credit analyses and risk grading/LGD rationales, proper monitoring and management of credit exposures, and compliance with applicable grading policies and underwriting guidelines.

For further discussion of consumer and wholesale loans, see Note 12.

Risk reporting

To enable monitoring of credit risk and effective decision-making, aggregate credit exposure, credit quality forecasts, concentration levels and risk profile changes are reported regularly to senior members of Credit Risk Management. Detailed portfolio reporting of industry; clients, counterparties and customers; product and geographic concentrations occurs monthly, and the appropriateness of the allowance for credit losses is reviewed by senior management at least on a quarterly basis. Through the risk reporting and governance structure, credit risk trends and limit exceptions are provided regularly to, and discussed with, risk committees, senior management and the Board of Directors as appropriate.

In the following tables, reported loans include loans retained (i.e., held-for-investment); loans held-for-sale; and certain loans accounted for at fair value. The following tables do not include certain loans the Firm accounts for at fair value and classifies as trading assets. For further information regarding these loans, see Note 2 and Note 3. For additional information on the Firm's loans, lending-related commitments, and derivative receivables, including the Firm's accounting policies, see Note 12, Note 27, and Note 5, respectively.

For further information regarding the credit risk inherent in the Firm's cash placed with banks, investment securities portfolio, and securities financing portfolio, see Note 4, Note 10, and Note 11, respectively.

For discussion of the consumer credit environment and consumer loans, see Consumer Credit Portfolio on pages 102-107 and Note 12. For discussion of the wholesale credit environment and wholesale loans, see Wholesale Credit Portfolio on pages 108–116 and Note 12.

Total credit portfolio

December 31, (in millions)	Credit exposure		Nonperforming[e][f]	
	2017	2016	**2017**	2016
Loans retained	**$ 924,838**	$ 889,907	**$ 5,943**	$ 6,721
Loans held-for-sale	**3,351**	2,628	**–**	162
Loans at fair value	**2,508**	2,230	**–**	–
Total loans – reported	**930,697**	894,765	**5,943**	6,883
Derivative receivables	**56,523**	64,078	**130**	223
Receivables from customers and other [a]	**26,272**	17,560	**–**	–
Total credit-related assets	**1,013,492**	976,403	**6,073**	7,106
Assets acquired in loan satisfactions				
Real estate owned	**NA**	NA	**311**	370
Other	**NA**	NA	**42**	59
Total assets acquired in loan satisfactions	**NA**	NA	**353**	429
Lending-related commitments	**991,482**	975,152 [d]	**731**	506
Total credit portfolio	**$ 2,004,974**	$ 1,951,555 [d]	**$ 7,157**	$ 8,041
Credit derivatives used in credit portfolio management activities[b]	**$ (17,609)**	$ (22,114)	**$ –**	$ –
Liquid securities and other cash collateral held against derivatives[c]	**(16,108)**	(22,705)	**NA**	NA

Year ended December 31, (in millions, except ratios)	**2017**	2016
Net charge-offs[g]	**$ 5,387**	$ 4,692
Average retained loans		
Loans	**898,979**	861,345
Loans – reported, excluding residential real estate PCI loans	**865,887**	822,973
Net charge-off rates[g]		
Loans	**0.60%**	0.54%
Loans – excluding PCI	**0.62**	0.57

(a) Receivables from customers and other primarily represents held-for-investment margin loans to brokerage customers.
(b) Represents the net notional amount of protection purchased and sold through credit derivatives used to manage both performing and nonperforming wholesale credit exposures; these derivatives do not qualify for hedge accounting under U.S. GAAP. For additional information, see Credit derivatives on pages 115-116 and Note 5.
(c) Includes collateral related to derivative instruments where an appropriate legal opinion has not been either sought or obtained.
(d) The prior period amounts have been revised to conform with the current period presentation.
(e) Excludes PCI loans. The Firm is recognizing interest income on each pool of PCI loans as each of the pools is performing.
(f) At December 31, 2017 and 2016, nonperforming assets excluded: (1) mortgage loans insured by U.S. government agencies of $4.3 billion and $5.0 billion, respectively, that are 90 or more days past due; (2) student loans insured by U.S. government agencies under the FFELP of zero and $263 million, respectively, that are 90 or more days past due; and (3) Real estate owned ("REO") insured by U.S. government agencies of $95 million and $142 million, respectively. These amounts have been excluded based upon the government guarantee. In addition, the Firm's policy is generally to exempt credit card loans from being placed on nonaccrual status as permitted by regulatory guidance issued by the Federal Financial Institutions Examination Council ("FFIEC").
(g) For the year ended December 31, 2017, excluding net charge-offs of $467 million related to the student loan portfolio sale, the net charge-off rate for loans would have been 0.55% and for loans - excluding PCI would have been 0.57%.

CONSUMER CREDIT PORTFOLIO

The Firm's retained consumer portfolio consists primarily of residential real estate loans, credit card loans, auto loans, and business banking loans, as well as associated lending-related commitments. The Firm's focus is on serving primarily the prime segment of the consumer credit market. Originated mortgage loans are retained in the mortgage portfolio, securitized or sold to U.S. government agencies and U.S. government-sponsored enterprises; other types of consumer loans are typically retained on the balance sheet. The credit performance of the consumer portfolio continues to benefit from discipline in credit underwriting as well as improvement in the economy driven by increasing home prices and low unemployment. The total amount of residential real estate loans delinquent 30+ days, excluding government guaranteed and purchased credit impaired loans, increased from December 31, 2016 due to the impact of recent hurricanes; however, the 30+ day delinquency rate decreased due to growth in the portfolio. The Credit Card 30+ day delinquency rate and the net charge-off rate increased from the prior year, in line with expectations. For further information on consumer loans, see Note 12. For further information on lending-related commitments, see Note 27.

The following table presents consumer credit-related information with respect to the credit portfolio held by CCB, prime mortgage and home equity loans held by AWM, and prime mortgage loans held by Corporate. For further information about the Firm's nonaccrual and charge-off accounting policies, see Note 12.

Consumer credit portfolio

As of or for the year ended December 31, (in millions, except ratios)	Credit exposure		Nonaccrual loans[k][l]		Net charge-offs/ (recoveries)[e][m][n]		Average annual net charge-off rate[e][m][n]	
	2017	2016	**2017**	2016	**2017**	2016	**2017**	2016
Consumer, excluding credit card								
Loans, excluding PCI loans and loans held-for-sale								
Residential mortgage[a]	**$ 216,496**	$ 192,486	**$ 2,175**	$ 2,256	**$ (10)**	$ 16	**–%**	0.01%
Home equity	**33,450**	39,063	**1,610**	1,845	**69**	189	**0.19**	0.45
Auto[b][c]	**66,242**	65,814	**141**	214	**331**	285	**0.51**	0.45
Consumer & Business Banking[a][c][d]	**25,789**	24,307	**283**	287	**257**	257	**1.03**	1.10
Student[a][e]	**–**	7,057	**–**	165	**498**	162	**NM**	2.13
Total loans, excluding PCI loans and loans held-for-sale	**341,977**	328,727	**4,209**	4,767	**1,145**	909	**0.34**	0.28
Loans – PCI								
Home equity	**10,799**	12,902	**NA**	NA	**NA**	NA	**NA**	NA
Prime mortgage	**6,479**	7,602	**NA**	NA	**NA**	NA	**NA**	NA
Subprime mortgage	**2,609**	2,941	**NA**	NA	**NA**	NA	**NA**	NA
Option ARMs[f]	**10,689**	12,234	**NA**	NA	**NA**	NA	**NA**	NA
Total loans – PCI	**30,576**	35,679	**NA**	NA	**NA**	NA	**NA**	NA
Total loans – retained	**372,553**	364,406	**4,209**	4,767	**1,145**	909	**0.31**	0.25
Loans held-for-sale	**128**	238	**–**	53	**–**	–	**–**	–
Total consumer, excluding credit card loans	**372,681**	364,644	**4,209**	4,820	**1,145**	909	**0.31**	0.25
Lending-related commitments[g]	**48,553**	53,247 [j]						
Receivables from customers[h]	**133**	120						
Total consumer exposure, excluding credit card	**421,367**	418,011 [j]						
Credit Card								
Loans retained[i]	**149,387**	141,711	**–**	–	**4,123**	3,442	**2.95**	2.63
Loans held-for-sale	**124**	105	**–**	–	**–**	–	**–**	–
Total credit card loans	**149,511**	141,816	**–**	–	**4,123**	3,442	**2.95**	2.63
Lending-related commitments[g]	**572,831**	553,891						
Total credit card exposure	**722,342**	695,707						
Total consumer credit portfolio	**$ 1,143,709**	$ 1,113,718 [j]	**$ 4,209**	$ 4,820	**$ 5,268**	$ 4,351	**1.04%**	0.89%
Memo: Total consumer credit portfolio, excluding PCI	**$ 1,113,133**	$ 1,078,039 [j]	**$ 4,209**	$ 4,820	**$ 5,268**	$ 4,351	**1.11%**	0.96%

(a) Certain loan portfolios have been reclassified. The prior period amounts have been revised to conform with the current period presentation.
(b) At December 31, 2017 and 2016, excluded operating lease assets of $17.1 billion and $13.2 billion, respectively. These operating lease assets are included in other assets on the Firm's Consolidated balance sheets. The risk of loss on these assets relates to the residual value of the leased vehicles, which is managed through projection of the lease residual value at lease origination, periodic review of residual values, and through arrangements with certain auto manufacturers that mitigates this risk.
(c) Includes certain business banking and auto dealer risk-rated loans that apply the wholesale methodology for determining the allowance for loan losses; these loans are managed by CCB, and therefore, for consistency in presentation, are included within the consumer portfolio.
(d) Predominantly includes Business Banking loans.
(e) For the year ended December 31, 2017, excluding net charge-offs of $467 million related to the student loan portfolio sale, the net charge-off rate for Total consumer, excluding credit card and PCI loans and loans held-for-sale would have been 0.20%; Total consumer - retained excluding credit card loans would have been 0.18%; Total consumer credit portfolio would have been 0.95%; and Total consumer credit portfolio, excluding PCI loans would have been 1.01%.
(f) At December 31, 2017 and 2016, approximately 68% and 66%, respectively, of the PCI option adjustable rate mortgages ("ARMs") portfolio has been modified into fixed-rate, fully amortizing loans.
(g) Credit card and home equity lending-related commitments represent the total available lines of credit for these products. The Firm has not experienced, and does not anticipate, that all available lines of credit would be used at the same time. For credit card and home equity commitments (if certain conditions are met), the Firm can reduce or cancel these lines of credit by providing the borrower notice or, in some cases as permitted by law, without notice. For further information, see Note 27.
(h) Receivables from customers represent held-for-investment margin loans to brokerage customers that are collateralized through assets maintained in the clients' brokerage accounts. These receivables are reported within accrued interest and accounts receivable on the Firm's Consolidated balance sheets.
(i) Includes billed interest and fees net of an allowance for uncollectible interest and fees.
(j) The prior period amounts have been revised to conform with the current period presentation.
(k) At December 31, 2017 and 2016, nonaccrual loans excluded loans 90 or more days past due as follows: (1) mortgage loans insured by U.S. government agencies of $4.3 billion and $5.0 billion, respectively; and (2) student loans insured by U.S. government agencies under the FFELP of zero and $263 million, respectively. These amounts have been excluded from nonaccrual loans based upon the government guarantee. In addition, the Firm's policy is generally to exempt credit card loans from being placed on nonaccrual status, as permitted by regulatory guidance issued by the FFIEC.
(l) Excludes PCI loans. The Firm is recognizing interest income on each pool of PCI loans as each of the pools is performing.
(m) Net charge-offs and net charge-off rates excluded write-offs in the PCI portfolio of $86 million and $156 million for the years ended December 31, 2017 and 2016. These write-offs decreased the allowance for loan losses for PCI loans. See Allowance for Credit Losses on pages 117-119 for further details.
(n) Average consumer loans held-for-sale were $1.5 billion and $496 million for the years ended December 31, 2017 and 2016, respectively. These amounts were excluded when calculating net charge-off rates.

Consumer, excluding credit card

Portfolio analysis

Consumer loan balances increased from December 31, 2016 predominantly due to originations of high-quality prime mortgage loans that have been retained on the balance sheet, partially offset by the sale of the student loan portfolio as well as paydowns and the charge-off or liquidation of delinquent loans.

PCI loans are excluded from the following discussions of individual loan products and are addressed separately below. For further information about the Firm's consumer portfolio, including information about delinquencies, loan modifications and other credit quality indicators, see Note 12.

Residential mortgage: The residential mortgage portfolio predominantly consists of high-quality prime mortgage loans with a small component (approximately 1%) of subprime mortgage loans. These subprime mortgage loans continue to run-off and are performing in line with expectations. The residential mortgage portfolio, including loans held-for-sale, increased from December 31, 2016 due to retained originations of primarily high-quality fixed rate prime mortgage loans partially offset by paydowns. Residential mortgage 30+ day delinquencies increased from December 31, 2016 due to the impact of recent hurricanes. Nonaccrual loans decreased from the prior year primarily as a result of loss mitigation activities. There was a net recovery for the year ended December 31, 2017 compared to a net charge-off for the year ended December 31, 2016, reflecting continued improvement in home prices and delinquencies.

At December 31, 2017 and 2016, the Firm's residential mortgage portfolio, including loans held-for-sale, included $8.6 billion and $9.5 billion, respectively, of mortgage loans insured and/or guaranteed by U.S. government agencies, of which $6.2 billion and $7.0 billion, respectively, were 30 days or more past due (of these past due loans, $4.3 billion and $5.0 billion, respectively, were 90 days or more past due). The Firm monitors its exposure to certain potential unrecoverable claim payments related to government insured loans and considers this exposure in estimating the allowance for loan losses.

At December 31, 2017 and 2016, the Firm's residential mortgage portfolio included $20.2 billion and $19.1 billion, respectively, of interest-only loans. These loans have an interest-only payment period generally followed by an adjustable-rate or fixed-rate fully amortizing payment period to maturity and are typically originated as higher-balance loans to higher-income borrowers. To date, losses on this portfolio generally have been consistent with the broader residential mortgage portfolio. The Firm continues to monitor the risks associated with these loans.

Home equity: The home equity portfolio declined from December 31, 2016 primarily reflecting loan paydowns. The amount of 30+ day delinquencies decreased from December 31, 2016 but was impacted by recent hurricanes. Nonaccrual loans decreased from December 31, 2016 primarily as a result of loss mitigation activities. Net charge-offs for the year ended December 31, 2017 declined when compared with the prior year, partially as a result of lower loan balances.

At December 31, 2017, approximately 90% of the Firm's home equity portfolio consists of home equity lines of credit ("HELOCs") and the remainder consists of home equity loans ("HELOANs"). HELOANs are generally fixed-rate, closed-end, amortizing loans, with terms ranging from 3–30 years. In general, HELOCs originated by the Firm are revolving loans for a 10-year period, after which time the HELOC recasts into a loan with a 20-year amortization period.

The carrying value of HELOCs outstanding was $30 billion at December 31, 2017. Of such amounts, $14 billion have recast from interest-only to fully amortizing payments or have been modified and $5 billion are interest-only balloon HELOCs, which primarily mature after 2030. The Firm manages the risk of HELOCs during their revolving period by closing or reducing the undrawn line to the extent permitted by law when borrowers are exhibiting a material deterioration in their credit risk profile.

The Firm monitors risks associated with junior lien loans where the borrower has a senior lien loan that is more than 90 days delinquent or has been modified. These loans are considered "high-risk seconds" and are classified as nonaccrual as they are considered to pose a higher risk of default than other junior lien loans. At December 31, 2017, the Firm estimated that the carrying value of its home equity portfolio contained approximately $725 million of current junior lien loans that were considered high-risk seconds, compared with $1.1 billion at December 31, 2016. For further information, see Note 12.

Auto: The auto loan portfolio, which predominantly consists of prime-quality loans, was relatively flat compared with December 31, 2016, as new originations were largely offset by paydowns and the charge-off or liquidation of delinquent loans. Nonaccrual loans decreased compared with December 31, 2016. Net charge-offs for the year ended December 31, 2017 increased compared with the prior year, primarily as a result of an incremental adjustment recorded in accordance with regulatory guidance regarding the timing of loss recognition for certain loans in bankruptcy and loans where assets were acquired in loan satisfaction.

Consumer & Business banking: Consumer & Business Banking loans increased compared with December 31, 2016 as growth due to loan originations was partially offset by paydowns and the charge-off or liquidation of delinquent loans. Nonaccrual loans and net charge-offs were relatively flat compared with prior year.

Student: The Firm wrote down and subsequently sold the student loan portfolio during 2017. Net charge-offs for the year ended December 31, 2017 increased as a result of the write-down.

Purchased credit-impaired loans: PCI loans decreased as the portfolio continues to run off. As of December 31, 2017, approximately 11% of the option ARM PCI loans were delinquent and approximately 68% of the portfolio had been modified into fixed-rate, fully amortizing loans. The borrowers for substantially all of the remaining loans are making amortizing payments, although such payments are not necessarily fully amortizing. This latter group of loans is subject to the risk of payment shock due to future payment recast. Default rates generally increase on option ARM loans when payment recast results in a payment increase. The expected increase in default rates is considered in the Firm's quarterly impairment assessment.

The following table provides a summary of lifetime principal loss estimates included in either the nonaccretable difference or the allowance for loan losses.

Summary of PCI loans lifetime principal loss estimates

	Lifetime loss estimates[a]		Life-to-date liquidation losses[b]	
December 31, (in billions)	**2017**	2016	**2017**	2016
Home equity	**$ 14.2**	$ 14.4	**$ 12.9**	$ 12.8
Prime mortgage	**4.0**	4.0	**3.8**	3.7
Subprime mortgage	**3.3**	3.2	**3.1**	3.1
Option ARMs	**10.0**	10.0	**9.7**	9.7
Total	**$ 31.5**	$ 31.6	**$ 29.5**	$ 29.3

(a) Includes the original nonaccretable difference established in purchase accounting of $30.5 billion for principal losses plus additional principal losses recognized subsequent to acquisition through the provision and allowance for loan losses. The remaining nonaccretable difference for principal losses was $842 million and $1.1 billion at December 31, 2017 and 2016, respectively.

(b) Represents both realization of loss upon loan resolution and any principal forgiven upon modification.

For further information on the Firm's PCI loans, including write-offs, see Note 12.

Geographic composition of residential real estate loans

At December 31, 2017, $152.8 billion, or 63% of the total retained residential real estate loan portfolio, excluding mortgage loans insured by U.S. government agencies and PCI loans, were concentrated in California, New York, Illinois, Texas and Florida, compared with $139.9 billion, or 63%, at December 31, 2016. For additional information on the geographic composition of the Firm's residential real estate loans, see Note 12.

Current estimated loan-to-values of residential real estate loans

Average current estimated loan-to-value ("LTV") ratios have declined consistent with improvements in home prices, customer pay downs, and charge-offs or liquidations of higher LTV loans. For further information on current estimated LTVs of residential real estate loans, see Note 12.

Loan modification activities for residential real estate loans

The performance of modified loans generally differs by product type due to differences in both the credit quality and the types of modifications provided. Performance metrics for modifications to the residential real estate portfolio, excluding PCI loans, that have been seasoned more than six months show weighted-average redefault rates of 24% for residential mortgages and 21% for home equity. The cumulative performance metrics for modifications to the PCI residential real estate portfolio that have been seasoned more than six months show weighted average redefault rates of 20% for home equity, 19% for prime mortgages, 16% for option ARMs and 34% for subprime mortgages. The cumulative redefault rates reflect the performance of modifications completed under both the U.S. Government's Home Affordable Modification Program ("HAMP") and the Firm's proprietary modification programs (primarily the Firm's modification program that was modeled after HAMP) from October 1, 2009, through December 31, 2017.

Certain loans that were modified under HAMP and the Firm's proprietary modification programs have interest rate reset provisions ("step-rate modifications"). Interest rates on these loans generally began to increase commencing in 2014 by 1% per year, and will continue to do so until the rate reaches a specified cap. The cap on these loans is typically at a prevailing market interest rate for a fixed-rate mortgage loan as of the modification date. At December 31, 2017, the carrying value of non-PCI loans and the unpaid principal balance of PCI loans modified in step-rate modifications, which have not yet met their specified caps, were $3 billion and $7 billion, respectively. The Firm continues to monitor this risk exposure and the impact of these potential interest rate increases is considered in the Firm's allowance for loan losses.

The following table presents information as of December 31, 2017 and 2016, relating to modified retained residential real estate loans for which concessions have been granted to borrowers experiencing financial difficulty. For further information on modifications for the years ended December 31, 2017 and 2016, see Note 12.

Modified residential real estate loans

December 31, (in millions)	2017 Retained loans	2017 Nonaccrual retained loans[d]	2016 Retained loans	2016 Nonaccrual retained loans[d]
Modified residential real estate loans, excluding PCI loans[a][b]				
Residential mortgage	**5,620**	**1,743**	6,032	1,755
Home equity	**$ 2,118**	**$ 1,032**	$ 2,264	$ 1,116
Total modified residential real estate loans, excluding PCI loans	**$ 7,738**	**$ 2,775**	$ 8,296	$ 2,871
Modified PCI loans[c]				
Home equity	**$ 2,277**	**NA**	$ 2,447	NA
Prime mortgage	**4,490**	**NA**	5,052	NA
Subprime mortgage	**2,678**	**NA**	2,951	NA
Option ARMs	**8,276**	**NA**	9,295	NA
Total modified PCI loans	**$17,721**	**NA**	$19,745	NA

(a) Amounts represent the carrying value of modified residential real estate loans.
(b) At December 31, 2017 and 2016, $3.8 billion and $3.4 billion, respectively, of loans modified subsequent to repurchase from Ginnie Mae in accordance with the standards of the appropriate government agency (i.e., Federal Housing Administration ("FHA"), U.S. Department of Veterans Affairs ("VA"), Rural Housing Service of the U.S. Department of Agriculture ("RHS")) are not included in the table above. When such loans perform subsequent to modification in accordance with Ginnie Mae guidelines, they are generally sold back into Ginnie Mae loan pools. Modified loans that do not re-perform become subject to foreclosure. For additional information about sales of loans in securitization transactions with Ginnie Mae, see Note 14.
(c) Amounts represent the unpaid principal balance of modified PCI loans.
(d) As of December 31, 2017 and 2016, nonaccrual loans included $2.2 billion and $2.3 billion, respectively, of troubled debt restructuring ("TDRs") for which the borrowers were less than 90 days past due. For additional information about loans modified in a TDR that are on nonaccrual status, see Note 12.

Nonperforming assets

The following table presents information as of December 31, 2017 and 2016, about consumer, excluding credit card, nonperforming assets.

Nonperforming assets[a]

December 31, (in millions)	2017	2016
Nonaccrual loans[b]		
Residential real estate[c]	**$ 3,785**	$ 4,154
Other consumer[c]	**424**	666
Total nonaccrual loans	**4,209**	4,820
Assets acquired in loan satisfactions		
Real estate owned	**225**	292
Other	**40**	57
Total assets acquired in loan satisfactions	**265**	349
Total nonperforming assets	**$ 4,474**	$ 5,169

(a) At December 31, 2017 and 2016, nonperforming assets excluded: (1) mortgage loans insured by U.S. government agencies of $4.3 billion and $5.0 billion, respectively, that are 90 or more days past due; (2) student loans insured by U.S. government agencies under the FFELP of zero and $263 million, respectively, that are 90 or more days past due; and (3) real estate owned insured by U.S. government agencies of $95 million and $142 million, respectively. These amounts have been excluded based upon the government guarantee.
(b) Excludes PCI loans which are accounted for on a pool basis. Since each pool is accounted for as a single asset with a single composite interest rate and an aggregate expectation of cash flows, the past-due status of the pools, or that of individual loans within the pools, is not meaningful. The Firm is recognizing interest income on each pool of loans as each of the pools is performing.
(c) Certain loan portfolios have been reclassified. The prior period amounts have been revised to conform with the current period presentation.

Nonaccrual loans in the residential real estate portfolio at December 31, 2017 decreased to $3.8 billion from $4.2 billion at December 31, 2016, of which 26% and 29% were greater than 150 days past due, respectively. In the aggregate, the unpaid principal balance of residential real estate loans greater than 150 days past due was charged down by approximately 40% and 43% to the estimated net realizable value of the collateral at December 31, 2017 and 2016, respectively.

Active and suspended foreclosure: For information on loans that were in the process of active or suspended foreclosure, see Note 12.

Nonaccrual loans: The following table presents changes in the consumer, excluding credit card, nonaccrual loans for the years ended December 31, 2017 and 2016.

Nonaccrual loan activity

Year ended December 31, (in millions)	2017	2016
Beginning balance	**$ 4,820**	$ 5,413
Additions	**3,525**	3,858
Reductions:		
Principal payments and other[a]	**1,577**	1,437
Charge-offs	**699**	843
Returned to performing status	**1,509**	1,589
Foreclosures and other liquidations	**351**	582
Total reductions	**4,136**	4,451
Net changes	**(611)**	(593)
Ending balance	**$ 4,209**	$ 4,820

(a) Other reductions includes loan sales.

Credit card

Total credit card loans increased from December 31, 2016 due to strong new account growth and higher sales volume. The December 31, 2017 30+ day delinquency rate increased to 1.80% from 1.61% at December 31, 2016, while the December 31, 2017 90+ day delinquency rate increased to 0.92% from 0.81% at December 31, 2016, in line with expectations. Net charge-offs increased for the year ended December 31, 2017 primarily due to growth in newer vintages which, as anticipated, have higher loss rates than the more seasoned portion of the portfolio. The credit card portfolio continues to reflect a largely well-seasoned portfolio that has strong U.S. geographic diversification.

Loans outstanding in the top five states of California, Texas, New York, Florida and Illinois consisted of $67.2 billion in receivables, or 45% of the retained loan portfolio, at December 31, 2017, compared with $62.8 billion, or 44%, at December 31, 2016. For more information on the geographic and FICO composition of the Firm's credit card loans, see Note 12.

Modifications of credit card loans

At both December 31, 2017 and 2016, the Firm had $1.2 billion of credit card loans outstanding that have been modified in TDRs. These balances included both credit card loans with modified payment terms and credit card loans that reverted back to their pre-modification payment terms because the cardholder did not comply with the modified payment terms.

Consistent with the Firm's policy, all credit card loans typically remain on accrual status until charged off. However, the Firm establishes an allowance, which is offset against loans and charged to interest income, for the estimated uncollectible portion of accrued and billed interest and fee income.

For additional information about loan modification programs to borrowers, see Note 12.

WHOLESALE CREDIT PORTFOLIO

In its wholesale businesses, the Firm is exposed to credit risk through its underwriting, lending, market-making, and hedging activities with and for clients and counterparties, as well as through its operating services activities (such as cash management and clearing activities), securities financing activities, investment securities portfolio, and cash placed with banks. A portion of the loans originated or acquired by the Firm's wholesale businesses is generally retained on the balance sheet. The Firm distributes a significant percentage of the loans it originates into the market as part of its syndicated loan business and to manage portfolio concentrations and credit risk.

The wholesale credit portfolio was stable for the year ended December 31, 2017, characterized by low levels of criticized exposure, nonaccrual loans and charge-offs. See industry discussion on pages 109–112 for further information. The increase in retained loans was driven by new originations in CB and higher loans to Private Banking clients in AWM, which was partially offset by paydowns in CIB. Discipline in underwriting across all areas of lending continues to be a key point of focus. The wholesale portfolio is actively managed, in part by conducting ongoing, in-depth reviews of client credit quality and transaction structure inclusive of collateral where applicable, and of industry, product and client concentrations.

In the following tables, the Firm's wholesale credit portfolio includes exposure held in CIB, CB, AWM and Corporate, and excludes all exposure managed by CCB.

Wholesale credit portfolio

December 31, (in millions)	Credit exposure		Nonperforming[c]	
	2017	2016	**2017**	2016
Loans retained	**$402,898**	$383,790	**$ 1,734**	$ 1,954
Loans held-for-sale	**3,099**	2,285	**–**	109
Loans at fair value	**2,508**	2,230	**–**	–
Loans – reported	**408,505**	388,305	**1,734**	2,063
Derivative receivables	**56,523**	64,078	**130**	223
Receivables from customers and other[a]	**26,139**	17,440	**–**	–
Total wholesale credit-related assets	**491,167**	469,823	**1,864**	2,286
Lending-related commitments	**370,098**	368,014	**731**	506
Total wholesale credit exposure	**$861,265**	$837,837	**$ 2,595**	$ 2,792
Credit derivatives used in credit portfolio management activities[b]	**$ (17,609)**	$ (22,114)	**$ –**	$ –
Liquid securities and other cash collateral held against derivatives	**(16,108)**	(22,705)	**NA**	NA

(a) Receivables from customers and other include $26.0 billion and $17.3 billion of held-for-investment margin loans at December 31, 2017 and 2016, respectively, to brokerage customers in CIB Prime Services and in AWM; these are classified in accrued interest and accounts receivable on the Consolidated balance sheets.
(b) Represents the net notional amount of protection purchased and sold through credit derivatives used to manage both performing and nonperforming wholesale credit exposures; these derivatives do not qualify for hedge accounting under U.S. GAAP. For additional information, see Credit derivatives on pages 115–116, and Note 5.
(c) Excludes assets acquired in loan satisfactions.

The following tables present the maturity and ratings profiles of the wholesale credit portfolio as of December 31, 2017 and 2016. The ratings scale is based on the Firm's internal risk ratings, which generally correspond to the ratings assigned by S&P and Moody's. For additional information on wholesale loan portfolio risk ratings, see Note 12.

Wholesale credit exposure – maturity and ratings profile

	Maturity profile[d]				Ratings profile			
					Investment-grade	Noninvestment-grade		
December 31, 2017 (in millions, except ratios)	Due in 1 year or less	Due after 1 year through 5 years	Due after 5 years	**Total**	AAA/Aaa to BBB-/Baa3	BB+/Ba1 & below	**Total**	Total % of IG
Loans retained	**$ 121,643**	**$ 177,033**	**$ 104,222**	**$ 402,898**	**$ 311,681**	**$ 91,217**	**$ 402,898**	**77%**
Derivative receivables				**56,523**			**56,523**	
Less: Liquid securities and other cash collateral held against derivatives				**(16,108)**			**(16,108)**	
Total derivative receivables, net of all collateral	**9,882**	**10,463**	**20,070**	**40,415**	**32,373**	**8,042**	**40,415**	**80**
Lending-related commitments	**80,273**	**275,317**	**14,508**	**370,098**	**274,127**	**95,971**	**370,098**	**74**
Subtotal	**211,798**	**462,813**	**138,800**	**813,411**	**618,181**	**195,230**	**813,411**	**76**
Loans held-for-sale and loans at fair value[a]				**5,607**			**5,607**	
Receivables from customers and other				**26,139**			**26,139**	
Total exposure – net of liquid securities and other cash collateral held against derivatives				**$ 845,157**			**$ 845,157**	
Credit derivatives used in credit portfolio management activities[b][c]	**$ (1,807)**	**$ (11,011)**	**$ (4,791)**	**$ (17,609)**	**$ (14,984)**	**$ (2,625)**	**$ (17,609)**	**85%**

	Maturity profile[d]				Ratings profile			
					Investment-grade	Noninvestment-grade		
December 31, 2016 (in millions, except ratios)	Due in 1 year or less	Due after 1 year through 5 years	Due after 5 years	Total	AAA/Aaa to BBB-/Baa3	BB+/Ba1 & below	Total	Total % of IG
Loans retained	$ 117,238	$ 167,235	$ 99,317	$ 383,790	$ 289,923	$ 93,867	$ 383,790	76%
Derivative receivables				64,078			64,078	
Less: Liquid securities and other cash collateral held against derivatives				(22,705)			(22,705)	
Total derivative receivables, net of all collateral	14,019	8,510	18,844	41,373	33,081	8,292	41,373	80
Lending-related commitments	88,399	271,825	7,790	368,014	269,820	98,194	368,014	73
Subtotal	219,656	447,570	125,951	793,177	592,824	200,353	793,177	75
Loans held-for-sale and loans at fair value[a]				4,515			4,515	
Receivables from customers and other				17,440			17,440	
Total exposure – net of liquid securities and other cash collateral held against derivatives				$ 815,132			$ 815,132	
Credit derivatives used in credit portfolio management activities [b][c]	$ (1,354)	$ (16,537)	$ (4,223)	$ (22,114)	$ (18,710)	$ (3,404)	$ (22,114)	85%

(a) Represents loans held-for-sale, primarily related to syndicated loans and loans transferred from the retained portfolio, and loans at fair value.
(b) These derivatives do not qualify for hedge accounting under U.S. GAAP.
(c) The notional amounts are presented on a net basis by underlying reference entity and the ratings profile shown is based on the ratings of the reference entity on which protection has been purchased. Predominantly all of the credit derivatives entered into by the Firm where it has purchased protection used in credit portfolio management activities, are executed with investment-grade counterparties.
(d) The maturity profile of retained loans, lending-related commitments and derivative receivables is based on remaining contractual maturity. Derivative contracts that are in a receivable position at December 31, 2017, may become payable prior to maturity based on their cash flow profile or changes in market conditions.

Wholesale credit exposure – industry exposures

The Firm focuses on the management and diversification of its industry exposures, and pays particular attention to industries with actual or potential credit concerns. Exposures deemed criticized align with the U.S. banking regulators' definition of criticized exposures, which consist of the special mention, substandard and doubtful categories. The total criticized component of the portfolio, excluding loans held-for-sale and loans at fair value, was $15.6 billion at December 31, 2017, compared with $19.8 billion at December 31, 2016, driven by a 47% decrease in the Oil & Gas portfolio.

In 2017, the Firm revised its methodology for the assignment of industry classifications, to better monitor and manage concentrations. This largely resulted in the re-assignment of holding companies from All other to the industry of risk category based on the primary business activity of the holding company's underlying entities. In the tables and industry discussions below, the prior period amounts have been revised to conform with the current period presentation.

Below are summaries of the Firm's exposures as of December 31, 2017 and 2016. For additional information on industry concentrations, see Note 4.

Wholesale credit exposure – industries[a]

			Noninvestment-grade			Selected metrics			
As of or for the year ended **December 31, 2017** (in millions)	Credit exposure[e]	Investment-grade	Noncriticized	Criticized performing	Criticized nonperforming	30 days or more past due and accruing loans	Net charge-offs/ (recoveries)	Credit derivative hedges[f]	Liquid securities and other cash collateral held against derivative receivables
Real Estate	$ 139,409	$ 115,401	$ 23,012	$ 859	$ 137	$ 254	$ (4)	$ –	$ (2)
Consumer & Retail	87,679	55,737	29,619	1,791	532	30	34	(275)	(9)
Technology, Media & Telecommunications	59,274	36,510	20,453	2,258	53	14	(12)	(910)	(19)
Healthcare	55,997	42,643	12,731	585	38	82	(1)	–	(207)
Industrials	55,272	37,198	16,770	1,159	145	150	(1)	(196)	(21)
Banks & Finance Cos	49,037	34,654	13,767	612	4	1	6	(1,216)	(3,174)
Oil & Gas	41,317	21,430	14,854	4,046	987	22	71	(747)	(1)
Asset Managers	32,531	28,029	4,484	4	14	27	–	–	(5,290)
Utilities	29,317	24,486	4,383	227	221	–	11	(160)	(56)
State & Municipal Govt[b]	28,633	27,977	656	–	–	12	5	(130)	(524)
Central Govt	19,182	18,741	376	65	–	4	–	(10,095)	(2,520)
Chemicals & Plastics	15,945	11,107	4,764	74	–	4	–	–	–
Transportation	15,797	9,870	5,302	527	98	9	14	(32)	(131)
Automotive	14,820	9,321	5,278	221	–	10	1	(284)	–
Metals & Mining	14,171	6,989	6,822	321	39	3	(13)	(316)	(1)
Insurance	14,089	11,028	2,981	–	80	1	–	(157)	(2,195)
Financial Markets Infrastructure	5,036	4,775	261	–	–	–	–	–	(23)
Securities Firms	4,113	2,559	1,553	1	–	–	–	(274)	(335)
All other[c]	147,900	134,110	13,283	260	247	901	8	(2,817)	(1,600)
Subtotal	$ 829,519	$ 632,565	$ 181,349	$ 13,010	$ 2,595	$ 1,524	$ 119	$ (17,609)	$ (16,108)
Loans held-for-sale and loans at fair value	5,607								
Receivables from customers and other	26,139								
Total[d]	$ 861,265								

As of or for the year ended December 31, 2016 (in millions)	Credit exposure[e]	Investment-grade	Noninvestment-grade: Noncriticized	Noninvestment-grade: Criticized performing	Noninvestment-grade: Criticized nonperforming	Selected metrics: 30 days or more past due and accruing loans	Selected metrics: Net charge-offs/ (recoveries)	Selected metrics: Credit derivative hedges[f]	Selected metrics: Liquid securities and other cash collateral held against derivative receivables[g]
Real Estate	$ 134,287	$ 104,869	$ 28,281	$ 937	$ 200	$ 206	$ (7)	$ (54)	$ (11)
Consumer & Retail	84,804	54,730	28,255	1,571	248	75	24	(424)	(69)
Technology, Media & Telecommunications	63,324	39,998	21,751	1,559	16	9	2	(589)	(30)
Healthcare	49,445	39,244	9,279	882	40	86	37	(286)	(246)
Industrials	55,733	36,710	17,854	1,033	136	128	3	(434)	(40)
Banks & Finance Cos	48,393	35,385	12,560	438	10	21	(2)	(1,336)	(7,337)
Oil & Gas	40,367	18,629	12,274	8,069	1,395	31	233	(1,532)	(18)
Asset Managers	33,201	29,194	4,006	1	–	17	–	–	(5,737)
Utilities	29,672	24,203	4,959	424	86	8	–	(306)	–
State & Municipal Govt[b]	28,263	27,603	624	6	30	107	(1)	(130)	–
Central Govt	20,408	20,123	276	9	–	4	–	(11,691)	(4,183)
Chemicals & Plastics	15,043	10,405	4,452	156	30	3	–	(35)	(3)
Transportation	19,096	12,178	6,421	444	53	9	10	(93)	(188)
Automotive	16,736	9,235	7,299	201	1	7	–	(401)	(14)
Metals & Mining	13,419	5,523	6,744	1,133	19	–	36	(621)	(62)
Insurance	13,510	10,918	2,459	–	133	9	–	(275)	(2,538)
Financial Markets Infrastructure	8,732	7,980	752	–	–	–	–	–	(390)
Securities Firms	4,211	1,812	2,399	–	–	–	–	(273)	(491)
All other[c]	137,238	124,661	11,988	303	286	598	6	(3,634)	(1,348)
Subtotal	$ 815,882	$ 613,400	$ 182,633	$ 17,166	$ 2,683	$ 1,318	$ 341	$ (22,114)	$ (22,705)
Loans held-for-sale and loans at fair value	4,515								
Receivables from customers and other	17,440								
Total[d]	$ 837,837								

(a) The industry rankings presented in the table as of December 31, 2016, are based on the industry rankings of the corresponding exposures at December 31, 2017, not actual rankings of such exposures at December 31, 2016.
(b) In addition to the credit risk exposure to states and municipal governments (both U.S. and non-U.S.) at December 31, 2017 and 2016, noted above, the Firm held: $9.8 billion and $9.1 billion, respectively, of trading securities; $32.3 billion and $31.6 billion, respectively, of AFS securities; and $14.4 billion and $14.5 billion, respectively, of HTM securities, issued by U.S. state and municipal governments. For further information, see Note 2 and Note 10.
(c) All other includes: individuals; SPEs; and private education and civic organizations, representing approximately 59%, 37% and 4%, respectively, at both December 31, 2017 and December 31, 2016.
(d) Excludes cash placed with banks of $421.0 billion and $380.2 billion, at December 31, 2017 and 2016, respectively, which is predominantly placed with various central banks, primarily Federal Reserve Banks.
(e) Credit exposure is net of risk participations and excludes the benefit of credit derivatives used in credit portfolio management activities held against derivative receivables or loans and liquid securities and other cash collateral held against derivative receivables.
(f) Represents the net notional amounts of protection purchased and sold through credit derivatives used to manage the credit exposures; these derivatives do not qualify for hedge accounting under U.S. GAAP. The All other category includes purchased credit protection on certain credit indices.
(g) Prior period amounts have been revised to conform with the current period presentation.

Presented below is additional detail on certain industries to which the Firm has exposure.

Real Estate

Exposure to the Real Estate industry increased $5.1 billion during the year ended December 31, 2017, to $139.4 billion predominantly driven by multifamily lending within CB. For the year ended December 31, 2017, the investment-grade percentage of the portfolio was 83%, up from 78% for the year ended December 31, 2016. For further information on Real Estate loans, see Note 12.

(in millions, except ratios)	December 31, 2017 Loans and Lending-related Commitments	Derivative Receivables	Credit exposure	% Investment-grade	% Drawn[c]
Multifamily[a]	**$ 84,635**	**$ 34**	**$ 84,669**	**89%**	**92%**
Other	**54,620**	**120**	**54,740**	**74**	**66**
Total Real Estate Exposure[b]	**139,255**	**154**	**139,409**	**83**	**82**

(in millions, except ratios)	December 31, 2016 Loans and Lending-related Commitments	Derivative Receivables	Credit exposure	% Investment-grade	% Drawn[c]
Multifamily[a]	$ 80,280	$ 34	$ 80,314	82%	90%
Other	53,801	172	53,973	72	62
Total Real Estate Exposure[b]	134,081	207	134,287	78	79

(a) Multifamily exposure is largely in California.
(b) Real Estate exposure is predominantly secured; unsecured exposure is largely investment-grade.
(c) Represents drawn exposure as a percentage of credit exposure.

Oil & Gas and Natural Gas Pipelines

Exposure to the Oil & Gas and Natural Gas Pipeline portfolios increased by $1.1 billion during the year ended December 31, 2017 to $45.9 billion. During the year ended December 31, 2017, the credit quality of this exposure continued to improve, with the investment-grade percentage increasing from 48% to 53% and criticized exposure decreasing by $4.5 billion.

(in millions, except ratios)	December 31, 2017 Loans and Lending-related Commitments	Derivative Receivables	Credit exposure	% Investment-grade	% Drawn[d]
Exploration & Production ("E&P") and Oilfield Services	**$ 20,558**	**$ 1,175**	**$ 21,733**	**34%**	**33%**
Other Oil & Gas[a]	**19,032**	**552**	**19,584**	**72**	**28**
Total Oil & Gas	**39,590**	**1,727**	**41,317**	**52**	**31**
Natural Gas Pipelines[b]	**4,507**	**38**	**4,545**	**66**	**14**
Total Oil & Gas and Natural Gas Pipelines[c]	**$ 44,097**	**$ 1,765**	**$ 45,862**	**53**	**29**

(in millions, except ratios)	December 31, 2016 Loans and Lending-related Commitments	Derivative Receivables	Credit exposure	% Investment-grade	% Drawn[d]
E&P and Oilfield Services	$ 20,971	$ 1,256	$ 22,227	27%	35%
Other Oil & Gas[a]	17,518	622	18,140	70	31
Total Oil & Gas	38,489	1,878	40,367	46	33
Natural Gas Pipelines[b]	4,253	106	4,359	66	30
Total Oil & Gas and Natural Gas Pipelines[c]	$ 42,742	$ 1,984	$ 44,726	48	33

(a) Other Oil & Gas includes Integrated Oil & Gas companies, Midstream/Oil Pipeline companies and refineries.
(b) Natural Gas Pipelines is reported within the Utilities Industry.
(c) Secured lending is $14.0 billion and $14.3 billion at December 31, 2017 and December 31, 2016, respectively, approximately half of which is reserve-based lending to the Exploration & Production sub-sector; unsecured exposure is largely investment-grade.
(d) Represents drawn exposure as a percentage of credit exposure.

Loans

In the normal course of its wholesale business, the Firm provides loans to a variety of clients, ranging from large corporate and institutional clients to high-net-worth individuals. For further discussion on loans, including information on credit quality indicators and sales of loans, see Note 12.

The following table presents the change in the nonaccrual loan portfolio for the years ended December 31, 2017 and 2016.

Wholesale nonaccrual loan activity[(a)]

Year ended December 31, (in millions)	2017	2016
Beginning balance	**$ 2,063**	$ 1,016
Additions	**1,482**	2,981
Reductions:		
Paydowns and other	**1,137**	1,148
Gross charge-offs	**200**	385
Returned to performing status	**189**	242
Sales	**285**	159
Total reductions	**1,811**	1,934
Net changes	**(329)**	1,047
Ending balance	**$ 1,734**	$ 2,063

(a) Loans are placed on nonaccrual status when management believes full payment of principal or interest is not expected, regardless of delinquency status, or when principal or interest have been in default for a period of 90 days or more unless the loan is both well-secured and in the process of collection.

The following table presents net charge-offs/recoveries, which are defined as gross charge-offs less recoveries, for the years ended December 31, 2017 and 2016. The amounts in the table below do not include gains or losses from sales of nonaccrual loans.

Wholesale net charge-offs/(recoveries)

Year ended December 31, (in millions, except ratios)	2017	2016
Loans – reported		
Average loans retained	**$ 392,263**	$ 371,778
Gross charge-offs	**212**	398
Gross recoveries	**(93)**	(57)
Net charge-offs	**119**	341
Net charge-off rate	**0.03%**	0.09%

Lending-related commitments

The Firm uses lending-related financial instruments, such as commitments (including revolving credit facilities) and guarantees, to meet the financing needs of its clients. The contractual amounts of these financial instruments represent the maximum possible credit risk should the counterparties draw down on these commitments or the Firm fulfill its obligations under these guarantees, and the counterparties subsequently fail to perform according to the terms of these contracts. Most of these commitments and guarantees are refinanced, extended, cancelled, or expire without being drawn upon or a default occurring. In the Firm's view, the total contractual amount of these wholesale lending-related commitments is not representative of the Firm's expected future credit exposure or funding requirements. For further information on wholesale lending-related commitments, see Note 27.

Clearing services

The Firm provides clearing services for clients entering into securities and derivative transactions. Through the provision of these services the Firm is exposed to the risk of non-performance by its clients and may be required to share in losses incurred by central counterparties. Where possible, the Firm seeks to mitigate its credit risk to its clients through the collection of adequate margin at inception and throughout the life of the transactions and can also cease provision of clearing services if clients do not adhere to their obligations under the clearing agreement. For further discussion of clearing services, see Note 27.

Derivative contracts

In the normal course of business, the Firm uses derivative instruments predominantly for market-making activities. Derivatives enable counterparties to manage exposures to fluctuations in interest rates, currencies and other markets. The Firm also uses derivative instruments to manage its own credit and other market risk exposure. The nature of the counterparty and the settlement mechanism of the derivative affect the credit risk to which the Firm is exposed. For OTC derivatives the Firm is exposed to the credit risk of the derivative counterparty. For exchange-traded derivatives ("ETD"), such as futures and options, and "cleared" over-the-counter ("OTC-cleared") derivatives, the Firm is generally exposed to the credit risk of the relevant CCP. Where possible, the Firm seeks to mitigate its credit risk exposures arising from derivative transactions through the use of legally enforceable master netting arrangements and collateral agreements. For further discussion of derivative contracts, counterparties and settlement types, see Note 5.

The following table summarizes the net derivative receivables for the periods presented.

Derivative receivables

December 31, (in millions)	2017	2016
Interest rate	**$ 24,673**	$ 28,302
Credit derivatives	**869**	1,294
Foreign exchange	**16,151**	23,271
Equity	**7,882**	4,939
Commodity	**6,948**	6,272
Total, net of cash collateral	**56,523**	64,078
Liquid securities and other cash collateral held against derivative receivables[(a)]	**(16,108)**	(22,705)
Total, net of all collateral	**$ 40,415**	$ 41,373

(a) Includes collateral related to derivative instruments where an appropriate legal opinion has not been either sought or obtained.

Derivative receivables reported on the Consolidated balance sheets were $56.5 billion and $64.1 billion at December 31, 2017 and 2016, respectively. Derivative receivables decreased predominantly as a result of client-driven market-making activities in CIB Markets, which reduced foreign exchange and interest rate derivative receivables, and increased equity derivative receivables, driven by market movements.

Derivative receivables amounts represent the fair value of the derivative contracts after giving effect to legally enforceable master netting agreements and cash collateral held by the Firm. However, in management's view, the appropriate measure of current credit risk should also take into consideration additional liquid securities (primarily U.S. government and agency securities and other group of seven nations ("G7") government bonds) and other cash collateral held by the Firm aggregating $16.1 billion and $22.7 billion at December 31, 2017 and 2016, respectively, that may be used as security when the fair value of the client's exposure is in the Firm's favor.

In addition to the collateral described in the preceding paragraph, the Firm also holds additional collateral (primarily cash, G7 government securities, other liquid government-agency and guaranteed securities, and corporate debt and equity securities) delivered by clients at the initiation of transactions, as well as collateral related to contracts that have a non-daily call frequency and collateral that the Firm has agreed to return but has not yet settled as of the reporting date. Although this collateral does not reduce the balances and is not included in the table above, it is available as security against potential exposure that could arise should the fair value of the client's derivative transactions move in the Firm's favor. The derivative receivables fair value, net of all collateral, also does not include other credit enhancements, such as letters of credit. For additional information on the Firm's use of collateral agreements, see Note 5.

While useful as a current view of credit exposure, the net fair value of the derivative receivables does not capture the potential future variability of that credit exposure. To capture the potential future variability of credit exposure, the Firm calculates, on a client-by-client basis, three measures of potential derivatives-related credit loss: Peak, Derivative Risk Equivalent ("DRE"), and Average exposure ("AVG"). These measures all incorporate netting and collateral benefits, where applicable.

Peak represents a conservative measure of potential exposure to a counterparty calculated in a manner that is broadly equivalent to a 97.5% confidence level over the life of the transaction. Peak is the primary measure used by the Firm for setting of credit limits for derivative transactions, senior management reporting and derivatives exposure management. DRE exposure is a measure that expresses the risk of derivative exposure on a basis intended to be equivalent to the risk of loan exposures. DRE is a less extreme measure of potential credit loss than Peak and is used for aggregating derivative credit risk exposures with loans and other credit risk.

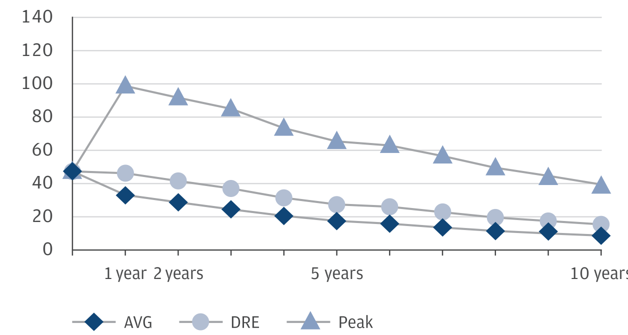
Finally, AVG is a measure of the expected fair value of the Firm's derivative receivables at future time periods, including the benefit of collateral. AVG exposure over the total life of the derivative contract is used as the primary metric for pricing purposes and is used to calculate credit risk capital and the CVA, as further described below. The three year AVG exposure was $29.0 billion and $31.1 billion at December 31, 2017 and 2016, respectively, compared with derivative receivables, net of all collateral, of $40.4 billion and $41.4 billion at December 31, 2017 and 2016, respectively.

The fair value of the Firm's derivative receivables incorporates CVA to reflect the credit quality of counterparties. CVA is based on the Firm's AVG to a counterparty and the counterparty's credit spread in the credit derivatives market. The Firm believes that active risk management is essential to controlling the dynamic credit risk in the derivatives portfolio. In addition, the Firm's risk management process takes into consideration the potential impact of wrong-way risk, which is broadly defined as the potential for increased correlation between the Firm's exposure to a counterparty (AVG) and the counterparty's credit quality. Many factors may influence the nature and magnitude of these correlations over time. To the extent that these correlations are identified, the Firm may adjust the CVA associated with that counterparty's AVG. The Firm risk manages exposure to changes in CVA by entering into credit derivative transactions, as well as interest rate, foreign exchange, equity and commodity derivative transactions.

The accompanying graph shows exposure profiles to the Firm's current derivatives portfolio over the next 10 years as calculated by the Peak, DRE and AVG metrics. The three measures generally show that exposure will decline after the first year, if no new trades are added to the portfolio.

Exposure profile of derivatives measures

December 31, 2017
(in billions)



The following table summarizes the ratings profile by derivative counterparty of the Firm's derivative receivables, including credit derivatives, net of all collateral, at the dates indicated. The ratings scale is based on the Firm's internal ratings, which generally correspond to the ratings as assigned by S&P and Moody's.

Ratings profile of derivative receivables

Rating equivalent	2017		2016	
December 31, (in millions, except ratios)	Exposure net of all collateral	% of exposure net of all collateral	Exposure net of all collateral	% of exposure net of all collateral
AAA/Aaa to AA-/Aa3	**$ 11,529**	**29%**	$ 11,449	28%
A+/A1 to A-/A3	**6,919**	**17**	8,505	20
BBB+/Baa1 to BBB-/Baa3	**13,925**	**34**	13,127	32
BB+/Ba1 to B-/B3	**7,397**	**18**	7,308	18
CCC+/Caa1 and below	**645**	**2**	984	2
Total	**$ 40,415**	**100%**	$ 41,373	100%

As previously noted, the Firm uses collateral agreements to mitigate counterparty credit risk. The percentage of the Firm's over-the-counter derivatives transactions subject to collateral agreements – excluding foreign exchange spot trades, which are not typically covered by collateral agreements due to their short maturity and centrally cleared trades that are settled daily – was approximately 90% as of December 31, 2017, largely unchanged compared with December 31, 2016.

Credit derivatives

The Firm uses credit derivatives for two primary purposes: first, in its capacity as a market-maker, and second, as an end-user to manage the Firm's own credit risk associated with various exposures. For a detailed description of credit derivatives, see Credit derivatives in Note 5.

Credit portfolio management activities

Included in the Firm's end-user activities are credit derivatives used to mitigate the credit risk associated with traditional lending activities (loans and unfunded commitments) and derivatives counterparty exposure in the Firm's wholesale businesses (collectively, "credit portfolio management" activities). Information on credit portfolio management activities is provided in the table below. For further information on derivatives used in credit portfolio management activities, see Credit derivatives in Note 5.

The Firm also uses credit derivatives as an end-user to manage other exposures, including credit risk arising from certain securities held in the Firm's market-making businesses. These credit derivatives are not included in credit portfolio management activities; for further information on these credit derivatives as well as credit derivatives used in the Firm's capacity as a market-maker in credit derivatives, see Credit derivatives in Note 5.

Credit derivatives used in credit portfolio management activities

	Notional amount of protection purchased [(a)]	
December 31, (in millions)	**2017**	2016
Credit derivatives used to manage:		
Loans and lending-related commitments	**$ 1,867**	$ 2,430
Derivative receivables	**15,742**	19,684
Credit derivatives used in credit portfolio management activities	**$ 17,609**	$ 22,114

(a) Amounts are presented net, considering the Firm's net protection purchased or sold with respect to each underlying reference entity or index.

The credit derivatives used in credit portfolio management activities do not qualify for hedge accounting under U.S. GAAP; these derivatives are reported at fair value, with gains and losses recognized in principal transactions revenue. In contrast, the loans and lending-related commitments being risk-managed are accounted for on an accrual basis. This asymmetry in accounting treatment, between loans and lending-related commitments and the credit derivatives used in credit portfolio management activities, causes earnings volatility that is not representative, in the Firm's view, of the true changes in value of the Firm's overall credit exposure.

The effectiveness of credit default swaps ("CDS") as a hedge against the Firm's exposures may vary depending on a number of factors, including the named reference entity (i.e., the Firm may experience losses on specific exposures that are different than the named reference entities in the purchased CDS); the contractual terms of the CDS (which may have a defined credit event that does not align with an actual loss realized by the Firm); and the maturity of the Firm's CDS protection (which in some cases may be shorter than the Firm's exposures). However, the Firm generally seeks to purchase credit protection with a maturity date that is the same or similar to the maturity date of the exposure for which the protection was purchased, and remaining differences in maturity are actively monitored and managed by the Firm.

ALLOWANCE FOR CREDIT LOSSES

JPMorgan Chase's allowance for credit losses covers the retained consumer and wholesale loan portfolios, as well as the Firm's wholesale and certain consumer lending-related commitments.

For a further discussion of the components of the allowance for credit losses and related management judgments, see Critical Accounting Estimates Used by the Firm on pages 138–140 and Note 13.

At least quarterly, the allowance for credit losses is reviewed by the CRO, the CFO and the Controller of the Firm, and discussed with the Board of Directors' Risk Policy Committee ("DRPC") and the Audit Committee. As of December 31, 2017, JPMorgan Chase deemed the allowance for credit losses to be appropriate and sufficient to absorb probable credit losses inherent in the portfolio.

The allowance for credit losses decreased as of December 31, 2017, driven by:

- a net reduction in the wholesale allowance, reflecting credit quality improvements in the Oil & Gas, Natural Gas Pipelines, and Metals & Mining portfolios (compared with additions to the allowance in the prior year driven by downgrades in the same portfolios)

largely offset by

- a net increase in the consumer allowance, reflecting
  - additions to the allowance for the credit card and business banking portfolios, driven by loan growth in both of these portfolios and higher loss rates in the credit card portfolio,

  largely offset by

  - a reduction in the allowance for the residential real estate portfolio, predominantly driven by continued improvement in home prices and delinquencies, and
  - the utilization of the allowance in connection with the sale of the student loan portfolio.

For additional information on the consumer and wholesale credit portfolios, see Consumer Credit Portfolio on pages 102-107, Wholesale Credit Portfolio on pages 108–116 and Note 12.

Summary of changes in the allowance for credit losses

Year ended December 31, (in millions, except ratios)	2017 Consumer, excluding credit card	2017 Credit card	2017 Wholesale	2017 Total	2016 Consumer, excluding credit card	2016 Credit card	2016 Wholesale	2016 Total
Allowance for loan losses								
Beginning balance at January 1,	$ 5,198	$ 4,034	$ 4,544	$ 13,776	$ 5,806	$ 3,434	$ 4,315	$ 13,555
Gross charge-offs	1,779	4,521	212	6,512	1,500	3,799	398	5,697
Gross recoveries	(634)	(398)	(93)	(1,125)	(591)	(357)	(57)	(1,005)
Net charge-offs[a]	1,145	4,123	119	5,387	909	3,442	341	4,692
Write-offs of PCI loans[b]	86	–	–	86	156	–	–	156
Provision for loan losses	613	4,973	(286)	5,300	467	4,042	571	5,080
Other	(1)	–	2	1	(10)	–	(1)	(11)
Ending balance at December 31,	$ 4,579	$ 4,884	$ 4,141	$ 13,604	$ 5,198	$ 4,034	$ 4,544	$ 13,776
Impairment methodology								
Asset-specific[c]	$ 246	$ 383	$ 461	$ 1,090	$ 308	$ 358	$ 342	$ 1,008
Formula-based	2,108	4,501	3,680	10,289	2,579	3,676	4,202	10,457
PCI	2,225	–	–	2,225	2,311	–	–	2,311
Total allowance for loan losses	$ 4,579	$ 4,884	$ 4,141	$ 13,604	$ 5,198	$ 4,034	$ 4,544	$ 13,776
Allowance for lending-related commitments								
Beginning balance at January 1,	$ 26	$ –	$ 1,052	$ 1,078	$ 14	$ –	$ 772	$ 786
Provision for lending-related commitments	7	–	(17)	(10)	–	–	281	281
Other	–	–	–	–	12	–	(1)	11
Ending balance at December 31,	$ 33	$ –	$ 1,035	$ 1,068	$ 26	$ –	$ 1,052	$ 1,078
Impairment methodology								
Asset-specific	$ –	$ –	$ 187	$ 187	$ –	$ –	$ 169	$ 169
Formula-based	33	–	848	881	26	–	883	909
Total allowance for lending-related commitments[d]	$ 33	$ –	$ 1,035	$ 1,068	$ 26	$ –	$ 1,052	$ 1,078
Total allowance for credit losses	$ 4,612	$ 4,884	$ 5,176	$ 14,672	$ 5,224	$ 4,034	$ 5,596	$ 14,854
Memo:								
Retained loans, end of period	$ 372,553	$ 149,387	$ 402,898	$ 924,838	$ 364,406	$ 141,711	$ 383,790	$ 889,907
Retained loans, average	366,798	139,918	392,263	898,979	358,486	131,081	371,778	861,345
PCI loans, end of period	30,576	–	3	30,579	35,679	–	3	35,682
Credit ratios								
Allowance for loan losses to retained loans	1.23%	3.27%	1.03%	1.47%	1.43%	2.85%	1.18%	1.55%
Allowance for loan losses to retained nonaccrual loans[e]	109	NM	239	229	109	NM	233	205
Allowance for loan losses to retained nonaccrual loans excluding credit card	109	NM	239	147	109	NM	233	145
Net charge-off rate[a]	0.31	2.95	0.03	0.60	0.25	2.63	0.09	0.54
Credit ratios, excluding residential real estate PCI loans								
Allowance for loan losses to retained loans	0.69	3.27	1.03	1.27	0.88	2.85	1.18	1.34
Allowance for loan losses to retained nonaccrual loans[e]	56	NM	239	191	61	NM	233	171
Allowance for loan losses to retained nonaccrual loans excluding credit card	56	NM	239	109	61	NM	233	111
Net charge-off rate[a]	0.34%	2.95%	0.03%	0.62%	0.28%	2.63%	0.09%	0.57%

Note: In the table above, the financial measures which exclude the impact of PCI loans are non-GAAP financial measures.

(a) For the year ended December 31, 2017, excluding net charge-offs of $467 million related to the student loan portfolio sale, the net charge-off rate for Consumer, excluding credit card would have been 0.18%; total Firm would have been 0.55%; Consumer, excluding credit card and PCI loans would have been 0.20%; and total Firm, excluding PCI would have been 0.57%.

(b) Write-offs of PCI loans are recorded against the allowance for loan losses when actual losses for a pool exceed estimated losses that were recorded as purchase accounting adjustments at the time of acquisition. A write-off of a PCI loan is recognized when the underlying loan is removed from a pool (e.g., upon liquidation).

(c) Includes risk-rated loans that have been placed on nonaccrual status and loans that have been modified in a TDR. The asset-specific credit card allowance for loan losses modified in a TDR is calculated based on the loans' original contractual interest rates and does not consider any incremental penalty rates.

(d) The allowance for lending-related commitments is reported in accounts payable and other liabilities on the Consolidated balance sheets.

(e) The Firm's policy is generally to exempt credit card loans from being placed on nonaccrual status as permitted by regulatory guidance.

Provision for credit losses

The following table presents the components of the Firm's provision for credit losses:

Year ended December 31, (in millions)	Provision for loan losses			Provision for lending-related commitments			Total provision for credit losses		
	2017	2016	2015	**2017**	2016	2015	**2017**	2016	2015
Consumer, excluding credit card	**$ 613**	$ 467	$ (82)	**$ 7**	$ –	$ 1	**$ 620**	$ 467	$ (81)
Credit card	**4,973**	4,042	3,122	**–**	–	–	**4,973**	4,042	3,122
Total consumer	**5,586**	4,509	3,040	**7**	–	1	**5,593**	4,509	3,041
Wholesale	**(286)**	571	623	**(17)**	281	163	**(303)**	852	786
Total	**$ 5,300**	$ 5,080	$ 3,663	**$ (10)**	$ 281	$ 164	**$ 5,290**	$ 5,361	$ 3,827

Provision for credit losses

The provision for credit losses decreased as of December 31, 2017 as a result of:

- a net $422 million reduction in the wholesale allowance for credit losses, reflecting credit quality improvements in the Oil & Gas, Natural Gas Pipelines, and Metals & Mining portfolios, compared with an addition of $511 million in the prior year driven by downgrades in the same portfolios.

The decrease was predominantly offset by

- a higher consumer provision driven by
  - $450 million of higher net charge-offs, primarily in the credit card portfolio due to growth in newer vintages which, as anticipated, have higher loss rates than the more seasoned portion of the portfolio, partially offset by a decrease in net charge-offs in the residential real estate portfolio reflecting continued improvement in home prices and delinquencies,
  - a $218 million impact in connection with the sale of the student loan portfolio, and
  - a $416 million higher addition to the allowance for credit losses.

    Current year additions to the consumer allowance included:

    - an $850 million addition to the allowance for credit losses in the credit card portfolio, compared to a $600 million addition in the prior year, due to higher loss rates and loan growth in both years, and
    - a $50 million addition to the allowance for credit losses in the business banking portfolio, driven by loan growth

    the additions were partially offset by

    - a $316 million net reduction in the allowance for credit losses in the residential real estate portfolio, compared to a $517 million net reduction in the prior year, reflecting continued improvement in home prices and delinquencies in both years.

INVESTMENT PORTFOLIO RISK MANAGEMENT

Investment portfolio risk is the risk associated with the loss of principal or a reduction in expected returns on investments arising from the investment securities portfolio held by Treasury and CIO in connection with the Firm's balance sheet or asset-liability management objectives or from principal investments managed in various LOBs in predominantly privately-held financial assets and instruments. Investments are typically intended to be held over extended periods and, accordingly, the Firm has no expectation for short-term realized gains with respect to these investments.

Investment securities risk

Investment securities risk includes the exposure associated with the default of principal plus coupon payments. This risk is minimized given that Treasury and CIO generally invest in high-quality securities. At December 31, 2017, the investment securities portfolio was $248.0 billion, and the average credit rating of the securities comprising the portfolio was AA+ (based upon external ratings where available and where not available, based primarily upon internal ratings that correspond to ratings as defined by S&P and Moody's). For further information on the investment securities portfolio, see Note 10 on pages 203-208. For further information on the market risk inherent in the portfolio, see Market Risk Management on pages 121-128. For further information on related liquidity risk, see Liquidity Risk on pages 92–97.

Governance and oversight

Investment securities risks are governed by the Firm's Risk Appetite framework, and discussed at the CIO, Treasury and Corporate (CTC) Risk Committee with regular updates to the DRPC.

The Firm's independent control functions are responsible for reviewing the appropriateness of the carrying value of investment securities in accordance with relevant policies. Approved levels for investment securities are established for each risk category, including capital and credit risks.

Principal investment risk

Principal investments are typically private non-traded financial instruments representing ownership or other forms of junior capital. Principal investments cover multiple asset classes and are made either in stand-alone investing businesses or as part of a broader business platform. As of December 31, 2017, the carrying value of the principal investment portfolios included tax-oriented investments (e.g., affordable housing and alternative energy investments) of $14.0 billion and private equity and various debt and equity instruments of $5.5 billion. Increasingly, new principal investment activity seeks to enhance or accelerate LOB strategic business initiatives. The Firm's principal investments are managed under various LOBs and are reflected within the respective LOB financial results.

Governance and oversight

The Firm's approach to managing principal risk is consistent with the Firm's general risk governance structure. A Firmwide risk policy framework exists for all principal investing activities. All investments are approved by investment committees that include executives who are independent from the investing businesses.

The Firm's independent control functions are responsible for reviewing the appropriateness of the carrying value of investments in accordance with relevant policies. Approved levels for investments are established for each relevant business in order to manage the overall size of the portfolios.

Industry, geographic and position level concentration limits have been set and are intended to ensure diversification of the portfolios. The Firm also conducts stress testing on these portfolios using specific scenarios that estimate losses based on significant market moves and/or other risk events.

Market risk is the risk associated with the effect of changes in market factors, such as interest and foreign exchange rates, equity and commodity prices, credit spreads or implied volatilities, on the value of assets and liabilities held for both the short and long term.

Market Risk Management

Market Risk Management monitors market risks throughout the Firm and defines market risk policies and procedures. The Market Risk Management function reports to the Firm's CRO.

Market Risk Management seeks to manage risk, facilitate efficient risk/return decisions, reduce volatility in operating performance and provide transparency into the Firm's market risk profile for senior management, the Board of Directors and regulators. Market Risk Management is responsible for the following functions:

- Establishment of a market risk policy framework
- Independent measurement, monitoring and control of line of business and firmwide market risk
- Definition, approval and monitoring of limits
- Performance of stress testing and qualitative risk assessments

Risk measurement

Tools used to measure risk

There is no single measure to capture market risk and therefore the Firm uses various metrics, both statistical and nonstatistical, to assess risk including:

- VaR
- Economic-value stress testing
- Nonstatistical risk measures
- Loss advisories
- Profit and loss drawdowns
- Earnings-at-risk
- Other sensitivities

Risk monitoring and control

Market risk exposure is managed primarily through a series of limits set in the context of the market environment and business strategy. In setting limits, the Firm takes into consideration factors such as market volatility, product liquidity and accommodation of client business, and management experience. The Firm maintains different levels of limits. Corporate level limits include VaR and stress limits. Similarly, line of business limits include VaR and stress limits and may be supplemented by loss advisories, nonstatistical measurements and profit and loss drawdowns. Limits may also be set within the lines of business, as well at the portfolio or legal entity level.

Market Risk Management sets limits and regularly reviews and updates them as appropriate, with any changes approved by line of business management and Market Risk Management. Senior management, including the Firm's CEO and CRO, are responsible for reviewing and approving certain of these risk limits on an ongoing basis. All limits that have not been reviewed within specified time periods by Market Risk Management are escalated to senior management. The lines of business are responsible for adhering to established limits against which exposures are monitored and reported.

Limit breaches are required to be reported in a timely manner to limit approvers, Market Risk Management and senior management. In the event of a breach, Market Risk Management consults with senior management of the Firm and the line of business senior management to determine the appropriate course of action required to return the applicable positions to compliance, which may include a reduction in risk in order to remedy the breach. Certain Firm or line of business-level limits that have been breached for three business days or longer, or by more than 30%, are escalated to senior management and the Firmwide Risk Committee.

The following table summarizes by line of business the predominant business activities that give rise to market risk, and certain market risk tools used to measure those risks.

Risk identification and classification by line of business

Line of Business	Predominant business activities and related market risks	Positions included in Risk Management VaR	Positions included in earnings-at-risk	Positions included in other sensitivity-based measures

CCB	• Services mortgage loans which give rise to complex, non-linear interest rate and basis risk
	  • Non-linear risk arises primarily from prepayment options embedded in mortgages and changes in the probability of newly originated mortgage commitments actually closing
	  • Basis risk results from differences in the relative movements of the rate indices underlying mortgage exposure and other interest rates
	• Originates loans and takes deposits
		• Mortgage pipeline loans, classified as derivatives
		• Warehouse loans, classified as trading assets – debt instruments
		• MSRs
		• Hedges of pipeline loans, warehouse loans and MSRs, classified as derivatives
		• Interest-only securities, classified as trading assets - debt instruments, and related hedges, classified as derivatives
			• Retained loan portfolio
			• Deposits	

CIB	• Makes markets and services clients across fixed income, foreign exchange, equities and commodities • Market risk arises from changes in market prices (e.g., rates and credit spreads) resulting in a potential decline in net income • Originates loans and takes deposits	• Trading assets/liabilities – debt and marketable equity instruments, and derivatives, including hedges of the retained loan portfolio • Certain securities purchased, loaned or sold under resale agreements and securities borrowed • Fair value option elected liabilities • Derivative CVA and associated hedges	• Retained loan portfolio • Deposits	• Private equity investments measured at fair value • Derivatives FVA and fair value option elected liabilities DVA
CB	• Engages in traditional wholesale banking activities which include extensions of loans and credit facilities and taking deposits • Risk arises from changes in interest rates and prepayment risk with potential for adverse impact on net interest income and interest-rate sensitive fees		• Retained loan portfolio • Deposits	
AWM	• Provides initial capital investments in products such as mutual funds, which give rise to market risk arising from changes in market prices in such products • Originates loans and takes deposits	• Debt securities held in advance of distribution to clients, classified as trading assets - debt instruments	• Retained loan portfolio • Deposits	• Initial seed capital investments and related hedges, classified as derivatives • Capital invested alongside third-party investors, typically in privately distributed collective vehicles managed by AWM (i.e., co-investments)
Corporate	• Manages the Firm's liquidity, funding, structural interest rate and foreign exchange risks arising from activities undertaken by the Firm's four major reportable business segments	• Derivative positions measured at fair value through noninterest revenue in earnings • Marketable equity investments measured at fair value through noninterest revenue in earnings	• Deposits with banks • Investment securities portfolio and related interest rate hedges • Long-term debt and related interest rate hedges	• Private equity investments measured at fair value • Foreign exchange exposure related to Firm-issued non-USD long-term debt ("LTD") and related hedges

Value-at-risk

JPMorgan Chase utilizes VaR, a statistical risk measure, to estimate the potential loss from adverse market moves in a normal market environment. The Firm has a single VaR framework used as a basis for calculating Risk Management VaR and Regulatory VaR.

The framework is employed across the Firm using historical simulation based on data for the previous 12 months. The framework's approach assumes that historical changes in market values are representative of the distribution of potential outcomes in the immediate future. The Firm believes the use of Risk Management VaR provides a stable measure of VaR that is closely aligned to the day-to-day risk management decisions made by the lines of business, and provides the appropriate information needed to respond to risk events on a daily basis.

The Firm's Risk Management VaR is calculated assuming a one-day holding period and an expected tail-loss methodology which approximates a 95% confidence level. Risk Management VaR provides a consistent framework to measure risk profiles and levels of diversification across product types and is used for aggregating risks and monitoring limits across businesses. VaR results are reported to senior management, the Board of Directors and regulators.

Under the Firm's Risk Management VaR methodology, assuming current changes in market values are consistent with the historical changes used in the simulation, the Firm would expect to incur VaR "back-testing exceptions," defined as losses greater than that predicted by VaR estimates, an average of five times every 100 trading days. The number of VaR back-testing exceptions observed can differ from the statistically expected number of back-testing exceptions if the current level of market volatility is materially different from the level of market volatility during the 12 months of historical data used in the VaR calculation.

Underlying the overall VaR model framework are individual VaR models that simulate historical market returns for individual products and/or risk factors. To capture material market risks as part of the Firm's risk management framework, comprehensive VaR model calculations are performed daily for businesses whose activities give rise to market risk. These VaR models are granular and incorporate numerous risk factors and inputs to simulate daily changes in market values over the historical period; inputs are selected based on the risk profile of each portfolio, as sensitivities and historical time series used to generate daily market values may be different across product types or risk management systems. The VaR model results across all portfolios are aggregated at the Firm level.

As VaR is based on historical data, it is an imperfect measure of market risk exposure and potential losses, and it is not used to estimate the impact of stressed market conditions or to manage any impact from potential stress events. In addition, based on their reliance on available historical data, limited time horizons, and other factors, VaR measures are inherently limited in their ability to measure certain risks and to predict losses, particularly those associated with market illiquidity and sudden or severe shifts in market conditions.

For certain products, specific risk parameters are not captured in VaR due to the lack of inherent liquidity and availability of appropriate historical data. The Firm uses proxies to estimate the VaR for these and other products when daily time series are not available. It is likely that using an actual price-based time series for these products, if available, would affect the VaR results presented. The Firm therefore considers other measures such as stress testing and nonstatistical measures, in addition to VaR, to capture and manage its market risk positions.

The daily market data used in VaR models may be different than the independent third-party data collected for VCG price testing in its monthly valuation process. For example, in cases where market prices are not observable, or where proxies are used in VaR historical time series, the data sources may differ (see Valuation process in Note 2 for further information on the Firm's valuation process). Because VaR model calculations require daily data and a consistent source for valuation, it may not be practical to use the data collected in the VCG monthly valuation process for VaR model calculations.

The Firm's VaR model calculations are periodically evaluated and enhanced in response to changes in the composition of the Firm's portfolios, changes in market conditions, improvements in the Firm's modeling techniques and measurements, and other factors. Such changes may affect historical comparisons of VaR results. For information regarding model reviews and approvals, see Model Risk Management on page 137.

The Firm calculates separately a daily aggregated VaR in accordance with regulatory rules ("Regulatory VaR"), which is used to derive the Firm's regulatory VaR-based capital requirements under Basel III. This Regulatory VaR model framework currently assumes a ten business-day holding period and an expected tail loss methodology which approximates a 99% confidence level. Regulatory VaR is applied to "covered" positions as defined by Basel III, which may be different than the positions included in the Firm's Risk Management VaR. For example, credit derivative hedges of accrual loans are included in the Firm's Risk Management VaR, while Regulatory VaR excludes these credit derivative hedges. In addition, in contrast to the Firm's Risk Management VaR, Regulatory VaR currently excludes the diversification benefit for certain VaR models.

For additional information on Regulatory VaR and the other components of market risk regulatory capital for the Firm (e.g., VaR-based measure, stressed VaR-based measure and the respective backtesting), see JPMorgan Chase's Basel III Pillar 3 Regulatory Capital Disclosures reports, which are available on the Firm's website at: (http://investor.shareholder.com/jpmorganchase/basel.cfm).

The table below shows the results of the Firm's Risk Management VaR measure using a 95% confidence level.

Total VaR

As of or for the year ended December 31,	2017			2016		
(in millions)	Avg.	Min	Max	Avg.	Min	Max
CIB trading VaR by risk type						
Fixed income	**$ 28**	**$ 20**	**$ 40**	$ 45	$ 33	$ 65
Foreign exchange	**10**	**4**	**20**	12	7	27
Equities	**12**	**8**	**19**	13	5	32
Commodities and other	**7**	**4**	**10**	9	7	11
Diversification benefit to CIB trading VaR	**(30)** (a)	**NM** (b)	**NM** (b)	(36) (a)	NM (b)	NM (b)
CIB trading VaR	**27**	**14** (b)	**38** (b)	43	28 (b)	79 (b)
Credit portfolio VaR	**7**	**3**	**12**	12	10	16
Diversification benefit to CIB VaR	**(6)** (a)	**NM** (b)	**NM** (b)	(10) (a)	NM (b)	NM (b)
CIB VaR	**28**	**17** (b)	**39** (b)	45	32 (b)	81 (b)
CCB VaR	**2**	**1**	**4**	3	1	6
Corporate VaR	**4**	**1**	**16** (c)	6	3	13 (c)
AWM VaR	**—**	**—**	**—**	2	—	4
Diversification benefit to other VaR	**(1)** (a)	**NM** (b)	**NM** (b)	(3) (a)	NM (b)	NM (b)
Other VaR	**5**	**2** (b)	**16** (b)	8	4 (b)	16 (b)
Diversification benefit to CIB and other VaR	**(4)** (a)	**NM** (b)	**NM** (b)	(8) (a)	NM (b)	NM (b)
Total VaR	**$ 29**	**$ 17** (b)	**$ 42** (b)	$ 45	$ 33 (b)	$ 78 (b)

(a) Average portfolio VaR is less than the sum of the VaR of the components described above, which is due to portfolio diversification. The diversification effect reflects that the risks are not perfectly correlated.
(b) Diversification benefit represents the difference between the total VaR and each reported level and the sum of its individual components. Diversification benefit reflects the non-additive nature of VaR due to imperfect correlation across lines of business and risk types. The maximum and minimum VaR for each portfolio may have occurred on different trading days than the components and consequently diversification benefit is not meaningful.
(c) Maximum Corporate VaR was higher than the prior year, due to a Private Equity position that became publicly traded in the fourth quarter of 2017. Previously, this position was included in other sensitivity-based measures.

Average Total VaR decreased $16 million for the year-ended December 31, 2017 as compared with the prior year. The reduction is a result of refinements made to VaR models for certain asset-backed products, changes made to the scope of positions included in VaR in the third quarter of 2016, and lower volatility in the one-year historical look-back period.

In addition, Credit Portfolio VaR declined by $5 million reflecting the sale of select positions and lower volatility in the one-year historical look-back period.

In the first quarter of 2017, the Firm refined the historical proxy time series inputs to certain VaR models. These refinements are intended to more appropriately reflect the risk exposure from certain asset-backed products. In the absence of this refinement, the average Total VaR, CIB fixed income VaR, CIB trading VaR and CIB VaR would have each been higher by $4 million for the year ended December 31, 2017.

VaR can vary significantly as positions change, market volatility fluctuates, and diversification benefits change.

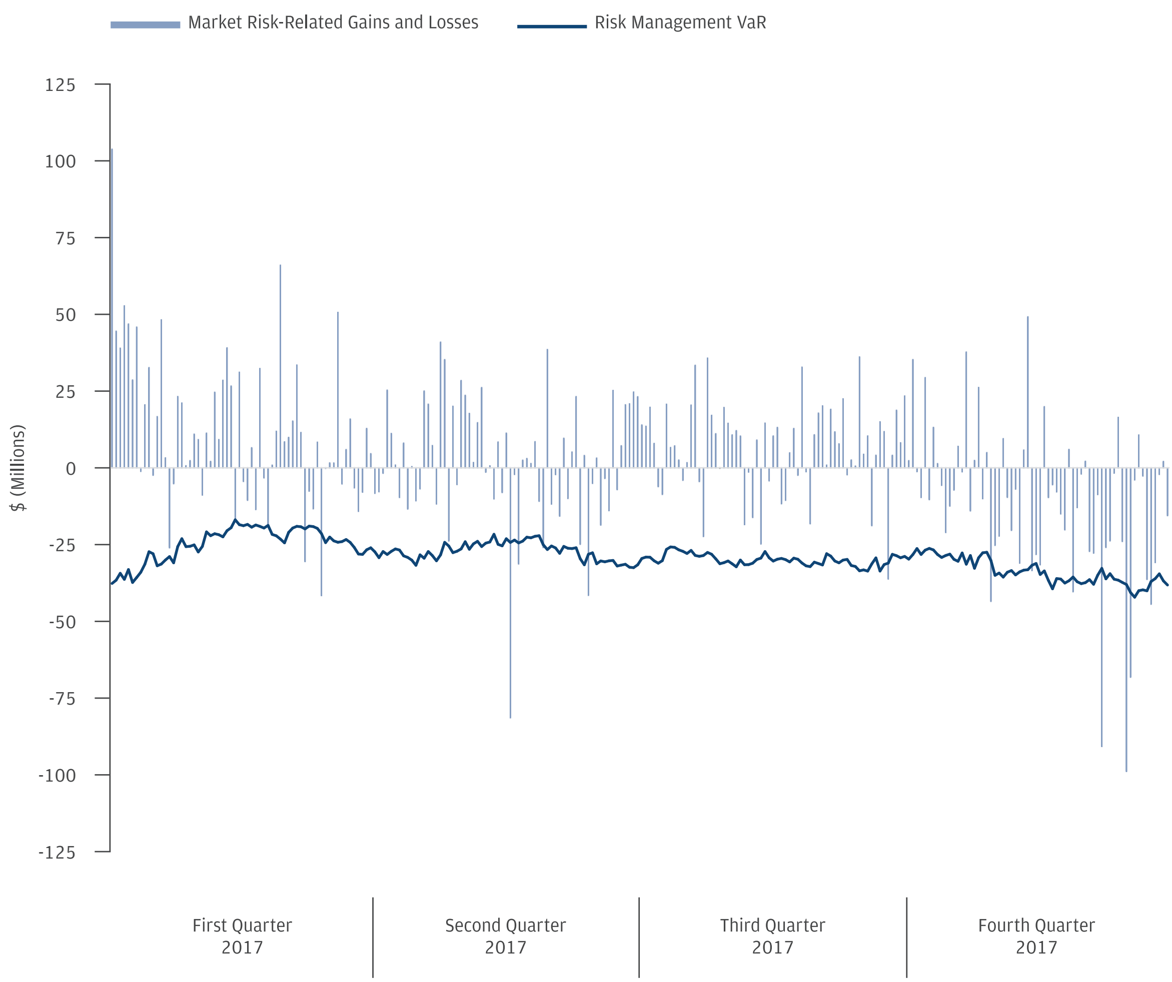
VaR back-testing

The Firm evaluates the effectiveness of its VaR methodology by back-testing, which compares the daily Risk Management VaR results with the daily gains and losses actually recognized on market-risk related revenue.

The Firm's definition of market risk-related gains and losses is consistent with the definition used by the banking regulators under Basel III. Under this definition market risk-related gains and losses are defined as: gains and losses on the positions included in the Firm's Risk Management VaR, excluding fees, commissions, certain valuation adjustments (e.g., liquidity and FVA), net interest income, and gains and losses arising from intraday trading.

The following chart compares actual daily market risk-related gains and losses with the Firm's Risk Management VaR for the year ended December 31, 2017. As the chart presents market risk-related gains and losses related to those positions included in the Firm's Risk Management VaR, the results in the table below differ from the results of back-testing disclosed in the Market Risk section of the Firm's Basel III Pillar 3 Regulatory Capital Disclosures reports, which are based on Regulatory VaR applied to covered positions. The chart shows that for the year ended December 31, 2017 the Firm observed 15 VaR back-testing exceptions and posted gains on 145 of the 258 days.

Daily Market Risk-Related Gains and Losses
vs. Risk Management VaR (1-day, 95% Confidence level)
Year ended December 31, 2017



Other risk measures

Economic-value stress testing

Along with VaR, stress testing is an important tool in measuring and controlling risk. While VaR reflects the risk of loss due to adverse changes in markets using recent historical market behavior as an indicator of losses, stress testing is intended to capture the Firm's exposure to unlikely but plausible events in abnormal markets. The Firm runs weekly stress tests on market-related risks across the lines of business using multiple scenarios that assume significant changes in risk factors such as credit spreads, equity prices, interest rates, currency rates and commodity prices.

The Firm uses a number of standard scenarios that capture different risk factors across asset classes including geographical factors, specific idiosyncratic factors and extreme tail events. The stress framework calculates multiple magnitudes of potential stress for both market rallies and market sell-offs for each risk factor and combines them in multiple ways to capture different market scenarios. For example, certain scenarios assess the potential loss arising from current exposures held by the Firm due to a broad sell-off in bond markets or an extreme widening in corporate credit spreads. The flexibility of the stress testing framework allows risk managers to construct new, specific scenarios that can be used to form decisions about future possible stress events.

Stress testing complements VaR by allowing risk managers to shock current market prices to more extreme levels relative to those historically realized, and to stress test the relationships between market prices under extreme scenarios. Stress scenarios are defined and reviewed by Market Risk Management, and significant changes are reviewed by the relevant LOB Risk Committees and may be redefined on a periodic basis to reflect current market conditions.

Stress-test results, trends and qualitative explanations based on current market risk positions are reported to the respective LOBs and the Firm's senior management to allow them to better understand the sensitivity of positions to certain defined events and to enable them to manage their risks with more transparency. Results are also reported to the Board of Directors.

The Firm's stress testing framework is utilized in calculating results for the Firm's CCAR and ICAAP processes. In addition, the results are incorporated into the quarterly assessment of the Firm's Risk Appetite Framework and are also presented to the DRPC.

Nonstatistical risk measures

Nonstatistical risk measures include sensitivities to variables used to value positions, such as credit spread sensitivities, interest rate basis point values and market values. These measures provide granular information on the Firm's market risk exposure. They are aggregated by line of business and by risk type, and are also used for monitoring internal market risk limits.

Loss advisories and profit and loss drawdowns

Loss advisories and profit and loss drawdowns are tools used to highlight trading losses above certain levels of risk tolerance. Profit and loss drawdowns are defined as the decline in net profit and loss since the year-to-date peak revenue level.

Earnings-at-risk

The VaR and sensitivity measures illustrate the economic sensitivity of the Firm's Consolidated balance sheets to changes in market variables.

The effect of interest rate exposure on the Firm's reported net income is also important as interest rate risk represents one of the Firm's significant market risks. Interest rate risk arises not only from trading activities but also from the Firm's traditional banking activities, which include extension of loans and credit facilities, taking deposits and issuing debt. The Firm evaluates its structural interest rate risk exposure through earnings-at-risk, which measures the extent to which changes in interest rates will affect the Firm's net interest income and interest rate-sensitive fees. For a summary by line of business, identifying positions included in earnings-at-risk, see the table on page 122.

The CTC Risk Committee establishes the Firm's structural interest rate risk policies and market risk limits, which are subject to approval by the DRPC. Treasury and CIO, working in partnership with the lines of business, calculates the Firm's structural interest rate risk profile and reviews it with senior management including the CTC Risk Committee and the Firm's ALCO. In addition, oversight of structural interest rate risk is managed through a dedicated risk function reporting to the CTC CRO. This risk function is responsible for providing independent oversight and governance around assumptions and establishing and monitoring limits for structural interest rate risk. The Firm manages structural interest rate risk generally through its investment securities portfolio and interest rate derivatives.

Structural interest rate risk can occur due to a variety of factors, including:

- Differences in the timing among the maturity or repricing of assets, liabilities and off-balance sheet instruments
- Differences in the amounts of assets, liabilities and off-balance sheet instruments that are repricing at the same time
- Differences in the amounts by which short-term and long-term market interest rates change (for example, changes in the slope of the yield curve)
- The impact of changes in the maturity of various assets, liabilities or off-balance sheet instruments as interest rates change

The Firm manages interest rate exposure related to its assets and liabilities on a consolidated, firmwide basis. Business units transfer their interest rate risk to Treasury and CIO through funds transfer pricing, which takes into account the elements of interest rate exposure that can be risk-managed in financial markets. These elements include asset and liability balances and contractual rates of interest, contractual principal payment schedules, expected prepayment experience, interest rate reset dates and maturities, rate indices used for repricing, and any interest rate ceilings or floors for adjustable rate products. All transfer-pricing assumptions are dynamically reviewed.

The Firm generates a baseline for net interest income and certain interest rate-sensitive fees, and then conducts simulations of changes for interest rate-sensitive assets and liabilities denominated in U.S. dollars and other currencies ("non-U.S. dollar" currencies). This simulation primarily includes, retained loans, deposits, deposits with banks, investment securities, long term debt and any related interest rate hedges, and excludes other positions in risk management VaR and other sensitivity-based measures as described on page 122.

Earnings-at-risk scenarios estimate the potential change in this baseline, over the following 12 months utilizing multiple assumptions. These scenarios consider the impact on exposures as a result of changes in interest rates from baseline rates, as well as pricing sensitivities of deposits, optionality and changes in product mix. The scenarios include forecasted balance sheet changes, as well as modeled prepayment and reinvestment behavior, but do not include assumptions about actions that could be taken by the Firm in response to any such instantaneous rate changes. Mortgage prepayment assumptions are based on scenario interest rates compared with underlying contractual rates, the time since origination, and other factors which are updated periodically based on historical experience. The pricing sensitivity of deposits in the baseline and scenarios use assumed rates paid which may differ from actual rates paid due to timing lags and other factors. The Firm's earnings-at-risk scenarios are periodically evaluated and enhanced in response to changes in the composition of the Firm's balance sheet, changes in market conditions, improvements in the Firm's simulation and other factors.

The Firm's U.S. dollar sensitivities are presented in the table below.

JPMorgan Chase's 12-month earnings-at-risk sensitivity profiles

U.S. dollar	Instantaneous change in rates			
(in billions)	+200 bps	+100 bps	-100 bps	-200 bps
December 31, 2017	**$ 2.4**	**$ 1.7**	**(3.6)** (a)	**NM** (b)
December 31, 2016	$ 4.0	$ 2.4	NM (b)	NM (b)

(a) As a result of the 2017 increase in the Fed Funds target rate to between 1.25% and 1.50%, the -100 bps sensitivity has been included.
(b) Given the level of market interest rates, these downward parallel earnings-at-risk scenarios are not considered to be meaningful.

The non-U.S. dollar sensitivities for an instantaneous increase in rates by 200 and 100 basis points results in a 12-month benefit to net interest income of approximately $800 million and $500 million, respectively, at December 31, 2017 and were not material at December 31, 2016. The non-U.S. dollar sensitivities for an instantaneous decrease in rates by 200 and 100 basis points were not material to the Firm's earnings-at-risk at December 31, 2017 and 2016.

The Firm's sensitivity to rates is largely a result of assets repricing at a faster pace than deposits.

The Firm's net U.S. dollar sensitivities for an instantaneous increase in rates by 200 and 100 basis points decreased by approximately $1.6 billion and $700 million, respectively, when compared to December 31, 2016. The primary driver of that decrease was the updating of the Firm's baseline to reflect higher interest rates. As higher interest rates are reflected in the Firm's baselines, the magnitude of the sensitivity to further increases in rates would be expected to be less significant.

Separately, another U.S. dollar interest rate scenario used by the Firm – involving a steeper yield curve with long-term rates rising by 100 basis points and short-term rates staying at current levels – results in a 12-month benefit to net interest income of approximately $700 million and $800 million at December 31, 2017 and 2016, respectively. The increase in net interest income under this scenario reflects the Firm reinvesting at the higher long-term rates, with funding costs remaining unchanged. The results of the comparable non-U.S. dollar scenarios were not material to the Firm at December 31, 2017 and 2016.

Non-U.S. dollar foreign exchange risk

Non-U.S. dollar FX risk is the risk that changes in foreign exchange rates affect the value of the Firm's assets or liabilities or future results. The Firm has structural non-U.S. dollar FX exposures arising from capital investments, forecasted expense and revenue, the investment securities portfolio and non-U.S. dollar-denominated debt issuance. Treasury and CIO, working in partnership with the lines of business, primarily manage these risks on behalf of the Firm. Treasury and CIO may hedge certain of these risks using derivatives within risk limits governed by the CTC Risk Committee.

Other sensitivity-based measures

The Firm quantifies the market risk of certain investment and funding activities by assessing the potential impact on net revenue and OCI due to changes in relevant market variables. For additional information on the positions captured in other sensitivity-based measures, please refer to the Risk identification and classification table on page 122.

The table below represents the potential impact to net revenue or OCI for market risk sensitive instruments that are not included in VaR or earnings-at-risk. Where appropriate, instruments used for hedging purposes are reported along with the positions being hedged. The sensitivities disclosed in the table below may not be representative of the actual gain or loss that would have been realized at December 31, 2017, as the movement in market parameters across maturities may vary and are not intended to imply management's expectation of future deterioration in these sensitivities.

Gain/(loss) (in millions) Activity	Description	Sensitivity measure	December 31, 2017	December 31, 2016
Investment activities				
Investment management activities	Consists of seed capital and related hedges; and fund co-investments	10% decline in market value	$ (110)	$ (166)
Other investments	Consists of private equity and other investments held at fair value	10% decline in market value	(338)	(358)
Funding activities				
Non-USD LTD cross-currency basis	Represents the basis risk on derivatives used to hedge the foreign exchange risk on the non-USD LTD	1 basis point parallel tightening of cross currency basis	(10)	(7)
Non-USD LTD hedges foreign currency ("FX") exposure	Primarily represents the foreign exchange revaluation on the fair value of the derivative hedges	10% depreciation of currency	(13)	(23)
Derivatives – funding spread risk	Impact of changes in the spread related to derivatives FVA	1 basis point parallel increase in spread	(6)	(4)
Fair value option elected liabilities – funding spread risk	Impact of changes in the spread related to fair value option elected liabilities DVA[(a)]	1 basis point parallel increase in spread	22	17
Fair value option elected liabilities – interest rate sensitivity	Interest rate sensitivity on fair value option liabilities resulting from a change in the Firm's own credit spread[(a)]	1 basis point parallel increase in spread	(1)	NA

(a) Impact recognized through OCI.

The Firm has a country risk management framework for monitoring and assessing how financial, economic, political or other significant developments adversely affect the value of the Firm's exposures related to a particular country or set of countries. The Country Risk Management group actively monitors the various portfolios which may be impacted by these developments to ensure the Firm's exposures are diversified and that exposure levels are appropriate given the Firm's strategy and risk tolerance relative to a country.

Organization and management

Country Risk Management is an independent risk management function that assesses, manages and monitors country risk originated across the Firm. The Firmwide Risk Executive for Country Risk reports to the Firm's CRO.

The Firm's country risk management function includes the following activities:

- Establishing policies, procedures and standards consistent with a comprehensive country risk framework
- Assigning sovereign ratings, and assessing country risks and establishing risk tolerance relative to a country
- Measuring and monitoring country risk exposure and stress across the Firm
- Managing and approving country limits and reporting trends and limit breaches to senior management
- Developing surveillance tools, such as signaling models and ratings indicators, for early identification of potential country risk concerns
- Providing country risk scenario analysis

Sources and measurement

The Firm is exposed to country risk through its lending and deposits, investing, and market-making activities, whether cross-border or locally funded. Country exposure includes activity with both government and private-sector entities in a country. Under the Firm's internal country risk management approach, country exposure is reported based on the country where the majority of the assets of the obligor, counterparty, issuer or guarantor are located or where the majority of its revenue is derived, which may be different than the domicile (legal residence) or country of incorporation of the obligor, counterparty, issuer or guarantor. Country exposures are generally measured by considering the Firm's risk to an immediate default of the counterparty or obligor, with zero recovery. Assumptions are sometimes required in determining the measurement and allocation of country exposure, particularly in the case of certain non-linear or index exposures. The use of different measurement approaches or assumptions could affect the amount of reported country exposure.

Under the Firm's internal country risk measurement framework:

- Lending exposures are measured at the total committed amount (funded and unfunded), net of the allowance for credit losses and cash and marketable securities collateral received
- Deposits are measured as the cash balances placed with central and commercial banks
- Securities financing exposures are measured at their receivable balance, net of collateral received
- Debt and equity securities are measured at the fair value of all positions, including both long and short positions
- Counterparty exposure on derivative receivables is measured at the derivative's fair value, net of the fair value of the related collateral. Counterparty exposure on derivatives can change significantly because of market movements
- Credit derivatives protection purchased and sold is reported based on the underlying reference entity and is measured at the notional amount of protection purchased or sold, net of the fair value of the recognized derivative receivable or payable. Credit derivatives protection purchased and sold in the Firm's market-making activities is measured on a net basis, as such activities often result in selling and purchasing protection related to the same underlying reference entity; this reflects the manner in which the Firm manages these exposures

Some activities may create contingent or indirect exposure related to a country (for example, providing clearing services or secondary exposure to collateral on securities financing receivables). These exposures are managed in the normal course of business through the Firm's credit, market, and operational risk governance, rather than through Country Risk Management.

The Firm's internal country risk reporting differs from the reporting provided under the FFIEC bank regulatory requirements. For further information on the FFIEC's reporting methodology, see Cross-border outstandings on page 296 of the 2017 Form 10-K.

Stress testing

Stress testing is an important component of the Firm's country risk management framework, which aims to estimate and limit losses arising from a country crisis by measuring the impact of adverse asset price movements to a country based on market shocks combined with counterparty specific assumptions. Country Risk Management periodically designs and runs tailored stress scenarios to test vulnerabilities to individual countries, or groups of countries, in response to specific or potential market events, sector performance concerns and geopolitical risks. These tailored stress results are used to assess potential risk reduction across the Firm, as necessary.

Risk Reporting

To enable effective risk management of country risk to the Firm, country nominal exposure and stress are measured and reported weekly, and used by Country Risk Management to identify trends, and monitor high usages and breaches against limits.

The following table presents the Firm's top 20 exposures by country (excluding the U.S.) as of December 31, 2017. The selection of countries represents the Firm's largest total exposures by country, based on the Firm's internal country risk management approach, and does not represent the Firm's view of any actual or potentially adverse credit conditions. Country exposures may fluctuate from period to period due to client activity and market flows.

Top 20 country exposures (excluding the U.S.)[(a)]

	December 31, 2017			
(in billions)	Lending and deposits[(b)]	Trading and investing[(c)(d)]	Other[(e)]	Total exposure
Germany	$ 43.3	$ 13.8	$ 0.3	$ 57.4
United Kingdom	32.0	11.5	2.8	46.3
Japan	24.7	5.7	0.4	30.8
France	12.5	6.6	0.3	19.4
China	9.6	5.5	1.2	16.3
Canada	12.2	2.5	0.2	14.9
Switzerland	8.5	1.5	3.9	13.9
India	5.3	6.1	0.9	12.3
Australia	5.8	5.6	–	11.4
Luxembourg	8.7	0.8	–	9.5
Netherlands	6.6	0.8	0.6	8.0
Spain	4.7	2.1	0.1	6.9
South Korea	4.6	1.9	0.3	6.8
Italy	3.5	3.1	0.1	6.7
Singapore	4.0	1.2	1.1	6.3
Mexico	4.0	1.2	–	5.2
Brazil	3.2	1.4	0.5	5.1
Hong Kong	2.3	0.9	1.6	4.8
Saudi Arabia	3.8	0.7	–	4.5
Belgium	2.7	1.5	–	4.2

(a) Country exposures above reflect 86% of total firmwide non U.S. exposure.
(b) Lending and deposits includes loans and accrued interest receivable (net of collateral and the allowance for loan losses), deposits with banks (including central banks), acceptances, other monetary assets, issued letters of credit net of participations, and unused commitments to extend credit. Excludes intra-day and operating exposures, such as from settlement and clearing activities.
(c) Includes market-making inventory, AFS securities, counterparty exposure on derivative and securities financings net of collateral and hedging.
(d) Includes single reference entity ("single-name"), index and other multiple reference entity transactions for which one or more of the underlying reference entities is in a country listed in the above table.
(e) Includes capital invested in local entities and physical commodity inventory.

Operational risk is the risk associated with inadequate or failed internal processes, people and systems, or from external events; operational risk includes cybersecurity risk, business and technology resiliency risk, payment fraud risk, and third-party outsourcing risk. Operational risk is inherent in the Firm's activities and can manifest itself in various ways, including fraudulent acts, business interruptions, inappropriate employee behavior, failure to comply with applicable laws and regulations or failure of vendors to perform in accordance with their arrangements. These events could result in financial losses, litigation and regulatory fines, as well as other damages to the Firm. The goal is to keep operational risk at appropriate levels in light of the Firm's financial position, the characteristics of its businesses, and the markets and regulatory environments in which it operates.

Operational Risk Management Framework

To monitor and control operational risk, the Firm has an Operational Risk Management Framework ("ORMF") which is designed to enable the Firm to maintain a sound and well-controlled operational environment. The ORMF has four main components: Governance, Risk Identification and Assessment, Measurement, and Monitoring and Reporting.

Governance

The lines of business and corporate functions are responsible for owning and managing their operational risks. The Firmwide Oversight and Control Group, which consists of control officers within each line of business and corporate function, is responsible for the day-to-day execution of the ORMF.

Line of business and corporate function control committees oversee the operational risk and control environments of their respective businesses and functions. These committees escalate operational risk issues to the FCC, as appropriate. For additional information on the FCC, see Enterprise-wide Risk Management on pages 75–137.

The Firmwide Risk Executive for Operational Risk Governance ("ORG"), a direct report to the CRO, is responsible for defining the ORMF and establishing minimum standards for its execution. Operational Risk Officers report to both the line of business CROs and to the Firmwide Risk Executive for ORG, and are independent of the respective businesses or corporate functions they oversee.

The Firm's Operational Risk Governance Policy is approved by the DRPC. This policy establishes the Operational Risk Management Framework for the Firm.

Risk identification and assessment

The Firm utilizes several tools to identify, assess, mitigate and manage its operational risk. One such tool is the Risk and Control Self-Assessment ("RCSA") program which is executed by LOBs and corporate functions in accordance with the minimum standards established by ORG. As part of the RCSA program, lines of business and corporate functions identify key operational risks inherent in their activities, evaluate the effectiveness of relevant controls in place to mitigate identified risks, and define actions to reduce residual risk. Action plans are developed for identified control issues and businesses and corporate functions are held accountable for tracking and resolving issues in a timely manner. Operational Risk Officers independently challenge the execution of the RCSA program and evaluate the appropriateness of the residual risk results.

In addition to the RCSA program, the Firm tracks and monitors events that have led to or could lead to actual operational risk losses, including litigation-related events. Responsible businesses and corporate functions analyze their losses to evaluate the effectiveness of their control environment to assess where controls have failed, and to determine where targeted remediation efforts may be required. ORG provides oversight of these activities and may also perform independent assessments of significant operational risk events and areas of concentrated or emerging risk.

Measurement

In addition to the level of actual operational risk losses, operational risk measurement includes operational risk-based capital and operational risk loss projections under both baseline and stressed conditions.

The primary component of the operational risk capital estimate is the Loss Distribution Approach ("LDA") statistical model, which simulates the frequency and severity of future operational risk loss projections based on historical data. The LDA model is used to estimate an aggregate operational risk loss over a one-year time horizon, at a 99.9% confidence level. The LDA model incorporates actual internal operational risk losses in the quarter following the period in which those losses were realized, and the calculation generally continues to reflect such losses even after the issues or business activities giving rise to the losses have been remediated or reduced.

As required under the Basel III capital framework, the Firm's operational risk-based capital methodology, which uses the Advanced Measurement Approach, incorporates internal and external losses as well as management's view of tail risk captured through operational risk scenario analysis, and evaluation of key business environment and internal control metrics.

The Firm considers the impact of stressed economic conditions on operational risk losses and develops a forward looking view of material operational risk events that may occur in a stressed environment. The Firm's operational risk stress testing framework is utilized in calculating results for the Firm's CCAR and ICAAP processes.

For information related to operational risk RWA, CCAR or ICAAP, see Capital Risk Management section, pages 82–91.

Monitoring and reporting
ORG has established standards for consistent operational risk monitoring and reporting. The standards also reinforce escalation protocols to senior management and to the Board of Directors. Operational risk reports are produced on a firmwide basis as well as by line of business and corporate function.

Subcategories and examples of operational risks

As mentioned previously, operational risk can manifest itself in various ways. Operational risk subcategories such as Compliance risk, Conduct risk, Legal risk and Estimations and Model risk, as well as other operational risks, can lead to losses which are captured through the Firm's operational risk measurement processes. More information on Compliance risk, Conduct risk, Legal risk and Estimations and Model risk subcategories are discussed on pages 134, 135, 136 and 137, respectively. Details on other select examples of operational risks are provided below.

Cybersecurity risk
Cybersecurity risk is an important, continuous and evolving focus for the Firm. The Firm devotes significant resources to protecting and continuing to improve the security of the Firm's computer systems, software, networks and other technology assets. The Firm's security efforts are intended to protect against, among other things, cybersecurity attacks by unauthorized parties to obtain access to confidential information, destroy data, disrupt or degrade service, sabotage systems or cause other damage. The Firm continues to make significant investments in enhancing its cyberdefense capabilities and to strengthen its partnerships with the appropriate government and law enforcement agencies and other businesses in order to understand the full spectrum of cybersecurity risks in the operating environment, enhance defenses and improve resiliency against cybersecurity threats. The Firm actively participates in discussions of cybersecurity risks with law enforcement, government officials, peer and industry groups, and has significantly increased efforts to educate employees and certain clients on the topic. Third parties with which the Firm does business or that facilitate the Firm's business activities (e.g., vendors, exchanges, clearing houses, central depositories, and financial intermediaries) could also be sources of cybersecurity risk to the Firm. Third party cybersecurity incidents such as system breakdowns or failures, misconduct by the employees of such parties, or cyberattacks could affect their ability to deliver a product or service to the Firm or result in lost or compromised information of the Firm or its clients. Clients can also be sources of cybersecurity risk to the Firm, particularly when their activities and systems are beyond the Firm's own security and control systems. As a result, the Firm engages in regular and ongoing discussions with certain vendors and clients regarding cybersecurity risks and opportunities to improve security. However, where cybersecurity incidents are due to client failure to maintain the security of their own systems and processes, clients will generally be responsible for losses incurred.

To protect the confidentiality, integrity and availability of the Firm's infrastructure, resources and information, the Firm leverages the ORMF to ensure risks are identified and managed within defined corporate tolerances. The Firm's Board of Directors and the Audit Committee are regularly briefed on the Firm's cybersecurity policies and practices and ongoing efforts to improve security, as well as its efforts regarding significant cybersecurity events.

Business and technology resiliency risk
Business disruptions can occur due to forces beyond the Firm's control such as severe weather, power or telecommunications loss, flooding, transit strikes, terrorist threats or infectious disease. The safety of the Firm's employees and customers is of the highest priority. The Firm's global resiliency program is intended to enable the Firm to recover its critical business functions and supporting assets (i.e., staff, technology and facilities) in the event of a business interruption. The program includes corporate governance, awareness and training, as well as strategic and tactical initiatives to identify, assess, and manage business interruption and public safety risks.

The strength and proficiency of the Firm's global resiliency program has played an integral role in maintaining the Firm's business operations during and after various events.

Payment fraud risk
Payment fraud risk is the risk of external and internal parties unlawfully obtaining personal monetary benefit through misdirected or otherwise improper payment, and exposing the Firm to financial or reputational harm. Over the past year, the risk of payment fraud remained at a heightened level across the industry. The complexities of these attacks along with perpetrators' strategies continue to evolve. A Payments Control Program has been established that includes Cybersecurity, Operations, Technology, Risk and the lines of business to manage the risk, implement controls and provide employee and client education and awareness training. In addition, a new wholesale fraud detection solution has been introduced which monitors high value payments for certain anomalies. The Firm's monitoring of customer behavior is periodically evaluated and enhanced, and attempts to detect and mitigate new strategies implemented by fraud perpetrators. The Firm's consumer and wholesale businesses collaborate closely to deploy risk mitigation controls across their businesses.

Third-party outsourcing risk

To identify and manage the operational risk inherent in its outsourcing activities, the Firm has a Third-Party Oversight ("TPO") framework to assist lines of business and corporate functions in selecting, documenting, onboarding, monitoring and managing their supplier relationships. The objective of the TPO framework is to hold third parties to the same high level of operational performance as is expected of the Firm's internal operations. The Corporate Third-Party Oversight group is responsible for Firmwide TPO training, monitoring, reporting and standards.

Insurance

One of the ways in which operational risk may be mitigated is through insurance maintained by the Firm. The Firm purchases insurance from commercial insurers and utilizes a wholly-owned captive insurer, Park Assurance Company, to ensure compliance with local laws and regulations (e.g., workers compensation), as well as to serve other needs (e.g., property loss and public liability). Insurance may also be required by third parties with whom the Firm does business. The insurance purchased is reviewed and approved by senior management.

Compliance risk, a subcategory of operational risk, is the risk of failure to comply with applicable laws, rules and regulations.

Overview

Each line of business and function is accountable for managing its compliance risk. The Firm's Compliance Organization ("Compliance"), which is independent of the lines of business, works closely with senior management to provide independent review, monitoring and oversight of business operations with a focus on compliance with the legal and regulatory obligations applicable to the delivery of the Firm's products and services to clients and customers.

These compliance risks relate to a wide variety of legal and regulatory obligations, depending on the line of business and the jurisdiction, and include those related to financial products and services, relationships and interactions with clients and customers, and employee activities. For example, compliance risks include those associated with anti-money laundering compliance, trading activities, market conduct, and complying with the rules and regulations related to the offering of products and services across jurisdictional borders, among others. Compliance risk is also inherent in the Firm's fiduciary activities, including the failure to exercise the applicable high standard of care (such as the duties of loyalty or care), to act in the best interest of clients and customers or to treat clients and customers fairly.

Other Functions provide oversight of significant regulatory obligations that are specific to their respective areas of responsibility.

Compliance implements various practices designed to identify and mitigate compliance risk by establishing policies, testing, monitoring, training and providing guidance.

Governance and oversight

Compliance is led by the Firms' CCO who reports to the Firm's CRO.

The Firm maintains oversight and coordination of its Compliance Risk Management practices through the Firm's CCO, lines of business CCOs and regional CCOs to implement the Compliance program globally across the lines of business and regions. The Firm's CCO is a member of the FCC and the FRC. The Firm's CCO also provides regular updates to the Audit Committee and DRPC. In addition, certain Special Purpose Committees of the Board have been established to oversee the Firm's compliance with regulatory Consent Orders.

The Firm has a Code of Conduct (the "Code"). Each employee is given annual training on the Code and is required annually to affirm his or her compliance with the Code. All new hires must complete Code training shortly after their start date with the Firm. The Code sets forth the Firm's expectation that employees will conduct themselves with integrity at all times and provides the principles that govern employee conduct with clients, customers, shareholders and one another, as well as with the markets and communities in which the Firm does business. The Code requires employees to promptly report any known or suspected violation of the Code, any internal Firm policy, or any law or regulation applicable to the Firm's business. It also requires employees to report any illegal conduct, or conduct that violates the underlying principles of the Code, by any of the Firm's employees, customers, suppliers, contract workers, business partners, or agents. The Code prohibits retaliation against anyone who raises an issue or concern in good faith. Specified compliance officers are specially trained and designated as "code specialists" who act as a resource to employees on questions related to the Code. Employees can report any known or suspected violations of the Code through the Code Reporting Hotline by phone or the internet. The Hotline is anonymous, except in certain non-U.S. jurisdictions where laws prohibit anonymous reporting, and is available 24/7 globally, with translation services. It is maintained by an outside service provider. Annually, the Chief Compliance Office and Human Resources report to the Audit Committee on the Code of Conduct program and provide an update on the employee completion rate for Code of Conduct training and affirmation.

Conduct risk, a subcategory of operational risk, is the risk that any action or inaction by an employee of the Firm could lead to unfair client/customer outcomes, compromise the Firm's reputation, impact the integrity of the markets in which the Firm operates, or reflect poorly on the Firm's culture.

Overview

Each line of business or function is accountable for identifying and managing its conduct risk to provide appropriate engagement, ownership and sustainability of a culture consistent with the Firm's How We Do Business Principles ("Principles"). The Principles serve as a guide for how employees are expected to conduct themselves. With the Principles serving as a guide, the Firm's Code sets out the Firm's expectations for each employee and provides information and resources to help employees conduct business ethically and in compliance with the law everywhere the Firm operates. For further discussion of the Code, see Compliance Risk Management on page 134.

Governance and oversight

The CMDC is the Board-level Committee with primary oversight of the firm's Culture and Conduct Program. The Audit Committee is responsible for reviewing the program established by management to monitor compliance with the Code. Additionally, the DRPC reviews, at least annually, the Firm's qualitative factors included in the Risk Appetite Framework, including conduct risk. The DRPC also meets annually with the CMDC to review and discuss aspects of the Firm's compensation practices. Finally, the Culture & Conduct Risk Committee provides oversight of certain culture and conduct risk initiatives at the Firm.

Conduct risk management is incorporated into various aspects of people management practices throughout the employee life cycle, including recruiting, onboarding, training and development, performance management, promotion and compensation processes. Businesses undertake annual RCSA assessments, and, as part of these reviews, identify their respective key inherent operational risks (including conduct risks), evaluate the design and effectiveness of their controls, identify control gaps and develop associated action plans. Each LOB and designated corporate function completes an assessment of conduct risk quarterly, reviews metrics and issues which may involve conduct risk, and provides business conduct training as appropriate.

The Firm's Know Your Employee framework generally addresses how the Firm manages, oversees and responds to workforce conduct related matters that may otherwise expose the Firm to financial, reputational, compliance and other operating risks. The Firm also has a HR Control Forum, the primary purpose of which is to discuss conduct and accountability for more significant risk and control issues and review, when appropriate, employee actions including but not limited to promotion and compensation actions.

LEGAL RISK MANAGEMENT

Legal risk, a subcategory of operational risk, is the risk of loss primarily caused by the actual or alleged failure to meet legal obligations that arise from the rule of law in jurisdictions in which the Firm operates, agreements with clients and customers, and products and services offered by the Firm.

Overview

The global Legal function ("Legal") provides legal services and advice to the Firm. Legal is responsible for managing the Firm's exposure to Legal risk by:

- managing actual and potential litigation and enforcement matters, including internal reviews and investigations related to such matters
- advising on products and services, including contract negotiation and documentation
- advising on offering and marketing documents and new business initiatives
- managing dispute resolution
- interpreting existing laws, rules and regulations, and advising on changes thereto
- advising on advocacy in connection with contemplated and proposed laws, rules and regulations, and
- providing legal advice to the LOBs and corporate functions, in alignment with the lines of defense described under Enterprise-wide Risk Management.

Legal selects, engages and manages outside counsel for the Firm on all matters in which outside counsel is engaged. In addition, Legal advises the Firm's Conflicts Office which reviews the Firm's wholesale transactions that may have the potential to create conflicts of interest for the Firm.

Governance and oversight

The Firm's General Counsel reports to the CEO and is a member of the Operating Committee, the Firmwide Risk Committee and the Firmwide Control Committee. The General Counsel's leadership team includes a General Counsel for each line of business, the heads of the Litigation and Corporate & Regulatory practices, as well as the Firm's Corporate Secretary. Each region (e.g., Latin America, Asia Pacific) has a General Counsel who is responsible for managing legal risk across all lines of business and functions in the region.

The Firm's General Counsel and other members of Legal report on significant legal matters at each meeting of the Firm's Board of Directors, at least quarterly to the Audit Committee, and periodically to the DRPC.

Legal serves on and advises various committees (including new business initiative and reputation risk committees) and advises the Firm's businesses to protect the Firm's reputation beyond any particular legal requirements.

ESTIMATIONS AND MODEL RISK MANAGEMENT

Estimations and Model risk, a subcategory of operational risk, is the potential for adverse consequences from decisions based on incorrect or misused estimation outputs.

The Firm uses models and other analytical and judgment-based estimations across various businesses and functions. The estimation methods are of varying levels of sophistication and are used for many purposes, such as the valuation of positions and measurement of risk, assessing regulatory capital requirements, conducting stress testing, and making business decisions. A dedicated independent function, Model Risk Governance and Review ("MRGR"), defines and governs the Firm's model risk management policies and certain analytical and judgment-based estimations, such as those used in risk management, budget forecasting and capital planning and analysis. MRGR reports to the Firm's CRO.

Model risks are owned by the users of the models within the various businesses and functions in the Firm based on the specific purposes of such models. Users and developers of models are responsible for developing, implementing and testing their models, as well as referring models to the Model Risk function for review and approval. Once models have been approved, model users and developers are responsible for maintaining a robust operating environment, and must monitor and evaluate the performance of the models on an ongoing basis. Model users and developers may seek to enhance models in response to changes in the portfolios and in product and market developments, as well as to capture improvements in available modeling techniques and systems capabilities.

Models are tiered based on an internal standard according to their complexity, the exposure associated with the model and the Firm's reliance on the model. This tiering is subject to the approval of the Model Risk function. A model review conducted by the Model Risk function considers the model's suitability for the specific uses to which it will be put. The factors considered in reviewing a model include whether the model accurately reflects the characteristics of the product and its significant risks, the selection and reliability of model inputs, consistency with models for similar products, the appropriateness of any model-related adjustments, and sensitivity to input parameters and assumptions that cannot be observed from the market. When reviewing a model, the Model Risk function analyzes and challenges the model methodology and the reasonableness of model assumptions and may perform or require additional testing, including back-testing of model outcomes. Model reviews are approved by the appropriate level of management within the Model Risk function based on the relevant model tier.

Under the Firm's Estimations and Model Risk Management Policy, the Model Risk function reviews and approves new models, as well as material changes to existing models, prior to implementation in the operating environment. In certain circumstances, the head of the Model Risk function may grant exceptions to the Firm's policy to allow a model to be used prior to review or approval. The Model Risk function may also require the user to take appropriate actions to mitigate the model risk if it is to be used in the interim. These actions will depend on the model and may include, for example, limitation of trading activity.

The governance of analytical and judgment-based estimations, such as those used in risk management, budget forecasting, and capital planning and analysis, within MRGR's scope, follows a consistent approach to the governance of models.

For a summary of valuations based on valuation models and other valuation techniques, see Critical Accounting Estimates Used by the Firm on pages 138–140 and Note 2.

CRITICAL ACCOUNTING ESTIMATES USED BY THE FIRM

JPMorgan Chase's accounting policies and use of estimates are integral to understanding its reported results. The Firm's most complex accounting estimates require management's judgment to ascertain the appropriate carrying value of assets and liabilities. The Firm has established policies and control procedures intended to ensure that estimation methods, including any judgments made as part of such methods, are well-controlled, independently reviewed and applied consistently from period to period. The methods used and judgments made reflect, among other factors, the nature of the assets or liabilities and the related business and risk management strategies, which may vary across the Firm's businesses and portfolios. In addition, the policies and procedures are intended to ensure that the process for changing methodologies occurs in an appropriate manner. The Firm believes its estimates for determining the carrying value of its assets and liabilities are appropriate. The following is a brief description of the Firm's critical accounting estimates involving significant judgments.

Allowance for credit losses

JPMorgan Chase's allowance for credit losses covers the retained consumer and wholesale loan portfolios, as well as the Firm's wholesale and certain consumer lending-related commitments. The allowance for loan losses is intended to adjust the carrying value of the Firm's loan assets to reflect probable credit losses inherent in the loan portfolio as of the balance sheet date. Similarly, the allowance for lending-related commitments is established to cover probable credit losses inherent in the lending-related commitments portfolio as of the balance sheet date.

The allowance for credit losses includes a formula-based component, an asset-specific component, and a component related to PCI loans. The determination of each of these components involves significant judgment on a number of matters. For further discussion of these components, areas of judgment and methodologies used in establishing the Firm's allowance for credit losses, see Note 13.

Allowance for credit losses sensitivity

The Firm's allowance for credit losses is sensitive to numerous factors, which may differ depending on the portfolio. Changes in economic conditions or in the Firm's assumptions and estimates could affect its estimate of probable credit losses inherent in the portfolio at the balance sheet date. The Firm uses its best judgment to assess these economic conditions and loss data in estimating the allowance for credit losses and these estimates are subject to periodic refinement based on changes to underlying external or Firm-specific historical data. The use of alternate estimates, data sources, adjustments to modeled loss estimates for model imprecision and other factors would result in a different estimated allowance for credit losses, as well as impact any related sensitivities described below. During the second quarter of 2017, the Firm refined its loss estimates relating to the wholesale credit portfolio. See Note 13 for further discussion.

To illustrate the potential magnitude of certain alternate judgments, the Firm estimates that changes in the following inputs would have the following effects on the Firm's modeled credit loss estimates as of December 31, 2017, without consideration of any offsetting or correlated effects of other inputs in the Firm's allowance for loan losses:

- A combined 5% decline in housing prices and a 100 basis point increase in unemployment rates from current levels could imply:
  - an increase to modeled credit loss estimates of approximately $525 million for PCI loans.
  - an increase to modeled annual credit loss estimates of approximately $100 million for residential real estate, excluding PCI loans.
- For credit card loans, a 100 basis point increase in unemployment rates from current levels could imply an increase to modeled annual loss estimates of approximately $1.0 billion.
- An increase in PD factors consistent with a one-notch downgrade in the Firm's internal risk ratings for its entire wholesale loan portfolio could imply an increase in the Firm's modeled credit loss estimates of approximately $1.4 billion.
- A 100 basis point increase in estimated loss given default ("LGD") for the Firm's entire wholesale loan portfolio could imply an increase in the Firm's modeled credit loss estimates of approximately $175 million.

The purpose of these sensitivity analyses is to provide an indication of the isolated impacts of hypothetical alternative assumptions on modeled loss estimates. The changes in the inputs presented above are not intended to imply management's expectation of future deterioration of those risk factors. In addition, these analyses are not intended to estimate changes in the overall allowance for loan losses, which would also be influenced by the judgment management applies to the modeled loss estimates to reflect the uncertainty and imprecision of these modeled loss estimates based on then-current circumstances and conditions.

It is difficult to estimate how potential changes in specific factors might affect the overall allowance for credit losses because management considers a variety of factors and inputs in estimating the allowance for credit losses. Changes in these factors and inputs may not occur at the same rate and may not be consistent across all geographies or product types, and changes in factors may be directionally inconsistent, such that improvement in one factor may offset deterioration in other factors. In addition, it is difficult to predict how changes in specific economic conditions or assumptions could affect borrower behavior or other factors considered by management in estimating the allowance for credit losses. Given the process the Firm follows and the judgments made in evaluating the risk factors related to its loss estimates, management believes that its current estimate of the allowance for credit losses is appropriate.

Fair value of financial instruments, MSRs and commodities inventory

JPMorgan Chase carries a portion of its assets and liabilities at fair value. The majority of such assets and liabilities are measured at fair value on a recurring basis. Certain assets and liabilities are measured at fair value on a nonrecurring basis, including certain mortgage, home equity and other loans, where the carrying value is based on the fair value of the underlying collateral.

Assets measured at fair value

The following table includes the Firm's assets measured at fair value and the portion of such assets that are classified within level 3 of the valuation hierarchy. For further information, see Note 2.

December 31, 2017 (in billions, except ratio data)	Total assets at fair value	Total level 3 assets
Trading debt and equity instruments	$ 325.3	$ 5.4
Derivative receivables[a]	56.5	6.0
Trading assets	381.8	11.4
AFS securities	202.2	0.3
Loans	2.5	0.3
MSRs	6.0	6.0
Other	33.2	1.2
Total assets measured at fair value on a recurring basis	625.7	19.2
Total assets measured at fair value on a nonrecurring basis	1.3	0.8
Total assets measured at fair value	$ 627.0	$ 20.0
Total Firm assets	$ 2,533.6	
Level 3 assets as a percentage of total Firm assets[a]		0.8%
Level 3 assets as a percentage of total Firm assets at fair value[a]		3.2%

(a) For purposes of the table above, the derivative receivables total reflects the impact of netting adjustments; however, the $6.0 billion of derivative receivables classified as level 3 does not reflect the netting adjustment as such netting is not relevant to a presentation based on the transparency of inputs to the valuation of an asset. The level 3 balances would be reduced if netting were applied, including the netting benefit associated with cash collateral.

Valuation

Details of the Firm's processes for determining fair value are set out in Note 2. Estimating fair value requires the application of judgment. The type and level of judgment required is largely dependent on the amount of observable market information available to the Firm. For instruments valued using internally developed valuation models and other valuation techniques that use significant unobservable inputs and are therefore classified within level 3 of the valuation hierarchy, judgments used to estimate fair value are more significant than those required when estimating the fair value of instruments classified within levels 1 and 2.

In arriving at an estimate of fair value for an instrument within level 3, management must first determine the appropriate valuation technique to use. Second, the lack of observability of certain significant inputs requires management to assess all relevant empirical data in deriving valuation inputs including, for example, transaction details, yield curves, interest rates, prepayment rates, default rates, volatilities, correlations, equity or debt prices, valuations of comparable instruments, foreign exchange rates and credit curves. For further discussion of the valuation of level 3 instruments, including unobservable inputs used, see Note 2.

For instruments classified in levels 2 and 3, management judgment must be applied to assess the appropriate level of valuation adjustments to reflect counterparty credit quality, the Firm's creditworthiness, market funding rates, liquidity considerations, unobservable parameters, and for portfolios that meet specified criteria, the size of the net open risk position. The judgments made are typically affected by the type of product and its specific contractual terms, and the level of liquidity for the product or within the market as a whole. For further discussion of valuation adjustments applied by the Firm see Note 2.

Imprecision in estimating unobservable market inputs or other factors can affect the amount of gain or loss recorded for a particular position. Furthermore, while the Firm believes its valuation methods are appropriate and consistent with those of other market participants, the methods and assumptions used reflect management judgment and may vary across the Firm's businesses and portfolios.

The Firm uses various methodologies and assumptions in the determination of fair value. The use of methodologies or assumptions different than those used by the Firm could result in a different estimate of fair value at the reporting date. For a detailed discussion of the Firm's valuation process and hierarchy, and its determination of fair value for individual financial instruments, see Note 2.

Goodwill impairment

Under U.S. GAAP, goodwill must be allocated to reporting units and tested for impairment at least annually. The Firm's process and methodology used to conduct goodwill impairment testing is described in Note 15.

Management applies significant judgment when estimating the fair value of its reporting units. Estimates of fair value are dependent upon estimates of the future earnings potential of the Firm's reporting units, long-term growth rates and the estimated market cost of equity. Imprecision in estimating these factors can affect the estimated fair value of the reporting units.

Based upon the updated valuations for all of its reporting units, the Firm concluded that the goodwill allocated to its reporting units was not impaired at December 31, 2017. The fair values of these reporting units exceeded their carrying values by approximately 15% or higher and did not indicate a significant risk of goodwill impairment based on current projections and valuations. Such valuations do not reflect the impact of the TCJA that was enacted in December 2017 as such impact would not alter the conclusion that goodwill is not impaired.

The projections for all of the Firm's reporting units are consistent with management's current short-term business outlook assumptions, and in the longer term, incorporate a set of macroeconomic assumptions and the Firm's best estimates of long-term growth and returns on equity of its businesses. Where possible, the Firm uses third-party and peer data to benchmark its assumptions and estimates.

Declines in business performance, increases in credit losses, increases in capital requirements, as well as deterioration in economic or market conditions, adverse estimates of regulatory or legislative changes or increases in the estimated market cost of equity, could cause the estimated fair values of the Firm's reporting units or their associated goodwill to decline in the future, which could result in a material impairment charge to earnings in a future period related to some portion of the associated goodwill.

For additional information on goodwill, see Note 15.

Credit card rewards liability

JPMorgan Chase offers credit cards with various reward programs which allow cardholders to earn reward points based on their account activity and the terms and conditions of the rewards program. Generally, there are no limits on the points that an eligible cardholder can earn, nor do they expire, and these points can be redeemed for a variety of rewards, including cash (predominantly in the form of account credits), gift cards and travel.

The Firm maintains a rewards liability which represents the estimated cost of reward points earned and expected to be redeemed by cardholders. The rewards liability is sensitive to various assumptions, including cost per point and redemption rates for each of the various reward programs, which are evaluated periodically. The liability is accrued as the cardholder earns the benefit and is reduced when the cardholder redeems points. This liability was $4.9 billion and $3.8 billion at December 31, 2017 and 2016, respectively, and is recorded in accounts payable and other liabilities on the Consolidated balance sheets.

Income taxes

JPMorgan Chase is subject to the income tax laws of the various jurisdictions in which it operates, including U.S. federal, state and local, and non-U.S. jurisdictions. These laws are often complex and may be subject to different interpretations. To determine the financial statement impact of accounting for income taxes, including the provision for income tax expense and unrecognized tax benefits, JPMorgan Chase must make assumptions and judgments about how to interpret and apply these complex tax laws to numerous transactions and business events, as well as make judgments regarding the timing of when certain items may affect taxable income in the U.S. and non-U.S. tax jurisdictions.

JPMorgan Chase's interpretations of tax laws around the world are subject to review and examination by the various taxing authorities in the jurisdictions where the Firm operates, and disputes may occur regarding its view on a tax position. These disputes over interpretations with the various taxing authorities may be settled by audit, administrative appeals or adjudication in the court systems of the tax jurisdictions in which the Firm operates. JPMorgan Chase regularly reviews whether it may be assessed additional income taxes as a result of the resolution of these matters, and the Firm records additional reserves as appropriate. In addition, the Firm may revise its estimate of income taxes due to changes in income tax laws, legal interpretations, and business strategies. It is possible that revisions in the Firm's estimate of income taxes may materially affect the Firm's results of operations in any reporting period.

The Firm's provision for income taxes is composed of current and deferred taxes. Deferred taxes arise from differences between assets and liabilities measured for financial reporting versus income tax return purposes. Deferred tax assets are recognized if, in management's judgment, their realizability is determined to be more likely than not. The Firm has also recognized deferred tax assets in connection with certain tax attributes, including NOLs. The Firm performs regular reviews to ascertain whether its deferred tax assets are realizable. These reviews include management's estimates and assumptions regarding future taxable income, which also incorporates various tax planning strategies, including strategies that may be available to utilize NOLs before they expire. In connection with these reviews, if it is determined that a deferred tax asset is not realizable, a valuation allowance is established. The valuation allowance may be reversed in a subsequent reporting period if the Firm determines that, based on revised estimates of future taxable income or changes in tax planning strategies, it is more likely than not that all or part of the deferred tax asset will become realizable. As of December 31, 2017, management has determined it is more likely than not that the Firm will realize its deferred tax assets, net of the existing valuation allowance.

Prior to December 31, 2017, U.S. federal income taxes had not been provided on the undistributed earnings of certain non-U.S. subsidiaries, to the extent that such earnings had been reinvested abroad for an indefinite period of time. The Firm will no longer maintain the indefinite reinvestment assertion on the undistributed earnings of those non-U.S. subsidiaries in light of the enactment of the TCJA. The U.S. federal and state and local income taxes associated with the undistributed and previously untaxed earnings of those non-U.S. subsidiaries was included in the deemed repatriation charge recorded as of December 31, 2017.

The Firm adjusts its unrecognized tax benefits as necessary when additional information becomes available. Uncertain tax positions that meet the more-likely-than-not recognition threshold are measured to determine the amount of benefit to recognize. An uncertain tax position is measured at the largest amount of benefit that management believes is more likely than not to be realized upon settlement. It is possible that the reassessment of JPMorgan Chase's unrecognized tax benefits may have a material impact on its effective income tax rate in the period in which the reassessment occurs.

The income tax expense for the current year includes a reasonable estimate recorded under SEC Staff Accounting Bulletin No. 118 resulting from the enactment of the TCJA.

For additional information on income taxes, see Note 24.

Litigation reserves

For a description of the significant estimates and judgments associated with establishing litigation reserves, see Note 29.

SEC Staff Accounting Bulletin adopted during 2017

Bulletin	Summary of guidance	Effects on financial statements
Application of U.S. GAAP related to the Tax Cuts and Jobs Act ("TCJA") (SEC Staff Accounting Bulletin No. 118) *Issued December 2017*	• Provides guidance on the accounting for income taxes in the context of the TCJA. • For impacts of the tax law changes that are reasonably estimable, requires the recognition of provisional amounts in year-end 2017 financial statements. • Provides a 1-year measurement period in which to refine previously recorded provisional amounts based on new information or interpretations.	• The TCJA resulted in a $2.4 billion decrease in net income driven by a deemed repatriation charge and adjustments to the value of the Firm's tax oriented investments, partially offset by a benefit from the revaluation of the Firm's net deferred tax liability. Certain of these amounts may be refined in accordance with SEC Staff Accounting Bulletin No. 118. • Refer to Note 24 for additional information related to the impacts of the TCJA.

FASB Standards issued but not adopted as of December 31, 2017

Standard	Summary of guidance	Effects on financial statements
Revenue recognition – revenue from contracts with customers *Issued May 2014*	• Requires that revenue from contracts with customers be recognized upon transfer of control of a good or service in the amount of consideration expected to be received. • Changes the accounting for certain contract costs, including whether they may be offset against revenue in the Consolidated statements of income, and requires additional disclosures about revenue and contract costs. • May be adopted using a full retrospective approach or a modified, cumulative effect approach wherein the guidance is applied only to existing contracts as of the date of initial application, and to new contracts transacted after that date.	• Adopted January 1, 2018. • The Firm adopted the revenue recognition guidance using the full retrospective method of adoption. • The adoption of the guidance did not result in any material changes in the timing of the Firm's revenue recognition, but will require gross presentation of certain costs currently offset against revenue. This change in presentation will be reflected in the first quarter of 2018 and will increase both noninterest revenue and noninterest expense for the Firm by $1.1 billion and $900 million for the years ended December 31, 2017 and 2016, respectively. The increase is predominantly associated with certain distribution costs in AWM (currently offset against Asset management, administration and commissions), with the remainder of the increase associated with certain underwriting costs in CIB (currently offset against Investment banking fees). • The Firm's Note 6 qualitative disclosures are consistent with the guidance.
Recognition and measurement of financial assets and financial liabilities *Issued January 2016*	• Requires that certain equity instruments be measured at fair value, with changes in fair value recognized in earnings. • Provides a measurement alternative for equity securities without readily determinable fair values to be measured at cost less impairment (if any), plus or minus observable price changes from an identical or similar investment of the same issuer. Any such price changes will be reflected in earnings beginning in the period of adoption. • Generally requires a cumulative-effect adjustment to retained earnings as of the beginning of the reporting period of adoption, except for those equity securities that are eligible for the measurement alternative.	• The Firm early adopted the provisions of this guidance related to presenting DVA in OCI for financial liabilities where the fair value option has been elected, effective January 1, 2016. The Firm adopted the portions of the guidance that were not eligible for early adoption on January 1, 2018. • Upon adoption, the Firm elected the measurement alternative for its equity securities that do not have readily determinable fair values, and the Firm did not record a cumulative-effect adjustment related to the adoption of this guidance.

FASB Standards issued but not adopted as of December 31, 2017 (continued)

Standard	Summary of guidance	Effects on financial statements
Classification of certain cash receipts and cash payments in the statement of cash flows *Issued August 2016*	• Provides targeted amendments to the classification of certain cash flows, including treatment of cash payments for settlement of zero-coupon debt instruments and distributions received from equity method investments. • Requires retrospective application to all periods presented.	• Adopted January 1, 2018. • No material impact upon adoption as the Firm was either in compliance with the amendments or the amounts to which it is applied are immaterial.
Treatment of restricted cash on the statement of cash flows *Issued November 2016*	• Requires inclusion of restricted cash in the cash and cash equivalents balances in the Consolidated statements of cash flows. • Requires additional disclosures to supplement the Consolidated statements of cash flows. • Requires retrospective application to all periods presented.	• Adopted January 1, 2018. • The adoption of the guidance will result in reclassification of restricted cash balances into Cash and restricted cash on the Consolidated statements of cash flows in the first quarter of 2018. The Firm will include Cash and due from banks and Deposits with banks in Cash and restricted cash in the Consolidated statements of cash flows, resulting in Deposits with banks no longer being reflected in Investing activities. • In addition, to align with the presentation of Cash and restricted cash on the Consolidated statements of cash flows, the Firm will reclassify restricted cash balances to Cash and due from banks and to Deposits with banks from Other assets and disclose the total for Cash and restricted cash on the Firm's Consolidated balance sheets in the first quarter of 2018.
Definition of a business *Issued January 2017*	• Narrows the definition of a business and clarifies that, to be considered a business, the fair value of the gross assets acquired (or disposed of) may not be substantially all concentrated in a single identifiable asset or a group of similar assets. • In addition, in order to be considered a business, a set of activities and assets must include, at a minimum, an input and a substantive process that together significantly contribute to the ability to create outputs.	• Adopted January 1, 2018. • No impact upon adoption because the guidance is to be applied prospectively. Subsequent to adoption, fewer transactions will be treated as acquisitions or dispositions of a business.
Presentation of net periodic pension cost and net periodic postretirement benefit cost *Issued March 2017*	• Requires the service cost component of net periodic pension and postretirement benefit cost to be reported separately in the consolidated results of operations from the other components (e.g., expected return on assets, interest costs, amortization of gains/losses and prior service costs). • Requires retrospective application and presentation in the consolidated results of operations of the service cost component in the same line item as other employee compensation costs and presentation of the other components in a different line item from the service cost component.	• Adopted January 1, 2018. • The adoption of the guidance in the first quarter of 2018 will result in an increase in compensation expense and a reduction in other expense of $223 million and $250 million for the years ended December 31, 2017 and 2016, respectively.
Premium amortization on purchased callable debt securities *Issued March 2017*	• Requires amortization of premiums to the earliest call date on debt securities with call features that are explicit, noncontingent and callable at fixed prices and on preset dates. • Does not impact securities held at a discount; the discount continues to be amortized to the contractual maturity. • Requires adoption on a modified retrospective basis through a cumulative-effect adjustment directly to retained earnings as of the beginning of the period of adoption.	• The Firm early adopted the new guidance on January 1, 2018. • The new guidance primarily impacts obligations of U.S. states and municipalities held in the Firm's investment securities portfolio. • The adoption of this guidance resulted in a cumulative-effect adjustment that reduced retained earnings by approximately $505 million as of January 1, 2018, with a corresponding increase of $261 million (after tax) in AOCI and related adjustments to securities and tax liabilities. • Subsequent to adoption, although the guidance will reduce the interest income recognized prior to the earliest call date for callable debt securities held at a premium, the effect of this guidance on the Firm's net interest income is not expected to be material.

FASB Standards issued but not adopted as of December 31, 2017 (continued)

Standard	Summary of guidance	Effects on financial statements
Hedge accounting *Issued August 2017*	• Reduces earnings volatility by better aligning the accounting with the economics of the risk management activities. • Expands the ability for certain hedges of interest rate risk to qualify for hedge accounting. • Allows recognition of ineffectiveness in cash flow hedges and net investment hedges in OCI. • Allows a one-time election at adoption to transfer certain securities classified as held-to-maturity to available-for-sale. • Simplifies hedge documentation requirements.	• The Firm early adopted the new guidance on January 1, 2018. • The adoption of the guidance resulted in a cumulative-effect adjustment that increased retained earnings in the amount of $34 million, with related adjustments to debt carrying values and AOCI. • The Firm will also amend its qualitative and quantitative disclosures within its derivative instruments note to the Consolidated Financial Statements in the first quarter of 2018. • In accordance with the new guidance, the Firm elected to transfer certain securities from HTM to AFS. The amendments provide the Firm with additional hedge accounting alternatives for its AFS securities (including those transferred under the election) to be considered as the Firm manages it structural interest rate risk and regulatory capital. The Firm is currently evaluating those risk management alternatives and intends to manage the transferred securities in a manner consistent with its existing AFS securities. This transfer is a non-cash transaction at fair value.
Reclassification of Certain Tax Effects from AOCI *Issued February 2018*	• Provides an election to reclassify from AOCI to retained earnings stranded tax effects due to the revaluation of deferred tax assets and liabilities as a result of changes in applicable tax rates under the TCJA. • Requires additional disclosures related to the Firm's election to reclassify amounts from AOCI to retained earnings and the Firm's policy for releasing income tax effects from AOCI. • The guidance may be applied on a modified retrospective basis through a cumulative-effect adjustment directly to retained earnings as of the beginning of the period of adoption.	• The Firm early adopted the new guidance on January 1, 2018. • The adoption of the guidance resulted in a cumulative-effect adjustment that increased retained earnings in the amount of $288 million in the first quarter of 2018. This amount is an estimate that may be refined in accordance with SEC Staff Accounting Bulletin No. 118, and represents the removal of the stranded tax effects from AOCI, thereby allowing the tax effects within AOCI to reflect the new respective corporate income tax rates. • Refer to Note 24 for additional information related to the impacts of the TCJA.
Leases *Issued February 2016*	• Requires lessees to recognize all leases longer than twelve months on the Consolidated balance sheets as lease liabilities with corresponding right-of-use assets. • Requires lessees and lessors to classify most leases using principles similar to existing lease accounting, but eliminates the "bright line" classification tests. • Permits the Firm to generally account for its existing leases consistent with current guidance, except for the incremental balance sheet recognition. • Expands qualitative and quantitative disclosures regarding leasing arrangements. • May be adopted using a modified cumulative effect approach wherein the guidance is applied only to existing contracts as of the date of initial application, and to new contracts transacted after that date.	• Required effective date: January 1, 2019.[a] • The Firm is in the process of its implementation which has included an initial evaluation of its leasing contracts and activities. As a lessee, the Firm is developing its methodology to estimate the right-of-use assets and lease liabilities, which is based on the present value of lease payments. The Firm expects to recognize lease liabilities and corresponding right-of-use assets (at their present value) related to predominantly all of the $10 billion of future minimum payments required under operating leases as disclosed in Note 28. However, the population of contracts subject to balance sheet recognition and their initial measurement remains under evaluation. The Firm does not expect material changes to the recognition of operating lease expense in its Consolidated statements of income. • The Firm plans to adopt the new guidance in the first quarter of 2019.

FASB Standards issued but not adopted as of December 31, 2017 (continued)

<table>
<tr><th>Standard</th><th>Summary of guidance</th><th>Effects on financial statements</th></tr>
<tr><td>Financial instruments – credit losses

Issued June 2016</td><td>• Replaces existing incurred loss impairment guidance and establishes a single allowance framework for financial assets carried at amortized cost (including HTM securities), which will reflect management's estimate of credit losses over the full remaining expected life of the financial assets.
• Eliminates existing guidance for PCI loans, and requires recognition of an allowance for expected credit losses on financial assets purchased with more than insignificant credit deterioration since origination.
• Amends existing impairment guidance for AFS securities to incorporate an allowance, which will allow for reversals of impairment losses in the event that the credit of an issuer improves.
• Requires a cumulative-effect adjustment to retained earnings as of the beginning of the reporting period of adoption.</td><td>• Required effective date: January 1, 2020.[a]
• The Firm has begun its implementation efforts by establishing a Firmwide, cross-discipline governance structure. The Firm is currently identifying key interpretive issues, and is assessing existing credit loss forecasting models and processes against the new guidance to determine what modifications may be required.
• The Firm expects that the new guidance will result in an increase in its allowance for credit losses due to several factors, including:
1. The allowance related to the Firm's loans and commitments will increase to cover credit losses over the full remaining expected life of the portfolio, and will consider expected future changes in macroeconomic conditions
2. The nonaccretable difference on PCI loans will be recognized as an allowance, offset by an increase in the carrying value of the related loans
3. An allowance will be established for estimated credit losses on HTM securities
• The extent of the increase is under evaluation, but will depend upon the nature and characteristics of the Firm's portfolio at the adoption date, and the macroeconomic conditions and forecasts at that date.</td></tr>
<tr><td>Goodwill

Issued January 2017</td><td>• Requires an impairment loss to be recognized when the estimated fair value of a reporting unit falls below its carrying value.
• Eliminates the second condition in the current guidance that requires an impairment loss to be recognized only if the estimated implied fair value of the goodwill is below its carrying value.</td><td>• Required effective date: January 1, 2020.[a]
• Based on current impairment test results, the Firm does not expect a material effect on the Consolidated Financial Statements.
• After adoption, the guidance may result in more frequent goodwill impairment losses due to the removal of the second condition.
• The Firm is evaluating the timing of adoption.</td></tr>
</table>

(a) Early adoption is permitted.

FORWARD-LOOKING STATEMENTS

From time to time, the Firm has made and will make forward-looking statements. 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 “anticipate,” “target,” “expect,” “estimate,” “intend,” “plan,” “goal,” “believe,” or other words of similar meaning. Forward-looking statements provide JPMorgan Chase’s current expectations or forecasts of future events, circumstances, results or aspirations. JPMorgan Chase’s disclosures in this Annual Report contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. The Firm also may make forward-looking statements in its other documents filed or furnished with the SEC. In addition, the Firm’s senior management may make forward-looking statements orally to investors, analysts, representatives of the media and others.

All forward-looking statements are, by their nature, subject to risks and uncertainties, many of which are beyond the Firm’s control. JPMorgan Chase’s actual future results may differ materially from those set forth in its forward-looking statements. While there is no assurance that any list of risks and uncertainties or risk factors is complete, below are certain factors which could cause actual results to differ from those in the forward-looking statements:

- Local, regional and global business, economic and political conditions and geopolitical events;
- Changes in laws and regulatory requirements, including capital and liquidity requirements affecting the Firm’s businesses, and the ability of the Firm to address those requirements;
- Heightened regulatory and governmental oversight and scrutiny of JPMorgan Chase’s business practices, including dealings with retail customers;
- Changes in trade, monetary and fiscal policies and laws;
- Changes in income tax laws and regulations;
- Securities and capital markets behavior, including changes in market liquidity and volatility;
- Changes in investor sentiment or consumer spending or savings behavior;
- Ability of the Firm to manage effectively its capital and liquidity, including approval of its capital plans by banking regulators;
- Changes in credit ratings assigned to the Firm or its subsidiaries;
- Damage to the Firm’s reputation;
- Ability of the Firm to deal effectively with an economic slowdown or other economic or market disruption;
- Technology changes instituted by the Firm, its counterparties or competitors;
- The success of the Firm’s business simplification initiatives and the effectiveness of its control agenda;
- Ability of the Firm to develop new products and services, and the extent to which products or services previously sold by the Firm (including but not limited to mortgages and asset-backed securities) require the Firm to incur liabilities or absorb losses not contemplated at their initiation or origination;
- Acceptance of the Firm’s new and existing products and services by the marketplace and the ability of the Firm to innovate and to increase market share;
- Ability of the Firm to attract and retain qualified employees;
- Ability of the Firm to control expenses;
- Competitive pressures;
- Changes in the credit quality of the Firm’s customers and counterparties;
- Adequacy of the Firm’s risk management framework, disclosure controls and procedures and internal control over financial reporting;
- Adverse judicial or regulatory proceedings;
- Changes in applicable accounting policies, including the introduction of new accounting standards;
- Ability of the Firm to determine accurate values of certain assets and liabilities;
- Occurrence of natural or man-made disasters or calamities or conflicts and the Firm’s ability to deal effectively with disruptions caused by the foregoing;
- Ability of the Firm to maintain the security of its financial, accounting, technology, data processing and other operational systems and facilities;
- Ability of the Firm to withstand disruptions that may be caused by any failure of its operational systems or those of third parties;
- Ability of the Firm to effectively defend itself against cyberattacks and other attempts by unauthorized parties to access information of the Firm or its customers or to disrupt the Firm’s systems; and
- The other risks and uncertainties detailed in Part I, Item 1A: Risk Factors in the Firm’s Annual Report on Form 10-K for the year ended December 31, 2017.

Any forward-looking statements made by or on behalf of the Firm speak only as of the date they are made, and JPMorgan Chase does not undertake to update forward-looking statements. The reader should, however, consult any further disclosures of a forward-looking nature the Firm may make in any subsequent Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, or Current Reports on Form 8-K.