PNC FINANCIAL SERVICES GROUP, INC.
Form 10-K
March 01, 2019
UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549
FORM 10-K
Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934
For the fiscal year ended December 31, 2018
Commission file number 001-09718
THE PNC FINANCIAL SERVICES GROUP, INC.
(Exact name of registrant as specified in its charter)

Pennsylvania	25-1435979
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

The Tower at PNC Plaza
300 Fifth Avenue
Pittsburgh, Pennsylvania 15222-2401
(Address of principal executive offices, including zip code)
Registrant's telephone number, including area code - (888) 762-2265
Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on Which Registered
Common Stock, par value $5.00	New York Stock Exchange
Depositary Shares Each Representing a 1/4,000 Interest in a Share of Fixed-to-Floating Rate Non-Cumulative Perpetual Preferred Stock, Series P	New York Stock Exchange
Depositary Shares Each Representing a 1/4,000 Interest in a Share of 5.375% Non-Cumulative Perpetual Preferred Stock, Series Q	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act:
$1.80 Cumulative Convertible Preferred Stock - Series B, par value $1.00
Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.
Yes X No
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No X
Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes X No
Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes X No
Indicate by check mark if the disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. X
Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer", "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer X	Accelerated filer
Non-accelerated filer	Smaller reporting company
	Emerging growth company

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

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

The aggregate market value of the registrant's outstanding voting common stock held by nonaffiliates on June 30, 2018, determined using the per share closing price on that date on the New York Stock Exchange of $135.10, was approximately $62.7 billion. There is no non-voting common equity of the registrant outstanding.

Number of shares of registrant's common stock outstanding at February 8, 2019: 453,612,522

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive Proxy Statement of The PNC Financial Services Group, Inc. to be filed pursuant to Regulation 14A for the 2019 annual meeting of shareholders (Proxy Statement) are incorporated by reference into Part III of this Form 10-K.

THE PNC FINANCIAL SERVICES GROUP, INC.
Cross-Reference Index to 2018 Form 10-K
TABLE OF CONTENTS

		Page
PART I		
Item 1	Business.	1
Item 1A	Risk Factors.	14
Item 1B	Unresolved Staff Comments.	27
Item 2	Properties.	27
Item 3	Legal Proceedings.	27
Item 4	Mine Safety Disclosures.	27
Executive Officers of the Registrant		27
PART II		
Item 5	Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.	29
	Common Stock Performance Graph	30
Item 6	Selected Financial Data.	31
Item 7	Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A).	33
	Executive Summary	33
	Consolidated Income Statement Review	35
	Consolidated Balance Sheet Review	39
	Business Segments Review	42
	2017 Versus 2016	51
	Risk Management	53
	Critical Accounting Estimates and Judgments	75
	Off-Balance Sheet Arrangements and Variable Interest Entities	78
	Glossary of Terms	78
	Cautionary Statement Regarding Forward-Looking Information	81
Item 7A	Quantitative and Qualitative Disclosures about Market Risk.	82
Item 8	Financial Statements and Supplementary Data.	83
	Report of Independent Registered Public Accounting Firm	83
	Consolidated Income Statement	84

Consolidated Statement of Comprehensive Income 85

Consolidated Balance Sheet 86

Consolidated Statement of Changes in Equity 87

Consolidated Statement of Cash Flows 88

Notes To Consolidated Financial Statements 90

Note 1 Accounting Policies 90
Note 2 Loan Sale and Servicing Activities and Variable Interest Entities 101
Note 3 Asset Quality 104
Note 4 Allowance for Loan and Lease Losses 111
Note 5 Investment Securities 112

THE PNC FINANCIAL SERVICES GROUP, INC.
Cross-Reference Index to 2018 Form 10-K (continued)
TABLE OF CONTENTS (Continued)

		Page
Item 8	Financial Statements and Supplementary Data. (continued)	
	Note 6 Fair Value	115
	Note 7 Goodwill and Mortgage Servicing Rights	127
	Note 8 Premises, Equipment and Leasehold Improvements	129
	Note 9 Time Deposits	130
	Note 10 Borrowed Funds	130
	Note 11 Employee Benefit Plans	131
	Note 12 Stock Based Compensation Plans	136
	Note 13 Financial Derivatives	137
	Note 14 Earnings Per Share	143
	Note 15 Equity	144
	Note 16 Other Comprehensive Income	146
	Note 17 Income Taxes	147
	Note 18 Regulatory Matters	149
	Note 19 Legal Proceedings	150
	Note 20 Commitments	155
	Note 21 Parent Company	156
	Note 22 Segment Reporting	157
	Note 23 Fee-based Revenue from Contracts with Customers	160
	Note 24 Subsequent Events	162
	Statistical Information (Unaudited)	162
Item 9	Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.	168
Item 9A	Controls and Procedures.	169
Item 9B	Other Information.	169
PART III		
Item 10	Directors, Executive Officers and Corporate Governance.	169
Item 11	Executive Compensation.	170
Item 12	Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.	170
Item 13	Certain Relationships and Related Transactions, and Director Independence.	170
Item 14	Principal Accounting Fees and Services.	171
PART IV		
Item 15	Exhibits, Financial Statement Schedules.	171

Item 16 Form 10-K Summary	177
SIGNATURES	177

THE PNC FINANCIAL SERVICES GROUP, INC.
Cross-Reference Index to 2018 Form 10-K (continued)

MD&A TABLE REFERENCE

Table	Description	Page
1	Summarized Average Balances and Net Interest Income	36
2	Noninterest Income	37
3	Noninterest Expense	38
4	Summarized Balance Sheet Data	39
5	Loans	39
6	Investment Securities	40
7	Weighted-Average Expected Maturities of Mortgage and Asset-Backed Debt Securities	41
8	Details of Funding Sources	41
9	Retail Banking Table	43
10	Corporate & Institutional Banking Table	46
11	Asset Management Group Table	49
12	BlackRock Table	50
13	Details of Loans	57
14	Commercial Loans by Industry	57
15	Commercial Real Estate Loans by Geography and Property Type	58
16	Home Equity Loans by Geography and by Lien Priority	59
17	Residential Real Estate Loans by Geography	59
18	Nonperforming Assets by Type	60
19	Change in Nonperforming Assets	61
20	Accruing Loans Past Due	61
21	Summary of Troubled Debt Restructurings	62
22	Allowance for Loan and Lease Losses	64
23	Loan Charge-Offs and Recoveries	64
24	Senior and Subordinated Debt	65
25	Contractual Obligations	67
26	Other Commitments	67
27	Credit Ratings for PNC and PNC Bank	68
28	Basel III Capital	69
29	Interest Sensitivity Analysis	71
30	Net Interest Income Sensitivity to Alternative Rate Scenarios	71
31	Alternate Interest Rate Scenarios: One Year Forward	71
32	Equity Investments Summary	72
33	Fair Value Measurements – Summary	75

THE PNC FINANCIAL SERVICES GROUP, INC.
Cross-Reference Index to 2018 Form 10-K (continued)

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS TABLE REFERENCE

Table	Description	Page
34	Cash Flows Associated with Loan Sale and Servicing Activities	102
35	Principal Balance, Delinquent Loans and Net Charge-offs Related to Serviced Loans For Others	102
36	Non-Consolidated VIEs	103
37	Analysis of Loan Portfolio	105
38	Nonperforming Assets	106
39	Commercial Lending Asset Quality Indicators	107
40	Asset Quality Indicators for Home Equity and Residential Real Estate Loans	108
41	Asset Quality Indicators for Automobile, Credit Card, Education and Other Consumer Loans	109
42	Financial Impact and TDRs by Concession Type	110
43	Impaired Loans	110
44	Rollforward of Allowance for Loan and Lease Losses and Associated Loan Data	111
45	Investment Securities Summary	112
46	Gross Unrealized Loss and Fair Value of Debt Securities	113
47	Gains (Losses) on Sales of Securities Available for Sale	114
48	Contractual Maturity of Debt Securities	114
49	Fair Value of Securities Pledged and Accepted as Collateral	114
50	Fair Value Measurements – Recurring Basis Summary	119
51	Reconciliation of Level 3 Assets and Liabilities	120
52	Fair Value Measurements – Recurring Quantitative Information	122
53	Fair Value Measurements – Nonrecurring	124
54	Fair Value Option – Fair Value and Principal Balances	124
55	Fair Value Option – Changes in Fair Value	125
56	Additional Fair Value Information Related to Other Financial Instruments	126
57	Goodwill by Business Segment	127
58	Commercial Mortgage Servicing Rights	127
59	Residential Mortgage Servicing Rights	128
60	Commercial Mortgage Servicing Rights – Key Valuation Assumptions	128
61	Residential Mortgage Servicing Rights – Key Valuation Assumptions	129
62	Premises, Equipment and Leasehold Improvements	129
63	Depreciation and Amortization Expense	129
64	Minimum Annual Lease Rentals	129
65	Time Deposits	130
66	Borrowed Funds	130

THE PNC FINANCIAL SERVICES GROUP, INC.
Cross-Reference Index to 2018 Form 10-K (continued)
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS TABLE REFERENCE (Continued)

Table	Description	Page
67	FHLB Borrowings, Senior Debt and Subordinated Debt	130
68	Reconciliation of Changes in Projected Benefit Obligation and Change in Plan Assets	132
69	Asset Strategy Allocations	133
70	Pension Plan Assets - Fair Value Hierarchy	134
71	Estimated Cash Flows	135
72	Components of Net Periodic Benefit Cost	135
73	Net Period Costs - Assumptions	135
74	Other Pension Assumptions	136
75	Nonvested Incentive/Performance Unit Awards and Restricted Share/Restricted Share Unit Awards - Rollforward	137
76	Total Gross Derivatives	138
77	Gains (Losses) Recognized on Fair Value and Cash Flow Hedges in the Consolidated Income Statement	140
78	Hedged Items - Fair Value Hedges	140
79	Gains (Losses) on Derivatives Not Designated for Hedging under GAAP	141
80	Derivative Assets and Liabilities Offsetting	142
81	Basic and Diluted Earnings Per Common Share	143
82	Preferred Stock - Authorized, Issued and Outstanding	144
83	Terms of Outstanding Preferred Stock	144
84	Dividends Per Share	145
85	Other Comprehensive Income (Loss)	146
86	Accumulated Other Comprehensive Income (Loss) Components	147
87	Components of Income Tax Expense	147
88	Deferred Tax Assets and Liabilities	147
89	Reconciliation of Statutory and Effective Tax Rates	148
90	Net Operating Loss Carryforwards	148
91	Change in Unrecognized Tax Benefits	148
92	IRS Tax Examination Status	149
93	Basel Regulatory Capital	149
94	Commitments to Extend Credit and Other Commitments	155
95	Parent Company - Income Statement	156
96	Parent Company - Balance Sheet	156
97	Parent Company - Interest Paid and Income Tax Refunds (Payments)	157
98	Parent Company - Statement of Cash Flows	157
99	Results of Businesses	159
100	Retail Banking Noninterest Income Disaggregation	160
101	Corporate & Institutional Banking Noninterest Income Disaggregation	161
102	Asset Management Group Noninterest Income Disaggregation	161

PART I

Forward-Looking Statements: From time to time, The PNC Financial Services Group, Inc. has made and may continue to make written or oral forward-looking statements regarding our outlook for earnings, revenues, expenses, capital and liquidity levels and ratios, asset levels, asset quality, financial position and other matters regarding or affecting us and our future business and operations or the impact of legal, regulatory or supervisory matters on our business operations or performance. This Annual Report on Form 10-K (the Report or Form 10-K) also includes forward-looking statements. With respect to all such forward-looking statements, you should review our Risk Factors discussion in Item 1A, our Risk Management, Critical Accounting Estimates and Judgments, and Cautionary Statement Regarding Forward-Looking Information sections included in Item 7, and Note 19 Legal Proceedings in the Notes To Consolidated Financial Statements included in Item 8 of this Report. See page 78 for a glossary of certain terms used in this Report. In this Report, "PNC", "we", "us", "the Company" or "the Corporation" refers to The PNC Financial Services Group, Inc. and its subsidiaries on a consolidated basis (except when referring to PNC as a public company, its common stock or other securities issued by PNC, which just refer to The PNC Financial Services Group, Inc.). References to The PNC Financial Services Group, Inc. or to any of its subsidiaries are specifically made where applicable.

ITEM 1 – BUSINESS

Business Overview

Headquartered in Pittsburgh, Pennsylvania, we are one of the largest diversified financial services companies in the United States. We have businesses engaged in retail banking, including residential mortgage, corporate and institutional banking and asset management, providing many of our products and services nationally. Our retail branch network is located in markets across the Mid-Atlantic, Midwest and Southeast. We also have strategic international offices in four countries outside the U.S. At December 31, 2018, our consolidated total assets, total deposits and total shareholders’ equity were $382.3 billion, $267.8 billion and $47.7 billion, respectively.

We were incorporated under the laws of the Commonwealth of Pennsylvania in 1983 with the consolidation of Pittsburgh National Corporation and Provident National Corporation. Since 1983, we have diversified our geographical presence, business mix and product capabilities through internal growth, strategic bank and non-bank acquisitions and equity investments, and the formation of various non-banking subsidiaries.

Subsidiaries

Our corporate legal structure at December 31, 2018 consisted of one domestic subsidiary bank, including its subsidiaries, and 35 active non-bank subsidiaries, in addition to various affordable housing investments. Our bank subsidiary is PNC Bank, National Association (PNC Bank), a national bank headquartered in Pittsburgh, Pennsylvania. For additional information on our subsidiaries, see Exhibit 21 to this Report.

Statistical Disclosure By Bank Holding Companies

The following statistical information is included on the indicated pages of this Report and is incorporated herein by reference:

	Form 10-K page
Average Consolidated Balance Sheet And Net Interest Analysis	163
Analysis Of Year-To-Year Changes In Net Interest Income	164
Book Values Of Securities	40 and 112-114
Maturities And Weighted-Average Yield Of Securities	41 and 114
Loan Types	39-40, 57, 105-106 and 165
Selected Loan Maturities And Interest Sensitivity	166
Nonaccrual, Past Due And Restructured Loans And Other Nonperforming Assets	56-64, 93-96, 104-110 and 166

Potential Problem Loans	56-64
Summary Of Loan Loss Experience	62-64, 111 and 167
Allocation Of Allowance For Loan And Lease Losses	62-64 and 167
Average Amount And Average Rate Paid On Deposits	163
Time Deposits Of $100,000 Or More	168
Selected Consolidated Financial Data	31-32
Short-term Borrowings – not included as average balances during 2018, 2017 and 2016 were less than 30% of total shareholders' equity at the end of each period.	

Supervision and Regulation

The PNC Financial Services Group, Inc. is a bank holding company (BHC) registered under the Bank Holding Company Act of 1956 (BHC Act) and a financial holding company under the Gramm-Leach-Bliley Act (GLB Act).

We are subject to numerous governmental regulations, some of which are highlighted below. See Note 18 Regulatory Matters in the Notes To Consolidated Financial Statements in Item 8 of this Report for additional information regarding our regulatory matters. Applicable laws and regulations restrict our permissible activities and investments, impose conditions and requirements on the products and services we offer and the manner in which they are offered and sold, and require compliance with protections for loan, deposit, brokerage, fiduciary, investment management and other customers, among other things. They also restrict our ability to repurchase stock or pay dividends, or to receive dividends from our bank subsidiary, and impose capital adequacy and liquidity requirements. The consequences of noncompliance with these, or other applicable laws or regulations, can include substantial monetary and nonmonetary sanctions.

In addition, we are subject to comprehensive supervision and periodic examination by, among other regulatory bodies, the Board of Governors of the Federal Reserve System (Federal Reserve) and the Office of the Comptroller of the Currency (OCC). These examinations consider not only compliance with applicable laws, regulations and supervisory policies of the agency, but also capital levels, asset quality, risk management effectiveness, the ability and performance of management and the board of directors, the effectiveness of internal controls, earnings, liquidity and various other factors.

The results of examination activity by any of our federal bank regulators potentially can result in the imposition of significant limitations on our activities and growth. These regulatory agencies generally have broad discretion to impose restrictions and limitations on the operations of a regulated entity and take enforcement action, including the imposition of substantial monetary penalties and nonmonetary requirements, against a regulated entity where the relevant agency determines, among other things, that the operations of the regulated entity or any of its subsidiaries fail to comply with applicable law or regulations, are conducted in an unsafe or unsound manner, or represent an unfair or deceptive act or practice. This supervisory framework, including the examination reports and supervisory ratings (which are not publicly available) of the agencies, could materially impact the conduct, growth and profitability of our operations.

The Consumer Financial Protection Bureau (CFPB) is responsible for examining PNC Bank and its affiliates (including PNC) for compliance with most federal consumer financial protection laws, including the laws relating to fair lending and prohibiting unfair, deceptive or abusive acts or practices in connection with the offer, sale or provision of consumer financial products or services, and for enforcing such laws with respect to PNC Bank and its affiliates. The results of the CFPB's examinations (which are not publicly available) also can result in restrictions or limitations on the operations of a regulated entity as well as enforcement actions against a regulated entity, including the imposition of substantial monetary penalties and nonmonetary requirements.

We also are subject to regulation by the Securities and Exchange Commission (SEC) by virtue of our status as a public company and by the SEC and the Commodity Futures Trading Commission (CFTC) due to the nature of some of our businesses. Our businesses with operations outside the United States also are subject to regulation by appropriate authorities in the foreign jurisdictions in which they do business.

As a regulated financial services firm, our relationships and good standing with regulators are of fundamental importance to the operation and growth of our businesses. The Federal Reserve, OCC, CFPB, SEC, CFTC and other domestic and foreign regulators have broad enforcement powers, and certain of the regulators have the power to approve, deny, or refuse to act upon our applications or notices to conduct new activities, acquire or divest businesses, assets or deposits, expand our operations geographically, or reconfigure existing operations.

Among the areas that have been receiving a high level of regulatory focus are compliance with the Bank Secrecy Act and anti-money laundering laws, capital and liquidity management, fair lending and other consumer protection laws and regulations, including those governing retail sales practices, fee disclosures, unfair, deceptive or abusive acts or practices, collection practices, and protections for military service members and individuals in bankruptcy, cyber security, capital planning and stress testing, the oversight of arrangements with third-party vendors and suppliers, the protection of confidential customer information, and the structure and effectiveness of enterprise risk management frameworks.

New legislation, changes in rules promulgated by federal financial regulators, other federal and state regulatory authorities and self-regulatory organizations, or changes in the interpretation or enforcement of existing laws and rules, may directly affect the operations and profitability of our businesses. We anticipate new legislative and regulatory initiatives over the next several years, focused specifically on banking and other financial services in which we are engaged. Legislative and regulatory developments to date, as well as those that come in the future, have had and are likely to continue to have an impact on the conduct of our business. The more detailed description of the significant regulations to which we are subject included in this Report is based on current laws and

regulations and is subject to potentially material change. See also the additional information included as Risk Factors in Item 1A of this Report discussing the impact of financial regulatory initiatives on the regulatory environment for us and the financial services industry.

The profitability of our businesses could also be affected by rules and regulations that impact the business and financial sectors in general, including changes to the laws governing taxation, antitrust regulation, electronic commerce, data security and privacy.

There are numerous rules governing the regulation of financial services institutions and their holding companies. Accordingly, the following discussion is general in nature and does not purport to be complete or to describe all of the laws, regulations and supervisory policies that apply to us. To a substantial extent, the purpose of the regulation and supervision of financial services institutions and their holding companies is not to protect our shareholders and our non-customer creditors, but rather to protect our customers (including depositors) and the financial markets and financial system in general.

Banking Regulation and Supervision

Regulatory Capital Requirements, Stress Testing and Capital Planning. PNC and PNC Bank are subject to the regulatory capital requirements established by the Federal Reserve and the OCC, respectively. The foundation of the agencies' regulatory capital rules is the international regulatory capital framework developed by the Basel Committee on Banking Supervision (Basel Committee), the international body responsible for developing global regulatory standards for banking organizations for consideration and adoption by national jurisdictions. The regulatory capital rules establish minimum requirements for the ratio of a banking organization's regulatory capital to its risk-weighted assets, referred to as risk-based capital requirements, as well as for the ratio of its regulatory capital to measures of assets and other exposures, referred to as leverage capital requirements. The agencies' regulatory capital rules have undergone significant change since 2013, when the agencies adopted final rules to implement the Basel Committee's international regulatory capital framework, known as "Basel III", as well as certain provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank). Certain provisions (described below) of these rules currently apply only to banking organizations that have $250 billion or more in total consolidated assets (such as PNC and PNC Bank) or that have $10 billion or more in on-balance sheet foreign exposure (referred to as advanced approaches banking organizations).

In 2018, the Federal Reserve, OCC and Federal Deposit Insurance Corporation (FDIC) requested comment on a set of proposed rules that would better tailor the application of the agencies' capital (including stress testing) and liquidity rules, and the Federal Reserve's enhanced prudential standards (EPS) adopted under Section 165 of Dodd-Frank, to banking organizations with $100 billion or more in consolidated total assets based on the risk profile and asset size of the organization (the Tailoring Proposals). The Tailoring Proposals would classify all bank holding companies (BHCs) with $100 billion or more in total assets into one of four categories (Category I, Category II, Category III and Category IV), with the most stringent capital, liquidity and EPS requirements applying to Category I firms and the least restrictive requirements applying to Category IV firms. The classification of any bank subsidiary of a BHC would generally follow that of its parent BHC. PNC and PNC Bank would be Category III firms under the Tailoring Proposals because PNC (i) has more than $250 billion in consolidated total assets, (ii) is not designated as a globally systemically important bank (GSIB), and (iii) has less than $75 billion in cross-jurisdictional activity (as defined by the proposals). The public comment period on the Tailoring Proposals closed on January 22, 2019. As described below, the Tailoring Proposals, if adopted in the form proposed, would make several important changes to the capital, liquidity and enhanced prudential standards requirements applicable to PNC and PNC Bank. However, it is unclear when, or if, the agencies may finalize the Tailoring Proposals or when the provisions of the Tailoring Proposals (if adopted in final) might become effective. In addition, any final tailoring rules adopted by the agencies could differ, perhaps materially, from the proposals issued for comment.

The regulatory capital rules generally divide regulatory capital into three components: common equity tier 1 (CET1) capital, additional Tier 1 capital (which, together with CET1 capital, comprises Tier 1 capital) and Tier 2 capital. CET1 capital is generally common stock, retained earnings, qualifying minority interest and, for PNC and PNC Bank as advanced approaches banking organizations, accumulated other comprehensive income (AOCI) related to both available for sale securities and pension and other post-retirement plans, less the deductions required to be made from CET1 capital. The Tailoring Proposals would allow PNC and PNC Bank to elect to exclude AOCI related to both available for sale securities and pension and other post-retirement plans from CET1 capital. Additional Tier 1 capital generally includes, among other things, perpetual preferred stock and qualifying minority interests, less the deductions required to be made from additional Tier 1 capital. Tier 2 capital generally comprises qualifying subordinated debt, less any required deductions from Tier 2 capital. There are significant limits on the extent to which minority interests in consolidated subsidiaries may be included in regulatory capital.

Total capital is the sum of Tier 1 capital and Tier 2 capital, less the deductions required from Total capital. Under the current regulatory capital rules, PNC and PNC Bank must deduct significant common stock investments in unconsolidated financial institutions, as well as mortgage servicing rights and deferred tax assets, from CET1 capital (in each case, net of associated deferred tax liabilities) to the extent such items individually exceed 10%, or in the aggregate exceed 15%, of the institution's adjusted CET1 capital. Under the Tailoring Proposals, PNC and PNC Bank would have to deduct each of the amounts for significant common stock investments in unconsolidated financial institutions, mortgage servicing rights and deferred tax assets from CET1 capital (in each

case, net of associated deferred tax liabilities) to the extent such items individually exceed 25% of the institution's adjusted CET1 capital. PNC's common stock investment in BlackRock is treated as a significant common stock investment in an unconsolidated financial institution for these purposes. As of December 31, 2018, a portion of PNC’s common stock investment in BlackRock was deducted from CET1 capital. If the Tailoring Proposals had been in effect as of December 31, 2018, no portion of PNC’s common stock investment in BlackRock would have been deducted from CET1 capital.

In 2018, the banking agencies jointly adopted a final rule that permits banking organizations to elect to phase-in, on a straight-line basis over a three-year period, the day-one regulatory capital effects of implementing the Financial Accounting Standards Board’s (FASB) Accounting Standards Update (ASU) 2016-13 Financial Instruments - Credit Losses (Topic 326), commonly referred to as the Current Expected Credit Losses (CECL) standard. PNC expects to implement the CECL standard effective January 1, 2020. The final rule also generally replaces references to the allowance for loan and lease losses (ALLL) in the regulatory capital and certain other rules of the agencies with references to the allowance for credit losses (ACL) for institutions that have adopted CECL. See the Critical Accounting Estimates and Judgments section of Item 7 of this Report for more detail on the CECL standard.

The regulatory capital rules include a standardized approach for determining a banking organization’s risk-weighted assets for purposes of calculating the risk-based capital ratios. To determine risk-weighted assets under the standardized approach, a banking organization must allocate its assets and specified off-balance sheet financial exposures and instruments into risk-weighted categories. The standardized approach for risk-weighted assets takes into account credit and market risk. To calculate risk-weighted assets under the standardized approach for credit risk, the nominal dollar amounts of assets and credit equivalent amounts of off-balance sheet items are generally multiplied by risk weights set forth in the rules, with the risk weights increasing as the perceived credit risk of the relevant asset or exposure increases. For certain types of exposures, such as securitization exposures, the standardized approach establishes one or more methodologies that are to be used to calculate the risk-weighted asset amount for the exposure. High volatility commercial real estate, past due, securitization and equity exposures, as well as investments in unconsolidated financial institutions, mortgage servicing rights and deferred tax assets that are not deducted from capital, are generally subject to higher risk weights than other types of exposures.

Under the currently effective regulatory capital rules, banking organizations with $250 billion or more in total consolidated assets (such as PNC and PNC Bank) are also required to calculate risk-weighted assets using a separate methodology, referred to as the advanced approaches, that is based on the Basel II capital framework. The Basel II framework seeks to provide more risk-sensitive regulatory capital calculations and promote enhanced risk management practices among large, internationally active banking organizations. Advanced approaches risk-weighted assets take into account credit, market and operational risk and rely to a significant extent on internal models. Prior to fully implementing the advanced approaches to calculate risk-weighted assets, PNC and PNC Bank must successfully complete a parallel run qualification phase. PNC and PNC Bank entered this parallel run qualification phase on January 1, 2013.

Because we remain in the parallel run qualification phase for the advanced approaches, our regulatory risk-based capital ratios in 2018 were calculated using the standardized approach for determining risk-weighted assets. Until we have exited parallel run, our regulatory risk-based capital ratios will be calculated using the standardized approach for determining risk-weighted assets. Under the currently effective capital rules, once we exit parallel run, our regulatory risk-based capital ratios will be the lower of the ratios calculated under the standardized approach and the advanced approaches. Under the Tailoring Proposals, PNC and PNC Bank would no longer be considered an advanced approaches banking organization for these purposes and would no longer be required to calculate advanced approaches risk-weighted assets.

With the exception of certain nonqualifying trust preferred capital securities included in PNC’s Total risk-based capital (which remain subject to a phase-out period that runs through 2021), the transitions and multi-year phase-in of the

definition of capital under the Basel III rules were completed as of January 1, 2018. Accordingly, we refer to the capital ratios calculated using the definition of capital in effect as of January 1, 2018 and, for the risk-based ratios, standardized risk-weighted assets, as our Basel III regulatory capital ratios. The Basel III regulatory capital ratios of PNC and PNC Bank as of December 31, 2018 exceeded the applicable minimum levels. For additional information regarding the Basel III ratios of PNC and PNC Bank as of December 31, 2018, as well as the levels needed to be considered "well capitalized", see the Liquidity and Capital Management portion of the Risk Management section of Item 7 of this Report.

The risk-based capital rules establish certain minimum standards for the capital ratios of banking organizations, including PNC and PNC Bank. Banking organizations must maintain a minimum CET1 ratio of 4.5%, a Tier 1 capital ratio of 6.0%, and a Total capital ratio of 8.0%, in each case in relation to risk-weighted assets, to be considered "adequately capitalized." Banking organizations also must maintain a capital conservation buffer requirement above the minimum risk-based capital ratio requirements in order to avoid limitations on capital distributions (including dividends and repurchases of any Tier 1 capital instrument, such as common and qualifying preferred stock) and certain discretionary incentive compensation payments. The capital conservation buffer requirement became fully phased in as of January 1, 2019. As a result, banking organizations (including PNC and PNC Bank) now are required to

maintain a CET1 capital ratio of at least 7.0%, a Tier 1 capital ratio of at least 8.5%, and a Total capital ratio of at least 10.5% to avoid limitations on capital distributions and certain discretionary incentive compensation payments.

For banking organizations with $250 billion or more in total consolidated assets (such as PNC and PNC Bank), these higher capital conservation buffer levels above the regulatory minimums could be supplemented by a countercyclical capital buffer of up to an additional 2.5% of risk-weighted assets. This buffer is currently set at zero in the U.S. A Federal Reserve policy statement establishes the framework and factors the Federal Reserve would use in setting and adjusting the amount of the U.S. countercyclical capital buffer. Covered banking organizations would generally have 12 months after the announcement of any increase in the countercyclical capital buffer to meet the increased buffer requirement, unless the Federal Reserve determines to establish an earlier effective date. If the full countercyclical buffer amount is implemented, PNC and PNC Bank would be required to maintain a CET1 capital ratio of at least 9.5%, a Tier 1 capital ratio of at least 11%, and a Total capital ratio of at least 13% to avoid limitations on capital distributions and certain discretionary incentive compensation payments.

PNC and PNC Bank are not subject to the additional CET1 capital surcharge, minimum long-term debt requirement, or minimum total loss-absorbing capacity (TLAC) requirement that applies to U.S. GSIBs.

The regulatory capital rules also require that banking organizations maintain a minimum amount of Tier 1 capital to average consolidated assets, referred to as the leverage ratio. Banking organizations are required to maintain a minimum leverage ratio of Tier 1 capital to total assets of 4.0%. As of December 31, 2018, the leverage ratios of PNC and PNC Bank were above the required minimum level.

Banking organizations with $250 billion or more in total consolidated assets (such as PNC and PNC Bank) also are subject to a minimum 3.0% supplementary leverage ratio. The supplementary leverage ratio is calculated by dividing Tier 1 capital by total leverage exposure, which takes into account on-balance sheet assets as well as certain off-balance sheet items, including loan commitments and potential future exposure under derivative contracts. BHCs with total consolidated assets of more than $700 billion or assets under custody of more than $10 trillion, as well as the insured depository institution subsidiaries of these BHCs, are subject to a higher supplementary leverage ratio requirement. These higher supplementary leverage requirements do not apply to PNC or PNC Bank.

Failure to meet applicable capital requirements could subject a banking organization to a variety of enforcement remedies available to the federal banking agencies, including a limitation on the ability to pay dividends or repurchase shares, the issuance of a capital directive to increase capital and, in severe cases, the termination of deposit insurance by the FDIC, and the appointment of a conservator or receiver. In some cases, the extent of these powers depends upon whether the institution in question is considered “well capitalized,” “adequately capitalized,” “undercapitalized,” “significantly undercapitalized” or “critically undercapitalized.” The thresholds at which an insured depository institution is considered “well capitalized,” “adequately capitalized,” “undercapitalized,” “significantly undercapitalized” or “critically undercapitalized” are based on (i) the institution’s CET1, Tier 1 and total risk-based capital ratios; (ii) the institution’s leverage ratio; and (iii) for the definitions of “adequately capitalized” and “undercapitalized”, the institution’s supplementary leverage ratio. Generally, the smaller an institution’s capital base in relation to its risk-weighted or total assets, the greater the scope and severity of the agencies’ powers. Business activities may also be affected by an institution’s capital classification. For example, as a financial holding company, PNC and PNC Bank must remain “well capitalized.” At December 31, 2017, PNC and PNC Bank exceeded the required ratios for classification as “well capitalized.” For additional discussion of capital adequacy requirements, see the Liquidity and Capital Management portion of the Risk Management section of Item 7 of this Report and to Note 18 Regulatory Matters in the Notes To Consolidated Financial Statements in Item 8 of this Report.

As discussed further in Item 1A Risk Factors of this Report, the Basel Committee in 2017 finalized additional, significant changes to the Basel III international capital framework for banking organizations. The extent to and manner in which these or similar changes by the Basel Committee would be implemented by the U.S. banking

agencies, and the implications of any such developments on the U.S. regulatory capital framework applicable to PNC and PNC Bank, are not fully known at this time.

In addition to regulatory capital requirements, we are subject to the Federal Reserve's capital plan rule, annual capital stress testing requirements and Comprehensive Capital Analysis and Review (CCAR) process, as well as the annual and mid-year Dodd-Frank capital stress testing (DFAST) requirements of the Federal Reserve (annual and mid-cycle) and the OCC (annual).

As part of the CCAR process, the Federal Reserve undertakes a supervisory assessment of the capital planning process of BHCs, including PNC, that have $100 billion or more in total consolidated assets. For us, this capital planning assessment is based on a review of a comprehensive capital plan submitted to the Federal Reserve that describes the company's planned capital actions, such as plans to pay or increase common stock dividends, engage in common stock repurchase programs, or issue or redeem preferred stock or other regulatory capital instruments, during the nine quarter review period, as well as the results of stress tests conducted by both the company and the Federal Reserve under different hypothetical macro-economic scenarios, including a supervisory adverse scenario and severely adverse scenario provided by the Federal Reserve. The agencies have requested comment on proposed rules that would

eliminate the supervisory adverse scenario in the CCAR and DFAST stress testing processes, but it is unclear when or if these proposals may be finalized, or when these changes (if adopted in final) might become effective.

The Federal Reserve can object to our capital plan for qualitative or quantitative reasons. If the Federal Reserve objects to a BHC's capital plan, the BHC cannot make capital distributions without Federal Reserve approval. In evaluating PNC's capital plan, the Federal Reserve considers a number of qualitative factors, which have become increasingly important in the CCAR process in recent years. The Federal Reserve's supervisory expectations for the capital planning and stress testing processes at large and complex BHCs, including PNC, are heightened relative to smaller and less complex BHCs. In assessing a BHC's capital planning and stress testing processes, the Federal Reserve considers whether the BHC has sound and effective governance to oversee these processes. The Federal Reserve's evaluation focuses on whether a BHC's capital planning and stress testing processes are supported by a strong risk management framework to identify, measure and assess material risks and that provides a strong foundation to capital planning. The Federal Reserve also considers the comprehensiveness of a BHC's control framework and evaluates a BHC's policy guidelines for capital planning and assessing capital adequacy. A BHC's stress testing scenario design processes and approaches for estimating the impact of stress on its capital position, including stress testing models and non-model qualitative approaches, are comprehensively reviewed to ensure that projections reflect the impact of appropriately stressful conditions, as well as risks idiosyncratic to the BHC, on its capital position. Significant deficiencies in a BHC's capital planning and stress testing processes may result in a qualitative objection by the Federal Reserve to its capital plan.

From a quantitative perspective, the Federal Reserve considers whether under different hypothetical macro-economic scenarios, including the supervisory severely adverse scenario, the BHC would be able to maintain, throughout each quarter of the nine quarter review period, projected regulatory risk-based and leverage capital ratios that exceed the applicable minimums. In making these estimates, the Federal Reserve assumes that the BHC would continue its base case capital actions in each supervisory scenario, including the severely adverse scenario. Failure to meet a minimum regulatory risk-based or leverage capital requirement on a projected stress basis is grounds for objection to a BHC's capital plan.

In connection with the 2019 CCAR exercise, we must file our capital plan and stress testing results using financial data as of December 31, 2018 with the Federal Reserve by April 5, 2019. We expect to receive the Federal Reserve's response (either a non-objection or objection) to the capital plan submitted as part of the 2019 CCAR in June 2019.

As part of the CCAR and annual DFAST processes, both we and the Federal Reserve release certain revenue, loss and capital results from stress testing exercises. For the 2019 exercises, the Federal Reserve has announced that it intends to publish its supervisory revenue, loss and capital projections for participating BHCs under the supervisory adverse and severely adverse macro-economic scenarios using the common assumptions concerning capital distributions established by the Federal Reserve in its DFAST regulations, as well as capital ratio information using the company's proposed base case capital actions. Within 15 days of the Federal Reserve publishing its DFAST results, we also are required to publicly disclose our own estimates of certain capital, revenue and loss information under the same hypothetical supervisory severely adverse macro-economic scenario and applying the same capital action assumptions.

Federal Reserve regulations also require that we and other large BHCs conduct a separate, mid-cycle stress test using financial data as of June 30 and three company-derived macro-economic scenarios (base, adverse and severely adverse) and publish a summary of the results under the severely adverse scenario. For the 2019 mid-cycle stress test cycle, we must publish our results in the period between October 5 and November 4, 2019. Under the Tailoring Proposals, the Federal Reserve has proposed to eliminate the mid-cycle DFAST stress test beginning in 2020, and to allow Category III BHCs (like PNC) to conduct the company-run DFAST stress test biennially (rather than annually, as currently required).

The Federal Reserve's capital plan rule provides that a BHC must resubmit a new capital plan prior to the annual submission date if, among other things, there has been or will be a material change in the BHC's risk profile, financial condition or corporate structure since its last capital plan submission. Under the "de minimis" safe harbor of the Federal Reserve's capital plan rule, we may make limited repurchases of common stock or other capital distributions in amounts that exceed the amounts included in our most recently approved capital plan subject to certain conditions, including that the Federal Reserve does not object to the additional repurchases or distributions. Such additional distributions may not exceed, in the aggregate, 0.25% of Tier 1 capital during the relevant 12-month period. The Federal Reserve's capital plan rule also allows a BHC to request the Federal Reserve's approval to make additional capital distributions, above the amounts permitted by this de minimis safe harbor and the amounts included in its most recently approved capital plan, provided that, among other things, the request is filed between July 1 and March 30 of the relevant capital plan year. In 2018, PNC received approval from the Federal Reserve for additional capital distributions above the amounts included in our most recently approved capital plan. See the Liquidity and Capital Management portion of the Risk Management section in Item 7 of this Report for additional detail.

In 2018, the Federal Reserve requested public comment on a proposal that would integrate its capital plan rule, stress test rules and the annual CCAR exercise with its Basel III regulatory capital rules. Among other things, the proposal would introduce new CET1 and

Tier 1 leverage stress capital buffer requirements. The CET1 and Tier 1 leverage stress capital buffers for a covered BHC would equal (i) the percentage decline in the BHC's CET1 and Tier 1 leverage ratios, respectively, in the most recently completed CCAR exercise as projected by the Federal Reserve under its supervisory severely adverse scenario, plus (ii) the BHC's projected common stock dividends in the fourth through seventh quarter of that exercise (expressed as a ratio to the BHC's total risk-weighted assets or average total consolidated assets, as applicable). The CET1 stress capital buffer would have a minimum "floor" of 2.5%. The CET1 and Tier 1 leverage stress capital buffers would replace the Basel III capital conservation buffer for covered BHCs. That is, a covered BHC (such as PNC) would, for example, be subject to limitations on capital distributions and certain discretionary incentive compensation payments if its CET1 ratio fell below (i) 4.5%, plus (ii) its applicable CET1 stress capital buffer, plus (iii) any applicable countercyclical capital buffer (which is currently set at zero in the United States). BHCs that are GSIBs or have exited parallel run under the advanced approaches would be subject to additional capital buffer requirements. In connection with these changes, the Federal Reserve proposed to make a number of other changes to the CCAR process.

Regulatory Liquidity Standards and Liquidity Risk Management Requirements. The Basel Committee's Basel III framework includes short-term liquidity standards (Liquidity Coverage Ratio or LCR) and long-term funding standards (Net Stable Funding Ratio or NSFR).

The U.S. banking agencies' LCR rules are designed to ensure that covered banking organizations maintain an adequate level of cash and high quality, unencumbered liquid assets (HQLA) to meet estimated net liquidity needs in a short-term stress scenario using liquidity inflow and outflow assumptions prescribed in the rules (net cash outflow). A company's LCR is the amount of its HQLA, as defined and calculated in accordance with the haircuts and limitations in the rule, divided by its net cash outflows, with the quotient expressed as a percentage. The regulatory minimum LCR that covered banking organizations are required to maintain is 100%. As of December 31, 2018, the LCR for PNC and PNC Bank exceeded the fully phased-in requirement of 100%.

Top-tier BHCs (like PNC) that have $250 billion or more in assets, as well as any subsidiary depository institution of such a company that has $10 billion or more in total consolidated assets (such as PNC Bank), currently are subject to the full LCR (rather than the less stringent modified LCR). PNC and PNC Bank are required to calculate the LCR on a daily basis. Under the full LCR, an institution required to calculate the LCR on a daily basis must promptly provide its regulator with a plan for achieving compliance with the minimum LCR requirement if its LCR is below the minimum requirement for three consecutive business days.

The Federal Reserve requires large BHCs, including PNC, to publicly disclose certain quantitative and qualitative measures of their LCR-related liquidity profile. These disclosures include major components used to calculate the LCR (e.g., HQLA, cash outflows and inflows for the consolidated parent company), and a qualitative discussion of the BHC's LCR results, including, among other things, key drivers of the results, composition of HQLA and concentration of funding sources. We began making these disclosures (through postings on our website) in the second quarter of 2018.

The NSFR is designed to promote a stable maturity structure of assets and liabilities of banking organizations over a one-year time horizon. In 2016, the federal banking agencies requested comment on proposed rules that would implement the NSFR in the United States. The proposed rules would require a covered BHC to calculate its NSFR as the ratio of its available stable funding (ASF) to its required stable funding (RSF) amount, each as defined in the proposed rules, over a one-year horizon. The regulatory minimum ratio for all covered banking organizations (expressed as a percentage) is 100%. Under the proposal, PNC and PNC Bank would be subject to the full NSFR, rather than the less stringent modified NSFR. The proposal also includes requirements for quarterly quantitative and qualitative NSFR disclosures. Although the impact on us will not be fully known until the rules are finalized, we have taken several actions to prepare for implementation of the NSFR and we expect to be in compliance with the NSFR requirements if and when they become effective.

The Tailoring Proposals would reduce the LCR requirements and the proposed NSFR requirements for Category III banking organizations that, like PNC and PNC Bank, have less than $75 billion in weighted short-term wholesale funding. Under the Tailoring Proposals, the net cash ouflows calculated under the LCR rules and the RSF amount determined under the proposed NSFR rules for such a Category III organization would be scaled by a factor of between 70% and 85%, thereby reducing the amount of HQLA and ASF that the organization would have to maintain to meet its LCR and NSFR minimum ratio, respectively.

PNC also is subject to Federal Reserve rules that require BHCs with $100 billion or more in consolidated total assets to, among other things, conduct internal liquidity stress tests over a range of time horizons, maintain a buffer of highly liquid assets sufficient to meet projected net outflows under the BHC's 30-day liquidity stress test, and maintain a contingency funding plan that meets certain requirements.

For additional discussion of regulatory liquidity requirements, please refer to the Liquidity and Capital Management portion of the Risk Management section of Item 7 of this Report.

Source of Parent Company Liquidity and Dividends. The principal source of our liquidity at the parent company level is dividends from PNC Bank. PNC Bank is subject to various restrictions on its ability to pay dividends to PNC Bancorp, Inc., its direct parent, which is a wholly-owned direct subsidiary of The PNC Financial Services Group, Inc. PNC Bank is also subject to federal laws limiting extensions of credit to its parent holding company and non-bank affiliates as discussed in Note 18 Regulatory Matters in the Notes To Consolidated Financial Statements in Item 8 of this Report. Further information on bank level liquidity and parent company liquidity is also available in the Liquidity and Capital Management portion of the Risk Management section of Item 7 of this Report

Federal Reserve rules provide that a BHC is expected to serve as a source of financial strength to its subsidiary banks and to commit resources to support such banks if necessary. Dodd-Frank requires that the Federal Reserve jointly adopt new rules with the OCC and the FDIC to implement this source of strength requirement. These joint rules have not yet been proposed. Consistent with this source of strength policy for subsidiary banks, the Federal Reserve has stated that, as a matter of prudent banking, a BHC generally should not maintain a rate of cash dividends unless its net income available to common shareholders has been sufficient to fully fund the dividends and the prospective rate of earnings retention appears to be consistent with the corporation’s capital needs, asset quality and overall financial condition. Further, in providing guidance to the large BHCs participating in the CCAR exercise, discussed above, the Federal Reserve has expected capital plans to reflect conservative dividend payout ratios. Requests that imply common dividend payout ratios above 30% of projected after-tax net income available to common shareholders have typically received particularly close scrutiny.

Enhanced Prudential Requirements. Under Federal Reserve rules, PNC and other BHCs with total consolidated assets of $100 billion or more are subject to various enhanced prudential standards related to liquidity risk management and overall risk management. For PNC, these rules, among other things, establish liquidity stress testing requirements (discussed above), limitations on PNC’s aggregate net credit exposures to any single, unaffiliated company (referred to as the single counterparty credit limit (SCCL)), and certain oversight and governance responsibilities for PNC's chief risk officer, the board of directors, and the risk committee of the board of directors. Under the Federal Reserve’s SCCL rules, which become effective July 1, 2020, PNC’s aggregate net credit exposure (including exposure resulting from, among other transactions, extensions of credit, repurchase and reverse repurchase transactions, investments in securities, and derivative transactions) to any unaffiliated counterparty may not exceed 25% of PNC’s Tier 1 capital. PNC is in the process of obtaining guidance from the Federal Reserve on how investments accounted for under the equity method, such as its investment in BlackRock, should be treated for purposes of the SCCL. At present, we do not expect the SCCL will have a material impact on PNC.

Under Dodd-Frank, the Federal Reserve is required to impose a maximum 15-to-1 debt to equity ratio on a BHC if the federal agencies that comprise the Financial Stability Oversight Council (FSOC) determine that the company poses a grave threat to the financial stability of the United States and that the imposition of such a debt-to-equity requirement would mitigate such risk. The Federal Reserve also is required to establish early remediation requirements for BHCs with more than $250 billion in total assets and continues to work towards finalizing these requirements.

The Federal Reserve may continue to develop the set of enhanced prudential standards that apply to large BHCs in order to further promote the resiliency of such firms and the U.S. financial system. For additional information, see Item 1A Risk Factors of this Report.

Additional Powers Under the GLB Act. The GLB Act permits a qualifying BHC, such as PNC, to become a “financial holding company” and thereby engage in, or affiliate with financial companies engaging in, a broader range of activities than would otherwise be permitted for a BHC. Permitted affiliates include securities underwriters and dealers, insurance companies, insurance agents and companies engaged in other activities that are determined by the Federal Reserve, in consultation with the Secretary of the Treasury, to be “financial in nature or incidental thereto” or are determined by the Federal Reserve unilaterally to be “complementary” to financial activities. We became a financial holding company as of March 13, 2000. A BHC qualifies to become a financial holding company if the BHC and its

subsidiary depository institutions are "well capitalized" and "well managed" and its subsidiary depository institutions have a rating under the Community Reinvestment Act (CRA) of Satisfactory or better. Among other activities, we currently rely on our status as a financial holding company to conduct merchant banking activities and securities underwriting and dealing activities. As subsidiaries of a financial holding company under the GLB Act, our non-bank subsidiaries are generally allowed to conduct new financial activities, and we are generally permitted to acquire non-bank financial companies that have less than $10 billion in assets, with after-the-fact notice to the Federal Reserve.

In addition, the GLB Act permits qualifying national banks to engage in expanded activities through a "financial subsidiary." PNC Bank has filed a financial subsidiary certification with the OCC and currently engages in insurance agency activities through financial subsidiaries. PNC Bank may also generally engage through a financial subsidiary in any activity that is determined to be financial in nature or incidental to a financial activity by the Secretary of the Treasury, in consultation with the Federal Reserve (other than insurance underwriting activities, insurance company investment activities and merchant banking). In order to establish a financial subsidiary, a national bank and each of its depository institution affiliates must be "well capitalized" and "well managed" and the national bank and each of its depository institution affiliates must have a CRA rating of Satisfactory or better.

If a financial holding company or a national bank with a financial subsidiary fails to continue to meet the applicable "well capitalized" or "well managed" criteria, the financial holding company or national bank must enter into an agreement with the Federal Reserve or the OCC, respectively, that, among other things, identifies how the capital or management deficiencies will be corrected. Until such deficiencies are corrected, the relevant agency may impose limits or conditions on the activities of the company or bank, and the company or bank may not engage in, or acquire a company engaged in, the types of expanded activities only permissible for a financial holding company or financial subsidiary without prior approval of the relevant agency.

In addition, a financial holding company generally may not engage in a new financial activity authorized by the GLB Act, or acquire a company engaged in such a new activity, if any of its insured depository institutions receives a CRA rating of less than Satisfactory rating. A national bank's financial subsidiary generally may not engage in a new financial activity authorized by the GLB Act, or acquire a company engaged in such a new financial activity, if the national bank or any of its insured depository institution affiliates received a CRA rating of less than Satisfactory.

At December 31, 2018, PNC Bank had an Outstanding rating with respect to the CRA.

Volcker Rule. The Volcker Rule and its implementing regulations prohibit banking entities (as defined by the statute and its implementing regulations) from engaging in short-term trading as principal and having certain ownership interests in and relationships with hedge funds, private equity funds, and certain other private funds (together, "covered funds"), unless an exemption or exception applies. For example, the exemptions under the Volcker Rule allow banking entities to trade as principal for securities underwriting, market making and risk-mitigating hedging purposes, subject to a variety of conditions.

To date, the prohibitions under the final Volcker Rule regulations have not had, and we do not expect them to have in the future, a material effect on our businesses or revenue. However, the conditions for engaging in exempted trading activities and having permissible relationships with a private fund under the regulations could, depending on the agencies' approach to interpreting them, cause us to forego engaging in hedging or other transactions that we would otherwise undertake in the ordinary course of business and, thus, to some extent, may limit our ability to most effectively hedge our risks, manage our balance sheet or provide products or services to our customers.

The final Volcker Rule regulations impose significant compliance and reporting obligations on banking entities. We have adopted an enterprise Volcker Rule compliance program in accordance with the enhanced compliance program requirements of the agencies' current regulations. We have also divested prohibited investments in covered funds and received extensions allowing an extended conformance period for our remaining $.1 billion interests in illiquid covered funds (as defined by the applicable requirements).

In 2018, the agencies jointly requested comment on proposed changes to the final Volcker Rule regulations that would, among other things, (i) streamline the compliance program requirements for banking entities (like PNC) that have trading assets and liabilities (excluding trading assets and liabilities involving U.S. government and agency obligations) of more than $1 billion, but less than $10 billion, and (ii) simplify the requirements for engaging in permissible risk-mitigating hedging activities. The proposal also would introduce a new requirement for identifying positions deemed to be held in a trading account which, if adopted as proposed, could have a negative impact on the ability of banking entities (including PNC) to effectively manage risks, make longer-term investments, and seed new funds.

Other Federal Reserve and OCC Regulation and Supervision. The federal banking agencies possess broad powers to take corrective action as deemed appropriate based on the actions, operations or risk management programs of a BHC, an insured depository institution or their subsidiaries, and the Federal Reserve and the OCC have the ability to take enforcement action against PNC and PNC Bank, respectively, to prevent and remedy acts and practices that the agencies determine to be unfair or deceptive. A finding that we have engaged in a deceptive act or practice may have

collateral consequences on our ability to rely on certain exemptions, or take advantage of certain provisions of, the securities laws absent a government waiver of such restrictions.

Moreover, less than satisfactory examination ratings, lower capital ratios than peer group institutions, or regulatory concerns regarding management, controls, assets, operations or other factors can all potentially result in practical limitations on the ability of a bank or BHC to engage in new activities, grow, acquire new businesses, repurchase its stock or pay dividends, or continue to conduct existing activities. Furthermore, the OCC has established certain heightened risk management and governance standards for large banks, including PNC Bank, as enforceable guidelines under Section 39 of the Federal Deposit Insurance Act (FDI Act). The guidelines, among other things, establish minimum standards for the design and implementation of a risk governance framework, describe the appropriate risk management roles and responsibilities of front line units, independent risk management, internal audit, and the board of directors, and provide that a covered bank should have a comprehensive written statement that articulates its risk appetite and serves as a basis for the framework. If the OCC determines that a covered national bank is not in compliance with these or other guidelines established under Section 39 of the FDI Act (including the guidelines relating to information security standards), the OCC may require the bank to submit a corrective action plan and may initiate enforcement action against the bank if an acceptable plan is not submitted or the bank fails to comply with an approved plan.

Sections 23A and 23B of the Federal Reserve Act and the Federal Reserve's implementing regulation, Regulation W, place quantitative and qualitative restrictions on covered transactions between a bank and its affiliates (for example between PNC Bank, on the one hand, and The PNC Financial Services Group, Inc. and its nonbank subsidiaries, on the other hand). In general, Section 23A and Regulation W limit the total amount of covered transactions between a bank and any single affiliate to 10% of the bank's capital stock and surplus, limit the total amount of covered transactions between a bank and all its affiliates to 20% of the bank's capital stock and surplus, prohibit a bank from purchasing low-quality assets from an affiliate, and require certain covered transactions to be secured with prescribed amounts of collateral. Section 23B generally requires that transactions between a bank and its affiliates be on terms that are at least as favorable to the bank as the terms that would apply in comparable transactions between the bank and a third party. Dodd-Frank amended Section 23A of the Federal Reserve Act to include as a covered transaction the credit exposure of a bank to an affiliate arising from a derivative transaction with the affiliate. The Federal Reserve has yet to propose rules to implement these revisions.

The Federal Reserve and the OCC have provided guidance regarding incentive and other elements of compensation provided to executives and other employees at banking organizations they regulate, both as general industry-wide guidance and guidance specific to select larger companies, including PNC. These guidelines are intended to ensure that the incentive compensation practices of covered banking organizations do not encourage excessive risk-taking. The Federal Reserve, the OCC, the FDIC, the SEC and two other regulatory agencies jointly proposed regulations in 2011 and again in 2016 to implement the incentive compensation requirements of Section 956 of Dodd-Frank. Final regulations implementing Section 956 have not been adopted. Regulation of compensation provided by us to our executives and other employees, whether through guidance or rules and regulations, could hamper our ability to attract and retain quality employees.

The Federal Reserve's prior approval is required whenever we propose to acquire all or substantially all of the assets of any bank, to acquire direct or indirect ownership or control of more than 5% of any class of voting securities of any bank or BHC, or to merge or consolidate with any other BHC. The BHC Act and other federal law enumerates the factors the Federal Reserve must consider when reviewing the merger of BHCs, the acquisition of banks or the acquisition of voting securities of a bank or BHC. These factors include the competitive effects of the proposal in the relevant geographic markets; the financial and managerial resources and future prospects of the companies and banks involved in the transaction; the effect of the transaction on the financial stability of the United States; the organizations' compliance with anti-money laundering laws and regulations; the convenience and needs of the communities to be served; and the records of performance under the CRA of the insured depository institutions involved in the transaction.

The Federal Reserve's prior approval is also required, and similar factors are considered, for a BHC to acquire direct or indirect ownership or control of more than 5% of any class of voting securities of a savings association or savings and loan holding company, or to merge or consolidate with a savings and loan holding company. In cases involving interstate bank acquisitions, the Federal Reserve also must consider the concentration of deposits nationwide and in certain individual states. A BHC is generally prohibited from merging or consolidating with, or acquiring, another company if upon consummation the resulting company would control 10% or more of deposits in the U.S or a state, or if the resulting company's liabilities would exceed 10% of the aggregate liabilities of the U.S. financial sector (including the U.S. liabilities of foreign financial companies). In extraordinary cases, the FSOC, in conjunction with the Federal Reserve, could order the break-up of financial firms that are deemed to present a grave threat to the financial stability of the United States.

OCC prior approval is required for PNC Bank to acquire another insured bank or savings association by merger or to acquire deposits or substantially all of the assets of such institutions. In deciding whether to approve such a transaction, the OCC is required to consider factors similar to those that must be considered by the Federal Reserve in connection with the acquisition of a bank or BHC. Approval of the OCC and the FDIC is required to merge a nonbank entity into PNC Bank. Our ability to grow through acquisitions or reorganize our operations could be limited by these

approval requirements.

Based on the Federal Reserve's interpretation of the BHC Act, the Federal Reserve has indicated that it considers BlackRock to be a subsidiary of The PNC Financial Services Group, Inc. for purposes of the BHC Act due to PNC's current and historical ownership interest in, as well as other relationships with, BlackRock and, thus, subject to the supervision and regulation of the Federal Reserve.

FDIC Insurance and Related Matters. PNC Bank is insured by the FDIC and subject to deposit premium assessments. Regulatory matters could increase the cost of FDIC deposit insurance premiums to an insured bank as FDIC deposit insurance premiums are "risk based." Therefore, higher fee percentages would be charged to banks that have lower capital ratios or higher risk profiles. These risk profiles take into account, among other things, weaknesses that are found by the primary federal banking regulator through its examination and supervision of the bank and the bank's holdings of assets or liabilities classified as higher risk by the FDIC. A negative evaluation by the FDIC or a bank's primary federal banking regulator could increase the costs to a bank and result in an aggregate cost of deposit funds higher than that of competing banks in a lower risk category.

Federal banking laws and regulations also apply a variety of requirements or restrictions on insured depository institutions with respect to brokered deposits. For instance, only a "well capitalized" insured depository institution may accept brokered deposits without prior regulatory approval. In addition, brokered deposits are generally subject to higher outflow assumptions than other types of deposits for purposes of the LCR.

Resolution and Recovery Planning. BHCs that have $100 billion or more in assets, such as PNC, are required to periodically submit to the Federal Reserve and the FDIC a resolution plan that includes, among other things, an analysis of how the company could be resolved in a rapid and orderly fashion if the company were to fail or experience material financial distress. The Federal Reserve and the FDIC may jointly impose restrictions on a covered BHC, including additional capital requirements or limitations on growth, if the agencies jointly determine that the company's plan is not credible or would not facilitate a rapid and orderly resolution of the company under the U.S. Bankruptcy Code (or other applicable resolution framework), and additionally could require the company to divest assets or take other actions if the company did not submit an acceptable resolution plan within two years after any such restrictions were imposed. The FDIC also requires large insured depository institutions, including PNC Bank, to periodically submit a resolution plan to the FDIC that includes, among other things, an analysis of how the institution could be resolved under the FDI Act in a manner that protects depositors and limits losses or costs to creditors of the bank in accordance with the FDI Act. PNC and PNC Bank are required to provide the Federal Reserve and FDIC a public summary of their resolution plans, which the agencies then make available to the public. Depending on how the agencies conduct their review of the resolution plans submitted by PNC and PNC Bank, these requirements could affect the ways in which PNC structures and conducts its business and result in higher compliance and operating costs.

PNC Bank also is subject to OCC guidelines under Section 39 of the FDI Act that establish standards for recovery planning. These guidelines require a covered bank to develop and maintain a recovery plan that, among other things, identifies a range of options that could be undertaken by the covered bank to restore its financial strength and viability should identified triggering events occur. The recovery plan guidelines are enforceable in the same manner as the other guidelines the OCC has established under Section 39 of the FDI Act.

CFPB Regulation and Supervision. The CFPB examines PNC and PNC Bank for compliance with a broad range of federal consumer financial laws and regulations, including the laws and regulations that relate to deposit products, credit card, mortgage, automobile, student and other consumer loans, and other consumer financial products and services that we offer. The consumer financial protection laws that are subject to the CFPB's supervision and enforcement powers include, among others, the Truth in Lending Act, Truth in Savings Act, Home Mortgage Disclosure Act, Fair Credit Reporting Act, Electronic Funds Transfer Act, Real Estate Settlement Procedures Act, Fair Debt Collections Practices Act, Equal Credit Opportunity Act and Fair Housing Act. The CFPB also has authority to take enforcement actions to prevent and remedy acts and practices relating to consumer financial products and services that it deems to be unfair, deceptive or abusive, and to impose new disclosure requirements for any consumer financial product or service.

The CFPB may issue regulations that impact products and services offered by PNC or PNC Bank. The regulations could reduce the fees that we receive, alter the way we provide our products and services, or expose us to greater risk of private litigation or regulatory enforcement action. The CFPB may engage in rulemakings affecting prepaid cards, data on small business lending, the Home Mortgage Disclosure Act, and payday, vehicle title, and certain high-cost installment loans.

Securities and Derivatives Regulation

Our registered broker-dealer and investment adviser subsidiaries are subject to the Securities Exchange Act of 1934, and the Investment Advisers Act of 1940, respectively, and related rules and regulations promulgated by the SEC. Our investment adviser subsidiary that serves as adviser to registered investment companies is also subject to the requirements of the Investment Company Act of 1940 and related regulations. The Financial Industry Regulatory Authority (FINRA) is the primary self-regulatory organization for our registered broker-dealer subsidiaries. Our

broker-dealer and investment adviser subsidiaries also are subject to additional regulation by states or local jurisdictions.

The SEC and FINRA have active enforcement functions that oversee broker-dealers and investment advisers and can bring actions that result in fines, restitution, a limitation on permitted activities, disqualification to continue to conduct certain activities and an inability to rely on certain favorable exemptions. Certain types of infractions and violations also can affect our ability to expeditiously issue new securities into the capital markets. In addition, certain changes in the activities of a broker-dealer require approval from FINRA, and FINRA takes into account a variety of considerations in acting upon applications for such approval, including internal controls, capital levels, management experience and quality, prior enforcement and disciplinary history and supervisory concerns.

In 2018, the SEC issued a package of regulatory proposals that, if finalized, would impact the provision of investment advice to retail customers by registered broker-dealers and investment advisers. Proposed Regulation Best Interest would create a new standard of conduct for broker-dealers making investment recommendations to retail customers. The proposed form would create a new set of disclosure obligations for broker-dealers and investment advisers dealing with retail customers. The SEC has indicated it expects to

adopt final rules later in 2019. If adopted, these rules would primarily impact PNC's retail broker-dealer/investment adviser, PNC Investments LLC.

Dodd-Frank imposed comprehensive and significant regulations on the activities of financial institutions that are active in the U.S. over-the-counter derivatives and foreign exchange markets. These regulations were intended to (i) address systemic risk issues, (ii) bring greater transparency to the derivatives markets, (iii) provide enhanced disclosures and protections to customers and (iv) promote market integrity. Among other things, Dodd-Frank: (i) requires the registration of both "swap dealers" and "major swap participants" with one or both of the CFTC (in the case of non security-based swaps) and the SEC (in the case of security-based swaps); (ii) requires that most standardized swaps be centrally cleared through a regulated clearing house and traded on a centralized exchange or swap execution facility; (iii) subjects swap dealers and major swap participants to capital and margin requirements in excess of historical practice; (iv) subjects swap dealers and major swap participants to comprehensive new recordkeeping and real-time public reporting requirements; (v) subjects swap dealers and major swap participants to new business conduct requirements, including the provision of daily marks to counterparties and disclosing to counterparties (pre-execution) the material risks, material incentives, and any conflicts of interest associated with their swap; (vi) imposes special duties on swap dealers and major swap participants when transacting a swap with a "special entity" (e.g., governmental agency (federal, state or local) or political subdivision thereof, pension plan or endowment); and (vii) imposes margin requirements on swaps that are not centrally cleared through a regulated clearing house.

As a registered swap dealer with the CFTC, PNC Bank's derivatives and foreign exchange businesses are subject to the regulations and requirements imposed on registered swap dealers, and the CFTC (and for certain delegated responsibilities, the National Futures Association) has a meaningful supervisory role with respect to PNC Bank's derivatives and foreign exchange businesses. Because of the limited volume of our security-based swap activities, PNC Bank has not registered with the SEC as a security-based swap dealer. The regulations and requirements applicable to swap dealers have and will continue to impose compliance burdens on PNC Bank and introduces additional legal risks (including as a result of applicable anti-fraud and anti-manipulation provisions and private rights of action). In addition, failure to comply with the "pay-to-play" regulations that govern our swap and municipal securities businesses could result in limitations on PNC Bank's ability to conduct swap and municipal securities business with state or local governments and their authorities.

BlackRock has subsidiaries in securities and related businesses subject to SEC, other governmental agencies, state, local and FINRA regulation, and a federally chartered nondepository trust company subsidiary subject to supervision and regulation by the OCC. BlackRock describes its regulation by these agencies and otherwise in its filings with the SEC.

Regulations of Other Agencies
In addition to regulations issued by the federal banking, securities and derivatives regulators, we also are subject to regulations issued by other federal agencies with respect to certain financial products and services we offer. For example, certain of our fiduciary, brokerage and investment management activities are subject to regulations issued by the Department of Labor (DOL) under the Employee Retirement Income Security Act of 1974 (ERISA), as amended, and related provisions of the Internal Revenue Code and certain of our student lending and servicing activities are subject to regulation by the Department of Education. Certain provisions of final rules issued by the DOL expanding the definition of "investment advice" for retirement accounts and certain other accounts took effect in June 2017. The rules increased the scope of activities that give rise to fiduciary status under ERISA and the Internal Revenue Code and primarily apply to aspects of our Retail Banking and Asset Management Group segments. Certain requirements of the amended rules that had been scheduled to take effect on January 1, 2018 have been delayed until July 1, 2019 and the DOL is expected to propose amendments to the rules during the delay.

Competition

We are subject to intense competition from other regulated banking organizations, as well as various other types of financial institutions and non-bank entities that can offer a number of similar products and services without being subject to bank regulatory supervision and restrictions.

PNC Bank competes for deposits and/or loans with:

- Other commercial banks,
- Savings banks,
- Credit unions,
- Consumer finance companies,
- Leasing companies,
- Other non-bank lenders,
- Financial technology companies,
- Treasury management service companies,
- Insurance companies, and
- Issuers of commercial paper and other securities, including mutual funds.

In providing asset management services, our businesses compete with:
- Investment management firms,
- Large banks and other financial institutions,
- Brokerage firms,
- Financial technology companies,
- Mutual fund complexes, and
- Insurance companies.

Our various non-bank businesses engaged in investment banking and alternative investment activities compete with:
- Commercial banks,
- Investment banking firms,
- Collateralized loan obligation managers,
- Hedge funds,
- Mutual fund complexes,
- Merchant banks,
- Insurance companies,
- Private equity firms, and
- Other investment vehicles.

Loan pricing, structure and credit standards are extremely important in the current environment as we seek to achieve appropriate risk-adjusted returns. Deposit-taking activities are also subject to pricing pressures and to customer migration as a result of intense competition for deposits and investments. Competitors may seek to compete with us through traditional channels such as physical locations or through digital channels such as internet or mobile. We include here by reference the additional information regarding competition and factors affecting our competitive position included in the Item 1A Risk Factors of this Report.

Employees
Employees totaled 53,063 at December 31, 2018. This total included 50,928 full-time and 2,135 part-time employees, of which 29,180 full-time and 1,974 part-time employees were employed by our Retail Banking business.

SEC Reports and Corporate Governance Information
We are subject to the informational requirements of the Securities Exchange Act of 1934 (Exchange Act) and, in accordance with the Exchange Act, we file annual, quarterly and current reports, proxy statements, and other information with the SEC. Our SEC File Number is 001-09718.

The SEC maintains an internet website at www.sec.gov that contains reports, including exhibits, proxy and information statements, and other information about issuers, like us, who file electronically with the SEC. You can also inspect reports, proxy statements and other information about us at the offices of the New York Stock Exchange, 20 Broad Street, New York, New York 10005.

We make our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and amendments to those reports filed with or furnished to the SEC pursuant to Section 13(a) or 15(d) of the Exchange Act available free of charge on our internet website as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. Our corporate internet address is www.pnc.com and you can find this information at www.pnc.com/secfilings. Shareholders and bondholders may obtain copies of these filings without charge by contacting Shareholder Services at 800-982-7652 or via the online contact form at www.computershare.com/contactus for copies without exhibits, or via e-mail to investor.relations@pnc.com for copies of exhibits, including financial statement and schedule exhibits where applicable. The interactive data file (XBRL) exhibit is only available electronically.

Information about our Board of Directors and its committees and corporate governance, including our PNC Code of Business Conduct and Ethics (as amended from time to time), is available on our corporate website at www.pnc.com/corporategovernance. In addition, any future waivers from a provision of the PNC Code of Business Conduct and Ethics covering any of our directors or executive officers (including our principal executive officer, principal financial officer, and principal accounting officer or controller) will be posted at this internet address.

Shareholders who would like to request printed copies of the PNC Code of Business Conduct and Ethics or our Corporate Governance Guidelines or the charters of our Board's Audit, Nominating and Governance, Personnel and Compensation, or Risk Committees (all of which are posted on our corporate website at www.pnc.com/corporategovernance) may do so by sending their requests to our Corporate Secretary at corporate headquarters at The Tower at PNC Plaza, 300 Fifth Avenue, Pittsburgh, Pennsylvania 15222-2401. Copies will be provided without charge to shareholders.

Our common stock is listed on the New York Stock Exchange (NYSE) under the symbol "PNC."

Internet Information
The PNC Financial Services Group, Inc.'s financial reports and information about its products and services are available on the internet at www.pnc.com. We provide information for investors on our corporate website under "About Us – Investor Relations." We use our Twitter account, @pncnews, as an additional way of disseminating to the public information that may be relevant to investors.

We generally post the following under "About Us – Investor Relations" shortly before or promptly following its first use or release: financially-related press releases, including earnings releases and supplemental financial information, various SEC filings, including annual, quarterly and current reports and proxy statements, presentation materials associated with earnings and other investor conference calls or events, and access to live and recorded audio from earnings and other investor conference calls or events. In some cases, we may post the presentation materials for other investor conference calls or events several days prior to the call or event. For earnings and other conference calls or events, we generally include in our posted materials a cautionary statement regarding forward-looking and non-GAAP financial information, and we provide GAAP reconciliations when we include non-GAAP financial information. Such GAAP reconciliations may be in materials for the applicable presentation, in materials for prior presentations or in our annual, quarterly or current reports.

When warranted, we will also use our website to expedite public access to time-critical information regarding PNC instead of using a press release or a filing with the SEC for first disclosure of the information. In some circumstances, the information may be relevant to investors but directed at customers, in which case it may be accessed directly through the home page rather than "About Us - Investor Relations."

We are required to provide additional public disclosure regarding estimated income, losses and pro forma regulatory capital ratios under supervisory and PNC-developed hypothetical severely adverse economic scenarios, as well as information concerning our capital stress testing processes, pursuant to the stress testing regulations adopted by the Federal Reserve and the OCC. We are also required to make certain additional regulatory capital-related public disclosures about our capital structure, risk exposures, risk assessment processes, risk-weighted assets and overall capital adequacy, including market risk-related disclosures, under the regulatory capital rules adopted by the Federal banking agencies. Under these regulations, we may satisfy these requirements through postings on our website, and we have done so and expect to continue to do so without also providing disclosure of this information through filings with the SEC.

Other information posted on our corporate website that may not be available in our filings with the SEC includes information relating to our corporate governance and annual communications from our chairman to shareholders.

Where we have included internet addresses in this Report, such as our internet address and the internet address of the SEC, we have included those internet addresses as inactive textual references only. Except as specifically incorporated by reference into this Report, information on those websites is not part hereof.

ITEM 1A – RISK FACTORS
We are subject to a number of risks potentially impacting our business, financial condition, results of operations and cash flows. As a financial services organization, certain elements of risk are inherent in what we do and the business decisions we make. Thus, we encounter risk as part of the normal course of our business, and we design risk management processes to help manage these risks.

Our success is dependent on our ability to identify, understand and manage the risks presented by our business activities so that we can appropriately balance revenue generation and profitability. We discuss our principal risk management oversight and processes and, in appropriate places, related historical performance and other metrics in

the Risk Management section included in Item 7 of this Report.

The following are the key risk factors that affect us. Any one or more of these risk factors could have a material adverse impact on our business, financial condition, results of operations or cash flows. In addition, these risks present other possible adverse consequences, including those described below. These risk factors and other risks we face are also discussed further in other sections of this Report.

Our business and financial performance are vulnerable to the impact of adverse economic conditions.

As a financial services company, our business and overall financial performance are affected to a significant extent by economic conditions. We are currently in a prolonged economic expansion. This is not likely to continue forever, and at some point economic conditions are likely to turn recessionary.

Adverse economic conditions generally result in reduced business activity, which may decrease the demand for our products and services. The ability of borrowers to repay loans is often weakened as a result of economic downturns. Such economic conditions also

may lead to turmoil and volatility in financial markets. Any of these effects would likely have an adverse impact on financial institutions such as PNC, with the significance of the impact generally depending on the severity of the adverse economic conditions.

Even when economic conditions are relatively good or stable, specific economic factors can negatively affect the business and performance of financial institutions. This can be especially true when the factors relate to particular industries or geographical regions. For example, shifting consumer behavior with respect to retail purchases being made over the internet rather than in physical stores has negatively impacted performance by some retailers. This likely decreases demand for financial services in that sector, possibly harming the creditworthiness of some shopping malls and retail companies. As another example, trade wars leading to increased tariffs likely adversely affect companies more dependent on imports or exports. Increased tariffs may also result in increased prices for some products or services, leading to decreases in demand. Here, as well, affected companies may experience lower levels of business and possible declining creditworthiness. Recently increased tariffs on imports into, as well as exports out of, the U.S. could have some or all of these effects on the U.S. economy and on our business.

Given the geographic scope of our business and operations, we are most exposed to issues within the U.S. economy and financial markets. Within the U.S., we are most exposed to issues within markets located in the Mid-Atlantic, Midwest and Southeast. This will continue to be the case for at least some period of time, even as we expand the national reach of some of our businesses.

Our international business activities continue to be a relatively small part of our overall business. As a result, the direct impact on our business and performance from international economic conditions is not likely to be significant. We are nonetheless susceptible to the risk that international economic conditions could affect our business and financial performance. Primarily, this risk results from the possibility that poor economic conditions or financial market disruptions affecting other major economies around the world would also affect the U.S. One example is the United Kingdom’s impending exit from the European Union. This has led to uncertainty regarding the impact on the economy and capital markets of the United Kingdom and Europe more generally, including the risk that other countries might seek to exit the European Union in the future. The extent to which these uncertainties will affect the U.S. economy and capital markets is unclear. The more severe the impact, the more likely it would have adverse effects on PNC and its business.

Government legislation, regulation and policy frequently impacts the economy in ways that could have an adverse effect on our business and financial performance.

Changes in law or governmental policy affecting the economy, business activity, or personal spending, investing or saving activities may cause consumers and businesses to alter behavior in ways that impact demand for our products and services. Even to the extent that demand is not affected, such changes may also alter the profitability of the transactions in which we engage. PNC may also adjust the types of transactions we seek to pursue under those circumstances. Uncertainty regarding future law or policy may have similar impacts.

A recent example of such a change was the 2017 Tax Cuts and Jobs Act, representing the most significant change in U.S. federal tax law in decades. It has had and is likely to continue to have an impact on corporate and consumer behavior, including decisions made by PNC in response to the changes in law. Changes in PNC’s behavior or that of our customers as a result of future substantial revisions to U.S. federal tax law could negatively impact us.

Concern regarding the ability of Congress and the President collectively to reach agreement on federal budgetary matters (including the debt ceiling), or prolonged stalemates leading to total or partial governmental shutdowns, such as the partial shutdown from December 2018 until January 2019, also can have adverse economic consequences and create the risk of economic instability or market volatility, with potential adverse consequences to our business and financial performance. The divided control of the U.S. government following the 2018 elections may make this type

of event more likely going forward.

The policies of the Federal Reserve and other governmental agencies have a significant impact on interest rates and overall financial market performance. These in turn drive much of our business and financial performance.

The monetary policies of the Federal Reserve have a significant impact on interest rates and overall financial market performance. These policies can thus affect the activities and results of operations of financial companies such as PNC. An important function of the Federal Reserve is to monitor the national supply of bank credit and set certain interest rates. The actions of the Federal Reserve influence the rates of interest that we charge on loans and that we pay on borrowings and interest-bearing deposits. Rates of interest can also affect the value of our on-balance sheet and off-balance sheet financial instruments. As a general matter, increasing rates tend to decrease the value of fixed rate financial instruments. We cannot predict the nature or timing of future changes in monetary policies or the precise effects that they may have on our activities and financial results.

Starting in late 2015, the Federal Reserve has regularly increased its benchmark interest rate from the near-zero level that had prevailed following the financial crisis that began in 2007. We expect this to continue at least into 2019. The amount and timing of future increases will likely depend on economic conditions, including rates of inflation and unemployment.

After an extended period during which the Federal Reserve increased its balance sheet substantially above historical levels through the purchase of debt securities, the Federal Reserve has started reducing its balance sheet from these elevated levels. Its reduction in holdings of longer term Treasury securities and mortgage-backed securities would tend to push long-term interest rates higher.

It is unclear what other impacts the Federal Reserve's actions will have on the economy or on the markets and values of financial assets, including assets of the types that we hold, purchase and sell.

In addition, monetary policy actions by governmental authorities in the European Union or other countries could have an impact on global interest rates, which could affect rates in the U.S. as well as rates on instruments denominated in currencies other than the U.S. dollar, any of which could have one or more of the potential effects on us described above.

As a regulated financial services firm, we are subject to numerous governmental regulations and comprehensive oversight by a variety of regulatory agencies and enforcement authorities. These regulations and the manner in which they are implemented can have a significant impact on our businesses and operations.

The PNC Financial Services Group, Inc. is a bank holding company (BHC) and a financial holding company and is subject to numerous laws and regulations involving both its business and organization. In addition, our businesses are subject to examination and supervision by multiple banking, consumer protection, securities and derivatives regulatory bodies.

These laws, regulations and supervisory activities are intended to promote the safety and soundness of financial institutions, financial market stability, the transparency and liquidity of financial markets, and consumer and investor protection. We are also subject to oversight by criminal and civil enforcement authorities. Over time, the scope of the laws and regulations affecting our businesses, as well as the number of requirements or limitations imposed by legislative or regulatory actions, has increased. This trend is likely to continue, at least over the long term. Legislative or regulatory actions can result in increased compliance costs, reduced business opportunities, or new requirements and limitations on how we conduct our business.

Applicable laws and regulations impose capital adequacy requirements and restrict our ability to repurchase stock or to receive dividends from subsidiaries that operate in the banking and securities businesses. PNC’s ability to service its obligations and pay dividends to shareholders is largely dependent on the receipt of dividends and advances from its subsidiaries, primarily PNC Bank. The Federal Reserve requires a BHC to act as a source of financial and managerial strength for its subsidiary banks. The Federal Reserve could require PNC to commit resources to PNC Bank when doing so is not otherwise in the interests of PNC or its shareholders or creditors.

Applicable laws and regulations also restrict permissible activities and investments and require compliance with provisions designed to protect loan, deposit, brokerage, fiduciary, mutual fund and other customers, and for the protection of customer information, among other things. We also are subject to laws and regulations designed to combat money laundering, terrorist financing, and transactions with persons, companies or foreign governments designated by U.S. authorities.

We are subject to supervision and examination by numerous governmental bodies. The results of these supervisory or examination activities could result in limitations on our ability to engage in new activities or expand geographically. These activities also could result in significant fines, penalties, or required corrective actions, some of which could be expensive and difficult to implement. As we expand our product and service offerings into additional states or countries, there could be an increase in state or foreign regulation affecting our operations. Different approaches to regulation by different jurisdictions could increase our compliance costs or risks of non-compliance.

A failure to comply, or to have adequate policies and procedures designed to comply, with regulatory requirements and expectations could expose us to damages, fines and regulatory penalties and other regulatory or enforcement actions or consequences, such as limitations on activities otherwise permissible for us or additional requirements for engaging in new activities, and could also injure our reputation with customers and others with whom we do business.

New regulatory requirements or other initiatives may well be pursued and implemented in the future. Such future regulatory requirements or initiatives could further increase our compliance costs and the risks associated with non-compliance and could affect our ability to pursue or take full advantage of some desirable business opportunities.

See Supervision and Regulation in Item 1 of this Report for more information concerning the regulation of PNC and recent initiatives to reform financial institution regulation, including some of the matters discussed in this Risk Factor. Note 18 Regulatory Matters in the Notes To Consolidated Financial Statements in Item 8 of this Report also discusses some of the regulation applicable to us.

We are subject to regulatory capital and liquidity standards that affect our business, operations and ability to pay dividends, or otherwise return capital, to shareholders. These regulatory capital and liquidity standards are subject to modification. Changes in these requirements could require us to maintain higher levels of capital and liquidity than currently required.

PNC and PNC Bank are subject to regulatory capital and liquidity requirements established by the Federal Reserve and the OCC, respectively. These regulatory capital and liquidity requirements are typically developed at an international level by the Basel Committee on Banking Supervision (Basel Committee) and then applied, with adjustments, in each country by the appropriate domestic regulatory bodies. Domestic regulatory agencies have the ability to apply stricter capital and liquidity standards than those developed by Basel Committee. In several instances, the U.S. banking agencies have done so with respect to U.S. banking organizations.

Requirements to maintain specified levels of capital and liquidity, and regulatory expectations as to the quality of our capital and liquidity, impact our business activities and may prevent us from taking advantage of opportunities in the best interest of shareholders or force us to take actions contrary to their interests. For example, PNC may be limited in its ability to pay or increase dividends or otherwise return capital to shareholders. In addition, these requirements may impact the amount and type of loans we make. We may be constrained in our ability to expand, either organically or through acquisitions. These requirements may force us to sell or refrain from acquiring assets where the capital requirements appear inconsistent with the assets' underlying risks. In addition, liquidity standards require us to maintain holdings of highly liquid short-term investments, thereby reducing our ability to invest in longer-term or less liquid assets, even if more desirable from a balance sheet or interest rate risk management perspective.

Regulatory capital and liquidity requirements are subject to regular review and revision by the Basel Committee and the U.S. banking agencies. Future changes to the capital and liquidity rules that require PNC or PNC Bank to maintain more or higher quality capital, or greater liquidity, could increase some of the potential adverse effects described above. Until the scope and terms of pending or future rulemakings relating to capital, liquidity or other prudential standards are known, the extent to which such rules may apply to us and the potential impact of such rules on us will remain uncertain.

In 2018, the U.S. banking agencies proposed several changes to the capital and liquidity frameworks, including the Basel III capital standards and Liquidity Coverage Ratio (LCR) requirements, applicable to PNC and PNC Bank. If adopted, these proposed changes would provide meaningful benefits to us, but the core elements of the current regulatory framework would remain in place. Until the proposed changes are finalized, the scope of any changes, the extent to which they would apply to us and the potential impact of such changes on us will remain uncertain. The proposed changes are summarized in the Supervision and Regulation section included in Item 1 of this Report.

The Basel Committee continues to engage in capital- and liquidity-related initiatives. For example, the Basel Committee in 2017 finalized additional, significant changes to the international capital framework for banking organizations. The changes would impact the market risk capital requirements for trading positions and the standardized risk weighting approach for credit risk and the measurement of operational risk. In addition, among other things, the changes would establish a standardized approach floor for capital ratios calculated by banking organizations that use the advanced approaches for the risk weighting of assets. Moreover, the Basel Committee continues to consider other changes to the international regulatory capital framework to enhance the transparency and consistency of capital requirements among banks and jurisdictions, including, among others, the treatment of securitization positions. As it is unclear, at this time, whether or how these initiatives will be implemented in the U.S., we are unable to estimate what potential impact such initiatives may have on us.

The liquidity standards applicable to large U.S. banking organizations also are expected to be supplemented in the coming years. For example, in May 2016, the U.S. banking agencies proposed rules to implement the Net Stable Funding Ratio (NSFR), which is designed to ensure that banking organizations maintain a stable, long-term funding

profile in relation to their asset composition and off-balance sheet activities. The U.S. rules have not yet been finalized and recent proposals would adjust the scope and effect of the originally-proposed U.S. rules. Thus, the potential impact of the NSFR on us remains unclear.

The regulatory capital and liquidity frameworks, as well as certain other prudential requirements and standards, that are applicable to PNC are discussed in the Supervision and Regulation section included in Item 1 of this Report and the Liquidity and Capital Management portion of the Risk Management section of Item 7 of this Report.

The planned discontinuance of the requirement that banks submit rates for the calculation of LIBOR presents risks to the financial instruments originated or held by PNC that use LIBOR as a reference rate.

LIBOR is used as a reference rate for many of our transactions, which means it is the base on which relevant interest rates are determined. Transactions include those in which we lend and borrow money, issue, purchase and sell securities, and enter into derivatives to manage our or our customers' risk. LIBOR is the subject of recent national and international regulatory guidance and proposals for reform. The United Kingdom Financial Conduct Authority, which regulates the process for setting LIBOR, announced in July 2017 that it intends to stop persuading or compelling banks to submit rates for the calculation of LIBOR to the administrator of LIBOR after 2021.

There are ongoing efforts to establish an alternative reference rate. The Secured Overnight Financing Rate (or SOFR) is considered the most likely alternative reference rate suitable for replacing LIBOR, but issues remain with respect to its implementation. As a result, the scope of its ultimate acceptance and the impact on rates, pricing and the ability to manage risk, including through derivatives, remain uncertain. No other alternative rate is currently under wide consideration. If SOFR or another rate does not achieve wide acceptance as the alternative to LIBOR, there likely will be disruption to all of the markets relying on the availability of a broadly accepted reference rate. Even if SOFR or another reference rate ultimately replaces LIBOR, risks will remain for us with respect to outstanding loans, derivatives or other instruments using LIBOR. Those risks arise in connection with transitioning those instruments to a new reference rate and the corresponding value transfer that may occur in connection with that transition. That is because a new reference rate likely will not exactly mimic LIBOR. As a result, for example, over the life of a transaction that transitions from LIBOR to a new reference rate, our monetary obligations to our counterparties and our yield from transactions with clients may change, potentially adversely to us. For some instruments, the method of transitioning to a new reference rate may be challenging, especially if parties to an instrument cannot agree as to how to effect that transition. If a contract is not transitioned to a new reference rate and LIBOR ceases to exist, the impact on our obligations is likely to vary by asset class and contract. In addition, prior to LIBOR cessation, instruments that continue to refer to LIBOR may be impacted if there is a change in the availability or calculation of LIBOR. Risks related to transitioning instruments to a new reference rate or to how LIBOR is calculated and its availability include impacts on the yield on loans or securities held by us, amounts paid on securities we have issued, or amounts received and paid on derivative instruments we have entered into. The value of loans, securities, or derivative instruments tied to LIBOR and the trading market for LIBOR-based securities could also be impacted upon its discontinuance or if it is limited.

While we expect LIBOR to continue to be available in substantially its current form until the end of 2021 or shortly before that, it is possible that LIBOR quotes will become unavailable prior to that point. This could result, for example, if sufficient banks decline to make submissions to the LIBOR administrator. In that case, the risks associated with the transition to an alternative reference rate will be accelerated and magnified. These risks may also be increased due to the shorter time for preparing for the transition.

We rely on technology to conduct our business and could suffer a material adverse impact from interruptions in the effective operation of those systems and we are vulnerable to the impact of attempts to breach data security involving our or our customers' information.

Generally. As a large financial services company, we handle a substantial volume of customer and other financial transactions. As a result, we rely heavily on information systems to conduct our business and to process, record and monitor our transactions and those of our customers. Over time, we have seen more customer usage of technological solutions for financial needs as well as higher expectations of customers and regulators regarding effective and safe systems operation. We expect these trends to continue for the foreseeable future. The need to ensure proper functioning and resiliency of these systems has become more challenging, and the costs involved in that effort continue to be high.

The risks resulting from use of these systems result from a variety of factors, both internal and external. We are vulnerable to the impact of failures of our systems to operate as needed or intended. Such failures could include those resulting from human error, unexpected transaction volumes, or overall design or performance issues. In addition, our ability to use our technology effectively could be impacted due to bad weather, disasters, terrorism and the like affecting our systems specifically or necessary infrastructure more broadly. In some cases, the risk results from the potential for bad acts on the part of hackers, criminals, foreign governments or their agents, rogue employees, contractors and others. These risks are further described below.

The consequences of failures to operate our systems properly can include disruptions to our ability to use our accounting, deposit, loan and other systems. Such events could also cause errors in transactions or impair system functionality with customers, vendors or other parties.

Throughout our businesses, we rely on other companies and on the information systems they maintain. We do so both for the provision of products and services directly to us and for assistance in providing products and services to our customers. Others may provide the infrastructure that supports, for example, communications, payment, clearing and settlement systems, or information processing and storage. These companies range from those providing highly sophisticated information processing to those that provide fundamental

services, such as electric power and telecommunications. These other companies are generally subject to many of the same risks we face with respect to our systems. To the extent we rely on these other companies, we could be adversely affected if they are impacted by system failures, cyber attacks or employee misconduct.

The occurrence of any failure, interruption or security breach of any of our information or communications systems, or the systems of other companies on which we rely, could result in a wide variety of adverse consequences to us. This risk is greater if the issue is widespread or results in financial losses to our customers. Possible adverse consequences include damage to our reputation or a loss of customer business. We also could face litigation or additional regulatory scrutiny. This in turn could lead to liability or other sanctions, including fines and penalties or reimbursement of adversely affected customers. Even if we do not suffer any material adverse consequences as a result of events affecting us directly, successful attacks or systems failures at other financial institutions could lead to a general loss of customer confidence in financial institutions, including us. Also, system problems, including those resulting from third party attacks, whether at PNC or at our competitors, would likely broadly increase legislative, regulatory and customer concerns regarding the functioning, safety and security of such systems. In that case, we would expect to incur even higher levels of costs with respect to prevention and mitigation of these risks.

Risk of cyber attacks. We are faced with ongoing efforts by others to breach data security at financial institutions or with respect to financial transactions. Some of these involve efforts to enter our systems directly by going through or around our security protections. Others involve the use of social engineering schemes to gain access to confidential information from our employees or customers. Most corporate and commercial transactions are now handled electronically, and our retail customers increasingly use online access and mobile devices to bank with us. The ability to conduct business with us in this manner depends on the transmission and storage of confidential information in electronic form. As a result, efforts by bad actors to engage in various types of cyber attacks pose a serious risk to our business and reputation. The same risks are presented by attacks potentially affecting information held by third parties on our behalf.

Bad actors may attempt to harm us by gaining access to confidential or proprietary company and customer information, often with the intent of stealing from or defrauding us or our customers. In some cases, they seek to disrupt our ability to conduct our business, including by destroying information maintained by us. The protections we have in place to prevent this harm may be insufficient to do so. If our measures to prevent unauthorized access or other malicious acts are inadequate, the ability of bad actors to cause harm would be increased. Ultimately, actions by bad actors are to some extent beyond our ability to prevent. Our ability to protect confidential or proprietary information is even more limited with respect to information held by third parties.

Our customers often use their own devices, such as computers, smartphones and tablets, to do business with us and may provide their PNC customer information (including passwords) to a third party in connection with obtaining services from the third party. Although we take steps to provide safety and security for our customers' transactions with us and their customer information to the extent they are utilizing their own devices or providing third parties access to their accounts, our ability to assure such safety and security is necessarily limited.

As our customers regularly use PNC-issued credit and debit cards to pay for transactions with retailers and other businesses, there is also the risk of data security breaches at those other businesses covering PNC account information. When our customers use PNC-issued cards to make purchases from those businesses, card account information may be provided to the business. If the business's systems that process or store card account information are subject to a data security breach, holders of our cards who have made purchases from that business may experience fraud on their card accounts. We may suffer losses associated with reimbursing our customers for such fraudulent transactions on customers' card accounts, as well as for other costs related to data security compromise events, such as replacing cards associated with compromised card accounts. In addition, we provide card transaction processing services to some merchant customers under agreements we have with payment networks such as Visa and MasterCard. Under these agreements, we may be responsible for certain losses and penalties if one of our merchant customers suffers a data

security breach.

Over the last few years, several large companies disclosed that they had suffered substantial data security breaches compromising millions of user accounts and credentials. To date, our losses and costs related to these breaches have not been material, but other similar events in the future could be more significant to us. Moreover, to the extent more consumer confidential information becomes available to bad actors through the cumulative effect of data breaches at companies generally, bad actors may find it easier to use such information to gain access to our customer accounts.

There have been other recent publicly announced cyber attacks that were not focused on gaining access to credit card or user credential information but instead sought access to a range of other types of confidential information including internal emails and other forms of customer financial information. Ransomware attacks have sought to deny access to data and possibly shut down systems and devices maintained by target companies. In a ransomware attack, system data is encrypted or access is otherwise denied, accompanied by a demand for ransom to restore access to the data.

A number of companies have fallen victim to business email compromise scams (BEC) scams in recent years. BEC scams involve using social engineering to cause employees to wire funds to the perpetrators in the mistaken belief that the requests were made by a company executive or established vendor. While we have not experienced such losses to date, some of our commercial customers have been victimized. Attacks on our customers may put these relationships at risk, particularly if customers' ability to continue operations is impaired due to the losses suffered.

Other attacks in recent years have included distributed denial of service (DDoS) attacks, in which individuals or organizations flood commercial websites with extraordinarily high volumes of traffic with the goal of disrupting the ability of commercial enterprises to process transactions and possibly making their websites unavailable to customers for extended periods of time. We (as well as other financial services companies) have been subject to such attacks.

To date, none of these types of attacks have had a material financial impact on us, but attacks on others demonstrate the risks posed by new and evolving types of cyber attacks. We could suffer material financial and reputational losses in the future from any of these or other types of attacks.

Methods used by others to attack information systems change frequently (with generally increasing sophistication), often are not recognized until launched against a target, may be supported by foreign governments or other well-financed entities, and may originate from less regulated and remote areas around the world. As a result, we may be unable to implement adequate preventive measures to address these methods in advance of attacks.

In addition to threats from people external to us, insider threats represent a significant risk to us. Insiders, including those having legitimate access to our systems and the information contained in them, have the easiest opportunity to make inappropriate use of the systems and information. Addressing that risk requires understanding not only how to protect us from unauthorized use and disclosure of data, but also how to engage behavioral analytics and other tools to identify potential internal threats before any damage is done.

Risks associated with inadequate planning and mitigation. We have policies, procedures and systems (including cyber security and business continuity programs) designed to prevent or limit the effect of possible failures, interruptions or breaches in security of information systems. We design our business continuity and other information and technology risk management programs to manage our capabilities to provide services in the case of an event resulting in material disruptions of business activities affecting our employees, facilities, technology or suppliers. We regularly seek to test the effectiveness of and enhance these policies, procedures and systems. Nonetheless, we cannot guarantee the effectiveness of our policies, procedures and systems to protect us in any particular future situation.

Our ability to mitigate the adverse consequences of such occurrences is in part dependent on the quality of our business continuity planning, our ability to understand threats to us from a holistic perspective, and our ability to anticipate the timing and nature of any such event that occurs. The adverse impact of natural and other disasters, terrorist activities, international hostilities and the like could be increased to the extent that there is a lack of preparedness on the part of national or regional governments, including emergency responders, or on the part of other organizations and businesses with which we deal, particularly those on which we depend, many of which we have little or no control over.

In recent years, we have devoted significant resources towards improving the reliability of our systems and their security against external and internal threats. Even with our proactive and defensive measures in place, there remains the risk that one or more adverse events might occur. If one does occur, we might not be able to remediate the event or its consequences timely or adequately, particularly to the extent that it represents a novel or unusual threat. To the extent that the risk relates to products or services provided by others, we seek to engage in due diligence and monitoring to limit the risk, but here, as well, we cannot eliminate this risk. Should an adverse event affecting another company's systems occur, we may not have financial protection from the other company sufficient to compensate us or otherwise protect us from the consequences.

New customer privacy initiatives will impose additional operational burdens on PNC, may limit our ability to pursue desirable business initiatives and increase the risks associated with any future use of customer data.

Recently there has been an increase in legislative and regulatory efforts to protect the privacy of consumer data. Significant examples include the General Data Protection Regulation of the European Union and the California Consumer Privacy Act. These initiatives, among other things, limit how companies can use customer data and impose obligations on companies in their management of such data. Financial services companies such as PNC necessarily gather, maintain and use a significant amount of customer data. Other jurisdictions may adopt similar requirements that impose different and potentially inconsistent compliance burdens. These initiatives, particularly to the extent multiple jurisdictions adopt inconsistent requirements, could increase compliance complexity and related costs, result in significant financial penalties for compliance failures, and limit our ability to develop new products or respond to technological changes. They also could heighten the reputational impact of perceived misuses of customer data, by us, our vendors, or others who gain unauthorized access to our customer data.

We depend on the effectiveness and integrity of employees, and the systems and controls for which they are responsible, to manage operational risks.

We are a large company that offers a wide variety of products and services to a broad and diverse group of customers. We rely on our employees to design, manage, and operate our systems and controls to assure that we properly enter into, record and manage processes, transactions and other relationships with customers, suppliers and other parties with whom we do business. In some cases, we rely on employees of third parties to perform these tasks. We also depend on employees and the systems and controls for which they are responsible to assure that we identify and mitigate the risks that are inherent in our relationships and activities. These concerns are increased when we change processes or procedures, introduce new products or services, or implement new technologies, as we may fail to adequately identify or manage operational risks resulting from such changes.

As a result of our necessary reliance on employees, whether ours or those of third parties, to perform these tasks and manage resulting risks, we are thus subject to human vulnerabilities. These range from innocent human error to misconduct or malfeasance, potentially leading to operational breakdowns or other failures. Our controls may not be adequate to prevent problems resulting from human involvement in our business, including risks associated with the design, operation and monitoring of automated systems.

Errors by our employees or others responsible for systems and controls on which we depend and any resulting failures of those systems and controls could result in significant harm to PNC. This could include customer remediation costs, regulatory fines or penalties, litigation or enforcement actions, or limitations on our business activities. We could also suffer damage to our reputation, impacting our ability to attract and retain customers and employees. The reputational impact is likely greater to the extent that the mistakes or failures are pervasive, long-standing or affect a significant number of customers, particularly retail consumers. It is possible that the damage to our reputation may be disproportionate to the actual harm suffered by our customers or may be severe even if we fully remediate any harm suffered by our customers.

We use automation to help reduce some risks of human error. Recently, we have started taking greater advantage of machine learning, artificial intelligence and robotic process automation tools. Nonetheless, we continue to rely on many manual processes to conduct our business and manage our risks. In addition, use of automation tools does not eliminate the need for effective design and monitoring of their operation to make sure they operate as intended. Enhanced use of automation may present its own risks. These tools are dependent on the quality of the data used by the tool to learn and enhance the process for which it is responsible. Not only bad or missing data but also anomalous data can adversely affect the functioning of such tools. In addition, use of automation tools may increase the possible impact of errors should they occur.

Our business and financial results are subject to risks associated with the creditworthiness of our customers and counterparties.

Credit risk is inherent in the financial services business. It results from, among other things, extending credit to customers, purchasing securities, and entering into financial derivative transactions and certain guarantee contracts. Credit risk is one of our most significant risks, particularly given the high percentage of our assets represented directly or indirectly by loans and securities and the importance of lending activity to our overall business. We manage credit risk by assessing and monitoring the creditworthiness of our customers and counterparties, by diversifying our loan portfolio and by investing primarily in high quality securities.

A borrower’s ability to repay a loan can be adversely affected by many factors. Individual borrowers can be affected, for example, by declines in income, job losses, health issues or family issues. Commercial borrowers can be affected, for example, by poor business performance or catastrophe losses. Weakness in the economy or in financial markets would typically adversely impact the ability of our borrowers to repay outstanding loans. Borrowers with higher

leverage (that is, higher ratios of indebtedness to total capitalization or income) have an increased risk that they will be unable to repay loans, particularly when economic conditions worsen. We may also be exposed to credit risk if we fail to evaluate properly at origination the likely ability of a borrower to repay a loan. A failure to identify declining creditworthiness of a borrower at a time when remedial actions could reduce our exposure also increases credit risk. Any decrease in our borrowers' ability to repay loans would result in higher levels of nonperforming loans, net charge-offs, provision for credit losses and valuation adjustments on loans held for sale.

In addition to credit risk associated with our lending activities, we have credit risk arising from many other types of business relationships. Routine transactions give us credit exposure to brokers and dealers, commercial banks, investment banks, mutual and hedge funds, other institutional clients, as well as vendors and other non-financial entities.

In the ordinary course of business, we may have heightened credit exposure to a particular industry, region or financial market. As an example, loans secured by commercial and residential real estate typically represent a significant percentage of our overall credit portfolio. They also represent a portion of the assets underlying our investment securities. Although there are limitations on the extent of total exposure to an individual or business borrower, we may have outsized exposure to a particular borrower. Events adversely affecting specific customers or counterparties, industries, regions or financial markets, including a decline in their creditworthiness or

a worsening overall risk profile, could materially adversely affect us. Thus, in the example above, a decline in commercial real estate activity or valuations in a region or more broadly could have a material impact on us. This could be the case even if the rest of our portfolio was performing well. Declining economic conditions also may impact commercial borrowers more than consumer borrowers, or vice versa. The last recession, for example, impacted consumers more than commercial borrowers, particularly in residential real estate. A future recession may have the opposite result. Thus, the relative balance and mix of our loan portfolio may affect the severity of the impact of a future recession.

Our credit risk may be exacerbated when collateral held by us to secure obligations to us cannot be realized upon or is liquidated at prices that are not sufficient to recover the full amount of the loan or derivative exposure due us.

We reserve for credit losses on our loan and lease portfolio, as well as for unfunded loan commitments and letters of credit, through our Allowances for loan and lease losses and unfunded loan commitments and letters of credit. Changes in the allowances are reflected in Net income through Provision for credit losses. An increase in credit risk would likely lead to an increase in Provision for credit losses with a resulting reduction in our Net income and would increase our allowances. As described in the Recently Issued Accounting Standards portion of the Critical Accounting Estimates and Judgments section in Item 7 of this Report, the implementation of pending changes in the accounting for credit losses is likely to result in an increase in total credit loss reserves at the adoption date.

Our business and financial performance are impacted significantly by market interest rates and movements in those rates.

As a result of the high percentage of our assets and liabilities that are in the form of interest-bearing or interest-related instruments, changes in interest rates, in the shape of the yield curve, or in spreads between different market interest rates can have a material effect on our business, our profitability and the value of our financial assets and liabilities. For example:

- Changes in interest rates or interest rate spreads can affect the difference between the interest that we earn on assets and the interest that we pay on liabilities, which impacts our overall net interest income and margin as well as our profitability.
- Such changes can affect the ability of borrowers to meet obligations under variable or adjustable rate loans and other debt instruments, and can, in turn, increase our credit losses on those assets.
- Such changes may decrease the demand for interest rate-based products and services, including loans and deposit accounts.
- Such changes can also affect our ability to hedge various forms of market and interest rate risk and may decrease the effectiveness of those hedges in helping to manage such risks.
- Movements in interest rates also affect mortgage prepayment speeds and could result in impairments of mortgage servicing assets or otherwise affect the profitability of such assets.
- Increases in interest rates can lower the price we would receive on fixed-rate customer obligations if we were to sell them.

The rates on some interest-bearing instruments adjust promptly in accordance with changes in market rates, while others adjust only periodically or are fixed throughout a defined term. As a result, the impact of changes in interest rates can be either increased or diluted due to differences in the relative variability of the rates paid on our liabilities in relation to the rates received on our assets. The extent to which we have elected to hedge interest rate risk through interest rate swaps also affects the impact of rate changes. We attempt to manage the balance sheet to increase our benefit or reduce negative impacts from future movements in interest rates, but failures to anticipate actual movements may have the opposite result.

Currently, market interest rates are generally increasing. While, in general, higher interest rates enhance our ability to grow our net interest income, there are risks associated with a rising interest rate environment. For one thing,

customers may be less willing overall to borrow at higher rates and the value of asset classes typically financed through secured loans may be negatively affected. These effects are likely to be found in home lending and other real estate finance businesses. As another example, there may be increased competitive pressures as rates on deposit products rise. The benefits of higher interest rates are best achieved if we can increase the rates on loans and other assets faster than the rates on deposits and other liabilities increase. We may not be able to achieve this result in a rising rate environment.

We discuss the impact of governmental monetary policy on interest rates, including recent increases by the Federal Reserve in its benchmark interest rates, under "The policies of the Federal Reserve and other governmental agencies have a significant impact on interest rates and overall financial market performance" Risk Factor in this Item 1A.

Our business and financial performance are vulnerable to the impact of changes in the values of financial assets.

As a financial institution, a substantial majority of our assets and liabilities are financial in nature. Examples include loans, securities, servicing rights, deposits and borrowings. Such assets and liabilities will fluctuate in value, often significantly, due to movements in the financial markets or market volatility as well as developments specific to the asset or liability in question. Credit-based assets and liabilities will fluctuate in value due to changes in the perceived creditworthiness of borrowers or other counterparties and also due to changes in market interest rates.

Changes in loan prepayment speeds, usually based on fluctuations in market interest rates, could adversely impact the value of our mortgage servicing rights. Also, the underlying value of assets under lease or securing an obligation may decrease due to supply and demand for the asset or the condition of the asset. This could negatively impact the ability to collect fully on the secured obligation.

In many cases, we mark our assets and liabilities to market on our financial statements, either through Net income and Retained earnings or through adjustments to Accumulated other comprehensive income. We may need to record losses in the value of financial assets even where our expectation of realizing the face value of the underlying instrument has not changed. Other assets and liabilities are not marked to market. As a result, our balance sheet may not precisely represent the fair market value of our financial assets and liabilities.

In addition, asset management revenue is earned primarily based on a percentage of the value of the assets being managed and thus is impacted by general changes in market valuations. Thus, although we are not directly impacted by changes in the value of such assets, decreases in the value of those assets would affect related Noninterest income.

Our asset and liability valuations and the determination of the amount of loss allowances and impairments taken on our assets are highly subjective. Inaccurate estimates could materially impact our results of operations or financial position.

We must use estimates, assumptions and judgments when assets and liabilities are measured and reported at fair value. Assets and liabilities carried at fair value inherently result in a higher degree of financial statement volatility. Changes in underlying factors or assumptions in any of the areas underlying our estimates could materially impact our future financial condition and results of operations. During periods of market disruption, it may be more difficult to value certain assets if trading becomes less frequent and/or market data becomes less observable. There may be certain asset classes that were historically traded in active markets with significant observable data that rapidly become illiquid due to market volatility, a loss in market confidence or other factors. In addition, we have certain assets and liabilities carried at fair value that are estimated using unobservable inputs that are significant to the fair value of the assets or liabilities. The valuation of any asset or liability substantially based on unobservable inputs is necessarily less reliable than those based on active trading markets. Further, rapidly changing and unprecedented market conditions in any particular market could materially impact the valuation of assets as reported within our consolidated financial statements. Our ability to hedge exposure is in part dependent on our ability to value the related assets or liabilities.

The determination of the amount of loss allowances and asset impairments varies by asset type and is based upon our periodic evaluation and assessment of known and inherent risks associated with the respective asset class. Management updates its evaluations regularly and reflects changes in allowances and impairments in operations as such evaluations are revised. Although we have policies and procedures in place to determine loss allowance and asset impairments, due to the subjective nature of this area, there can be no assurance that our management has accurately assessed the level of impairments taken and allowances reflected in our financial statements. Furthermore, additional impairments may need to be taken or allowances provided for in the future. Historical trends may not be indicative of future impairments or allowances.

There are risks resulting from the extensive use of models in our business.

We rely on quantitative models to measure risks and to estimate many financial values. We use models throughout much of our business, relying on them for much of our decision making. Examples of areas we use models include determining the pricing of various products, grading loans and extending credit, measuring interest rate and other market risks, predicting or estimating losses, assessing capital adequacy, and calculating economic and regulatory capital levels. We also use models to estimate the value of financial instruments and balance sheet items. Poorly designed or implemented models present the risk that our business decisions based on information incorporating model output will be adversely affected due to the inadequacy of that information. Also, information we provide to the

public or to our regulators based on poorly designed or implemented models could be inaccurate or misleading. Some of the decisions that our regulators make, including those related to capital distributions to our shareholders, could be affected adversely if they perceive that the quality of the relevant models used is insufficient.

Our success depends on our ability to attract and retain customers for our products and services, which may be negatively impacted by a lack of consumer and business economic confidence as well as our actions, including our ability to anticipate and satisfy customer demands for products and services.

As a financial institution, our performance is subject to risks associated with declines in customer demand for our products and services, including as a result of a loss of economic confidence or customer trust in us.

Economic and market developments may affect consumer and business confidence levels. If customers lose confidence due to concerns regarding the economy, the demand for our products and services could suffer. We may also fail to attract or retain customers if we are unable to develop and market products and services that meet evolving customer needs or demands or if we are unable to

deliver them effectively and securely to our customers. This is particularly true to the extent that our competitors are better able to do so.

News or other publicity that harms our reputation, or the reputation of our industry generally, also could cause a loss of customers or a reduction in the extent to which customers do business with us. Financial companies are highly vulnerable to reputational damage when they are found to have harmed customers, particularly retail customers, through conduct that is seen as illegal, unfair, deceptive, manipulative or otherwise wrongful. The negative impact of such reputational damage on our business may be disproportionate to the actual harm caused to customers. In addition, we could suffer reputational harm and a loss of customer trust as a result of conduct of others in the industry even where we have not engaged in the conduct. We use third parties to help in many aspects of our business, with the risk that their conduct can affect our reputation regardless of the degree to which we are responsible for it. We are also subject to the risk of reputational harm resulting from conduct of employees outside of the scope of their employment, including through activities on social media.

If we fail to attract and retain customers, demand for our loans and other financial products and services could decrease and we could experience adverse changes in payment patterns. We could lose interest income from a decline in credit usage and noninterest income from a decline in product sales, investments and other transactions. Our customers could remove money from checking, savings or other types of deposit accounts in favor of other banks or other types of investment products. Deposits are a low cost source of funds for us. Therefore, losing deposits could increase our funding costs and reduce our net interest income.

The U.S. is emerging from an extended period of very low interest rates. Very low interest rates decrease the attractiveness of alternatives to bank checking and savings accounts, which may lack deposit insurance and some of the convenience associated with more traditional banking products. As interest rates rise, customers may be less willing to maintain balances in noninterest-bearing or low interest bank accounts. In addition, if the spread between the rates we offer and those offered by alternatives to bank accounts widens, customers could be willing to forego benefits of bank accounts for the higher return. As a result, we could suffer a relatively higher cost of funds, with a negative impact on net interest income. Loss of customers could also harm noninterest income.

In our asset management business, investment performance is an important factor influencing the level of assets that we manage. Poor investment performance could hurt revenue and growth as existing clients might withdraw funds in favor of better performing products. Additionally, the ability to attract funds from existing and new clients might diminish. Overall economic conditions may limit the amount that customers are able or willing to invest as well as the value of the assets they do invest. The failure or negative performance of products of other financial institutions could lead to a loss of confidence in similar products offered by us without regard to the performance of our products. Such a negative contagion could lead to withdrawals, redemptions and liquidity issues in such products and have an adverse impact on our assets under management and asset management revenues and earnings.

We rely on third party vendors, service providers and other counterparties to help support many aspects of our business. To this extent, our direct control of activities related to our business is reduced, which could introduce risk.

Our use of third parties to support our business needs typically means that we do not directly control the activities we are having them perform. Risks can arise through greater complexity and inadequate performance by the third party, specifically where that performance could affect us or our customers. Many of the kinds of risks presented by activities performed by third parties are described elsewhere in these Risk Factors. For example, outside companies may assist us in processing confidential customer or employee information. In such a case, a cyber attack on another company may result in access to our customers' or employees' information. An outside company may also fail to comply with legal requirements relevant to its work on our behalf. We may in those circumstances suffer financial losses, legal consequences and injury to our reputation. Even if the other company makes us whole for financial losses, which is not necessarily the case, it is unlikely that it would be able to restore our reputation. As a result, the

use of third parties to assist in our business activities heightens the risks to us inherent in those activities.

We operate in a highly competitive environment in terms of the products and services we offer and the geographic markets in which we conduct business. The labor markets where we compete for talented employees are also highly competitive. Competition could adversely impact our customer acquisition, growth and retention, as well as our credit spreads and product pricing, causing us to lose market share and deposits and revenues.

We are subject to intense competition from various financial institutions as well as from non-bank entities that engage in many similar activities without being subject to bank regulatory supervision and restrictions. This competition is described in Item 1 of this Report under "Competition."

The principal bases for competition are pricing, product structure, the range of products and services offered and the quality of customer service. Pricing in our industry includes interest rates on loans and deposits as well as fees for various services. Customer service expectations include ease of doing business and responsiveness to needs and concerns. The ability to access and use technology is an increasingly important competitive factor in the financial services industry. Having the right technology is a critically

important component to customer satisfaction as it affects our ability to deliver the products and services that customers desire and in a manner that they find convenient and attractive. Banks generally are facing the risk of increased competition from products and services offered by non-bank financial technology companies, particularly related to payment services and lending.

Consolidation in our industry, including among smaller banks combining to form more competitive larger ones and between banks and non-bank entities, could result in PNC facing more intense competition, particularly in impacted regions or with respect to particular products.

Another increasingly competitive factor in the financial services industry is the ability to attract and retain talented employees across many of our businesses and support areas. This factor presents greater risk when we are expanding into new markets, developing new product lines, or significantly enhancing staffing in certain areas, particularly technology. This competition leads to increased expenses in many business areas and can also cause us to not pursue certain business opportunities. Limitations on the manner in which regulated financial institutions can compensate their officers and employees, including those contained in pending rule proposals implementing requirements of Dodd-Frank, may make it more difficult for regulated financial institutions, including PNC, to compete with unregulated financial institutions for talent.

A failure to adequately address the competitive pressures we face could make it harder for us to attract and retain customers across our businesses. On the other hand, meeting these competitive pressures could require us to incur significant additional expense or to accept risk beyond what we would otherwise view as desirable under the circumstances. In addition, in our interest rate sensitive businesses, pressures to increase rates on deposits or decrease rates on loans could reduce our net interest margin, resulting in a negative impact on our net interest income.

We continually encounter technological change and need to keep pace with this change in order to maintain or enhance the competitiveness of our businesses.

The financial services industry is undergoing rapid technological change with frequent introductions of new technology-driven products and services. Examples include expanded use of cloud computing, artificial intelligence and machine learning, virtual and augmented reality, biometric authentication, voice and natural language, and data protection enhancements, as well as increased online and mobile device interaction with customers. The effective use of technology increases efficiency and enables financial institutions to better serve customers. We have been investing in technology and connectivity in order to automate functions previously performed manually, to facilitate the ability of customers to engage in financial transactions, and otherwise to enhance the customer experience with respect to our products and services. On the retail banking side, this has included developments such as more sophisticated ATMs (including the ability to cash checks using exact change), cashless bank branches, and expanded access to banking transactions (including mobile deposits, instant availability of funds, online loan applications and real time payment processing) through the internet, smart phones, tablets and other mobile devices. These efforts have all been in response to actual and anticipated customer behavior and expectations. Our continued success depends, in part, upon our ability to address the needs of our customers by using technology to provide products and services that satisfy customer demands, including demands for faster and more secure payment services, and create efficiencies in our operations. A failure to maintain or enhance our competitive position with respect to technology, whether because we fail to anticipate customer expectations or because our technological developments fail to perform as desired or are not rolled out in a timely manner, may cause us to lose market share or incur additional expense.

Societal responses to climate change could adversely affect our business and performance, including indirectly through impacts on our customers.

Concerns over the long-term impacts of climate change have led and will continue to lead to governmental efforts around the world to mitigate those impacts. Consumers and businesses also may change their behavior on their own as

a result of these concerns. PNC and its customers will need to respond to new laws and regulations as well as consumer and business preferences resulting from climate change concerns. We and our customers may face cost increases, asset value reductions, operating process changes, and the like. The impact on our customers will likely vary depending on their specific attributes, including reliance on or role in carbon intensive activities. Among the impacts to PNC could be a drop in demand for our products and services, particularly in certain sectors. In addition, we could face reductions in creditworthiness on the part of some customers or in the value of assets securing loans. Our efforts to take these risks into account in making lending and other decisions, including by increasing our business with climate-friendly companies, may not be effective in protecting us from the negative impact of new laws and regulations or changes in consumer or business behavior.

Our business and financial results could be impacted materially by adverse results in legal proceedings.

Many aspects of our business involve substantial risk of legal liability. We have been named or threatened to be named as defendants in various lawsuits arising from our business activities. In addition, we are regularly the subject of governmental investigations and other forms of regulatory inquiry. We also are at risk when we have agreed to indemnify others for losses related to legal proceedings

they face, such as in connection with the sale of a business or assets by us. The results of these legal proceedings could lead to significant monetary damages or penalties, restrictions on the way in which we conduct our business, or reputational harm.

Although we establish accruals for legal proceedings when information related to the loss contingencies represented by those matters indicates both that a loss is probable and that the amount of loss can be reasonably estimated, we do not have accruals for all legal proceedings where we face a risk of loss. In addition, due to the inherent subjectivity of the assessments and unpredictability of the outcome of legal proceedings, amounts accrued may not represent the ultimate loss to us from the legal proceedings in question. Thus, our ultimate losses may be higher, and possibly significantly so, than the amounts accrued for legal loss contingencies. We discuss further the unpredictability of legal proceedings and describe certain of our pending legal proceedings in Note 19 Legal Proceedings in the Notes To Consolidated Financial Statements in Item 8 of this Report.

We have a substantial minority equity interest in BlackRock, a publicly traded company, and its business operations and financial performance can adversely affect PNC and our results.

Our investment in BlackRock represents a significant investment for PNC and contributes both income (through equity method accounting) and cash inflows (through dividends) to PNC. See Note 22 Segment Reporting in the Notes To Consolidated Financial Statements in Item 8 of this Report. In 2018, BlackRock contributed 15% of our net income. The value of our investment in BlackRock and its contribution to our financial results are vulnerable to poor financial performance or other issues at BlackRock affecting its business. In addition, we rely on BlackRock for its financial results that, as discussed above, are included in our financial statements. BlackRock is responsible for, and has control over, the preparation of its financial statements and its internal controls over financial reporting. PNC may be impacted by factors such as poor performance or other issues, as well as by financial reporting control failures, at BlackRock, with the extent of the impact on us and our financial results depending on the severity of the issue at BlackRock.

BlackRock is a public company that files separately with the SEC. In its filings with the SEC, BlackRock provides disclosure as to its business, including disclosure regarding its views as to the drivers of its financial performance and the most significant risks it faces. Its SEC filings also include certifications and disclosure regarding internal controls over financial reporting and disclosure controls.

We grow our business in part by acquiring other financial services businesses from time to time. Sometimes these are businesses with technologies or other assets valuable to us even if they do not themselves provide financial services to customers. These acquisitions present a number of risks and uncertainties related both to the acquisition transactions themselves and to the integration of the acquired businesses into PNC after closing.

Acquisitions of other companies or of financial assets and related deposits and other liabilities present risks and uncertainties to us in addition to those presented by the nature of the business acquired.

Acquisitions may be substantially more expensive or take longer to complete than anticipated. This risk includes unanticipated costs incurred in connection with the integration of the acquired business. Anticipated benefits (such as cost savings from synergies or strategic gains from being able to offer product sets to a broader potential customer base) may not be fully realized. It can take longer or require greater resources to achieve these benefits. It also may prove impossible to achieve them at all or in their entirety as a result of unexpected factors or events.

Specific factors that can affect our ability to achieve anticipated results from acquisitions may include, depending on the nature of the business acquired, the following:

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If the acquisition includes loan portfolios, the extent of credit losses following completion of the acquisition. Similarly, if the acquisition includes deposits, the extent of deposit attrition post-closing. Acquisitions of banking companies typically include both loans and deposits. These factors will be affected by a number of factors, including the state of the economy following the acquisition and the quality of our pre-acquisition analysis of the acquired business.

- If a significant aspect of the value of an acquired business is intellectual property, the extent to which the intellectual property may be protected and commercialized by PNC following the acquisition.
- If the acquisition involves entering into new businesses or geographic or other markets, our inability to take advantage of these opportunities as a result of our inexperience with respect to them.
- The results of litigation and governmental investigations that may be pending at the time of the acquisition or be filed or commenced thereafter, as a result of an acquisition or otherwise. It is often hard to predict the results of such legal proceedings. It may also be hard to anticipate what legal proceedings may be started following an acquisition.
- The extent to which client attrition from the acquired business exceeds expectations.

Our ability to analyze the risks presented by prospective acquisitions, as well as our ability to prepare in advance of closing for integration, depends, in part, on the information we can gather with respect to the business we are acquiring, which can be quite limited. Our pre-acquisition review of the business may also impact our ability to prepare for and execute on the integration of an

acquired business.

As a regulated financial institution, our ability to pursue or complete attractive acquisition opportunities could be negatively impacted by regulatory issues, including delays in obtaining required approvals. Our ability to make large acquisitions in the future may be negatively impacted as well by regulatory rules or future regulatory initiatives designed to limit systemic risk and the potential for a financial institution to become "too big to fail."

Our business and financial performance could be adversely affected, directly or indirectly, by disasters, natural or otherwise, by terrorist activities or by international hostilities.

Neither the occurrence nor the potential impact of disasters (whether caused naturally or by human conduct), terrorist activities and international hostilities can be predicted. However, these occurrences could adversely impact us, for example, by causing significant damage to our facilities or preventing us from conducting our business in the ordinary course. Also, their impact on our borrowers, depositors, other customers, suppliers or other counterparties could result in indirect adverse effects on us. Other indirect adverse consequences from disasters, terrorist activities or international hostilities could result from impacts to the financial markets or the economy in general or in any particular region. These types of indirect effects could lead, for example, to an increase in delinquencies, bankruptcies or defaults that could result in our experiencing higher levels of nonperforming assets, net charge-offs and provisions for credit losses. They could also cause a reduction in demand for lending or other services that we provide. Climate change may be increasing the frequency or severity of adverse weather conditions, making the impact from these types of natural disasters on us or our customers worse.

Our ability to mitigate the adverse consequences of such occurrences is in part dependent on the quality of our resiliency planning. This includes our ability to anticipate the nature of any such event that might occur. The adverse impact of disasters, terrorist activities or international hostilities also could be increased to the extent that there is a lack of preparedness on the part of national or regional emergency responders or on the part of other organizations and businesses that we deal with, many of which we depend on but have limited or no control over.

ITEM 1B – UNRESOLVED STAFF COMMENTS

There are no SEC staff comments regarding PNC's periodic or current reports under the Exchange Act that are pending resolution.

ITEM 2 – PROPERTIES

Our executive and primary administrative offices are currently located at The Tower at PNC Plaza, Pittsburgh, Pennsylvania. The 33-story structure is owned by PNC Bank, National Association.

We own or lease numerous other premises for use in conducting business activities, including operations centers, offices, and branches and other facilities. We consider the facilities owned or occupied under lease by our subsidiaries to be adequate for the purposes of our business operations. We include here by reference the additional information regarding our properties in Note 8 Premises, Equipment and Leasehold Improvements in the Notes To Consolidated Financial Statements in Item 8 of this Report.

ITEM 3 – LEGAL PROCEEDINGS

See the information set forth in Note 19 Legal Proceedings in the Notes To Consolidated Financial Statements in Item 8 of this Report, which is incorporated here by reference.

ITEM 4 – MINE SAFETY DISCLOSURES

Not applicable

EXECUTIVE OFFICERS OF THE REGISTRANT

Information regarding each of our executive officers as of February 22, 2019 is set forth below. Executive officers do not have a stated term of office. Each executive officer has held the position or positions indicated or another executive position with the same entity or one of its affiliates for the past five years unless otherwise indicated below.

Name	Age	Position with PNC	Year Employed (a)
William S. Demchak	56	Chairman, President and Chief Executive Officer (b)	2002
Michael J. Hannon	62	Executive Vice President and Chief Credit Officer	1982
Vicki C. Henn	50	Executive Vice President and Chief Human Resources Officer	1994
Gregory B. Jordan	59	Executive Vice President, General Counsel and Chief Administrative Officer	2013
Stacy M. Juchno	43	Executive Vice President and General Auditor	2009
Karen L. Larrimer	56	Executive Vice President, Chief Customer Officer and Head of Retail Banking	1995
Michael P. Lyons	48	Executive Vice President, Head of Corporate & Institutional Banking and Head of Asset Management Group	2011
E William Parsley, III	53	Executive Vice President and Chief Operating Officer	2003
Robert Q. Reilly	54	Executive Vice President and Chief Financial Officer	1987
Joseph E. Rockey	54	Executive Vice President and Chief Risk Officer	1999
Steven Van Wyk	60	Executive Vice President and Head of Technology and Innovation	2013
Gregory H. Kozich	55	Senior Vice President and Controller	2010

(a) Where applicable, refers to year employed by predecessor company.

(b) Mr. Demchak also serves as a director. Biographical information for Mr. Demchak is included in “Election of Directors (Item 1)” in our proxy statement for the 2019 annual meeting of shareholders. See Item 10 of this Report.

Michael J. Hannon has served as Executive Vice President since 2009, prior to which he was a Senior Vice President. He has served as Chief Credit Officer since 2001 and was Interim Chief Risk Officer from December 2011 to February 2012.

Vicki C. Henn has served as Executive Vice President and Chief Human Resources Officer of PNC since July 2014. Ms. Henn joined PNC in 1994 and has held numerous management positions. Prior to being named to her current position, Ms. Henn was a Senior Vice President, responsible for Human Resources for Retail Banking.

Gregory B. Jordan joined PNC in 2013 as Executive Vice President, General Counsel and Head of Regulatory and Government Affairs. In February 2016, Mr. Jordan was also appointed Chief Administrative Officer. Prior to joining PNC, he served as the Global Managing Partner for the last 13 years of his 29 year tenure at Reed Smith LLP.

Stacy M. Juchno has served as Executive Vice President and General Auditor of PNC since April 2014 and previously served as Senior Vice President and Finance Governance and Oversight Director.

Karen L. Larrimer was appointed Executive Vice President in 2013 and became head of PNC’s Retail Banking in 2016. She has also served as Chief Customer Officer since April 2014, prior to which she served as Chief Marketing Officer.

Michael P. Lyons has been an Executive Vice President since 2011 and is head of PNC’s Corporate & Institutional Banking. Mr. Lyons assumed responsibility for PNC's Asset Management Group in January 2018. Prior to joining PNC in October 2011, from May 2010 until October 2011, Mr. Lyons was head of corporate development and strategic planning for Bank of America.

E William Parsley, III has served as Executive Vice President since 2009. In February 2018, Mr. Parsley was appointed Chief Operating Officer. Previously, he served as Treasurer and Chief Investment Officer since 2004 and head of Consumer Lending since the spring of 2016.

Robert Q. Reilly was appointed Chief Financial Officer in 2013. He served as the head of PNC’s Asset Management Group from 2005 until April 2013. Previously, he held numerous management roles in both Corporate Banking and Asset Management. He was appointed Executive Vice President in 2009.

Joseph E. Rockey was appointed Executive Vice President and Chief Risk Officer in January 2015. Prior to his appointment, Mr. Rockey led enterprise risk management and the Basel office within PNC’s risk management organization.

Steven Van Wyk joined PNC as Head of Technology and Operations in 2013 and was appointed Head of Technology and Innovation in April 2017. He was appointed Executive Vice President of PNC in 2013. From 2007 until joining PNC, Mr. Van Wyk served as Global Chief Operating Officer for ING.

Gregory H. Kozich has served as Controller of PNC since 2011. He was appointed as Senior Vice President in 2010. Prior to joining PNC in 2010, Mr. Kozich was with the Federal National Mortgage Association from 2005 until late 2010, most recently serving as its corporate controller.

PART II
ITEM 5 – MARKET FOR REGISTRANT’S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

(a) (1) Our common stock is listed on the New York Stock Exchange and is traded under the symbol “PNC.” At the close of business on February 15, 2019, there were 53,986 common shareholders of record.

Holders of PNC common stock are entitled to receive dividends when declared by our Board of Directors out of funds legally available for this purpose. Our Board of Directors may not pay or set apart dividends on the common stock until dividends for all past dividend periods on any series of outstanding preferred stock and certain outstanding capital securities issued by the parent company have been paid or declared and set apart for payment. The Board of Directors presently intends to continue the policy of paying quarterly cash dividends. The amount of any future dividends will depend on economic and market conditions, our financial condition and operating results, and other factors, including contractual restrictions and applicable government regulations and policies (such as those relating to the ability of bank and non-bank subsidiaries to pay dividends to the parent company and regulatory capital limitations). The amount of our dividend is also currently subject to the results of the supervisory assessment of capital adequacy and capital planning processes undertaken by the Federal Reserve and our primary bank regulators as part of the Comprehensive Capital Analysis and Review (CCAR) process as described in the Supervision and Regulation section in Item 1 of this Report.

The Federal Reserve has the power to prohibit us from paying dividends without its approval. For further information concerning dividend restrictions and other factors that could limit our ability to pay dividends, as well as restrictions on loans, dividends or advances from bank subsidiaries to the parent company, see the Supervision and Regulation section in Item 1, Item 1A Risk Factors, the Liquidity and Capital Management portion of the Risk Management section in Item 7, and Note 10 Borrowed Funds, Note 15 Equity and Note 18 Regulatory Matters in the Notes To Consolidated Financial Statements in Item 8 of this Report, which we include here by reference.

We include here by reference the information regarding our compensation plans under which PNC equity securities are authorized for issuance as of December 31, 2018 in the table (with introductory paragraph and notes) in Item 12 of this Report.

Our stock transfer agent and registrar is:
Computershare Trust Company, N.A.
250 Royall Street
Canton, MA 02021
800-982-7652
www.computershare.com/pnc

Registered shareholders may contact Computershare regarding dividends and other shareholder services.

We include here by reference the information that appears under the Common Stock Performance Graph caption at the end of this Item 5.

(a)(2) None.

(b) Not applicable.

(c) Details of our repurchases of PNC common stock during the fourth quarter of 2018 are included in the following table:

In thousands, except per share data

2018 period	Total shares purchased (a)	Average price paid per share	Total shares purchased as part of publicly announced programs (b)	Maximum number of shares that may yet be purchased under the programs (b)
October 1 – 31	1,204	$ 128.43	1,189	25,663

November 1 – 30	1,491	$ 133.79	1,491	24,172
December 1 – 31	3,458	$ 119.43	3,458	20,714
Total	6,153	$ 124.67		

(a) Includes PNC common stock purchased in connection with our various employee benefit plans generally related to forfeitures of unvested restricted stock awards and shares used to cover employee payroll tax withholding requirements. Note 11 Employee Benefit Plans and Note 12 Stock Based Compensation Plans in the Notes To Consolidated Financial Statements in Item 8 of this Report include additional information regarding our employee benefit and equity compensation plans that use PNC common stock.

(b) On March 11, 2015, we announced that our Board of Directors approved a stock repurchase program authorization in the amount of 100 million shares of PNC common stock, effective April 1, 2015. Repurchases are made in open market or privately negotiated transactions and the timing and exact amount of common stock repurchases will depend on a number of factors including, among others, market and general economic conditions, regulatory capital considerations, alternative uses of capital, the potential impact on our credit ratings, and contractual and regulatory limitations, including the results of the supervisory assessment of capital adequacy and capital planning processes undertaken by the Federal Reserve as part of the CCAR process. In June 2018, we announced share repurchase programs of up to $2.0 billion for the four quarter period beginning with the third quarter of 2018, including repurchases of up to $300 million related to stock issuances under employee benefit plans, in accordance with PNC's 2018 capital plan. In November 2018, we announced an increase to these previously announced programs in the amount of up to $900 million in additional common share repurchases. The aggregate repurchase price of shares repurchased during the fourth quarter of 2018 was $.8 billion. See the Liquidity and Capital Management portion of the Risk Management section in Item 7 of this Report for more information on the authorized share repurchase programs for the period July 1, 2018 through June 30, 2019.

Common Stock Performance Graph

This graph shows the cumulative total shareholder return (i.e., price change plus reinvestment of dividends) on our common stock during the five-year period ended December 31, 2018, as compared with: (1) a selected peer group as set forth below and referred to as the "Peer Group;" (2) an overall stock market index, the S&P 500 Index; and (3) a published industry index, the S&P 500 Banks. The yearly points marked on the horizontal axis of the graph correspond to December 31 of each year. The stock performance graph assumes that $100 was invested on January 1, 2014 for the five-year period and that dividends were reinvested. The table below the graph shows the resultant compound annual growth rate for the performance period.

	Base Period	Assumes $100 investment at Close of Market on December 31, 2013 Total Return = Price change plus reinvestment of dividends					5-Year Compound Growth Rate
	Dec. 2013	Dec. 2014	Dec. 2015	Dec. 2016	Dec. 2017	Dec. 2018	
PNC	$ 100	$120.32	$128.51	$161.64	$203.60	$169.03	11.07 %
S&P 500 Index	$ 100	$113.68	$115.24	$129.02	$157.17	$150.27	8.49 %
S&P 500 Banks	$ 100	$115.51	$116.49	$144.81	$177.47	$148.30	8.20 %
Peer Group	$ 100	$110.15	$109.59	$144.66	$162.10	$135.40	6.25 %

The Peer Group for the preceding chart and table consists of the following companies: Bank of America Corporation; BB&T Corporation; Capital One Financial Corporation; Citizens Financial Group, Inc.; Fifth Third Bancorp; JPMorgan Chase & Co.; KeyCorp; M&T Bank Corporation; Regions Financial Corporation; SunTrust Banks, Inc.; The PNC Financial Services Group, Inc.; U.S. Bancorp; and Wells Fargo & Company. This Peer Group was approved for 2018 by the Board of Directors' Personnel and Compensation Committee. Such Committee has approved the same peer group for 2019.

Each yearly point for the Peer Group is determined by calculating the cumulative total shareholder return for each company in the Peer Group from December 31, 2013 to December 31 of that year (End of Month Dividend Reinvestment Assumed) and then using the median of these returns as the yearly plot point.

In accordance with the rules of the SEC, this section, captioned "Common Stock Performance Graph," is not incorporated by reference into any of our future filings made under the Securities Exchange Act of 1934 or the Securities Act of 1933. The Common Stock Performance Graph, including its accompanying table and footnotes, is not deemed to be soliciting material or to be filed under the Exchange Act or the Securities Act.

ITEM 6 – SELECTED FINANCIAL DATA

This Selected Financial Data should be reviewed in conjunction with the Consolidated Financial Statements and Notes included in
Item 8 of this Report as well as the other disclosures in this Report concerning our historical financial performance, our future
prospects and the risks associated with our business and financial performance.

	Year ended December 31				
Dollars in millions, except per share data	2018	2017	2016	2015	2014
Summary of Operations					
Interest income	$12,582	$10,814	$9,652	$9,323	$9,431
Interest expense	2,861	1,706	1,261	1,045	906
Net interest income	9,721	9,108	8,391	8,278	8,525
Noninterest income	7,411	7,221	6,771	6,947	6,850
Total revenue	17,132	16,329	15,162	15,225	15,375
Provision for credit losses	408	441	433	255	273
Noninterest expense	10,296	10,398	9,476	9,463	9,488
Income before income taxes and noncontrolling interests	6,428	5,490	5,253	5,507	5,614
Income taxes	1,082	102	1,268	1,364	1,407
Net income	5,346	5,388	3,985	4,143	4,207
Less: Net income attributable to noncontrolling interests	45	50	82	37	23
Preferred stock dividends	236	236	209	220	232
Preferred stock discount accretion and redemptions	4	26	6	5	5
Net income attributable to common shareholders	$5,061	$5,076	$3,688	$3,881	$3,947
Per Common Share					
Basic earnings	$10.79	$10.49	$7.42	$7.52	$7.44
Diluted earnings	$10.71	$10.36	$7.30	$7.39	$7.30
Book value	$95.72	$91.94	$85.94	$81.84	$77.61
Cash dividends declared	$3.40	$2.60	$2.12	$2.01	$1.88
Effective tax rate (a) (b)	16.8 %	1.9 %	24.1 %	24.8 %	25.1 %
Performance Ratios					
Net interest margin (c)	2.97 %	2.87 %	2.73 %	2.74 %	3.08 %
Noninterest income to total revenue	43 %	44 %	45 %	46 %	45 %
Efficiency	60 %	64 %	62 %	62 %	62 %
Return on:					
Average common shareholders' equity (b)	11.83 %	12.09 %	8.85 %	9.50 %	9.91 %
Average assets (b)	1.41 %	1.45 %	1.10 %	1.17 %	1.28 %

(a) The effective tax rates are generally lower than the statutory rate due to the relationship of pretax income to tax credits and earnings that are not subject to tax.

(b) The 2018 results reflected the change in the statutory federal income tax rate from 35% to 21%, effective January 1, 2018, as a result of the new federal tax legislation. The 2017 results reflected an income tax benefit from the new federal tax legislation primarily attributable to revaluation of deferred tax liabilities at the lower statutory tax rate.

(c) Net interest margin is the total yield on interest-earning assets minus the total rate on interest-bearing liabilities and includes the benefit from use of noninterest-bearing sources. To provide more meaningful comparisons of net interest margins, we use net interest income on a taxable-equivalent basis in calculating average yields used in the calculation of net interest margin by increasing the interest income earned on tax-exempt assets to make it fully equivalent to interest income earned on taxable investments. This adjustment is not permitted under GAAP in the Consolidated Income Statement. For additional information, see Reconciliation of Taxable-Equivalent Net Interest Income (Non-GAAP) Statistical Information (Unaudited) in Item 8 of this Report.

Certain prior period amounts have been reclassified to conform with the current period presentation, which we believe is more meaningful to readers of our consolidated financial statements.

	At or for the year ended December 31				
Dollars in millions, except as noted	2018	2017	2016	2015	2014
Balance Sheet Highlights					
Assets	$382,315	$380,768	$366,380	$358,493	$345,072
Loans	$226,245	$220,458	$210,833	$206,696	$204,817
Allowance for loan and lease losses	$2,629	$2,611	$2,589	$2,727	$3,331
Interest-earning deposits with banks (a)	$10,893	$28,595	$25,711	$30,546	$31,779
Investment securities	$82,701	$76,131	$75,947	$70,528	$55,823
Loans held for sale	$994	$2,655	$2,504	$1,540	$2,262
Equity investments (b)	$12,894	$11,392	$10,728	$10,587	$10,728
Mortgage servicing rights	$1,983	$1,832	$1,758	$1,589	$1,351
Goodwill	$9,218	$9,173	$9,103	$9,103	$9,103
Other assets	$34,408	$27,894	$27,506	$26,566	$28,180
Noninterest-bearing deposits	$73,960	$79,864	$80,230	$79,435	$73,479
Interest-bearing deposits	$193,879	$185,189	$176,934	$169,567	$158,755
Total deposits	$267,839	$265,053	$257,164	$249,002	$232,234
Borrowed funds (c)	$57,419	$59,088	$52,706	$54,532	$56,768
Total shareholders' equity	$47,728	$47,513	$45,699	$44,710	$44,551
Common shareholders' equity	$43,742	$43,530	$41,723	$41,258	$40,605
Accumulated other comprehensive income (loss)	$(725)	$(148)	$(265)	$130	$503
Period-end common shares outstanding (millions)	457	473	485	504	523
Loans to deposits	84%	83%	82%	83%	88%
Client Assets (billions)					
Discretionary client assets under management	$148	$151	$137	$134	$135
Nondiscretionary client assets under administration	124	131	120	119	123
Total client assets under administration	272	282	257	253	258
Brokerage account client assets	47	49	44	43	43
Total	$319	$331	$301	$296	$301
Capital Ratios (d) (e)					
Basel III (f)					
Common equity Tier 1	9.6%	9.8%	10.0%	10.0%	10.0%
Tier 1 risk-based	10.8%	N/A	N/A	N/A	N/A
Total capital risk-based	13.0%	N/A	N/A	N/A	N/A
Transitional Basel III					
Common equity Tier I	N/A	10.4%	10.6%	10.6%	10.9%
Tier 1 risk-based capital	N/A	11.6%	12.0%	12.0%	12.6%
Other Selected Ratios					
Dividend payout	31.5%	24.7%	29.0%	27.0%	25.3%
Common shareholders' equity to total assets	11.4%	11.4%	11.4%	11.5%	11.8%
Average common shareholders' equity to average assets	11.3%	11.3%	11.5%	11.5%	12.1%
Selected Statistics					
Employees	53,063	52,906	52,006	52,513	53,587
Retail Banking branches	2,372	2,459	2,520	2,616	2,697
ATMs	9,162	9,051	9,024	8,956	8,605

(a) Includes balances held with the Federal Reserve Bank of Cleveland of $10.5 billion, $28.3 billion, $25.1 billion, $30.0 billion and $31.4 billion as of December 31, 2018, 2017, 2016, 2015 and 2014, respectively.

(b) Includes our equity interest in BlackRock. On January 1, 2018, $.6 billion of trading and available for sale securities, primarily money market funds, were reclassified to Equity investments in accordance with the adoption of Accounting Standards Update (ASU) 2016-01. See the Recently Adopted Accounting Standards portion of Note

1 Accounting Policies in Item 8 of this Report for additional detail on this adoption.

(c) Includes long-term borrowings of $37.4 billion, $43.1 billion, $38.3 billion, $43.6 billion and $41.5 billion for 2018, 2017, 2016, 2015 and 2014, respectively. Borrowings which mature more than one year after December 31, 2018 are considered to be long-term.

(d) See capital ratios discussion in the Supervision and Regulation section of Item 1 and in the Liquidity and Capital Management portion of the Risk Management section in Item 7 of this Report for additional discussion on these capital ratios. Additional information on the 2014-2016 fully phased-in ratios and Transitional Basel III ratios is included in the Statistical Information (Unaudited) section in Item 8 of this Report.

(e) All ratios are calculated using the regulatory capital methodology applicable to PNC during each period presented, except for the prior period Basel III Common equity Tier 1 ratios, which are fully phased-in Basel III ratios and are presented as pro forma estimates. Ratios for all periods were calculated based on the standardized approach.

(f) The 2018 Basel III ratios for Common equity Tier 1 capital and Tier 1 risk-based capital reflect the full phase-in of all Basel III adjustments to these metrics applicable to PNC. The 2018 Basel III Total risk-based capital ratio includes $80 million of nonqualifying trust preferred capital securities that are subject to a phase-out period that runs through 2021.

ITEM 7 – MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS (MD&A)
EXECUTIVE SUMMARY

Key Strategic Goals
At PNC we manage our company for the long term. We are focused on the fundamentals of growing customers, loans, deposits and revenue and improving profitability, while investing for the future and managing risk, expenses and capital. We continue to invest in our products, markets and brand, and embrace our commitments to our customers, shareholders, employees and the communities where we do business.

We strive to expand and deepen customer relationships by offering a broad range of deposit, credit and fee-based products and services. We are focused on delivering those products and services to our customers with the goal of addressing their financial objectives and putting customers' needs first. Our business model is built on customer loyalty and engagement, understanding our customers' financial goals and offering our diverse products and services to help them achieve financial well-being. Our approach is concentrated on organically growing and deepening client relationships across our businesses that meet our risk/return measures.

We are focused on our strategic priorities, which are designed to enhance value over the long term, and consist of:
- Expanding our leading banking franchise to new markets and digital platforms;
- Deepening customer relationships by delivering a superior banking experience and financial solutions; and
- Leveraging technology to innovate and enhance products, services, security and processes.

Our capital priorities are to support client growth and business investment, maintain appropriate capital in light of economic conditions, the Basel III framework, and other regulatory expectations, and return excess capital to shareholders. For more detail, see the Capital Highlights portion of this Executive Summary and the Liquidity and Capital Management portion of the Risk Management section of this Item 7 and the Supervision and Regulation section in Item 1 Business of this Report.

Key Factors Affecting Financial Performance
We face a variety of risks that may impact various aspects of our risk profile from time to time. The extent of such impacts may vary depending on factors such as the current business and economic conditions, political and regulatory environment and operational challenges. Many of these risks and our risk management strategies are described in more detail elsewhere in this Report.
Our financial performance is substantially affected by a number of external factors outside of our control, including the following:
- Global and domestic economic conditions, including the continuity, speed and stamina of the current U.S. economic expansion;
- The monetary policy actions and statements of the Federal Reserve and the Federal Open Market Committee (FOMC);
- The level of, and direction, timing and magnitude of movement in, interest rates and the shape of the interest rate yield curve;
- The functioning and other performance of, and availability of liquidity in, U.S. and global financial markets, including capital markets;
- The impact of tariffs and other trade policies of the U.S. and its global trading partners;
- Changes in the competitive and regulatory landscape;
- The impact of legislative, regulatory and administrative initiatives and actions;
- The impact of market credit spreads on asset valuations;
- The ability of customers, counterparties and issuers to perform in accordance with contractual terms, and the resulting impact on our asset quality;

- Loan demand, utilization of credit commitments and standby letters of credit; and
- The impact on customers and changes in customer behavior due to changing business and economic conditions or regulatory or legislative initiatives, including the 2017 federal tax legislation.

In addition, our success will depend upon, among other things:

- Effectively managing capital and liquidity including:
- Continuing to maintain and grow our deposit base as a low-cost stable funding source;
- Prudent liquidity and capital management to meet evolving regulatory capital, capital planning, stress testing and liquidity standards; and
- Actions we take within the capital and other financial markets.
- Management of credit risk in our portfolio;
- Execution of our strategic priorities;
- Our ability to manage and implement strategic business objectives within the changing regulatory environment;
- The impact of legal and regulatory-related contingencies; and
- The appropriateness of reserves needed for critical accounting estimates and related contingencies.

For additional information, see the Cautionary Statement Regarding Forward-Looking Information section in this Item 7 and Item 1A Risk Factors in this Report.

Income Statement Highlights

Net income for 2018 was $5.3 billion, or $10.71 per diluted common share, a decrease of 1% compared to $5.4 billion, or $10.36 per diluted common share, for 2017.

- Total revenue increased $803 million, or 5%, to $17.1 billion.
- Net interest income increased $613 million, or 7%, to $9.7 billion.
- Net interest margin increased to 2.97% for 2018 compared to 2.87% for 2017.
- Noninterest income increased $190 million, or 3%, to $7.4 billion.
- Provision for credit losses was $408 million in 2018 compared to $441 million for 2017.
- Noninterest expense decreased $102 million, or 1%, to $10.3 billion.
- Income tax expense was $1.1 billion in 2018 compared to $102 million in 2017, which reflected a benefit of $1.2 billion from federal tax legislation, the Tax Cut and Jobs Act, enacted in December 2017.

For additional detail, see the Consolidated Income Statement Review section of this Item 7.

Balance Sheet Highlights

Our balance sheet was strong and well positioned at December 31, 2018 and 2017. In comparison to December 31, 2017:

- Total loans increased $5.8 billion, or 3%, to $226.2 billion.
- Total commercial lending grew $4.9 billion, or 3%.
- Total consumer lending increased $.9 billion, or 1%.
- Total deposits increased $2.8 billion, or 1%, to $267.8 billion.
- Investment securities increased $6.6 billion, or 9%, to $82.7 billion.
- Interest earning deposits with banks, primarily with the Federal Reserve Bank, decreased $17.7 billion, or 62%, to $10.9 billion.
- Other assets increased $6.5 billion, or 23%, to $34.4 billion driven by higher short-term investments in resale agreements.

For additional detail, see the Consolidated Balance Sheet Review section of this Item 7.

Credit Quality Highlights

Overall credit quality remained strong.

- At December 31, 2018 compared to December 31, 2017:
  Nonperforming assets decreased $227 million, or 11%, to $1.8 billion.
  Overall loan delinquencies of $1.5 billion decreased $35 million, or 2%.
- Net charge-offs of $420 million in 2018 decreased 8% compared to net charge-offs of $457 million for 2017.
- The allowance for loan and lease losses to total loans was 1.16% at December 31, 2018 and 1.18% at December 31, 2017.

For additional detail, see the Credit Risk Management portion of the Risk Management section of this Item 7.

Capital Highlights

We maintained a strong capital position during 2018 and continued to return capital to shareholders.

- The Basel III common equity Tier 1 capital ratio, which includes the full phase-in of all Basel III adjustments and became effective for PNC as of January 1, 2018, was 9.6% at December 31, 2018 compared with 9.8% at December 31, 2017, calculated on the same basis.
-

- In 2018 we returned $4.4 billion of capital to shareholders through repurchases of 19.9 million common shares for $2.8 billion and dividends on common shares of $1.6 billion.
- In June 2018, we announced share repurchase programs of up to $2.0 billion for the four quarter period beginning with the third quarter of 2018, including repurchases of up to $300 million related to stock issuances under employee benefit plans. In November 2018, we announced an increase to these previously announced programs in the amount of up to $900 million in additional common share repurchases.

Our ability to take certain capital actions, including plans to pay or increase common stock dividends or to repurchase shares under current or future programs, is subject to the results of the supervisory assessment of capital adequacy undertaken by the Federal Reserve as part of the Comprehensive Capital Analysis and Review (CCAR) process. For additional information, see the Supervision and Regulation section in Item 1 Business of this Report.

See the Liquidity and Capital Management portion of the Risk Management section of this Item 7 for more detail on our 2018 capital and liquidity actions as well as our capital ratios.

Business Outlook

Statements regarding our business outlook are forward-looking within the meaning of the Private Securities Litigation Reform Act of 1995. Our forward-looking financial statements are subject to the risk that economic and financial market conditions will be substantially different than those we are currently expecting and do not take into account potential legal and regulatory contingencies. These statements are based on our view that U.S. economic growth has accelerated over the past two years to above its long-run trend. We expect further gradual improvement in the labor market this year, including job gains and rising wages, which would be a positive indicator for consumer spending. However, growth is expected to slow over the course of 2019. Trade restrictions and geopolitical concerns are downside risks to the forecast. Inflation is expected to slow in the first half of 2019, to below the FOMC's 2% objective. Short-term interest rates and bond yields are expected to rise very slowly in 2019. Our baseline forecast is for one more increase in the federal funds rate, in September 2019, pushing the rate to a range of 2.50% to 2.75% in the second half of this year. See the Cautionary Statement Regarding Forward-Looking Information section in this Item 7 and Item 1A Risk Factors in this Report for other factors that could cause future events to differ, perhaps materially, from those anticipated in these forward-looking statements.

For additional information on financial results for the fourth quarter of 2018, see the Selected Quarterly Financial Data section in the Statistical Information (Unaudited) section of Item 8 of this Report.

For full year 2019 compared to full year 2018, we expect:

- Average loan growth to be between 3% and 4%;
- Revenue growth on the higher end of low-single digits, on a percentage basis;
- Noninterest expense to increase on the lower end of low-single digits, on a percentage basis; and
- The effective tax rate to be approximately 17%.

For the first quarter of 2019 compared to the fourth quarter of 2018, we expect:

- Average loans to be stable;
- Net interest income to be stable, reflecting two fewer days in the quarter;
- Fee income to decrease by low-single digits, on a percentage basis. Fee income consists of asset management, consumer services, corporate services, residential mortgage and service charges on deposits;
- Other noninterest income to be between $275 million and $325 million, excluding net securities and Visa activity;
- Noninterest expense to remain stable; and
- Provision for credit losses to be between $125 million and $175 million.

CONSOLIDATED INCOME STATEMENT REVIEW

Our Consolidated Income Statement is presented in Item 8 of this Report.

Net income for 2018 was $5.3 billion, or $10.71 per diluted common share, a decrease of 1% compared with $5.4 billion, or $10.36 per diluted common share, for 2017. The decrease was primarily driven by higher income tax expense in 2018 which more than offset a 5% increase in total revenue and a 1% decrease in noninterest expense. Income tax expense in 2017 reflected an income tax benefit of $1.2 billion from new federal tax legislation primarily attributable to revaluation of net deferred tax liabilities at the lower statutory tax rate.

Net Interest Income

Table 1: Summarized Average Balances and Net Interest Income (a)

Year ended December 31 Dollars in millions	2018 Average Balances	Average Yields/ Rates	Interest Income/ Expense	2017 Average Balances	Average Yields/ Rates	Interest Income/ Expense
Assets						
Interest-earning assets						
Investment securities	$78,784	2.91 %	$2,289	$75,057	2.74 %	$2,059
Loans	223,278	4.33 %	9,667	217,271	3.86 %	8,390
Interest-earning deposits with banks	20,603	1.84 %	379	24,043	1.11 %	267
Other	8,093	4.47 %	362	8,983	3.48 %	313
Total interest-earning assets/interest income	$330,758	3.84 %	12,697	$325,354	3.39 %	11,029
Liabilities						
Interest-bearing liabilities						
Interest-bearing deposits	$186,361	.66 %	1,229	$179,447	.35 %	623
Borrowed funds	59,306	2.75 %	1,632	56,889	1.90 %	1,083
Total interest-bearing liabilities/interest expense	$245,667	1.16 %	2,861	$236,336	.72 %	1,706
Net interest income/margin (Non-GAAP)		2.97 %	9,836		2.87 %	9,323
Taxable-equivalent adjustments			(115)			(215)
Net interest income (GAAP)			$9,721			$9,108

(a) Interest income calculated as taxable-equivalent interest income. To provide more meaningful comparisons of interest income and yields for all interest-earning assets, as well as net interest margins, we use interest income on a taxable-equivalent basis in calculating average yields and net interest margins by increasing the interest income earned on tax-exempt assets to make it fully equivalent to interest income earned on taxable investments. This adjustment is not permitted under GAAP on the Consolidated Income Statement. For more information, see Reconciliation of Taxable-Equivalent Net Interest Income (Non-GAAP) in the Statistical Information (Unaudited) section in Item 8 of this Report.

Changes in net interest income and margin result from the interaction of the volume and composition of interest-earning assets and related yields, interest-bearing liabilities and related rates paid, and noninterest-bearing sources of funding. See the Statistical Information (Unaudited) – Average Consolidated Balance Sheet And Net Interest Analysis and Analysis Of Year-To-Year Changes In Net Interest Income in Item 8 of this Report.

Net interest income increased $613 million, or 7%, in 2018 compared with 2017 due to higher loan and securities yields and balances partially offset by increases in deposit and borrowing costs. Net interest margin increased in the comparison reflecting the impact of higher interest rates.

Average investment securities increased $3.7 billion, or 5%, reflecting net purchases of agency residential mortgage-backed securities of $4.0 billion and U.S. Treasury and government agency securities of $3.3 billion, partially offset by declines of $1.1 billion in both commercial mortgage-backed securities and other securities. Average investment securities increased to 24% of average interest-earning assets in 2018 compared to 23% in 2017.

Average loans grew $6.0 billion, or 3%, driven by an increase in average commercial lending of $5.2 billion reflecting strong growth in our Corporate Banking, Business Credit and Equipment Finance businesses in our Corporate & Institutional Banking segment.

Average consumer lending increased $.8 billion in 2018 compared to 2017 as growth in residential real estate, automobile and credit card loans was partially offset by declines in home equity and education loans. Lower home equity loans reflected paydowns and payoffs exceeding new originated volume. In addition, run-off in the

non-strategic consumer loan portfolios of brokered home equity and government guaranteed education loans contributed to the declines. Average loans represented 68% of average interest-earning assets in 2018 compared to 67% in 2017.

Average interest-bearing deposits grew $6.9 billion, or 4%, reflecting overall deposit and customer growth. The increase also reflected a shift from noninterest-bearing deposits, which declined $2.3 billion, or 3%, to interest-bearing deposits as deposit rates have risen. Within average interest-bearing deposits, average savings deposits increased $9.2 billion, due in part to a shift to relationship-based savings products from money market deposits, which decreased $6.0 billion. Additionally, average interest-bearing demand deposits grew $3.6 billion. Average interest-bearing deposits remained stable at 76% of average interest-bearing liabilities in 2018 and 2017.

Further details regarding average loans and deposits are included in the Business Segments Review section of this Item 7.

Average borrowed funds increased $2.4 billion, or 4%, primarily due to higher bank notes and senior debt of $2.3 billion and Federal Home Loan Bank borrowings of $1.1 billion, partially offset by a decline in subordinated debt of $1.0 billion. See the Consolidated Balance Sheet Review portion of this Item 7 for additional detail on the level and composition of borrowed funds.

Noninterest Income

Table 2: Noninterest Income

Year ended December 31			Change	
Dollars in millions	2018	2017	$	%
Noninterest income				
Asset management	$1,825	$1,942	$(117)	(6)%
Consumer services	1,502	1,415	87	6 %
Corporate services	1,849	1,742	107	6 %
Residential mortgage	316	350	(34)	(10)%
Service charges on deposits	714	695	19	3 %
Other	1,205	1,077	128	12 %
Total noninterest income	$7,411	$7,221	$190	3 %

Noninterest income as a percentage of total revenue was 43% for 2018 and 44% for 2017.

Asset management revenue decreased in the comparison reflecting a $254 million fourth quarter 2017 flow through impact of federal tax legislation on our equity investment in BlackRock. This decline was partially offset by higher earnings from our equity investment in BlackRock which benefited from the lower federal statutory income tax rate and by stronger average equity markets during 2018. PNC's discretionary client assets under management decreased to $148 billion at December 31, 2018 compared with $151 billion at December 31, 2017 primarily due to lower equity markets as of December 31, 2018.

Consumer service fees increased in the comparison primarily due to growth in debit card fees and credit card fees, net of rewards, which increased $32 million and $23 million, respectively, reflecting higher transaction volume and customer growth. Brokerage revenue increased $38 million resulting from growth in average brokerage assets under management.

Corporate service fees were higher primarily driven by growth in treasury management product revenue of $70 million and higher merger and acquisition advisory fees of $42 million. These increases were partially offset by a decline in revenue from commercial mortgage banking activities driven by a $27 million lower benefit from commercial mortgage servicing rights valuation, net of economic hedge.

Residential mortgage revenue declined due to lower loan sales revenue of $61 million driven by lower gain on sales margins as a result of increased competition, a shift in product mix to purchases from refinancing and lower loan origination volume. This decrease was partially offset by negative residential mortgage servicing rights valuation adjustments, net of economic hedge, of $30 million in 2017, which included a negative adjustment of $71 million in the fourth quarter of 2017 for residential mortgage servicing rights fair value assumption updates. The valuation adjustment benefit in 2018 was insignificant.

Service charges on deposits increased reflecting higher consumer transaction volumes and product enhancements.

Other noninterest income increased in the comparison largely attributable to the impact of negative derivative fair value adjustments related to Visa Class B common shares of $280 million in 2017, including $248 million in the fourth quarter of 2017 primarily related to the extension of anticipated timing of litigation resolution, compared with positive adjustments of $35 million in 2018.

These increases were partially offset by the impact of a fourth quarter 2017 benefit of $119 million for appreciation in value of BlackRock common stock used to fund PNC's fourth quarter 2017 contribution to the PNC Foundation. In addition, the comparison reflected a $28 million decline in revenue from equity investments, which included the impact of first quarter 2017 positive valuation adjustments related to the Volcker Rule provisions of the Dodd-Frank

Act.

In the first quarter of 2018, and in connection with the commercial and vendor finance business we acquired in 2017, we reclassified operating lease income in Other noninterest income of $121 million in 2017 and $85 million in 2016 to Corporate services noninterest income on the Consolidated Income Statement. Operating lease income was $130 million in 2018.

Other noninterest income typically fluctuates from period to period depending on the nature and magnitude of transactions completed. Further details regarding our customer-related trading activities are included in the Market Risk Management – Customer-Related Trading Risk portion of the Risk Management section of this Item 7. Further details regarding private and other equity investments are included in the Market Risk Management – Equity and Other Investment Risk section, and further details regarding gains or losses related to our equity investment in BlackRock are included in the Business Segments Review section of this Item 7.

Provision for Credit Losses

The provision for credit losses was $408 million in 2018 compared to $441 million in 2017, reflecting a lower provision for commercial loans, partially offset by a higher provision for consumer loans.

The Credit Risk Management portion of the Risk Management section of this Item 7 includes additional information regarding factors impacting the provision for credit losses.

Noninterest Expense

Table 3: Noninterest Expense

Year ended December 31			Change	
Dollars in millions	2018	2017	$	%
Noninterest expense				
Personnel	$5,471	$5,268	$203	4 %
Occupancy	818	868	(50)	(6)%
Equipment	1,103	1,065	38	4 %
Marketing	285	244	41	17 %
Other	2,619	2,953	(334)	(11)%
Total noninterest expense	$10,296	$10,398	$(102)	(1)%

Noninterest expense decreased in 2018 compared to 2017 as ongoing business investments, including technology and staffing, and higher levels of business activity were more than offset by the $502 million impact of certain fourth quarter 2017 items described in the next paragraph.

Higher personnel expense reflected higher staffing levels, an increase in the minimum hourly pay rate for eligible employees, enhanced employee benefits and higher variable compensation related to revenue growth, partially offset by the fourth quarter 2017 impact of $105 million for employee cash payments and pension account credits. Marketing expense was higher in support of business expansion. The decline in other noninterest expense reflected the fourth quarter 2017 impact of a $200 million contribution of BlackRock common stock to the PNC Foundation. Additionally, fourth quarter 2017 included $197 million of charges for real estate dispositions and exits, which were primarily within other noninterest expense.

During 2018, we completed actions and achieved our 2018 continuous improvement program savings goal of $250 million, which funded a portion of our strategic investments. In 2019, we have a goal of $300 million in cost savings through our continuous improvement program, which we expect will continue to partially fund our ongoing business investments.

Effective Income Tax Rate

The effective income tax rate was 16.8% for 2018 compared with 1.9% for 2017. In the fourth quarter of 2017, an income tax benefit of $1.2 billion was recognized as a result of federal tax legislation and was primarily attributable to the revaluation of net deferred tax liabilities at the lower statutory tax rate of 21%, which became effective January 1, 2018. For additional information on our accounting related to the new federal tax legislation, see Note 17 Income Taxes in the Notes To Consolidated Financial Statements included in Item 8 of this Report.

The effective tax rate is generally lower than the statutory rate primarily due to tax credits we receive from our investments in low income housing and new markets investments, as well as earnings on other tax exempt investments.

Additional information regarding our effective tax rate is included in the Reconciliation of Statutory and Effective Tax Rates table in Note 17 Income Taxes in Item 8 of this Report.

CONSOLIDATED BALANCE SHEET REVIEW

Table 4: Summarized Balance Sheet Data

Dollars in millions	December 31 2018	December 31 2017	Change $	%
Assets				
Interest-earning deposits with banks	$10,893	$28,595	$(17,702)	(62)%
Loans held for sale	994	2,655	(1,661)	(63)%
Investment securities	82,701	76,131	6,570	9 %
Loans	226,245	220,458	5,787	3 %
Allowance for loan and lease losses	(2,629)	(2,611)	(18)	(1)%
Mortgage servicing rights	1,983	1,832	151	8 %
Goodwill	9,218	9,173	45	—
Other, net	52,910	44,535	8,375	19 %
Total assets	$382,315	$380,768	$1,547	—
Liabilities				
Deposits	$267,839	$265,053	$2,786	1 %
Borrowed funds	57,419	59,088	(1,669)	(3)%
Other	9,287	9,042	245	3 %
Total liabilities	334,545	333,183	1,362	—
Equity				
Total shareholders' equity	47,728	47,513	215	—
Noncontrolling interests	42	72	(30)	(42)%
Total equity	47,770	47,585	185	—
Total liabilities and equity	$382,315	$380,768	$1,547	—

The summarized balance sheet data in Table 4 is based upon our Consolidated Balance Sheet in Item 8 of this Report.
Our balance sheet at December 31, 2018 increased slightly compared to December 31, 2017 and we maintained strong capital and liquidity positions.

- Total assets increased as higher short-term investments, investment securities and loans were substantially offset by lower interest-earning deposits with banks.
- Total liabilities increased due to deposit growth, partially offset by lower borrowed funds.
- Total equity increased slightly as higher retained earnings was mostly offset by share repurchases and lower accumulated other comprehensive income (AOCI) largely related to net unrealized securities losses.

The following discussion provides additional information about the major components of our balance sheet. Information regarding our capital and regulatory compliance is included in the Liquidity and Capital Management portion of the Risk Management section of this Item 7 and in Note 18 Regulatory Matters in our Notes To Consolidated Financial Statements included in this Report.

Loans

Table 5: Loans

Dollars in millions	December 31 2018	December 31 2017	Change $	%
Commercial lending				
Commercial	$ 116,834	$ 110,527	$6,307	6 %
Commercial real estate	28,140	28,978	(838)	(3)%
Equipment lease financing	7,308	7,934	(626)	(8)%
Total commercial lending	152,282	147,439	4,843	3 %
Consumer lending				
Home equity	26,123	28,364	(2,241)	(8)%
Residential real estate	18,657	17,212	1,445	8 %

Automobile	14,419	12,880	1,539	12 %
Credit card	6,357	5,699	658	12 %
Education	3,822	4,454	(632)	(14)%
Other consumer	4,585	4,410	175	4 %
Total consumer lending	73,963	73,019	944	1 %
Total loans	$ 226,245	$ 220,458	$5,787	3 %

Loans at December 31, 2018 reflected growth in both commercial and consumer lending compared to December 31, 2017.

Commercial lending increased driven by growth in our Corporate Banking and Business Credit businesses partially offset by lower loan balances in the Real Estate business within our Corporate & Institutional Banking segment. In Corporate Banking, commercial loan growth in asset-backed finance securitizations as well as increased lending to large and midsized corporate clients was partially offset by lower public finance lending. Growth in Business Credit was driven by higher utilization and new originations. Balances in the Real Estate business declined due to project loan payoffs, partially offset by higher commercial mortgage balances.
For commercial loans by industry and commercial real estate loans by geography and property type, see Loan Portfolio Characteristics and Analysis in the Credit Risk Management portion of the Risk Management section in this Item 7.
Consumer lending balances increased as growth in automobile loans, residential real estate loans and credit card balances were partially offset by lower home equity and education loans.
The growth in automobile loans was primarily due to higher indirect auto loans including continued new loan growth in the Southeast markets and expansion to franchised dealers in new markets. Residential real estate loans increased primarily as a result of originations of nonconforming loans, which are loans that do not meet government agency standards as a result of exceeding agency conforming loan limits. Credit card balances increased as we continued to focus on our long-term objective of deepening penetration within our existing customer base.
Home equity loans declined as paydowns and payoffs exceeded new originated volume. In addition, the declines in both home equity and education loans included the continued runoff in our non-strategic brokered home equity and government guaranteed education loan portfolios.
For information on home equity and residential real estate loans, including by geography and lien priority, and automobile loans, see Loan Portfolio Characteristics and Analysis in the Credit Risk Management portion of the Risk Management section in this Item 7.
For additional information regarding our loan portfolio, see the Credit Risk Management portion of the Risk Management section in this Item 7 and Note 1 Accounting Policies, Note 3 Asset Quality and Note 4 Allowance for Loan and Lease Losses in our Notes To Consolidated Financial Statements included in Item 8 of this Report.
Investment Securities
Investment securities of $82.7 billion at December 31, 2018 increased $6.6 billion compared to December 31, 2017, driven by net purchases of agency residential mortgage-backed securities of $4.8 billion and U.S. Treasury and government agencies securities of $3.6 billion. These increases were partially offset by the reclassification of $.6 billion of available for sale securities, primarily money market funds, to equity investments as part of the adoption of ASU 2016-01. See the Recently Adopted Accounting Standards portion of Note 1 Accounting Policies in Item 8 of this Report for additional detail on the adoption of this ASU.

The level and composition of the investment securities portfolio fluctuates over time based on many factors including market conditions, loan and deposit growth, and balance sheet management activities. We manage our investment securities portfolio to optimize returns, while providing a reliable source of liquidity for our banking and other activities, considering LCR and other internal and external guidelines and constraints.
Table 6: Investment Securities

	December 31, 2018		December 31, 2017		Ratings (a) As of December 31, 2018				
Dollars in millions	Amortized Cost	Fair Value	Amortized Cost	Fair Value	AAA/ AA	A	BBB	BB and Lower	No Rating
U.S. Treasury and government agencies	$18,862	$18,863	$15,173	$15,286	100 %				
Agency residential mortgage-backed	45,153	44,407	40,037	39,847	100 %				
Non-agency residential mortgage-backed	2,076	2,365	2,610	2,932	12 %	2 %	2 %	50 %	34 %
	2,773	2,720	2,367	2,315	100 %				

Agency commercial mortgage-backed									
Non-agency commercial mortgage-backed (b)	3,177	3,145	3,141	3,161	86 %	6 %			8 %
Asset-backed (c)	5,115	5,155	5,531	5,598	88 %	3 %	4 %	5 %	
Other debt (d)	5,670	5,753	6,279	6,459	74 %	15 %	8 %		3 %
Other (e)			587	585					
Total investment securities (f)	$82,826	$82,408	$75,725	$76,183	95 %	1 %	1 %	2 %	1 %

(a) Ratings percentages allocated based on amortized cost.

(b) Collateralized primarily by retail properties, office buildings, lodging properties and multi-family housing.

(c) Collateralized primarily by corporate debt, government guaranteed education loans and other consumer credit products.

(d) Includes state and municipal securities.

(e) On January 1, 2018, $.6 billion of available for sale securities, primarily money market funds, were reclassified to equity investments in accordance with the adoption of ASU 2016-01. See the Recently Adopted Accounting Standards portion of Note 1 Accounting Policies in the Notes to Consolidated Financial Statements in Item 8 of this Report for additional detail.

(f) Includes available for sale and held to maturity securities, which are recorded on our balance sheet at fair value and amortized cost, respectively.

Table 6 presents the distribution of our total investment securities portfolio by amortized cost and fair value, as well as by credit rating. The relationship of fair value to amortized cost at December 31, 2018 compared to December 31, 2017 primarily reflected the impact of higher interest rates on the valuation of fixed rate securities. We have included credit ratings information because we believe that the information is an indicator of the degree of credit risk to which we are exposed, which could affect our risk-weighted assets and, therefore, our risk-based regulatory capital ratios under the regulatory capital rules. Changes in credit ratings classifications could indicate increased or decreased credit risk and could be accompanied by a reduction or increase in the fair value of our investment securities portfolio.

The duration of investment securities was 3.4 years at December 31, 2018. We estimate that at December 31, 2018 the effective duration of investment securities was 3.5 years for an immediate 50 basis points parallel increase in interest rates and 3.2 years for an immediate 50 basis points parallel decrease in interest rates. Comparable amounts at December 31, 2017 for the effective duration of investment securities were 3.4 years and 3.0 years, respectively.

Based on expected prepayment speeds, the weighted-average expected maturity of the investment securities portfolio (excluding other) was 5.3 years at December 31, 2018 compared to 5.2 years at December 31, 2017.

Table 7: Weighted-Average Expected Maturities of Mortgage and Asset-Backed Debt Securities

December 31, 2018	Years
Agency residential mortgage-backed	6.3
Non-agency residential mortgage-backed	6.0
Agency commercial mortgage-backed	4.1
Non-agency commercial mortgage-backed	2.6
Asset-backed	2.2

Additional information regarding our investment securities is included in Note 5 Investment Securities and Note 6 Fair Value in the Notes To Consolidated Financial Statements included in this Report.

Funding Sources

Table 8: Details of Funding Sources

Dollars in millions	December 31 2018	December 31 2017	Change $	Change %
Deposits				
Noninterest-bearing	$73,960	$79,864	$(5,904)	(7)%
Interest-bearing				
Money market	53,368	59,735	(6,367)	(11)%
Demand	65,211	61,213	3,998	7 %
Savings	56,793	46,980	9,813	21 %
Time deposits	18,507	17,261	1,246	7 %
Total interest-bearing deposits	193,879	185,189	8,690	5 %
Total deposits	267,839	265,053	2,786	1 %
Borrowed funds				
Federal Home Loan Bank (FHLB) borrowings	21,501	21,037	464	2 %
Bank notes and senior debt	25,018	28,062	(3,044)	(11)%
Subordinated debt	5,895	5,200	695	13 %
Other	5,005	4,789	216	5 %
Total borrowed funds	57,419	59,088	(1,669)	(3)%
Total funding sources	$325,258	$324,141	$1,117	—

Total deposits increased in 2018 over 2017 as growth in interest-bearing deposits was partially offset by a decline in noninterest-bearing deposits. Noninterest-bearing deposits decreased mainly due to the impact of rising interest rates, reflecting a shift of primarily commercial noninterest-bearing deposits to interest-bearing. The increase in

interest-bearing deposits was driven by growth in savings deposits reflecting, in part, a shift from consumer money market to relationship-based savings products.

Borrowed funds decreased in the comparison as a decline in bank notes and senior debt was partially offset by increases in subordinated debt and FHLB borrowings. The level and composition of borrowed funds fluctuates over time based on many factors including market conditions, loan, investment securities and deposit growth and capital considerations. We manage our borrowed

funds to provide a reliable source of liquidity for our banking and other activities, considering LCR and other internal and external guidelines and constraints.

See the Liquidity and Capital Management portion of the Risk Management section of this Item 7 for additional information regarding our 2018 liquidity and capital activities.

Shareholders' Equity
Total shareholders' equity was $47.7 billion at December 31, 2018, an increase of $.2 billion compared to December 31, 2017. Higher retained earnings, which reflected net income of $5.3 billion reduced by $1.8 billion of common and preferred dividends, was partially offset by common share repurchases of $2.8 billion and lower AOCI of $.6 billion primarily due to net unrealized securities losses.

Common shares outstanding were 457 million at December 31, 2018 and 473 million at December 31, 2017 as repurchases of 19.9 million shares during 2018 were partially offset by share issuances from treasury stock related to warrants exercised and stock-based compensation activity.

BUSINESS SEGMENTS REVIEW

We have four reportable business segments:
- Retail Banking
- Corporate & Institutional Banking
- Asset Management Group
- BlackRock

Business segment results and a description of each business are included in Note 22 Segment Reporting included in the Notes To Consolidated Financial Statements in Item 8 of this Report. Certain amounts included in this Business Segments Review differ from those amounts shown in Note 22, primarily due to the presentation in this Item 7 of business net interest revenue on a taxable-equivalent basis. Note 22 presents results of businesses for 2018, 2017 and 2016.
Net interest income in business segment results reflects our internal funds transfer pricing methodology. Assets receive a funding charge and liabilities and capital receive a funding credit based on a transfer pricing methodology that incorporates product repricing characteristics, tenor and other factors.

Total business segment financial results differ from total consolidated net income. The impact of these differences is reflected in the "Other" category as shown in Table 99 in Note 22 Segment Reporting in Item 8 of this Report. "Other" includes residual activities that do not meet the criteria for disclosure as a separate reportable business, such as asset and liability management activities including net securities gains or losses, other-than-temporary impairment of investment securities, certain trading activities, certain non-strategic runoff consumer loan portfolios, private equity investments, intercompany eliminations, certain corporate overhead, tax adjustments that are not allocated to business segments, gains or losses related to BlackRock transactions, integration costs, exited businesses, and differences between business segment performance reporting and financial statement reporting (GAAP), including the presentation of net income attributable to noncontrolling interests as the segments' results exclude their portion of net income attributable to noncontrolling interests.

In the fourth quarter of 2018, we updated our internal management reporting processes relating to our segment reporting disclosures. Certain expenses that were previously recorded within "Other" were reclassified to our reportable segments. These expenses largely related to items that were previously considered corporate expenses, but were either closely aligned to processes and revenue functions within our business segments or were an allocation of expenses that the business segment would have incurred if it operated on a standalone basis. These reclassifications were retrospectively applied to the periods presented in this Business Segments Review and in Note 22 Segment Reporting

in Item 8 of this Report. Additionally, certain fourth quarter 2017 net income tax benefits that were previously reported in "Other" in the fourth quarter of 2017 were reclassified within that period, in order to align the accounting of certain tax positions with the business segments that recorded the underlying activity.

Retail Banking

Retail Banking's core strategy is to acquire and retain customers who maintain their primary checking and transaction relationships with us. We seek to deepen relationships by meeting the broad range of our customers' financial needs with savings, liquidity, lending, investment and retirement solutions. A strategic priority for us is to differentiate the customer experience and drive transformation and automation. A key element of our strategy is to expand the use of lower-cost alternative distribution channels, with an emphasis on digital capabilities, while continuing to optimize the traditional branch network. In addition, we have a disciplined process to continually improve the engagement of both our employees and customers, which is a strong driver of customer growth, retention and relationship expansion. In 2018, we launched our national retail digital strategy designed to grow customers with digitally-led banking and an ultra-thin branch network in markets outside of our retail branch network.

Table 9: Retail Banking Table
(Unaudited)

Year ended December 31			Change	
Dollars in millions, except as noted	2018	2017	$	%
Income Statement				
Net interest income	$5,119	$4,626	$493	11 %
Noninterest income	2,631	2,236	395	18 %
Total revenue	7,750	6,862	888	13 %
Provision for credit losses	373	347	26	7 %
Noninterest expense	5,978	5,746	232	4 %
Pretax earnings	1,399	769	630	82 %
Income taxes	335	322	13	4 %
Earnings	$1,064	$447	$617	138 %
Average Balance Sheet				
Loans held for sale	$636	$799	$(163)	(20)%
Loans				
Consumer				
Home equity	$23,991	$25,278	$(1,287)	(5)%
Automobile	13,827	12,407	1,420	11 %
Education	4,135	4,832	(697)	(14)%
Credit cards	5,838	5,248	590	11 %
Other	1,843	1,773	70	4 %
Total consumer	49,634	49,538	96	—
Commercial and commercial real estate	10,383	10,767	(384)	(4)%
Residential mortgage	13,985	12,238	1,747	14 %
Total loans	$74,002	$72,543	$1,459	2 %
Total assets	$89,739	$88,663	$1,076	1 %
Deposits				
Noninterest-bearing demand	$30,670	$29,788	$882	3 %
Interest-bearing demand	42,042	40,958	1,084	3 %
Money market	29,798	36,592	(6,794)	(19)%
Savings	47,019	38,802	8,217	21 %
Certificates of deposit	12,007	13,135	(1,128)	(9)%
Total deposits	$161,536	$159,275	$2,261	1 %
Performance Ratios				
Return on average assets	1.19 %	.50 %		
Noninterest income to total revenue	34 %	33 %		
Efficiency	77 %	84 %		

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Year ended December 31			Change	
Dollars in millions, except as noted	2018	2017	$	%
Supplemental Noninterest Income Information				
Consumer services	$1,128	$1,079	$49	5 %
Brokerage	$350	$312	$38	12 %
Residential mortgage	$316	$350	$(34)	(10)%
Service charges on deposits	$688	$668	$20	3 %
Residential Mortgage Information				
Residential mortgage servicing statistics (in billions, except as noted) (a)				
Serviced portfolio balance (b)	$125	$127	$(2)	(2)%
Serviced portfolio acquisitions	$12	$19	$(7)	(37)%
MSR asset value (b)	$1.3	$1.2	$.1	8 %
MSR capitalization value (in basis points) (b)	100	92	8	9 %
Servicing income: (in millions)				
Servicing fees, net (c)	$181	$187	$(6)	(3)%
Mortgage servicing rights valuation, net of economic hedge	$3	$(30)	$33	*
Residential mortgage loan statistics				
Loan origination volume (in billions)	$7.4	$9.0	$(1.6)	(18)%
Loan sale margin percentage	2.41 %	2.80 %		
Percentage of originations represented by:				
Purchase volume (d)	67 %	53 %		
Refinance volume	33 %	47 %		
Other Information (b)				
Customer-related statistics (average)				
Non-teller deposit transactions (e)	55 %	53 %		
Digital consumer customers (f)	66 %	62 %		
Credit-related statistics				
Nonperforming assets (g)	$1,126	$1,129	$(3)	—
Net charge-offs	$420	$371	$49	13 %
Other statistics				
ATMs	9,162	9,051	111	1 %
Branches (h)	2,372	2,459	(87)	(4)%
Brokerage account client assets (in billions) (i)	$47	$49	$(2)	(4)%

* - Not Meaningful

(a) Represents mortgage loan servicing balances for third parties and the related income.

(b) Presented as of December 31, except for customer-related statistics, which are averages for the year ended, and net charge-offs, which are for the year ended.

(c) Servicing fees net of impact of decrease in MSR value due to passage of time, including the impact from both regularly scheduled loan prepayments and loans that were paid down or paid off during the period.

(d) Mortgages with borrowers as part of residential real estate purchase transactions.

(e) Percentage of total consumer and business banking deposit transactions processed at an ATM or through our mobile banking application.

(f) Represents consumer checking relationships that process the majority of their transactions through non-teller channels.

(g) Includes nonperforming loans of $1.1 billion at both December 31, 2018 and 2017.

(h) Excludes stand-alone mortgage offices and satellite offices (e.g., drive-ups, electronic branches and retirement centers) that provide limited products and/or services.

(i) Includes cash and money market balances.

Retail Banking earned $1.1 billion in 2018 compared with $447 million in 2017. The increase in earnings was driven by higher net interest income and noninterest income, partially offset by increases in noninterest expense and provision for credit losses. Earnings in 2018 also benefited from the lower statutory federal income tax rate.

Net interest income increased primarily due to wider interest rate spreads on the value of deposits.

The increase in noninterest income was largely attributable to the impact of negative derivative fair value adjustments related to Visa Class B common shares of $280 million in 2017, including $248 million in the fourth quarter of 2017 primarily related to the extension of anticipated timing of litigation resolution, compared with positive fair value adjustments of $35 million in 2018. Higher noninterest income also reflected growth in consumer service fees, including higher debit and credit card fees, as well as higher brokerage fees and service charges on deposits.

These increases in noninterest income were partially offset by lower residential mortgage noninterest income, reflecting a decline in loan sales revenue, as well as lower servicing revenue. The decline in loan sales revenue reflected lower gain on sales margins as a result of increased competition, a shift in product mix to purchases from refinancing, and lower loan origination volume. The comparison also included a benefit in 2018 from residential mortgage servicing rights valuation, net of economic hedge, compared with a negative valuation adjustment in 2017, which included a fourth quarter 2017 negative adjustment of $71 million for residential mortgage servicing rights fair value assumption updates.

Provision for credit losses increased in 2018 compared to 2017 primarily due to portfolio growth in credit card and unsecured installment loans partially offset by declines in the home equity portfolio.

Higher noninterest expense primarily resulted from increases in personnel expense, non-credit losses, continued investments in technology, risk and compliance expense, and marketing activity. Higher personnel expense included an increase in the minimum hourly pay rate for eligible employees.

The deposit strategy of Retail Banking is to remain disciplined on pricing and focused on growing and retaining relationship-based balances, executing on market-specific deposit growth strategies and providing a source of low-cost funding and liquidity to PNC. During 2018, average total deposits increased compared to 2017, as both interest-bearing and noninterest-bearing demand deposits increased. Savings deposits grew, reflecting, in part, a shift from money market deposits to relationship-based savings products. Certificates of deposit declined due to the net runoff of maturing accounts.

Retail Banking average total loans grew in 2018 compared with 2017:

- Average residential mortgages increased primarily as a result of growth in nonconforming residential mortgage loans.
- Average automobile loans, increased primarily due to strong new indirect auto loan volumes, including in our Southeast and new markets, as well as growth in direct auto loans.
- Average credit card balances increased as we continued to focus on our long-term objective of deepening penetration within our existing customer base.
- Average home equity loans decreased as paydowns and payoffs on loans exceeded new originated volume.
- Average education loans decreased driven by a decline in the runoff portfolio of government guaranteed education loans.
- Average commercial and commercial real estate loans declined as paydowns and payoffs on loans exceeded new volume.

Retail Banking continues to enhance the customer experience with refinements to product and service offerings that drive value for consumers and small businesses. We are focused on meeting the financial needs of our customers by providing a broad range of liquidity, banking and investment products. In 2018, Retail Banking launched its national retail digital strategy by offering a high yield savings account in markets outside of our existing retail branch network and opened a retail location in Kansas City.

Retail Banking continued to focus on its strategy of transforming the customer experience through transaction migration, branch network and home lending transformations, and multi-channel engagement and service strategies.

- Approximately 66% of consumer customers used non-teller channels for the majority of their transactions in 2018 compared with 62% in 2017.
- Deposit transactions via ATM and mobile channels increased to 55% of total deposit transactions from 53% in 2017.

Retail Banking continued to make progress on its multi-year initiative to redesign the home lending process by integrating mortgage and home equity lending into a common platform to enhance product capability and improve speed of delivery and convenience. We implemented a new mortgage origination system in 2017 and converted home equity loans to the new servicing platform in 2018. Both residential mortgage and home equity loans are now serviced

on a single platform.

Corporate & Institutional Banking

Corporate & Institutional Banking's strategy is to be the leading relationship-based provider of traditional banking products and services to its customers through the economic cycles. We aim to grow our market share and drive higher returns by delivering value-added solutions that help our clients better run their organizations, all while maintaining prudent risk and expense management. We continue to focus on building client relationships where the risk-return profile is attractive.

Table 10: Corporate & Institutional Banking Table
(Unaudited)

Year ended December 31			Change	
Dollars in millions, except as noted	2018	2017	$	%
Income Statement				
Net interest income	$3,637	$3,551	$86	2 %
Noninterest income	2,406	2,271	135	6 %
Total revenue	6,043	5,822	221	4 %
Provision for credit losses	85	160	(75)	(47)%
Noninterest expense	2,706	2,554	152	6 %
Pretax earnings	3,252	3,108	144	5 %
Income taxes	744	675	69	10 %
Earnings	$2,508	$2,433	$75	3 %
Average Balance Sheet				
Loans held for sale	$739	$898	$(159)	(18)%
Loans				
Commercial	$103,285	$96,937	$6,348	7 %
Commercial real estate	26,569	27,372	(803)	(3)%
Equipment lease financing	7,437	7,619	(182)	(2)%
Total commercial lending	137,291	131,928	5,363	4 %
Consumer	42	233	(191)	(82)%
Total loans	$137,333	$132,161	$5,172	4 %
Total assets	$154,119	$148,414	$5,705	4 %
Deposits				
Noninterest-bearing demand	$44,099	$47,264	$(3,165)	(7)%
Money market	24,060	22,464	1,596	7 %
Other	20,250	16,389	3,861	24 %
Total deposits	$88,409	$86,117	$2,292	3 %
Performance Ratios				
Return on average assets	1.63 %	1.64 %		
Noninterest income to total revenue	40 %	39 %		
Efficiency	45 %	44 %		
Other Information				
Consolidated revenue from: (a)				
Treasury Management (b)	$1,779	$1,516	$263	17 %
Capital Markets (b)	$1,088	$1,017	$71	7 %
Commercial mortgage banking activities:				
Commercial mortgage loans held for sale (c)	$107	$115	$(8)	(7)%
Commercial mortgage loan servicing income (d)	247	228	19	8 %
Commercial mortgage servicing rights valuation, net of economic hedge (e)	27	54	(27)	(50)%
Total	$381	$397	$(16)	(4)%

Commercial mortgage servicing rights asset value (f)	$726	$668	$58	9 %
Average Loans by C&IB Business				
Corporate Banking	$58,611	$55,701	$2,910	5 %
Real Estate	37,571	38,235	(664)	(2)%
Business Credit	17,411	15,804	1,607	10 %
Equipment Finance	14,531	13,408	1,123	8 %
Commercial Banking	6,984	7,028	(44)	(1)%
Other	2,225	1,985	240	12 %
Total average loans	$137,333	$132,161	$5,172	4 %
Credit-related statistics				
Nonperforming assets (f) (g)	$377	$531	$(154)	(29)%
Net charge-offs	$10	$93	$(83)	(89)%

(a) Represents consolidated amounts. See the additional revenue discussion regarding treasury management, capital markets-related products and services, and commercial mortgage banking activities in the Product Revenue section of this Corporate & Institutional Banking section.
(b) Includes amounts reported in net interest income and noninterest income.
(c) Includes other noninterest income for valuations on commercial mortgage loans held for sale and related commitments, derivative valuations, originations fees, gains on sale of loans held for sale and net interest income on loans held for sale.
(d) Includes net interest income and noninterest income (primarily in corporate service fees) from loan servicing net of reduction in commercial mortgage servicing rights due to amortization expense and payoffs. Commercial mortgage servicing rights valuation, net of economic hedge is shown separately.
(e) Amounts are reported in corporate service fees.
(f) As of December 31.
(g) Includes nonperforming loans of $.3 billion and $.5 billion at December 31, 2018 and 2017, respectively.

Corporate & Institutional Banking earned $2.5 billion in 2018 compared to $2.4 billion in 2017. The increase was primarily due to higher revenue and lower provision for credit losses, mostly offset by higher noninterest expense and income tax expense, as the 2018 impact of a lower statutory rate was more than offset by a 2017 benefit from federal tax legislation.

Net interest income increased in the comparison, primarily due to wider interest rate spreads on the value of deposits, as well as higher average loan and deposit balances, partially offset by narrower interest rate spreads on the value of loans.

Growth in noninterest income in the comparison was primarily driven by higher treasury management product revenue and higher capital markets-related revenue, including higher merger and acquisition advisory fees and revenue from customer-related derivative and foreign exchange services. Higher gains on asset sales also contributed to noninterest income growth in 2018. These increases were partially offset by a lower benefit from commercial mortgage servicing rights valuation, net of economic hedge, and decreased revenue from credit valuations on customer-related derivative activities.

Credit quality for 2018 was strong as nonperforming assets and net charge-offs declined compared with 2017. The decrease in provision for credit losses in the comparison reflected improved credit quality.

Noninterest expense increased in the comparison largely due to investments in strategic initiatives and variable costs associated with increased business activity.

Average loans increased compared with 2017 due to strong growth in Corporate Banking, Business Credit and Equipment Finance:

- Corporate Banking provides lending, treasury management and capital markets-related products and services to midsized and large corporations and government and not-for-profit entities. Average loans for this business grew in the comparison reflecting strong production in asset-backed financing as well as increased lending to large and midsized corporate clients, partially offset by lower public finance lending.
- PNC Real Estate provides banking, financing and servicing solutions for commercial real estate clients across the country. Average loans for this business decreased primarily driven by project loan payoffs, partially offset by higher commercial mortgage balances.
- PNC Business Credit provides asset-based lending. The loan portfolio is relatively high yielding, with acceptable risk as the loans are mainly secured by short-term assets. Average loans for this business grew in the comparison as increased utilization and new originations were partially offset by payoffs.
- PNC Equipment Finance provides equipment financing solutions for clients throughout the U.S. and Canada. Average loans, including commercial loans and finance leases, and operating leases totaled $15.5 billion in

2018, an increase of $1.2 billion compared with 2017 due to strong new production and the impact of the business acquired in the second quarter of 2017.

- Commercial Banking provides lending, treasury management and capital markets-related products and services to smaller corporations and businesses. Average loans for this business were relatively unchanged.

The deposit strategy of Corporate & Institutional Banking is to remain disciplined on pricing and focused on growing and retaining relationship-based balances over time, executing on customer and segment-specific deposit growth strategies and continuing to provide funding and liquidity to PNC. In 2018, average total deposits increased compared to 2017 driven by growth in interest-bearing deposits reflecting, in part, a shift from noninterest-bearing deposits in the rising rate environment. We continue to monitor and balance the relationship between increases to rates paid and the overall profitability of our deposit balances.

Corporate & Institutional Banking expanded its Corporate Banking business, focused on the middle market and larger sectors, into the Denver, Houston and Nashville markets in 2018. This followed offices opened in 2017 in Dallas, Kansas City and Minneapolis. These locations complement Corporate & Institutional Banking national businesses with a significant presence in these cities, and build on past successes in the markets where PNC's retail banking presence was limited, such as in the Southeast. Our full suite of commercial products and services is offered in these locations. We have announced plans to expand into the Boston and Phoenix markets in 2019.

Product Revenue

In addition to credit and deposit products for commercial customers, Corporate & Institutional Banking offers other services, including treasury management, capital markets-related products and services, and commercial mortgage banking activities, for

customers of all business segments. On a consolidated basis, the revenue from these other services is included in net interest income, corporate service fees and other noninterest income. From a business segment perspective, the majority of the revenue and expense related to these services is reflected in the Corporate & Institutional Banking segment results and the remainder is reflected in the results of other businesses. The Other Information section in Table 10 includes the consolidated revenue to PNC for these services. A discussion of the consolidated revenue from these services follows.

The Treasury Management business provides payables, receivables, deposit and account services, liquidity and investments, and online and mobile banking products and services to our clients. Treasury management revenue is reported in noninterest income and net interest income. Noninterest income includes treasury management product revenue less earnings credits provided to customers on compensating deposit balances used to pay for products and services. Net interest income primarily includes revenue from all treasury management customer deposit balances. Compared with 2017, treasury management revenue increased primarily due to interest rate spread expansion on deposit balances and higher product revenue.

Capital markets-related products and services include foreign exchange, derivatives, securities underwriting, loan syndications, mergers and acquisitions advisory and equity capital markets advisory related services. The increase in revenue in the comparison was broad based across most products and services and included higher merger and acquisition advisory, derivative, foreign exchange and equity capital markets advisory related services, partially offset by lower revenue from credit valuations on customer-related derivative activities.

Commercial mortgage banking activities include revenue derived from commercial mortgage servicing (including net interest income and noninterest income) and revenue derived from commercial mortgage loans held for sale and related hedges. Total revenue from commercial mortgage banking activities decreased in the comparison as a lower benefit from commercial mortgage servicing rights valuation, net of economic hedge, and lower revenue from commercial mortgage loans held for sale were partially offset by higher revenue from commercial mortgage loan servicing.

Asset Management Group

Asset Management Group is focused on being a premier bank-held individual and institutional asset manager in each of the markets it serves. The business seeks to deliver high quality banking, trust and investment management services to our high net worth, ultra high net worth and institutional client sectors through a broad array of products and services. Asset Management Group’s priorities are to serve our clients' financial objectives, grow and deepen customer relationships and deliver solid financial performance with prudent risk and expense management.

Table 11: Asset Management Group Table
(Unaudited)

Year ended December 31			Change	
Dollars in millions, except as noted	2018	2017	$	%
Income Statement				
Net interest income	$287	$287	$—	—
Noninterest income	892	881	11	1 %
Total revenue	1,179	1,168	11	1 %
Provision for credit losses	2	1	1	100 %
Noninterest expense	913	905	8	1 %
Pretax earnings	264	262	2	1 %
Income taxes	62	75	(13)	(17)%
Earnings	$202	$187	$15	8 %
Average Balance Sheet				
Loans				
Consumer	$4,656	$5,018	$(362)	(7)%
Commercial and commercial real estate	727	715	12	2 %
Residential mortgage	1,588	1,301	287	22 %
Total loans	$6,971	$7,034	$(63)	(1)%
Total assets	$7,423	$7,511	$(88)	(1)%
Deposits				
Noninterest-bearing demand	$1,458	$1,528	$(70)	(5)%
Interest-bearing demand	3,323	3,628	(305)	(8)%
Money market	2,253	3,158	(905)	(29)%
Savings	4,890	3,947	943	24 %
Other	466	250	216	86 %
Total deposits	$12,390	$12,511	$(121)	(1)%
Performance Ratios				
Return on average assets	2.72 %	2.49 %		
Noninterest income to total revenue	76 %	75 %		
Efficiency	77 %	77 %		
Supplemental Noninterest Income Information				
Asset management fees	$883	$865	$18	2 %
Other Information				
Nonperforming assets (a) (b)	$46	$49	$(3)	(6)%
Net charge-offs	$9	$4	$5	125 %
Client Assets Under Administration (in billions) (a) (c)				
Discretionary client assets under management	$148	$151	$(3)	(2)%
Nondiscretionary client assets under administration	124	131	(7)	(5)%
Total	$272	$282	$(10)	(4)%
Discretionary client assets under management				
Personal	$87	$94	$(7)	(7)%
Institutional	61	57	4	7 %

Total	$148	$151	$(3)	(2)%

(a) As of December 31.
(b) Includes nonperforming loans of $45 million at December 31, 2018 and $44 million at December 31, 2017.
(c) Excludes brokerage account client assets.

Asset Management Group earned $202 million in 2018 compared with $187 million in 2017. Higher earnings reflected the lower statutory federal income tax rate and higher revenue, partially offset by higher noninterest expense.

Higher revenue in the comparison was driven by growth in asset management fees, reflecting stronger average equity markets, partially offset by changes in asset mix.

Noninterest expense increased in the comparison and was primarily attributable to higher compensation and continued investments in technology.

Asset Management Group's discretionary client assets under management decreased in the comparison, primarily attributable to a decline in the equity markets as of December 31, 2018 compared to the prior year-end.

The Asset Management Group strives to be the leading relationship-based provider of investment, planning, banking and fiduciary services to wealthy individuals and institutions by proactively delivering value-added ideas and solutions and exceptional service.

Wealth Management and Hawthorn have nearly 100 offices operating in seven out of the ten most affluent states in the U.S. with a majority co-located with retail banking branches. The businesses provide customized investments, wealth planning, trust and estate administration and private banking solutions to affluent individuals and ultra-affluent families.

Institutional Asset Management provides outsourced chief investment officer, custody, private real estate, cash and fixed income client solutions, and retirement administration services to institutional clients such as corporations, healthcare systems, insurance companies, unions, municipalities and non-profits. The business also offers PNC proprietary mutual funds and investment strategies. Institutional Asset Management is strengthening its partnership with Corporate & Institutional Banking to drive growth and is focused on building retirement capabilities and expanding product solutions for all customers.

BlackRock

(Unaudited)

Information related to our equity investment in BlackRock follows:

Table 12: BlackRock Table

Year ended December 31 Dollars in millions	2018	2017
Business segment earnings (a)	$781	$1,764
PNC's economic interest in BlackRock (b)	22 %	22 %

(a) Includes our share of BlackRock's reported GAAP earnings and income taxes on those earnings incurred by us.
(b) At December 31.

In billions	December 31, 2018	December 31, 2017
Carrying value of our investment in BlackRock (c)	$ 8.2	$ 7.7
Market value of our investment in BlackRock (d)	$ 13.7	$ 17.9

(c) We account for our investment in BlackRock under the equity method of accounting, exclusive of a related deferred tax liability of $1.7 billion at December 31, 2018 and $1.6 billion at December 31, 2017. Our voting interest in BlackRock common stock was approximately 22% at December 31, 2018.
(d) Does not include liquidity discount.

Earnings for our BlackRock segment decreased compared with 2017, reflecting the 2017 income tax benefit of $972 million resulting from the revaluation of our deferred tax liabilities related to BlackRock as a result of the new federal tax legislation. Our share of BlackRock's reported 2017 GAAP earnings also included a $254 million flow through impact of the new tax legislation on the income recognized on our equity investment in BlackRock.

In addition to our investment in BlackRock reflected in Table 12, at December 31, 2018, we held approximately 143,458 shares of BlackRock Series C Preferred Stock valued at $45 million, which were available to fund our obligation in connection with certain BlackRock long-term incentive plan (LTIP) programs. Additional information regarding the valuation of the BlackRock Series C Preferred Stock is included in Note 6 Fair Value, and additional information regarding our BlackRock LTIP share obligations is included in Note 12 Stock Based Compensation Plans, both of which are in Item 8 of this Report.

See Note 24 Subsequent Events in Item 8 of this Report for information on our January 31, 2019 transfer of our remaining shares of Series C Preferred Stock to BlackRock to satisfy our obligation under the Share Surrender Agreement.

2017 VERSUS 2016

Consolidated Income Statement Review

Summary Results

Net income for 2017 was $5.4 billion, or $10.36 per diluted common share, an increase of 35% compared with $4.0 billion, or $7.30 per diluted common share, for 2016. Higher net income was driven by an 8% increase in total revenue and a tax benefit from the new federal tax legislation, partially offset by a 10% increase in noninterest expense.

Net Interest Income

Net interest income increased $717 million, or 9%, to $9.1 billion in 2017 compared to 2016 due to increases in loan and securities balances and yields, partially offset by an increase in borrowing and deposit costs. Net interest margin increased to 2.87% in 2017 compared to 2.73% in 2016, reflecting the benefit to loans and securities yields from higher interest rates in 2017.

Noninterest Income

Noninterest income increased $450 million, or 7%, to $7.2 billion for 2017 compared to 2016. Noninterest income as a percentage of total revenue was 44% for 2017 compared to 45% for 2016.

Asset management revenue increased $421 million, or 28%, to $1.9 billion in 2017 compared to 2016 reflecting higher earnings from our equity investment in BlackRock, including a $254 million flow through impact from the new federal tax legislation on our equity investment. Additionally, the impact of stronger equity markets contributed to the increase. Discretionary client assets under management in our Asset Management Group segment were $151 billion at December 31, 2017 compared with $137 billion at December 31, 2016, primarily attributable to higher equity markets.

Consumer service fees of $1.4 billion in 2017 grew $27 million, or 2%, compared to 2016, primarily due to a $25 million increase in credit card fees, net of rewards, and debit card fees, which reflected continued momentum in customer activity in both transaction trends and customer growth. In addition, brokerage fees increased $17 million, driven by higher brokerage assets under management. These increases were partially offset by individually insignificant items.

Corporate services revenue increased $153 million, or 10%, to $1.7 billion in 2017 compared to 2016, reflecting broad based growth, including higher merger and acquisition (M&A) advisory fees of $65 million and an increase in loan syndication and agency fees of $28 million, both of which reflected continued momentum in the M&A market. Higher treasury management revenue and operating lease income related to the commercial and vendor finance business acquired in the second quarter of 2017 also contributed to the increase in corporate services revenue.

In the first quarter of 2018, and in connection with the commercial and vendor finance business we acquired in the second quarter of 2017, we reclassified operating lease income to Corporate services noninterest income from Other noninterest income on the Consolidated Income Statement. Operating lease income was $121 million in 2017 and $85 million in 2016.

Residential mortgage revenue decreased $217 million, or 38%, to $.4 billion in 2017 compared to 2016, reflecting a decline of $122 million in residential mortgage servicing rights valuation, net of economic hedge, which included a $71 million negative adjustment for mortgage servicing rights fair value assumption updates in the fourth quarter of 2017. In addition, the decrease reflected lower loan sales revenue of $85 million, which was driven by lower origination volume and compressed pricing margins.

Service charges on deposits of $.7 billion in 2017 increased $28 million, or 4%, compared to 2016, reflecting higher levels of activity.

Other noninterest income increased $38 million, or 4%, to $1.1 billion in 2017 compared to 2016, primarily due to higher revenue from private equity investments of $172 million and $119 million for the appreciation of BlackRock common stock used to fund PNC's fourth quarter 2017 contribution to the PNC Foundation. The increase in revenue from private equity investments reflected positive impacts from valuation adjustments on equity investments subject to the Volcker Rule provision of Dodd-Frank. These increases were largely offset by negative derivative fair value adjustments related to Visa Class B common shares of $280 million in 2017, including $248 million in the fourth quarter primarily related to the extension of anticipated timing of litigation resolution. In 2016, gains on sales of Visa Class B common shares, net of derivative fair value adjustments, were $32 million.

Provision For Credit Losses

The provision for credit losses increased to $441 million in 2017 compared to $433 million in 2016. The provision for 2017 reflected loan growth, including an initial provision for the loan and lease portfolio obtained through the business acquired in the second quarter of 2017, mostly offset by lower provisions in the oil, gas and coal sectors.

Noninterest Expense

Noninterest expense increased by $922 million, or 10%, to $10.4 billion in 2017 compared to 2016, reflecting higher levels of business activity and ongoing investments in technology and business infrastructure. Higher personnel expense included the fourth quarter 2017 announcement of employee cash payments and pension account credits totaling $105 million. In addition, charges for

real estate dispositions and exits totaled $197 million for the fourth quarter of 2017, primarily within other noninterest expense. Additionally, other noninterest expense for 2017 included the fourth quarter $200 million contribution of BlackRock common stock to the PNC Foundation. Contributions to the PNC Foundation in 2016 were $75 million.

During 2017, we completed actions and achieved our 2017 continuous improvement program savings goal of $350 million, which funded a significant portion of our business and technology investments, including our Retail branch strategy, enhanced digital capabilities and our home lending transformation.

Effective Income Tax Rate

An income tax benefit of $1.2 billion was recorded in the fourth quarter of 2017 related to the change in tax legislation and was primarily attributable to the revaluation of net deferred tax liabilities at the lower statutory tax rate of 21%. As a result, the effective income tax rate for 2017 was 1.9% compared with 24.1% for 2016.

Consolidated Balance Sheet Review

Summary Results

Our balance sheet grew in 2017 compared to 2016 and we had strong liquidity and capital positions. Total assets increased to $380.8 billion at December 31, 2017 compared to $366.4 billion at December 31, 2016 primarily due to strong loan growth and higher interest-earning deposits with banks. Total liabilities increased to $333.2 billion at December 31, 2017 compared to $319.5 billion at December 31, 2016 due to deposit growth and higher borrowed funds. Total equity increased to $47.6 billion at December 31, 2017 compared to $46.9 at December 31, 2016 due to higher retained earnings driven by net income, partially offset by common share repurchases and a decline in noncontrolling interests related to the redemption of Perpetual Trust Securities in the first quarter of 2017.

Loans

Loans increased $9.6 billion, or 5%, to $220.5 billion as of December 31, 2017 compared with December 31, 2016, reflecting higher commercial lending and consumer lending.

Commercial lending increased $9.5 billion, or 7%, reflecting broad based growth across our lending businesses, including Corporate Banking, Business Credit and Equipment Finance within our Corporate & Institutional Banking segment. In Corporate Banking, loan growth was largely due to increased lending related to mergers and acquisition activity and strong growth in middle market lending. In Business Credit, new originations and higher utilization drove the increase. In the Equipment Finance business, commercial loans and equipment lease financing loans increased as a result of new production, as well as the acquisition of a commercial and vendor finance business with $1.0 billion of loans and leases during the second quarter of 2017.

Growth in consumer lending balances of $.1 billion was driven by higher residential real estate, automobile and credit card loans, partially offset by lower home equity and education loans. Residential real estate loans increased as a result of growth in originations of nonconforming residential mortgage loans, both nationwide and within our branch network. Automobile loans grew in part due to continued expansion in our Southeast markets. Higher credit card balances reflected an increase in new accounts, due in part to the introduction of a new credit card product, as well as higher purchase volume. Decreases in home equity and education loans included the continued runoff in our non-strategic brokered home equity and government guaranteed education loan portfolios. The decline in home equity also reflected decreases due to paydowns and payoffs exceeding new originated volume.

Average total loans increased $8.5 billion, or 4%, to $217.3 billion in 2017 compared to 2016, reflecting increases in average commercial lending of $8.4 billion and average consumer lending of $.1 billion.

Investment Securities

Investment securities increased $.2 billion to $76.1 billion at December 31, 2017 compared to December 31, 2016. Growth in investment securities was driven by net purchases of agency residential mortgage-backed securities of $2.7 billion and U.S. Treasury and government agencies securities of $1.6 billion, partially offset by declines in commercial mortgage-backed securities of $2.2 billion, asset-backed securities of $.9 billion and non-agency residential mortgage-backed securities of $.6 billion.

Average investment securities increased $3.0 billion, or 4%, to $75.1 billion in 2017 compared to 2016. Net purchases of U.S. Treasury and government agencies securities of $2.9 billion and agency residential mortgage-backed securities of $2.8 billion were partially offset by declines in average commercial mortgage-backed securities of $1.6 billion and non-agency residential mortgage-backed securities of $.8 billion.

The weighted-average expected maturity of the investment securities portfolio (excluding other) was 5.2 years at December 31, 2017 and 5.0 years at December 31, 2016.

Funding Sources

Deposits increased $7.9 billion, or 3%, to $265.1 billion at December 31, 2017 compared with December 31, 2016. Savings deposits grew $10.0 billion reflecting, in part, a shift from consumer money market to relationship-based savings products. Money market deposits declined $4.2 billion due to the shift to savings products, which was partially offset by growth of $3.5 billion in commercial

interest-bearing money market deposits. Interest-bearing demand deposits increased $2.7 billion, reflecting growth in consumer deposits of $1.7 billion and higher commercial deposits of $1.0 billion.

Average total deposits increased $7.2 billion, or 3%, to $258.1 billion in 2017 compared to 2016 primarily due to growth in average interest-bearing deposits of $6.7 billion, or 4%, driven by higher average savings deposits of $13.1 billion. This increase reflected a shift, in part, to relationship-based savings products from money market deposits, which decreased $9.2 billion. Additionally, average interest-bearing demand deposits grew $4.3 billion, mainly attributable to the higher interest rate environment and customer growth. Average noninterest-bearing deposits increased $.5 billion in 2017 over 2016.

Total borrowed funds increased $6.4 billion, or 12%, to $59.1 billion at December 31, 2017 compared with December 31, 2016 as higher bank notes and senior debt and FHLB borrowings were driven by new issuances outpacing maturities and calls. These increases were partially offset by subordinated debt maturities.

Shareholders’ Equity

Total shareholders’ equity grew $1.8 billion, or 4%, to $47.5 billion at December 31, 2017 compared with December 31, 2016. Higher retained earnings, which reflected net income of $5.4 billion reduced by $1.5 billion of common and preferred dividends, was partially offset by common share repurchases of $2.3 billion. Common shares outstanding were 473 million and 485 million at December 31, 2017 and December 31, 2016, respectively, reflecting repurchases of 18.6 million shares during 2017, which were partially offset by share issuances from treasury stock related to warrants exercised and stock-based compensation activity.

RISK MANAGEMENT

Enterprise Risk Management

We encounter risk as part of the normal course of operating our business. Accordingly, we design risk management processes to help manage this risk. We manage risk in light of our risk appetite to optimize long-term shareholder value while supporting our employees, customers and communities.

Our Enterprise Risk Management (ERM) Framework is structurally aligned with enhanced prudential standards that establish minimum requirements for the design and implementation of a risk management framework. This Risk Management section describes our ERM Framework which consists of risk culture, enterprise strategy (including risk appetite, strategic planning, capital planning and stress testing), risk governance and oversight, risk identification, risk assessments, risk controls and monitoring, and risk aggregation and reporting. The overall Risk Management section of this Item 7 also provides an analysis of our key areas of risk, which include but are not limited to credit, liquidity and capital, market, operational and compliance. Our use of financial derivatives as part of our overall asset and liability risk management process is also addressed within this Risk Management section.

We operate within a rapidly evolving regulatory environment. Accordingly, we are actively focused on the timely adoption of applicable regulatory pronouncements within our ERM Framework.

We view risk management as a cohesive combination of the following risk elements which form our ERM Framework:

Risk Culture

A strong risk culture helps us make well-informed decisions, ensures individuals conform to the established culture, reduces an individual's ability to do something for personal gain, and rewards employees working toward a common goal rather than individual interests. Our risk culture reinforces the appropriate protocols for responsible and ethical behavior. These protocols are especially critical in terms of our risk awareness, risk-taking behavior and risk management practices.

Managing risk is every employee's responsibility. All of our employees individually and collectively assume responsibility for ensuring the organization is performing with the utmost integrity, is applying sound risk management practices and is striving to achieve our stated objectives rather than pursuing individual interests. All employees are responsible for understanding our Enterprise Risk Appetite Statement, the ERM Framework and how risk management applies to their respective roles and responsibilities. Employees are encouraged to collaborate across groups to identify and mitigate risks and elevate issues as required. We reinforce risk management responsibilities through a performance management system where employee performance goals include risk management objectives and incentives for employees to reinforce balanced measures of risk-adjusted performance.

Proactive communication, between groups and up to the Board of Directors, facilitates timely identification and resolution of risk issues. Our multi-level risk committee structure provides formal channels to identify and report risk.

Enterprise Strategy

We ensure that our overall enterprise strategy is within acceptable risk parameters through our risk appetite, strategic planning, capital planning and stress testing processes. These components are reviewed and approved at least annually by the Board of Directors.

Risk Appetite: Our risk appetite represents the organization's desired enterprise risk position, set within our capital based risk and liquidity capacity to achieve our strategic objectives and business plans. The Enterprise Risk Appetite Statement qualitatively describes the aggregate level of risk we are willing to accept in order to execute our business strategies. Qualitative guiding principles further define each of the risks within our taxonomy to support the risk appetite statement. Risk appetite metrics and limits, including forward-looking metrics, quantitatively measure whether we are operating within our stated Risk Appetite. Our risk appetite metrics reflect material risks, align with our established Risk Appetite Framework, balance risk and reward, leverage analytics, and adjust in a timely manner to changes in the external and internal risk environments.

Strategic Planning: Our enterprise and line of business strategic plans outline major objectives, strategies and goals which are expected to be achieved over the next five years while seeking to ensure we remain compliant with all capital, risk appetite and liquidity targets and guidelines. Our CEO and CFO lead the development of the strategic plan, the strategic objectives and the comprehensive identification of material risks that could hinder successful implementation and execution of strategies. Strategic planning is linked to our risk management and capital planning processes.

Capital Planning and Stress Testing: Capital planning helps to ensure we are maintaining safe and sound operations and viability. The capital planning process and the resulting capital plan evolve as our overall risks, activities and risk management practices change. Capital planning aligns with our strategic planning process.

Stress testing is an essential element of the capital planning process. Effective stress testing enables us to consider the estimated effect on capital of various hypothetical scenarios.

Risk Governance and Framework

We employ a comprehensive risk management governance framework to help ensure that risks are identified, balanced decisions are made that consider risk and return, and risks are adequately monitored and managed. Risk committees established within this risk governance and oversight framework provide oversight for risk management activities at the Board of Directors, executive, corporate and business levels. Committee composition is designed to provide effective oversight balanced across the three lines of defense in accordance with the OCC's heightened risk management and governance standards and guidelines. See discussion of the enhanced prudential standards in the Supervision and Regulation section in Item 1 of this Report.

To ensure the appropriate risks are being taken and effectively managed and controlled, risk is managed across three lines of defense. The Board of Directors' and each line of defense's responsibilities are detailed below:

Board of Directors – The Board of Directors oversees our risk-taking activities and is responsible for exercising sound, independent judgment when assessing risk.
First line of defense – The front line units are accountable for identifying, owning and managing risks to within acceptable levels while adhering to the risk management framework established by the Independent Risk Management department. Our businesses strive to enhance risk management and internal control processes within their areas. Integrated and comprehensive processes are designed to adequately identify, measure, manage, monitor and report risks which may significantly impact each business.
Second line of defense – The second line of defense is independent from the first line of defense and is responsible for establishing the standards for identifying, measuring, monitoring, controlling and reporting aggregate risks. As the second line of defense, the

independent risk areas monitor the risks generated by the first line of defense, review and challenge the implementation of effective risk management practices, and report any issues or exceptions. The risk areas help to ensure the first line of defense is properly designed and operating as intended, and they may intervene directly in modifying and developing first line of defense risk processes and controls.
Third line of defense – As the third line of defense, Internal Audit is independent from the first and second lines of defense. Internal Audit provides the Board of Directors and executive management comprehensive assurance on the effectiveness of risk management practices across the organization.
Within the three lines of defense, the independent risk organization has sufficient authority to influence material decisions. Our business oversight and decision-making is supported through a governance structure at the Board of Directors and management level. Specific responsibilities include:
Board of Directors – Our Board of Directors oversees our business and affairs as managed by our officers and employees. The Board of Directors may receive assistance in carrying out its duties and may delegate authority through the following standing committees:

- Audit Committee: monitors the integrity of our consolidated financial statements; monitors internal control over financial reporting; monitors compliance with our code of ethics; evaluates and monitors the qualifications and independence of our independent auditors; and evaluates and monitors the performance of our Internal Audit function and our independent auditors.
- Nominating and Governance Committee: oversees the implementation of sound corporate governance principles and practices while promoting our best interests and those of our shareholders
- Personnel and Compensation Committee: oversees the compensation of our executive officers and other specified responsibilities related to personnel compensation matters affecting us. The committee is also responsible for evaluating the relationship between risk-taking activities and incentive compensation plans.
- Risk Committee: oversees enterprise-wide risk structure and the processes established to identify, measure, monitor and manage the organization’s risks and evaluates and approves our risk governance framework. The Risk Committee has formed a Technology Subcommittee and a Compliance Subcommittee to facilitate Board-level oversight of risk management in these areas.

Executive Committee: The Executive Committee is responsible for guiding the creation and execution of our business strategy across the company. With this responsibility, the Executive Committee executes various strategic approval and review activities, with a focus on capital deployment, business performance and risk management.
Corporate Committees – The corporate committees are responsible for overseeing risk standards and strategies, recommending risk limits, policies and metrics, monitoring risk exposures, reviewing risk profiles and key risk issues, and approving significant transactions and initiatives. We have established several senior management-level corporate committees to facilitate the review, evaluation and management of risk.
Working Committees – The working committees are generally subcommittees of the corporate committees. Working committees are intended to assist in the implementation of key enterprise-level activities within a business or function; recommend and/or approve risk appetite metrics and limits; recommend and/or approve policies that are generally within the standards outlined in the applicable enterprise policy; and review and/or approve certain significant transactions or initiatives.

Policies and Procedures – We have established risk management policies and procedures to provide direction, guidance and clarity on roles and responsibilities to management and the Board of Directors. These policies and procedures are organized in a multi-tiered framework and require periodic review and approval by relevant committees within the governance structure.
We have established risk management policies, programs and procedures to support our ERM Framework, articulate our risk culture, define the parameters and processes within which employees are to manage risk and conduct our business activities and to provide direction, guidance and clarity on roles and responsibilities to management and the Board of Directors. These policies, programs and procedures are organized in a multi-tiered framework and require periodic review and approval by relevant committees within the governance structure.
Risk Identification

Risk identification takes place across a variety of risk types throughout the organization. These risk types consist of, but are not limited to, credit, liquidity and capital, market, operational and compliance. Risks are identified based on a balanced use of analytical tools and management judgment for both on- and off-balance sheet exposures. Our governance structure supports risk identification by facilitating assessment of key risk issues, emerging risks and idiosyncratic risks and implementation of mitigation strategies as appropriate. These risks are prioritized based on quantitative and qualitative analysis and assessed against the risk appetite. Multiple tools and approaches are used to help identify and prioritize risks, including Risk Appetite Metrics, Key Risk Indicators, Key Performance Indicators, Risk Control and Self-Assessments, scenario analysis, stress testing and special investigations.

Risks are aggregated and assessed within and across risk functions or businesses. The aggregated risk information is reviewed and reported at an enterprise level for adherence to the Risk Appetite Framework and approved by the Board of Directors or by appropriate committees. This enterprise aggregation and reporting approach promotes the identification and appropriate escalation of material risks across the organization and supports an understanding of the cumulative impact of risk in relation to our risk appetite.

Risk Assessment

Once risks are identified, they are evaluated based on quantitative and qualitative analysis to determine whether they are material. Risk assessments support the overall management of an effective ERM Framework and allow us to control and monitor our actual risk level and risk management effectiveness through the use of risk measures. Comprehensive, accurate and timely assessments of risk are essential to an effective ERM Framework. Effective risk measurement practices will uncover recurring risks that have been experienced in the past; make the known risks easy to see, understand, compare and report; and reveal unanticipated risks that may not be easy to understand or predict.

Risk Controls and Monitoring

Our ERM Framework consists of policies, processes, personnel and control systems. Risk controls and limits provide the linkage from our Risk Appetite Statement and associated guiding principles to the risk taking activities of our businesses. In addition to risk appetite limits, a system of more detailed internal controls exists which oversees and monitors our various processes and functions. These control systems measure performance, help employees make correct decisions, ensure information is accurate and reliable, and document compliance with laws and regulations. Our monitoring and evaluation of risks and controls provides assurance that policies, procedures and controls are effective and also results in the identification of control improvement recommendations. Risk monitoring is a daily, ongoing process used by both the first and second line of defense to ensure compliance with our ERM Framework. Risk monitoring is accomplished in many ways, including performing risk assessments at the prime process and risk assessment unit level, monitoring an area’s key controls, the timely reporting of issues, and establishing a quality control and/or quality assurance function, as applicable.

Risk Aggregation and Reporting

Risk reporting is a comprehensive way to: (i) aggregate risks; (ii) identify concentrations; (iii) help ensure we remain within our established risk appetite; (iv) serve as a basis for monitoring our risk profile in relation to our risk appetite and (v) communicate risks to the Board of Directors and executive management.

Risk reports are produced at the line of business, functional risk and enterprise levels. The enterprise level risk report aggregates risks identified in the functional and business reports to define the enterprise risk profile. The enterprise risk profile is a point-in-time assessment of enterprise risk and represents our overall risk position in relation to the desired enterprise risk appetite. The determination of the enterprise risk profile is based on analysis of quantitative reporting of risk limits and other measures along with qualitative assessments. Quarterly aggregation of our risk profile enables a clear view of our risk level relative to our quantitative risk appetite. The enterprise level report is provided through the governance structure to the Board of Directors.

Each individual risk report includes an assessment of inherent risk, quality of risk management, residual risk, risk appetite and risk outlook. The enterprise level risk report includes an aggregate view of risks identified in the individual report and provides a summary of our overall risk profile compared to our risk appetite.

Credit Risk Management

Credit risk represents the possibility that a customer, counterparty or issuer may not perform in accordance with contractual terms. Credit risk is inherent in the financial services business and results from extending credit to customers, purchasing securities, and entering into financial derivative transactions and certain guarantee contracts. Credit risk is one of our most significant risks. Our processes for managing credit risk are embedded in our risk culture and in our decision-making processes using a systematic approach whereby credit risks and related exposures are identified and assessed, managed through specific policies and processes, measured and evaluated against our risk appetite and credit concentration limits, and reported, along with specific mitigation activities, to management and the Board of Directors through our governance structure. Our most significant concentration of credit risk is in our loan portfolio.

Loan Portfolio Characteristics and Analysis

Table 13: Details of Loans
Dollars in billions

We use several asset quality indicators, as further detailed in Note 3 Asset Quality, to monitor and measure our exposure to credit risk within our loan portfolio. The following provides additional information about our significant loan classes.

Commercial
Commercial loans comprised 52% and 50% of our total loan portfolio at December 31, 2018 and 2017, respectively. The majority of our commercial loans are secured by collateral that provides a secondary source of repayment for the loan should the borrower experience cash generation difficulties. Examples of this collateral include short-term assets, such as accounts receivable, inventory and securities, and long-lived assets, such as equipment, real estate and other business assets.

We actively manage our commercial loans to assess any changes (both positive and negative) in the level of credit risk at both the borrower and portfolio level. To evaluate the level of credit risk, we assign internal risk ratings reflecting our estimates of the borrower's probability of default (PD) and loss given default (LGD) for each related credit facility. This two-dimensional credit risk rating methodology provides granularity in the risk monitoring process and is updated on an ongoing basis through our credit risk management processes. In addition to continual monitoring of the level of credit risk, we also monitor concentrations of credit risk pertaining to both specific industries and geography that may exist in our portfolio. Our portfolio remains stable and well-diversified as shown in the following table which provides a breakout of our commercial loans by industry classification (classified based on the North American Industry Classification System (NAICS)).

Table 14: Commercial Loans by Industry

	December 31, 2018		December 31, 2017	
Dollars in millions	Amount	% of Total	Amount	% of Total
Commercial				
Manufacturing	$21,207	18 %	$20,578	19 %
Retail/wholesale trade	20,850	18	17,846	16
Service providers	14,869	13	15,100	14
Real estate related (a)	12,312	11	12,496	11
Financial services	9,500	8	8,532	8
Health care	8,886	8	9,739	9
Transportation and warehousing	5,781	5	5,609	5
Other industries	23,429	19	20,627	18
Total commercial loans	$116,834	100%	$110,527	100%

(a) Includes loans to customers in the real estate and construction industries.

Commercial Real Estate
Commercial real estate loans comprised $6.6 billion of real estate project loans, $7.1 billion of intermediate term financing loans and $14.4 billion related to commercial mortgages as of December 31, 2018. Comparable amounts were $6.9 billion, $8.4 billion and $13.7 billion, respectively, as of December 31, 2017.

We monitor credit risk associated with our commercial real estate loans similar to commercial loans by analyzing PD and LGD. Additionally, risks associated with these types of credit activities tend to be correlated to the loan structure, collateral location, project progress and business environment. These attributes are also monitored and utilized in assessing credit risk. The portfolio is geographically diverse due to the nature of our business involving clients throughout the U.S. The following table presents our commercial real estate loans by geographic market and property type.

Table 15: Commercial Real Estate Loans by Geography and Property Type

	December 31, 2018		December 31, 2017	
Dollars in millions	Amount	% of Total	Amount	% of Total
Geography				
California	$4,154	15 %	$4,192	14 %
Florida	2,157	8	2,221	8
Maryland	1,966	7	2,104	7
Virginia	1,682	6	1,609	5
Texas	1,531	5	1,639	6
Illinois	1,368	5	1,325	5
Pennsylvania	1,214	4	1,394	5
New York	1,151	4	1,163	4
Ohio	1,053	4	1,134	4
North Carolina	915	3	943	3
All other states	10,949	39	11,254	39
Total commercial real estate loans	$28,140	100%	$28,978	100%
Property Type				
Multifamily	$8,770	31 %	$8,958	31 %
Office	7,279	26	7,178	25
Retail	4,065	14	4,670	16
Hotel/Motel	1,686	6	1,793	6
Industrial/Warehouse	1,678	6	1,877	6
Senior Housing	1,092	4	905	3
Mixed Use	933	3	1,142	4
Other	2,637	10	2,455	9
Total commercial real estate loans	$28,140	100%	$28,978	100%

Home Equity
Home equity loans comprised $15.5 billion of primarily variable-rate home equity lines of credit and $10.6 billion of closed-end home equity installment loans at December 31, 2018. Comparable amounts were $16.8 billion and $11.6 billion, respectively, as of December 31, 2017.

We track borrower performance monthly, including obtaining original loan-to-value ratios (LTV), updated FICO scores at least quarterly, updated LTVs at least semi-annually, and other credit metrics at least quarterly, including the historical performance of any related mortgage loans regardless of lien position that we do or do not hold. This information is used for internal reporting and risk management. For internal reporting and risk management we also

segment the population into pools based on product type (e.g., home equity loans, brokered home equity loans, home equity lines of credit, brokered home equity lines of credit). As part of our overall risk analysis and monitoring, we also segment the portfolio based upon the loan delinquency, nonperforming status, modification and bankruptcy status, FICO scores, LTV, lien position and geographic concentration.

The portfolio is primarily originated within markets located in the Mid-Atlantic, Midwest, and Southeast, with less than 5% of the portfolio in states outside of those markets as of December 31, 2018. The credit quality of newly originated loans in 2018 was strong overall as evidenced by a weighted-average LTV on originations of 67% and a weighted-average FICO score of 773.

The credit performance of the majority of the home equity portfolio where we hold the first lien position is superior to the portion of the portfolio where we hold the second lien position, but do not hold the first lien. Lien position information is generally based upon

original LTV at the time of origination. We use an industry-leading third-party service provider to obtain updated loan, lien and collateral data that is aggregated from public and private sources.

The following table presents our home equity loans by geographic market and lien type.

Table 16: Home Equity Loans by Geography and by Lien Priority

	December 31, 2018		December 31, 2017	
Dollars in millions	Amount	% of Total	Amount	% of Total
Geography				
Pennsylvania	$6,160	24 %	$6,792	24 %
New Jersey	3,935	15	4,252	15
Ohio	3,095	12	3,413	12
Illinois	1,634	6	1,801	6
Maryland	1,481	6	1,572	6
Michigan	1,340	5	1,442	5
Florida	1,227	5	1,255	4
North Carolina	1,161	4	1,266	5
Kentucky	1,040	4	1,138	4
Indiana	845	3	924	3
All other states	4,205	16	4,509	16
Total home equity loans	$26,123	100%	$28,364	100%
Lien type				
1st lien		58 %		58 %
2nd lien		42		42
Total		100%		100%

Residential Real Estate

Residential real estate loans primarily consisted of residential mortgage loans at both December 31, 2018 and 2017.

We track borrower performance of this portfolio monthly similar to home equity loans. This information is used for internal reporting and risk management. For internal reporting and risk management we also segment the mortgage portfolio into pools based on product type (e.g., nonconforming, conforming). As part of our overall risk analysis and monitoring, we also segment the portfolio based upon loan delinquency, nonperforming status, modification and bankruptcy status, FICO scores, LTV and geographic concentrations. Loan performance is evaluated by source originators and loan servicers.

The credit quality of newly originated loans that we retained on our balance sheet in 2018 was strong overall as evidenced by a weighted-average LTV on originations of 71% and a weighted-average FICO score of 769.

The following presents our residential real estate loans by geographic market.

Table 17: Residential Real Estate Loans by Geography

	December 31, 2018		December 31, 2017	
Dollars in millions	Amount	% of Total	Amount	% of Total
Geography				
California	$4,666	25 %	$3,676	21 %

New Jersey	1,649	9	1,503	9
Florida	1,544	8	1,529	9
Illinois	1,161	6	1,230	7
Pennsylvania	1,031	6	962	5
New York	956	5	847	5
Maryland	913	5	902	5
North Carolina	854	5	821	5
Virginia	825	4	824	5
Ohio	682	4	684	4
All other states	4,376	23	4,234	25
Total residential real estate loans	$18,657	100%	$17,212	100%

We originate residential mortgage loans nationwide through our national mortgage business as well as within our branch network. Residential mortgage loans underwritten to government agency standards, including conforming loan amount limits, are typically sold with servicing retained by us. We also originate nonconforming residential mortgage loans that do not meet government agency standards, which we retain on our balance sheet. The nonconforming residential mortgage portfolio had strong credit quality at December 31, 2018 with an average original LTV of 70% and an average original FICO score of 772. Our portfolio of nonconforming residential mortgage loans totaled $12.8 billion at December 31, 2018 with 30% located in California.

Automobile

Within auto loans, $12.9 billion resided in the indirect auto portfolio while $1.5 billion were in the direct auto portfolio as of December 31, 2018. Comparable amounts as of December 31, 2017 were $11.4 billion and $1.4 billion, respectively, and also included $.1 billion of securitized loans. The indirect auto portfolio relates to loan applications originated through franchised automobile dealers. This business is strategically aligned with our core retail banking business.

We continue to focus on borrowers with strong credit profiles as evidenced by a weighted-average loan origination FICO score during 2018 of 740 for indirect auto loans and 762 for direct auto loans. The weighted-average term of loan originations during 2018 was 74 months for indirect auto loans and 62 months for direct auto loans. We offer both new and used automobile financing to customers through our various channels. At December 31, 2018, the portfolio was composed of 53% new vehicle loans and 47% used vehicle loans. Comparable amounts at December 31, 2017 were 54% and 46%, respectively.

The auto loan portfolio's performance is measured monthly, including updated collateral values that are obtained monthly and updated FICO scores that are obtained at least quarterly. For internal reporting and risk management, we analyze the portfolio by product channel and product type and regularly evaluate default and delinquency experience. As part of our overall risk analysis and monitoring, we segment the portfolio by loan structure, collateral attributes and credit metrics which include FICO score, LTV and term.

Nonperforming Assets and Loan Delinquencies

Nonperforming Assets

Nonperforming assets include nonperforming loans and leases for which ultimate collectability of the full amount of contractual principal and interest is not probable and include nonperforming troubled debt restructurings (TDRs), other real estate owned (OREO) and foreclosed assets. Loans held for sale, certain government insured or guaranteed loans, purchased impaired loans and loans accounted for under the fair value option are excluded from nonperforming loans. Additional information regarding our nonperforming loans and nonaccrual policies is included in Note 1 Accounting Policies in the Notes To Consolidated Financial Statements in Item 8 of this report. A summary of the major categories of nonperforming assets are presented in Table 18. See Note 3 Asset Quality in the Notes To Consolidated Financial Statements in Item 8 of this Report for further detail of nonperforming asset categories.

Table 18: Nonperforming Assets by Type

Dollars in millions	December 31 2018	December 31 2017	Change $	Change %
Nonperforming loans				
Commercial lending	$432	$554	$(122)	(22)%
Consumer lending (a)	1,262	1,311	(49)	(4)%
Total nonperforming loans	1,694	1,865	(171)	(9)%
OREO and foreclosed assets	114	170	(56)	(33)%
Total nonperforming assets	$1,808	$2,035	$(227)	(11)%

TDRs included in nonperforming loans	$863	$964	$(101)	(10)%
Percentage of total nonperforming loans	51 %	52 %		
Nonperforming loans to total loans	.75 %	.85 %		
Nonperforming assets to total loans, OREO and foreclosed assets	.80 %	.92 %		
Nonperforming assets to total assets	.47 %	.53 %		
Allowance for loan and lease losses to total nonperforming loans	155 %	140 %		

(a) Excludes most consumer loans and lines of credit not secured by residential real estate, which are charged off after 120 to 180 days past due and are not placed on nonperforming status.

Table 19: Change in Nonperforming Assets

In millions	2018	2017
January 1	$2,035	$2,374
New nonperforming assets	1,110	1,376
Charge-offs and valuation adjustments	(556)	(585)
Principal activity, including paydowns and payoffs	(476)	(638)
Asset sales and transfers to loans held for sale	(139)	(178)
Returned to performing status	(166)	(314)
December 31	$1,808	$2,035

As of December 31, 2018, approximately 89% of total nonperforming loans were secured by collateral which lessened reserve requirements and is expected to reduce credit losses in the event of default. As of December 31, 2018, commercial lending nonperforming loans were carried at approximately 70% of their unpaid principal balance, due to charge-offs recorded to date, before consideration of the Allowance for loan and lease losses (ALLL).

Within consumer lending nonperforming loans, residential real estate TDRs comprised 81% and 75% of total residential real estate nonperforming loans at December 31, 2018 and 2017, respectively. Home equity TDRs comprised 47% of home equity nonperforming loans at December 31, 2018, down from 50% at December 31, 2017. TDRs generally remain in nonperforming status until a borrower has made at least six consecutive months of both principal and interest payments under the modified terms or ultimate resolution occurs. Loans where borrowers have been discharged from personal liability through Chapter 7 bankruptcy and have not formally reaffirmed their loan obligations to us and loans to borrowers not currently obligated to make both principal and interest payments under the restructured terms are not returned to accrual status.

At December 31, 2018, our largest nonperforming asset was $36 million in the Information industry and the ten largest individual nonperforming assets represented 11% of total nonperforming assets.

Loan Delinquencies

We regularly monitor the level of loan delinquencies and believe these levels may be a key indicator of loan portfolio asset quality. Measurement of delinquency status is based on the contractual terms of each loan. Loans that are 30 days or more past due in terms of payment are considered delinquent. Loan delinquencies exclude loans held for sale and purchased impaired loans, but include government insured or guaranteed loans and loans accounted for under the fair value option.

Table 20: Accruing Loans Past Due (a)

	Amount				Percentage of Total Loans Outstanding	
	December 31,	December 31,	Change		December 31,	December 31,
Dollars in millions	2018	2017	$	%	2018	2017
Early stage loan delinquencies						
Accruing loans past due 30 to 59 days	$585	$ 545	$40	7 %	.26 %	.25 %
Accruing loans past due 60 to 89 days	271	238	33	14 %	.12 %	.11 %
Total	856	783	73	9 %	.38 %	.36 %
Late stage loan delinquencies						
Accruing loans past due 90 days or more	629	737	(108)	(15)%	.28 %	.33 %
Total	$1,485	$ 1,520	$(35)	(2)%	.66 %	.69 %

(a) Past due loan amounts include government insured or guaranteed loans of $.7 billion at December 31, 2018 and $.9 billion at December 31, 2017.

Accruing loans past due 90 days or more are not included in nonperforming loans and continue to accrue interest because they are well secured by collateral and are in the process of collection, or are managed in homogenous portfolios with specified charge-off timeframes adhering to regulatory guidelines, or are certain government insured or guaranteed loans.

Troubled Debt Restructurings and Loan Modifications

Troubled Debt Restructurings

A TDR is a loan whose terms have been restructured in a manner that grants a concession to a borrower experiencing financial difficulties. TDRs result from our loss mitigation activities and include rate reductions, principal forgiveness, postponement/reduction of scheduled amortization and extensions, which are intended to minimize economic loss and to avoid foreclosure or repossession of collateral. Additionally, TDRs also result from court imposed concessions (e.g., a Chapter 7 bankruptcy where the debtor is discharged from personal liability to us and a court approved Chapter 13 bankruptcy repayment plan).

Table 21: Summary of Troubled Debt Restructurings (a)

In millions	December 31 2018	December 31 2017	Change $	%
Total commercial lending	$ 409	$ 409	$—	—
Total consumer lending	1,442	1,652	(210)	(13)%
Total TDRs	$ 1,851	$ 2,061	$(210)	(10)%
Nonperforming	$ 863	$ 964	$(101)	(10)%
Accruing (b)	988	1,097	(109)	(10)%
Total TDRs	$ 1,851	$ 2,061	$(210)	(10)%

(a) Amounts in table represent recorded investment. Recorded investment does not include any associated valuation allowance.

(b) Accruing loans include consumer credit card loans and loans that have demonstrated a period of at least six months of performance under the restructured terms and are excluded from nonperforming loans.

Excluded from TDRs are $1.1 billion and $1.2 billion of consumer loans held for sale, loans accounted for under the fair value option and pooled purchased impaired loans, as well as certain government insured or guaranteed loans at December 31, 2018 and 2017, respectively. Nonperforming TDRs represented approximately 51% and 52% of total nonperforming loans at December 31, 2018 and 2017, respectively, while representing 47% of total TDRs at both December 31, 2018 and 2017. The remaining portion of TDRs represents TDRs that have been returned to accrual status after performing under the restructured terms for at least six consecutive months.

See Note 3 Asset Quality in the Notes To Consolidated Financial Statements in Item 8 of this Report for additional information on TDRs.

Commercial Loan Modifications

Modifications of terms for commercial loans are based on individual facts and circumstances. Commercial loan modifications may involve reduction of the interest rate, extension of the loan term and/or forgiveness of principal. We evaluate these modifications for TDR classification based upon whether we granted a concession to a borrower experiencing financial difficulties.

Consumer Loan Modifications

We modify loans under government and PNC-developed programs based upon our commitment to help eligible homeowners and borrowers avoid foreclosure, where appropriate. Initially, a borrower is evaluated for a modification under a government program. If a borrower does not qualify under a government program, the borrower is then evaluated under a PNC program. Our programs utilize both temporary and permanent modifications and typically reduce the interest rate, extend the term and/or defer principal. Loans that are either temporarily or permanently modified under programs involving a change to loan terms are generally classified as TDRs. Further, loans that have certain types of payment plans and trial payment arrangements which do not include a contractual change to loan terms may be classified as TDRs.

A temporary modification, with a term up to 24 months, involves a change in original loan terms for a period of time and reverts to a calculated exit rate for the remaining term of the loan as of a specific date. A permanent modification, with a term greater than 24 months, is a modification in which the terms of the original loan are changed. Permanent modification programs generally result in principal forgiveness, interest rate reduction, term extension, capitalization of past due amounts, interest-only period or deferral of principal.

We also monitor the success rates and delinquency status of our loan modification programs to assess their effectiveness in serving our borrowers’ and servicing customers’ needs while mitigating credit losses.

Allowances for Loan and Lease Losses and Unfunded Loan Commitments and Letters of Credit

We maintain an ALLL to absorb losses from the loan and lease portfolio and determine this allowance based on quarterly assessments of the estimated probable credit losses incurred in the loan and lease portfolio. Our total ALLL of $2.6 billion at December 31, 2018 consisted of $1.6 billion and $1.0 billion established for the commercial lending and consumer lending categories, respectively. We maintain the ALLL at a level that we believe to be appropriate to absorb estimated probable credit losses incurred in the loan and lease portfolio as of the balance sheet date. The reserve calculation and determination process is dependent on the use of key assumptions. Key reserve assumptions and estimation processes react to and are influenced by observed changes in loan and lease portfolio performance experience, the financial strength of the borrower, and economic conditions. Key reserve assumptions are periodically updated.

Reserves are established for non-impaired commercial loan classes based primarily on PD and LGD.

Our commercial pool reserve methodology is sensitive to changes in key risk parameters such as PD and LGD. The results of these parameters are then applied to the loan balance and unfunded loan commitments and letters of credit to determine the amount of the respective reserves. The majority of the commercial portfolio is secured by collateral, including loans to asset-based lending customers, which generally demonstrate lower LGD compared to loans not secured by collateral. Our PDs and LGDs are primarily determined using internal commercial loan loss data. This internal data is supplemented with third-party data and management judgment, as deemed necessary. We continue to evaluate and enhance our use of internal commercial loss data and will periodically update our PDs and LGDs as well as consider third-party data, regulatory guidance and management judgment.

Allowances for non-impaired consumer loan classes are primarily based upon transition matrices, including using a roll-rate model. The roll-rate model uses statistical relationships, calculated from historical data that estimate the movement of loan outstandings through the various stages of delinquency and ultimately charge-off.

We establish specific allowances for loans considered impaired using methods prescribed by GAAP. All impaired loans are subject to individual analysis, except leases and large groups of smaller-balance homogeneous loans which may include, but are not limited to, credit card, loans secured by residential real estate and consumer installment loans. Specific allowances for individual loans (including commercial and consumer TDRs) are determined based on an analysis of the present value of expected future cash flows from the loans discounted at their effective interest rate, observable market price or the fair value of the underlying collateral.

A portion of the ALLL is related to qualitative measurement factors. These factors may include, but are not limited to, the following:

- Industry concentrations and conditions,
- Changes in market conditions,
- Recent credit quality trends,
- Recent loss experience in particular portfolios, including specific and unique events,
- Recent macro-economic factors,
- Model imprecision,
- Changes in lending policies and procedures,
- Timing of available information, including the performance of first lien positions, and
- Limitations of available historical data.

Our determination of the ALLL for non-impaired loans is sensitive to the risk grades assigned to commercial loans and loss rates for consumer loans. There are several other qualitative and quantitative factors considered in determining the ALLL. Periodically, reserve sensitivity analyses are performed. Such analyses provide insight into the impact of adverse changes to risk grades and loss rates. Given the current processes used, we believe the risk grades and loss rates currently assigned are appropriate.

Purchased impaired loans are initially recorded at fair value and applicable accounting guidance prohibits the carry over or creation of valuation allowances at acquisition. Because the initial fair values of these loans already reflect a credit component, additional reserves are established when performance is expected to be worse than our expectations as of the acquisition date. At December 31, 2018, we had established reserves of $.3 billion for purchased impaired loans. In addition, loans (purchased impaired and non-impaired) acquired after January 1, 2009 were recorded at fair value. No allowance for loan losses was carried over and no allowance was created at the date of acquisition.

In determining the appropriateness of the ALLL, we make specific allocations to impaired loans and allocations to portfolios of commercial and consumer loans. We also allocate reserves to provide coverage for probable losses incurred in the portfolio at the balance sheet date based upon current market conditions, which may not be reflected in historical loss data. Commercial lending is the largest category of credits and is sensitive to changes in assumptions and judgments underlying the determination of the ALLL.

In addition to the ALLL, we maintain an allowance for unfunded loan commitments and letters of credit. We report this allowance as a liability on our Consolidated Balance Sheet. We maintain the allowance for unfunded loan commitments and letters of credit at a level we believe is appropriate to absorb estimated probable losses on these unfunded credit facilities. We determine this amount using estimates of the probability of the ultimate funding and losses related to those credit exposures. Other than the estimation of the probability of funding, this methodology is very similar to the one we use for determining our ALLL.

See Note 1 Accounting Policies and Note 3 Asset Quality in the Notes To Consolidated Financial Statements in Item 8 of this Report for further information on certain key asset quality indicators that we use to evaluate our portfolios and establish the allowances.

Table 22: Allowance for Loan and Lease Losses

Dollars in millions	2018	2017
January 1	$2,611	$2,589
Total net charge-offs	(420)	(457)
Provision for credit losses	408	441
Net decrease / (increase) in allowance for unfunded loan commitments and letters of credit	12	4
Other	18	34
December 31	$2,629	$2,611
Net charge-offs to average loans (for the year ended)	.19 %	.21 %
Allowance for loan and lease losses to total loans	1.16 %	1.18 %
Commercial lending net charge-offs	$(25)	$(105)
Consumer lending net charge-offs	(395)	(352)
Total net charge-offs	$(420)	$(457)
Net charge-offs to average loans (for the year ended)		
Commercial lending	.02 %	.07 %
Consumer lending	.54 %	.49 %

At December 31, 2018, total ALLL to total nonperforming loans was 155%. The comparable amount for December 31, 2017 was 140%. These ratios are 112% and 102%, respectively, when excluding the $.7 billion of ALLL at both December 31, 2018 and 2017 allocated to consumer loans and lines of credit not secured by residential real estate and purchased impaired loans. We have excluded these amounts from ALLL in these ratios as these asset classes are not included in nonperforming loans. See Table 18 within this Credit Risk Management section for additional information.

The ALLL balance increases or decreases across periods in relation to fluctuating risk factors, including asset quality trends, net charge-offs and changes in aggregate portfolio balances. During 2018, overall credit quality remained strong, which resulted in an essentially flat ALLL balance as of December 31, 2018 compared to December 31, 2017.

The following table summarizes our loan charge-offs and recoveries.

Table 23: Loan Charge-Offs and Recoveries

Year ended December 31 Dollars in millions	Gross Charge-offs	Recoveries	Net Charge-offs / (Recoveries)	Percent of Average Loans
2018				
Commercial	$ 108	$ 67	$ 41	.04 %
Commercial real estate	8	24	(16)	(.06)%
Equipment lease financing	8	8		
Home equity	110	98	12	.04 %
Residential real estate	6	21	(15)	(.08)%
Automobile	171	77	94	.68 %
Credit card	217	24	193	3.30 %
Education	31	8	23	.56 %
Other consumer	105	17	88	1.98 %
Total	$ 764	$ 344	$ 420	.19 %
2017				
Commercial	$ 186	$ 81	$ 105	.10 %
Commercial real estate	24	28	(4)	(.01)%
Equipment lease financing	11	7	4	.05 %
Home equity	123	91	32	.11 %
Residential real estate	9	18	(9)	(.06)%

Automobile	126	58	68	.54 %
Credit card	182	21	161	3.06 %
Education	34	8	26	.54 %
Other consumer	91	17	74	1.66 %
Total	$ 786	$ 329	$ 457	.21 %

See Note 1 Accounting Policies and Note 4 Allowance for Loan and Lease Losses in the Notes To Consolidated Financial Statements in Item 8 of this Report for additional information on the ALLL.

Liquidity and Capital Management

Liquidity risk has two fundamental components. The first is potential loss assuming we were unable to meet our funding requirements at a reasonable cost. The second is the potential inability to operate our businesses because adequate contingent liquidity is not available. We manage liquidity risk at the consolidated company level (bank, parent company and nonbank subsidiaries combined) to help ensure that we can obtain cost-effective funding to meet current and future obligations under both normal "business as usual" and stressful circumstances, and to help ensure that we maintain an appropriate level of contingent liquidity.

Management monitors liquidity through a series of early warning indicators that may indicate a potential market, or PNC-specific, liquidity stress event. In addition, management performs a set of liquidity stress tests over multiple time horizons with varying levels of severity and maintains a contingency funding plan to address a potential liquidity stress event. In the most severe liquidity stress simulation, we assume that our liquidity position is under pressure, while the market in general is under systemic pressure. The simulation considers, among other things, the impact of restricted access to both secured and unsecured external sources of funding, accelerated run-off of customer deposits, valuation pressure on assets and heavy demand to fund committed obligations. Parent company liquidity guidelines are designed to help ensure that sufficient liquidity is available to meet our parent company obligations over the succeeding 24-month period. Liquidity-related risk limits are established within our Enterprise Liquidity Management Policy and supporting policies. Management committees, including the Asset and Liability Committee, and the Board of Directors and its Risk Committee regularly review compliance with key established limits.

In addition to these liquidity monitoring measures and tools described above, we also monitor our liquidity by reference to the Liquidity Coverage Ratio (LCR) which is further described in the Supervision and Regulation section in Item 1 of this Report. PNC and PNC Bank calculate the LCR on a daily basis and as of December 31, 2018, the LCR for PNC and PNC Bank exceeded the fully phased-in requirement of 100%.

We provide additional information regarding regulatory liquidity requirements and their potential impact on us in the Supervision and Regulation section of Item 1 Business and Item 1A Risk Factors of this Report.

Sources of Liquidity

Our largest source of liquidity on a consolidated basis is the customer deposit base generated by our banking businesses. These deposits provide relatively stable and low-cost funding. Total deposits increased to $267.8 billion at December 31, 2018 from $265.1 billion at December 31, 2017 driven by growth in interest-bearing deposits partially offset by a decrease in noninterest-bearing deposits. See the Funding Sources section of the Consolidated Balance Sheet Review in this Report for additional information related to our deposits. Additionally, certain assets determined by us to be liquid as well as unused borrowing capacity from a number of sources are also available to manage our liquidity position.

At December 31, 2018, our liquid assets consisted of short-term investments (federal funds sold, resale agreements, trading securities and interest-earning deposits with banks) totaling $22.1 billion and securities available for sale totaling $63.4 billion. The level of liquid assets fluctuates over time based on many factors, including market conditions, loan and deposit growth and balance sheet management activities. Our liquid assets included $2.7 billion of securities available for sale and trading securities pledged as collateral to secure public and trust deposits, repurchase agreements and for other purposes. In addition, $4.9 billion of securities held to maturity were also pledged as collateral for these purposes.

We also obtain liquidity through various forms of funding, including long-term debt (senior notes, subordinated debt and FHLB borrowings) and short-term borrowings (securities sold under repurchase agreements, commercial paper and other short-term borrowings). See Note 10 Borrowed Funds and the Funding Sources section of the Consolidated Balance Sheet Review in this Report for additional information related to our Borrowings.

Total senior and subordinated debt, on a consolidated basis, decreased due to the following activity:

Table 24: Senior and Subordinated Debt

In billions	2018
January 1	$33.3
Issuances	4.5
Calls and maturities	(6.8)
Other	(.1)
December 31	$30.9

Bank Liquidity
Under PNC Bank's 2014 bank note program, as amended, PNC Bank may from time to time offer up to $40.0 billion aggregate principal amount outstanding at any one time of its unsecured senior and subordinated notes with maturity dates more than nine months (in the case of senior notes) and five years or more (in the case of subordinated notes) from their date of issue. At December 31, 2018, PNC Bank had $24.5 billion of notes outstanding under this program of which $20.2 billion were senior bank notes and $4.3 billion were subordinated bank notes. There were no new issuances for the three months ended December 31, 2018.

PNC Bank maintains additional secured borrowing capacity with the FHLB-Pittsburgh and through the Federal Reserve Bank discount window. The Federal Reserve Bank, however, is not viewed as a primary means of funding our routine business activities, but rather as a potential source of liquidity in a stressed environment or during a market disruption. At December 31, 2018, our unused secured borrowing capacity at the FHLB-Pittsburgh and the Federal Reserve Bank totaled $40.4 billion.

PNC Bank has the ability to offer up to $10.0 billion of its commercial paper to provide additional liquidity. As of December 31, 2018, there were no issuances outstanding under this program.

Parent Company Liquidity
In addition to managing liquidity risk at the bank level, we monitor the parent company's liquidity. The parent company's contractual obligations consist primarily of debt service related to parent company borrowings and funding non-bank affiliates. Additionally, the parent company maintains adequate liquidity to fund discretionary activities such as paying dividends to our shareholders, share repurchases and acquisitions.

As of December 31, 2018, available parent company liquidity totaled $4.6 billion. Parent company liquidity is primarily held in intercompany short-term investments, the terms of which provide for the availability of cash in 31 days or less. Investments with longer durations may also be acquired, but if so, the related maturities are aligned with scheduled cash needs, such as the maturity of parent company debt obligations.

The principal source of parent company liquidity is the dividends it receives from PNC Bank, which may be impacted by the following:
- Bank-level capital needs;
- Laws and regulations;
- Corporate policies;
- Contractual restrictions; and
- Other factors.

There are statutory and regulatory limitations on the ability of a national bank to pay dividends or make other capital distributions or to extend credit to the parent company or its non-bank subsidiaries. The amount available for dividend payments by PNC Bank to the parent company without prior regulatory approval was approximately $2.9 billion at December 31, 2018. See Note 18 Regulatory Matters in the Notes To Consolidated Financial Statements in Item 8 of this Report for a further discussion of these limitations.

In addition to dividends from PNC Bank, other sources of parent company liquidity include cash and investments, as well as dividends and loan repayments from other subsidiaries and dividends or distributions from equity investments. We can also generate liquidity for the parent company and PNC's non-bank subsidiaries through the issuance of debt and equity securities, including certain capital instruments, in public or private markets and commercial paper. The parent company has the ability to offer up to $5.0 billion of commercial paper to provide additional liquidity. As of December 31, 2018, there were no commercial paper issuances outstanding.

The parent company has an effective shelf registration statement pursuant to which we can issue additional debt, equity and other capital instruments. See Note 24 Subsequent Events in Item 8 of this Report for information on the January 23, 2019 and February 15, 2019 issuances of $1.05 billion aggregate principal amount of senior fixed rate notes by the parent company utilizing this shelf registration statement.

Parent company senior and subordinated debt outstanding totaled $6.7 billion at December 31, 2018 compared with $6.8 billion at December 31, 2017.

Contractual Obligations and Commitments

The following tables set forth contractual obligations and various other commitments as of December 31, 2018.

Table 25: Contractual Obligations

December 31, 2018 – in millions	Total	Payment Due By Period Less than one year	One to three years	Four to five years	After five years
Remaining contractual maturities of time deposits	$18,507	$11,972	$ 4,760	$ 1,150	$ 625
Borrowed funds (a)	57,419	20,007	21,242	7,185	8,985
Minimum annual rentals on noncancellable leases	2,455	374	654	486	941
Nonqualified pension and postretirement benefits	464	54	105	94	211
Purchase obligations (b)	1,012	455	348	152	57
Total contractual cash obligations	$79,857	$32,862	$ 27,109	$ 9,067	$ 10,819

(a) Includes basis adjustment relating to accounting hedges and purchase accounting adjustments.

(b) Includes purchase obligations for goods and services covered by noncancellable contracts and contracts including cancellation fees.

Our contractual obligations totaled $80.4 billion at December 31, 2017. The decrease in the comparison is primarily attributable to the decrease in borrowed funds, partially offset by the increase in remaining contractual maturities of time deposits. See Funding Sources in the Consolidated Balance Sheet Review section of this Item 7 for additional information regarding our funding sources.

Table 26: Other Commitments (a)

December 31, 2018 – in millions	Total Amounts Committed	Amount Of Commitment Expiration By Period Less than one year	One to three years	Four to five years	After five years
Commitments to extend credit (b)	$ 169,278	$80,571	$ 39,056	$48,800	$ 851
Net outstanding standby letters of credit (c)	8,655	4,966	2,497	1,105	87
Reinsurance agreements (d)	1,549	1	6	10	1,532
Standby bond purchase agreements	1,000	171	802	27	
Other commitments (e)	1,130	739	261	95	35
Total commitments	$ 181,612	$86,448	$ 42,622	$50,037	$ 2,505

(a) Other commitments are funding commitments that could potentially require performance in the event of demands by third parties or contingent events. Loan commitments are reported net of syndications, assignments and participations.

(b) Commitments to extend credit, or net unfunded loan commitments, represent arrangements to lend funds or provide liquidity subject to specified contractual conditions.

(c) Includes $3.7 billion of standby letters of credit that support remarketing programs for customers' variable rate demand notes.

(d) Reinsurance agreements are with third-party insurers related to insurance sold to our customers. Balances represent estimates based on availability of financial information.

(e) Includes other commitments of $.3 billion that were not on our Consolidated Balance Sheet. The remaining $.8 billion of other commitments were included in Other liabilities on our Consolidated Balance Sheet.

Our total commitments were $172.5 billion at December 31, 2017. The increase in the comparison was primarily attributable to an increase in commitments to extend credit, partially offset by declines in other commitments.

Credit Ratings

PNC's credit ratings affect the cost and availability of short and long-term funding, collateral requirements for certain derivative instruments and the ability to offer certain products.

In general, rating agencies base their ratings on many quantitative and qualitative factors, including capital adequacy, liquidity, asset quality, business mix, level and quality of earnings, and the current legislative and regulatory environment, including implied government support. A decrease, or potential decrease, in credit ratings could impact access to the capital markets and/or increase the cost of debt, and thereby adversely affect liquidity and financial condition.

Table 27: Credit Ratings for PNC and PNC Bank

	December 31, 2018		
	Moody's	Standard & Poor's	Fitch
PNC			
Senior debt	A3	A-	A+
Subordinated debt	A3	BBB+	A
Preferred stock	Baa2	BBB-	BBB-
PNC Bank			
Senior debt	A2	A	A+
Subordinated debt	A3	A-	A
Long-term deposits	Aa2	A	AA-
Short-term deposits	P-1	A-1	F1+
Short-term notes	P-1	A-1	F1

Capital Management

We manage our funding and capital positions by making adjustments to our balance sheet size and composition, issuing or redeeming debt, issuing equity or other capital instruments, executing treasury stock transactions and capital redemptions or repurchases, and managing dividend policies and retaining earnings.

In 2018, we returned $4.4 billion of capital to shareholders through repurchases of 19.9 million common shares for $2.8 billion and dividends on common shares of $1.6 billion.

We repurchase shares of PNC common stock under share repurchase authorization provided by our Board of Directors in the amount of up to 100 million shares and consistent with capital plans submitted to, and accepted by, the Federal Reserve. Repurchases are made on the open market or in privately negotiated transactions and the extent and timing of share repurchases under authorizations depend on a number of factors including, among others, market and general economic conditions, economic and regulatory capital considerations, alternative uses of capital, the potential impact on our credit ratings, contractual and regulatory limitations, and the results of supervisory assessments of capital adequacy and capital planning processes undertaken by the Federal Reserve as part of the CCAR and Dodd-Frank capital stress testing (DFAST) processes.

In relation to the 2017 capital plan accepted by the Federal Reserve, we announced share repurchase programs of up to $2.7 billion for the four quarter period ended June 30, 2018, including repurchases of up to $.3 billion related to employee benefit plans. For the four quarter period ended June 30, 2018, we repurchased 18.4 million shares of PNC common stock for $2.6 billion. Of the total repurchased, 10.5 million shares for $1.5 billion occurred in the first two quarters of 2018.

In connection with the 2018 CCAR process, we submitted our capital plan, as approved by our Board of Directors, to the Federal Reserve in April 2018. In June 2018, the Federal Reserve accepted the capital plan and did not object to our proposed capital actions. As provided for in the 2018 capital plan, we announced new share repurchase programs of up to $2.0 billion for the four quarter period beginning in the third quarter of 2018, including repurchases of up to $.3 billion related to employee benefit plans. In November 2018, we announced an increase to these previously announced programs in the amount of up to $900 million in additional common share repurchases. We repurchased 9.4 million common shares for $1.3 billion during the third and fourth quarters of 2018 under these share repurchase programs.

The quarterly cash dividend was increased from $.75 to $.95 per share effective with the August 5, 2018 dividend payment date.

See the Supervision and Regulation section of Item 1 Business in this Report for further information concerning the CCAR and DFAST process and the factors the Federal Reserve takes into consideration in its evaluation of capital plans.

Table 28: Basel III Capital

Dollars in millions	Basel III December 31, 2018 (a) (b)	Fully Phased-In Basel III (Non-GAAP) December 31, 2017 (c)	2017 Transitional Basel III December 31, 2017 (a)
Common equity Tier 1 capital			
Common stock plus related surplus, net of treasury stock	$5,548	$8,195	$8,195
Retained earnings	38,919	35,481	35,481
Accumulated other comprehensive income (loss) for securities currently, and those transferred from, available for sale	(80)	337	270
Accumulated other comprehensive income (loss) for pension and other postretirement plans	(530)	(544)	(436)
Goodwill, net of associated deferred tax liabilities	(9,022)	(8,988)	(8,988)
Other disallowed intangibles, net of deferred tax liabilities	(255)	(319)	(255)
Other adjustments/(deductions)	(211)	(141)	(138)
Total common equity Tier 1 capital before threshold deductions	34,369	34,021	34,129
Total threshold deductions (d)	(3,464)	(2,928)	(1,983)
Common equity Tier 1 capital	$30,905	$31,093	$32,146
Additional Tier 1 capital			
Preferred stock plus related surplus	3,986	3,985	3,985
Other adjustments/(deductions)	(156)	(146)	(124)
Tier 1 capital	$34,735	$34,932	$36,007
Additional Tier 2 capital			
Qualifying subordinated debt	3,877	3,433	3,482
Trust preferred capital securities	80		100
Eligible credit reserves includable in Tier 2 capital	2,914	2,907	2,907
Total Basel III capital	$41,606	$41,272	$42,496
Risk-weighted assets			
Basel III standardized approach risk-weighted assets (e)	$320,595	$316,120	$309,460
Basel III advanced approaches risk-weighted assets (f)	$282,902	$285,226	N/A
Average quarterly adjusted total assets	$370,921	$363,967	$364,999
Supplementary leverage exposure (g)	$443,899	$434,698	$435,731
Basel III risk-based capital and leverage ratios			
Common equity Tier 1 (i)	9.6%	9.8% (h)	10.4%
Tier 1 (j)	10.8%	11.1% (h)	11.6%
Total (k) (l) (m)	13.0%	13.1% (h)	13.7%
Leverage (n)	9.4%	9.6%	9.9%
Supplementary leverage ratio (o)	7.8%	8.0%	8.3%

(a) All ratios are calculated using the regulatory capital methodology applicable to PNC during each period presented and calculated based on the standardized approach.

(b) The Basel III Common equity Tier 1 capital, Tier 1 risk-based capital, Leverage and Supplementary ratios as of December 31, 2018 reflect the full phase-in of all Basel III adjustments to these metrics applicable to PNC.

(c) 2017 Fully Phased-In Basel III results are presented as pro forma estimates.

(d) Under the Basel III rules, certain items such as significant common stock investments in unconsolidated financial institutions (primarily BlackRock), mortgage servicing rights and deferred tax assets must be deducted from capital (subject to a phase-in schedule that ended December 31, 2017 and net of associated deferred tax liabilities) to the extent they individually exceed 10%, or in the aggregate exceed 15%, of PNC's adjusted common equity Tier 1 capital.

(e) Includes credit and market risk-weighted assets.

(f) Basel III advanced approaches risk-weighted assets are calculated based on the Basel III advanced approaches rules, and include credit, market and operational risk-weighted assets. During the parallel run qualification phase, PNC has refined the data, models and internal processes used as part of the advanced approaches for determining risk-weighted assets. We anticipate additional refinements to this calculation through the parallel run qualification phase.

(g) Supplementary leverage exposure is the sum of Adjusted average assets and certain off-balance sheet exposures including undrawn credit commitments and derivative potential future exposures.

(h) Pro forma Fully phased-in Basel III capital ratio based on Basel III standardized approach risk-weighted assets and rules.

(i) For comparative purposes only, the advanced approaches Basel III Common equity Tier 1 capital ratio for both December 31, 2018 and December 31, 2017 (estimated) is 10.9%. This capital ratio is calculated using Common equity Tier 1 capital and dividing by Basel III advanced approaches risk-weighted assets.

(j) For comparative purposes only, the advanced approaches Basel III Tier 1 risk-based capital ratio for December 31, 2018 is 12.3% and for December 31, 2017 is 12.2% (estimated). This capital ratio is calculated using Tier 1 capital and dividing by Basel III advanced approaches risk-weighted assets.

(k) For comparative purposes only, the advanced approaches Basel III Total capital risk-based capital ratio for December 31, 2018 is 13.7% and for December 31, 2017 is 13.5% (estimated). This ratio is calculated using Total Basel III capital, which under the advanced approaches, Additional Tier 2 capital includes allowance for loan and lease losses in excess of Basel expected credit losses, if any, up to 0.6% of credit risk-weighted assets, and dividing by Basel III advanced approaches risk-weighted assets.

(l) The Basel III Total risk-based capital ratio includes $80 million of nonqualifying trust preferred capital securities that are subject to a phase-out period that runs through 2021.

(m) For comparative purposes only, as of December 31, 2018 the ratio would be 13.0%, assuming nonqualifying trust preferred capital securities are phased out.

(n) Leverage ratio is calculated based on Tier 1 capital divided by Average quarterly adjusted total assets.

(o) Supplementary leverage ratio is calculated based on Tier 1 capital divided by Supplementary leverage exposure. As advanced approaches banking organizations, PNC and PNC Bank are subject to a 3% minimum supplementary leverage ratio effective January 1, 2018.

The decline in our Basel III Common equity Tier 1 capital ratio at December 31, 2018 compared to December 31, 2017 reflected continued capital return to shareholders in the form of common share repurchases and dividends and a decline in AOCI largely related to the impact of higher interest rates on the valuation of our available for sale securities portfolio.

We refer to the capital ratios calculated using the definition of capital in effect as of January 1, 2018 and, for the risk-based ratios, standardized approach risk-weighted assets, as the Basel III ratios. In addition, we refer to the capital ratios calculated using the phased-in Basel III provisions in effect for 2017 and, for the risk-based ratios, standardized approach risk-weighted assets, as the 2017 Transitional Basel III ratios. All current period capital ratios are calculated using the regulatory capital methodology applicable to us during 2018.

Federal banking regulators have stated that they expect the largest U.S. bank holding companies (BHCs), including PNC, to have a level of regulatory capital well in excess of the regulatory minimum and have required the largest U.S. BHCs, including PNC, to have a capital buffer sufficient to withstand losses and allow them to meet the credit needs of their customers through estimated stress scenarios. We seek to manage our capital consistent with these regulatory principles, and believe that our December 31, 2018 capital levels were aligned with them.

At December 31, 2018, PNC and PNC Bank, our sole bank subsidiary, were both considered “well capitalized,” based on applicable U.S. regulatory capital ratio requirements. To qualify as “well capitalized”, PNC must have Basel III capital ratios of at least 6% for Tier 1 risk-based capital and 10% for Total risk-based capital, and PNC Bank must have Basel III capital ratios of at least 6.5% for Common equity Tier 1 risk-based capital, 8% for Tier 1 risk-based capital, 10% for Total risk-based capital and a Leverage ratio of at least 5%.

We provide additional information regarding regulatory capital requirements and some of their potential impacts on us in the Supervision and Regulation section of Item 1 Business, Item 1A Risk Factors and Note 18 Regulatory Matters in the Notes To Consolidated Financial Statements in Item 8 of this Report. See the Statistical Information (Unaudited) section in Item 8 of this Report for details on our December 31, 2016, 2015, and 2014 Transitional Basel III and Fully Phased-in Basel III Common equity Tier 1 capital ratios.

Market Risk Management

Market risk is the risk of a loss in earnings or economic value due to adverse movements in market factors such as interest rates, credit spreads, foreign exchange rates, commodity prices and equity prices. We are exposed to market risk primarily by our involvement in the following activities, among others:

- Traditional banking activities of gathering deposits and extending loans;
- Equity and other investments and activities whose economic values are directly impacted by market factors; and
- Fixed income securities, derivatives and foreign exchange activities, as a result of customer activities and securities underwriting.

We have established enterprise-wide policies and methodologies to identify, measure, monitor and report market risk. Market Risk Management provides independent oversight by monitoring compliance with established guidelines and reporting significant risks in the business to the Risk Committee of the Board of Directors.

Market Risk Management – Interest Rate Risk

Interest rate risk results primarily from our traditional banking activities of gathering deposits and extending loans. Many factors, including economic and financial conditions, movements in interest rates and consumer preferences, affect the difference between the interest that we earn on assets and the interest that we pay on liabilities and the level of our noninterest-bearing funding sources. Due to the repricing term mismatches and embedded options inherent in certain of these products, changes in market interest rates not only affect expected near-term earnings, but also the economic values of these assets and liabilities.

The interest rates that we pay on customer deposits have risen in 2018 as a result of higher short-term market interest rates. The rates paid on commercial deposits have had a higher correlation to increases in short-term interest rates, as compared to the rates paid on consumer deposits. During 2019, we anticipate that the rates paid on our consumer deposits will continue to reflect increases in short-term interest rates. The rates paid on customer deposits are also impacted by factors including the level of interest rates, competition for deposits, new product offerings and changes in business strategies.

Our Asset and Liability Management group centrally manages interest rate risk as prescribed in our risk management policies, which are approved by management's Asset and Liability Committee and the Risk Committee of the Board of Directors.

Sensitivity results and market interest rate benchmarks for the fourth quarters of 2018 and 2017 follow.

Table 29: Interest Sensitivity Analysis

	Fourth Quarter 2018	Fourth Quarter 2017
Net Interest Income Sensitivity Simulation (a)		
Effect on net interest income in first year from gradual interest rate change over the following 12 months of:		
100 basis point increase	1.7 %	2.7 %
100 basis point decrease	(2.2)%	(3.2)%
Effect on net interest income in second year from gradual interest rate change over the preceding 12 months of:		
100 basis point increase	3.7 %	5.0 %
100 basis point decrease	(6.2)%	(8.1)%
Duration of Equity Model (a)		
Base case duration of equity (in years)	(1.0)	(1.7)
Key Period-End Interest Rates		
One-month LIBOR	2.50 %	1.56 %
Three-month LIBOR	2.81 %	1.69 %
Three-year swap	2.59 %	2.17 %

(a) Given the inherent limitations in certain of these measurement tools and techniques, results become less meaningful as interest rates approach zero.

In addition to measuring the effect on net interest income assuming parallel changes in current interest rates, we routinely simulate the effects of a number of nonparallel interest rate environments. Table 30 reflects the percentage change in net interest income over the next two 12-month periods assuming (i) the PNC Economist's most likely rate forecast, (ii) implied market forward rates and (iii) yield curve slope flattening (a 100 basis point yield curve slope flattening between one-month and ten-year rates superimposed on current base rates) scenario.

All changes in forecasted net interest income are relative to results in a base rate scenario where current market rates are assumed to remain unchanged over the forecast horizon.

Table 30: Net Interest Income Sensitivity to Alternative Rate Scenarios

	December 31, 2018		
	PNC Economist	Market Forward	Slope Flattening
First year sensitivity	.5 %	.6 %	(.7)%
Second year sensitivity	.8 %	(.6)%	(3.3)%

When forecasting net interest income, we make assumptions about interest rates and the shape of the yield curve, the volume and characteristics of new business and the behavior of existing on- and off-balance sheet positions. These assumptions determine the future level of simulated net interest income in the base interest rate scenario and the other interest rate scenarios presented in Tables 29 and 30. These simulations assume that as assets and liabilities mature, they are replaced or repriced at then current market rates.

The following graph presents the LIBOR/Swap yield curves for the base rate scenario and each of the alternate scenarios one year forward.

Table 31: Alternate Interest Rate Scenarios: One Year Forward

The fourth quarter 2018 interest sensitivity analyses indicate that our Consolidated Balance Sheet is positioned to benefit from an increase in interest rates and an upward sloping interest rate yield curve. We believe that we have the deposit funding base and balance sheet flexibility to adjust, where appropriate and permissible, to changing interest rates and market conditions.

Market Risk Management – Customer-Related Trading Risk

We engage in fixed income securities, derivatives and foreign exchange transactions to support our customers' investing and hedging activities. These transactions, related hedges and the credit valuation adjustment related to our customer derivatives portfolio are marked-to-market daily and reported as customer-related trading activities. We do not engage in proprietary trading of these products.

We use value-at-risk (VaR) as the primary means to measure and monitor market risk in customer-related trading activities. VaR is used to estimate the probability of portfolio losses based on the statistical analysis of historical market risk factors. A diversified VaR reflects empirical correlations across different asset classes. We calculate a diversified VaR at a 95% confidence interval and the results for 2018 and 2017 were within our acceptable limits.

To help ensure the integrity of the models used to calculate VaR for each portfolio and enterprise-wide, we use a process known as backtesting. The backtesting process consists of comparing actual observations of gains or losses against the VaR levels that were calculated at the close of the prior day. Our VaR measure assumes that exposures remain constant and that recent market variability is a good predictor of future variability. Actual observations include customer related revenue and intraday hedging which helps to reduce losses and can reduce the number of instances actual losses exceed the prior day VaR measure. There were minimal instances during 2018 and 2017 under our diversified VaR measure where actual losses exceeded the prior day VaR measure and those losses were insignificant. Our portfolio and enterprise-wide VaR models utilize a historical approach with a 500 day look back period.

Customer-related trading revenue was $248 million in 2018 compared with $255 million in 2017 and is recorded in Other noninterest income and Other interest income on our Consolidated Income Statement. The decrease was primarily due to the impact of changes in credit valuations for customer-related derivative activities, which was partially offset by higher foreign exchange and derivative client revenues.

Market Risk Management – Equity And Other Investment Risk

Equity investment risk is the risk of potential losses associated with investing in both private and public equity markets. In addition to extending credit, taking deposits, underwriting securities and trading financial instruments, we make and manage direct investments in a variety of transactions, including management buyouts, recapitalizations and growth financings in a variety of industries. We also have investments in affiliated and non-affiliated funds that make similar investments in private equity. The economic and/or book value of these investments and other assets are directly affected by changes in market factors.

Various PNC business units manage our equity and other investment activities. Our businesses are responsible for making investment decisions within the approved policy limits and associated guidelines.

A summary of our equity investments follows:

Table 32: Equity Investments Summary

Dollars in millions	December 31 2018	December 31 2017	Change $	Change %
BlackRock	$ 8,016	$ 7,576	$440	6 %
Tax credit investments	2,219	2,148	71	3 %
Private equity and other	2,659	1,668	991	59%
Total	$ 12,894	$ 11,392	$1,502	13%

BlackRock

We owned approximately 35 million common stock equivalent shares of BlackRock equity at December 31, 2018, accounted for under the equity method. The Business Segments Review section of this Item 7 includes additional information about BlackRock.

Tax Credit Investments

Included in our equity investments are direct tax credit investments and equity investments held by consolidated entities. These tax credit investment balances included unfunded commitments totaling $.8 billion at both December 31, 2018 and 2017, respectively. These unfunded commitments are included in Other Liabilities on our Consolidated Balance Sheet.

Note 2 Loan Sale and Servicing Activities and Variable Interest Entities in the Notes To Consolidated Financial Statements in Item 8 of this Report has further information on Tax Credit Investments.

Private Equity and Other
The majority of our other equity investments consists of our private equity portfolio. The private equity portfolio is an illiquid portfolio consisting of mezzanine and equity investments that vary by industry, stage and type of investment. Private equity investments carried at estimated fair value totaled $1.5 billion and $1.3 billion at December 31, 2018 and 2017, respectively. As of December 31, 2018, $1.3 billion was invested directly in a variety of companies and $.2 billion was invested indirectly through various private equity funds. See the Supervision and Regulation section in Item 1 of this Report for discussion of the potential impacts of the Volcker Rule provisions of Dodd-Frank on our interests in and of private funds covered by the Volcker Rule.

Effective January 1, 2018, $.6 billion of available for sale securities were reclassified to equity investments as part of the adoption of ASU 2016-01. These securities were primarily money market funds.

Included in our other equity investments are Visa Class B common shares, which are recorded at cost. Visa Class B common shares that we own are transferable only under limited circumstances until they can be converted into shares of the publicly-traded Class A common shares, which cannot happen until the resolution of the pending interchange litigation. Based upon the December 31, 2018 per share closing price of $131.94 for a Visa Class A common share, the estimated value of our total investment in the Class B common shares was approximately $756 million at the current conversion rate of Visa B shares to Visa A shares, while our cost basis was not significant. See Note 6 Fair Value and Note 19 Legal Proceedings in the Notes To Consolidated Financial Statements in Item 8 of this Report for additional information regarding our Visa agreements. The estimated value does not represent fair value of the Visa B common shares given the share's limited transferability and the lack of observable transactions in the marketplace. In the fourth quarter of 2017, we recorded a negative derivative fair value adjustment of $248 million related to swap agreements with purchasers of Visa Class B common shares. These fair value adjustments were primarily related to the extension of anticipated timing of litigation resolution.

We also have certain other equity investments, the majority of which represent investments in affiliated and non-affiliated funds with both traditional and alternative investment strategies. Net gains related to these investments were not significant during 2018 and 2017.

Impact of Inflation
Our assets and liabilities are primarily financial in nature and typically have varying maturity dates. Accordingly, future changes in prices do not affect the obligations to pay or receive fixed and determinable amounts of money. However, during periods of inflation, there may be a subsequent impact affecting certain fixed costs or expenses, an erosion of consumer and customer purchasing power, and fluctuations in the need or demand for our products and services. Should significant levels of inflation occur, our business could potentially be impacted by, among other things, reducing our tolerance for extending credit or causing us to incur additional credit losses resulting from possible increased default rates.

Financial Derivatives
We use a variety of financial derivatives as part of the overall asset and liability risk management process to help manage exposure to market (primarily interest rate) and credit risk inherent in our business activities. We also enter into derivatives with customers to facilitate their risk management activities.

Financial derivatives involve, to varying degrees, market and credit risk. Derivatives represent contracts between parties that usually require little or no initial net investment and result in one party delivering cash or another type of asset to the other party based on a notional and an underlying as specified in the contract. Therefore, cash requirements and exposure to credit risk are significantly less than the notional amount on these instruments.

Further information on our financial derivatives is presented in Note 1 Accounting Policies, Note 6 Fair Value and Note 13 Financial Derivatives in Item 8 of this Report.

Not all elements of market and credit risk are addressed through the use of financial derivatives, and such instruments may be ineffective for their intended purposes due to unanticipated market changes, among other reasons.

Operational Risk Management

Operational risk is the risk to the current or projected financial condition and resilience arising from inadequate or failed internal processes or systems, human errors or misconduct, or adverse external events. Operational risk is inherent to the entire organization.

Operational risk management is embedded in our culture and decision-making processes through a systematic approach whereby operational risks and exposures are: 1) identified and assessed; 2) managed through the design and implementation of controls; 3) measured and evaluated against our risk tolerance limits; and 4) appropriately reported to management and the Risk Committee. Strong operational risk management and well-informed risk-based decisions benefit us by improving the customer experience,

enhancing compliance, reducing reputational risk, minimizing losses and establishing an appropriate amount of required operational risk capital held by us.

The Operational Risk Management Framework supports our effective and consistent management of operational risk. The primary purpose of the framework is to enable us to understand our operational risks and manage them to the desired risk profile, in line with our Risk Appetite. Additionally, the guidance established within the framework enables management to make well-informed risk-based business decisions.

The framework provides a disciplined and structured process for us to manage operational risk across eight operational risk domains. These domains provide a comprehensive view of operational risk and allow us to discuss operational risk in a standard way, facilitating reporting and ongoing risk mitigation.

The operational risk domains are:

- Operations: Risk resulting from inadequate or failed internal processes, misconduct or errors of people or fraud.
- Compliance: Risk of legal or regulatory sanctions, financial loss, or damage to reputation resulting from failure to comply with laws, regulations, rules, self-regulatory standards, or other regulatory requirements.
- Data Management: Risk associated with incomplete or inaccurate data.
- Model: Risk associated with the design, implementation, and ongoing use and management of a model.
- Technology and Systems: Risk associated with the use, operation, and adoption of technology.
- Information Security: Risk resulting from the failure to protect information and ensure appropriate access to, and use and handling of information assets.
- Business Continuity: Risk of potential disruptive events to business activities.
- Third Party: Risk arising from failure of third party providers to conduct activity in a safe and sound manner and in compliance with contract provisions and applicable laws and regulations.

We utilize operational risk management programs within the framework, including Risk Control and Self-Assessments, scenario analysis, and internal and external loss event review and analysis, to assess existing risks, determine potential/emerging risks and evaluate the effectiveness of internal controls. The program tools and methodology enable our business managers to identify potential risks and control gaps.

Lines of business are responsible for identifying, owning, managing and monitoring the operational risks and controls associated with its business activities and product or service offerings to within acceptable levels. Centralized functions, such as Business Continuity, Enterprise Third Party Management, and Information Security, are responsible for the development, implementation and management of their individual programs and for the development and maintenance of the policies, procedures, methodologies, tools and technology utilized across the enterprise to identify, assess, monitor and report program risks. Additionally, independent risk management reviews and challenges line of business adherence to the framework to ensure proper controls are in place and appropriate risk mitigation plans are established as necessary.

Compliance Risk

Enterprise Compliance is responsible for coordinating the compliance risk component of our Operational Risk Management Framework. Compliance issues are identified and tracked through enterprise-wide monitoring and tracking programs. Key compliance risk issues are escalated through a comprehensive risk reporting process at both a business and enterprise level and incorporated, as appropriate, into the development and assessment of our operational risk profile. A committee, co-chaired by the Chief Compliance Officer and the Chief BSA/AML Officer, is responsible for oversight of compliance and fiduciary risk management programs across PNC. In order to help understand and proactively address emerging regulatory issues where appropriate, Enterprise Compliance communicates regularly with various regulators having supervisory or regulatory responsibilities with respect to us, our subsidiaries, or businesses and participates in forums focused on regulatory and compliance matters in the financial services industry.

CRITICAL ACCOUNTING ESTIMATES AND JUDGMENTS

Our consolidated financial statements are prepared by applying certain accounting policies. Note 1 Accounting Policies in the Notes To Consolidated Financial Statements in Item 8 of this Report describes the most significant accounting policies that we use. Certain of these policies require us to make estimates or economic assumptions that may vary under different assumptions or conditions and such variations may significantly affect our reported results and financial position for the period or in future periods.

Fair Value Measurements

We must use estimates, assumptions and judgments when assets and liabilities are required to be recorded at, or adjusted to reflect, fair value. Assets and liabilities carried at fair value inherently result in a higher degree of financial statement volatility. Fair values and the information used to record valuation adjustments for certain assets and liabilities are based on either quoted market prices or are provided by independent third-party sources, including appraisers and valuation specialists, when available. When such third-party information is not available, we estimate fair value primarily by using cash flow and other financial modeling techniques. Changes in underlying factors, assumptions, or estimates in any of these areas could materially impact our future financial condition and results of operations.

We apply ASC 820 – Fair Value Measurements. This guidance defines fair value as the price that would be received to sell a financial asset or paid to transfer a financial liability in an orderly transaction between market participants at the measurement date. This guidance requires a three level hierarchy for disclosure of assets and liabilities recorded at fair value. The classification of assets and liabilities within the hierarchy is based on whether the inputs to the valuation methodology used in the measurement are observable or unobservable.

The following table summarizes the assets and liabilities measured at fair value on a recurring basis at December 31, 2018 and 2017, respectively, and the portions of such assets and liabilities that are classified within Level 3 of the valuation hierarchy. Level 3 assets and liabilities are those where the fair value is estimated using significant unobservable inputs.

Table 33: Fair Value Measurements – Summary

	December 31, 2018		December 31, 2017	
Dollars in millions	Total Fair Value	Level 3	Total Fair Value	Level 3
Total assets	$75,744	$6,157	$69,673	$6,475
Total assets at fair value as a percentage of consolidated assets	20 %		18 %	
Level 3 assets as a percentage of total assets at fair value		8 %		9 %
Level 3 assets as a percentage of consolidated assets		2 %		2 %
Total liabilities	$3,355	$333	$4,233	$531
Total liabilities at fair value as a percentage of consolidated liabilities	1 %		1 %	
Level 3 liabilities as a percentage of total liabilities at fair value		10 %		13 %
Level 3 liabilities as a percentage of consolidated liabilities		<1%		<1 %

The majority of assets recorded at fair value are included in the securities available for sale portfolio. The majority of Level 3 assets represent non-agency residential mortgage-backed securities in the securities available for sale portfolio, mortgage servicing rights and equity investments. The majority of Level 3 liabilities represent financial derivatives. For further information on fair value, see Note 6 Fair Value in the Notes To the Consolidated Financial Statements in Item 8 of this Report.

Allowances for Loan and Lease Losses and Unfunded Loan Commitments and Letters of Credit

We maintain the ALLL and the Allowance for Unfunded Loan Commitments and Letters of Credit at levels that we believe to be appropriate to absorb estimated probable credit losses incurred in the loan and lease portfolios and on these unfunded credit facilities as of the balance sheet date. Our determination of the allowances is based on periodic evaluations of the loan and lease portfolios and unfunded credit facilities and other relevant factors. These critical

estimates include significant use of our own historical data and complex methods to interpret them. We have an ongoing process to evaluate and enhance the quality, quantity and timeliness of our data and interpretation methods used in the determination of these allowances. These evaluations are inherently subjective, as they require material estimates and may be susceptible to significant change, and include, among others:

- Probability of default (PD);
- Loss given default (LGD);
- Exposure at default;
- Movement through delinquency stages;
- Amounts and timing of expected future cash flows;
- Value of collateral; and
- Qualitative factors, such as changes in current economic conditions, that may not be reflected in modeled results.

For all loans, the ALLL is the sum of three components: (i) asset specific/individual impaired reserves, (ii) quantitative (formulaic or pooled) reserves and (iii) qualitative (judgmental) reserves. The reserve calculation and determination process is dependent on the use of key assumptions. Key reserve assumptions and estimation processes react to and are influenced by observed changes in loan portfolio performance experience, the financial strength of the borrower, and economic conditions. For unfunded commitments, the reserve estimate also includes estimation of the probability of funding. Key reserve assumptions are periodically updated.

To the extent actual outcomes differ from our estimates, additional provision for credit losses may be required that would reduce future earnings. See the following for additional information:

- Allowances For Loan And Lease Losses And Unfunded Loan Commitments And Letters Of Credit in the Credit Risk Management section of this Item 7; and
- Note 1 Accounting Policies and Note 4 Allowance for Loan and Lease Losses in the Notes To Consolidated Financial Statements and Allocation of Allowance for Loan and Lease Losses in the Statistical Information (Unaudited) section of Item 8 of this Report.

Residential and Commercial Mortgage Servicing Rights

We elect to measure our residential and commercial mortgage servicing rights (MSRs) at fair value. This election was made to be consistent with our risk management strategy to hedge changes in the fair value of these assets. The fair value of residential and commercial MSRs is estimated by using a discounted cash flow valuation model which calculates the present value of estimated future net servicing cash flows, taking into consideration actual and expected mortgage loan prepayment rates, discount rates, servicing costs, and other factors which are determined based on current market conditions.

We employ risk management strategies designed to protect the value of MSRs from changes in interest rates and related market factors. The values of the residential and commercial MSRs are economically hedged with securities and derivatives, including interest-rate swaps, options, and forward mortgage-backed and futures contracts. As interest rates change, these financial instruments are expected to have changes in fair value negatively correlated to the change in fair value of the hedged MSR portfolios. The hedge relationships are actively managed in response to changing market conditions over the life of the MSRs. Selecting appropriate financial instruments to economically hedge residential or commercial MSRs requires significant management judgment to assess how mortgage rates and prepayment speeds could affect the future values of MSRs. Hedging results can frequently be less predictable in the short term, but over longer periods of time are expected to protect the economic value of the MSRs.

For additional information on our residential and commercial MSRs, see Note 6 Fair Value and Note 7 Goodwill and Mortgage Servicing Rights in Item 8 of this Report.

Recently Issued Accounting Standards

Accounting Standards Update (ASU)	Description	Financial Statement Impact
Leases - ASU 2016-02 Issued February 2016	• Required effective date of January 1, 2019.[(a)] • Requires lessees to recognize a right-of-use asset and related lease liability for all leases with lease terms of more than 12 months. • Recognition, measurement and presentation of expenses and cash flows arising from a lease by a lessee will depend on its classification as a finance or operating lease. • Targeted changes have been made to the lessor accounting model to align the guidance with the new lessee model and revenue recognition guidance. • May be adopted using a modified retrospective approach through a cumulative-effect adjustment. • Financial Accounting Standards Board (FASB) issued an ASU which permits the option to adopt the new standard prospectively as of the effective date, without adjusting comparative periods presented. Under this new transition method, an entity initially applies the new leases standard at the effective date and recognizes a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption.	• We adopted this standard prospectively as of January 1, 2019, without adjusting comparative periods presented. We recognized lease liabilities and right-of-use assets of $2.1 billion and $2.0 billion, respectively, as of January 1, 2019. We recognized a one-time adjustment of $83 million to retained earnings, related primarily to deferred gains on previous sale-leaseback transactions. • The impact of adoption was immaterial to PNC's consolidated income statement. • The impact of adoption of the changes to the lessor accounting model did not have a material impact on our financial statements.
Credit Losses - ASU 2016-13 Issued June 2016	• Required effective date of January 1, 2020.[(a)] • Requires the use of an expected credit loss methodology; specifically, current expected credit losses (CECL) for the remaining life of the asset will be recognized at the time of origination or acquisition. • Methodology will apply to loans, debt securities, and other financial assets and net investment in leases not accounted for at fair value through net income. It will also apply to off-balance sheet credit exposures except for unconditionally cancellable commitments. • In-scope assets will be presented at the net amount expected to be collected after deducting the allowance for credit losses from the amortized cost basis of the assets.	• We did not adopt the standard at its early adoption date as of January 2019. • We established a company-wide, cross-functional governance structure in the third quarter of 2016, which oversees overall strategy for implementation of CECL. • We have prepared preliminary CECL accounting policies and interpretations, and continue to refine and test our models, estimation techniques, data, operational processes and controls to be used in preparing the CECL estimates. • We expect that we will be able to test-run all of our processes by the end of the second quarter of 2019, pending any unforeseen circumstances or significant changes to the requirements. During 2019, we expect to continually address any gaps in our interpretations, methodology, data and operational processes based upon our reviews and tests. • We are also participating in the FASB's standard setting activity related to CECL. Recently, the FASB has issued a proposed ASU for technical corrections related to financial

	• Requires enhanced credit quality disclosures including disaggregation of credit quality indicators by vintage. • Requires a modified retrospective approach through a cumulative-effect adjustment to retained earnings as of the beginning of the year of adoption.	instruments, which has an impact on the implementation of CECL related to treatment of recoveries, accrued interest receivables and some disclosure requirements. The comment period for the proposed ASU closed on January 18, 2019. We are awaiting final guidance from the FASB, and expect to be able to implement any changes. • We believe that given current conditions, our credit loss reserves will increase primarily for longer duration consumer loans, due to the difference between loss emergence periods currently used versus prepayment adjusted contractual maturities required under CECL. We will continue to refine our estimates throughout 2019, as CECL models and techniques are implemented and the results are vetted. We continue to believe that total credit loss reserves will increase at the adoption date and that the magnitude of the increase will depend upon the nature and characteristics of the portfolio at the adoption date, as well as macroeconomic conditions and forecasts at that date.
	• Required effective date of January 1, 2020.(a)	
Goodwill - ASU 2017-04 Issued January 2017	• Eliminates Step 2 from the goodwill impairment test to simplify the subsequent measurement of goodwill under which a loss was recognized only if the estimated implied fair value of the goodwill is below its carrying value. • Requires impairment to be recognized if the carrying amount exceeds the reporting unit's fair value.	• We plan to adopt the standard on its effective date and we do not expect the adoption of this standard to impact our consolidated results of operations or our consolidated financial position.

(a) Early adoption is permitted.

Recently Adopted Accounting Pronouncements

See Note 1 Accounting Policies in the Notes To the Consolidated Financial Statements in Item 8 of this Report regarding the impact of new accounting pronouncements which we have adopted.

OFF-BALANCE SHEET ARRANGEMENTS AND VARIABLE INTEREST ENTITIES

We engage in a variety of activities that involve entities that are not consolidated or otherwise reflected in our Consolidated Balance Sheet that are generally referred to as "off-balance sheet arrangements." Additional information on these types of activities is included in the following sections of this Report:

- Commitments, including contractual obligations and other commitments, included within the Risk Management section of this Item 7; and
- Note 2 Loan Sale and Servicing Activities and Variable Interest Entities;
- Note 10 Borrowed Funds;
- Note 15 Equity; and
- Note 20 Commitments, all of which are in the Notes To Consolidated Financial Statements included in Item 8 of this Report.

A summary and further description of variable interest entities (VIEs) as of December 31, 2018 and 2017 is included in Note 1 Accounting Policies and Note 2 Loan Sale and Servicing and Variable Interest Entities in the Notes To Consolidated Financial Statements included in Item 8 of this Report.

Trust Preferred Securities

See Note 10 Borrowed Funds in the Notes To Consolidated Financial Statements in Item 8 of this Report for additional information on trust preferred securities issued by PNC Capital Trust C including information on contractual limitations potentially imposed on payments (including dividends) with respect to PNC's equity securities.

GLOSSARY OF TERMS

Adjusted average total assets – Primarily consisted of total average quarterly (or annual) assets plus/less unrealized losses (gains) on investment securities, less goodwill and certain other intangible assets (net of eligible deferred taxes).

Basel III common equity Tier 1 capital – Common stock plus related surplus, net of treasury stock, plus retained earnings, plus accumulated other comprehensive income for securities currently, and those transferred from, available for sale and pension and other postretirement benefit plans, subject to phase-in limits, less goodwill, net of associated deferred tax liabilities, less other disallowed intangibles, net of deferred tax liabilities and plus/less other adjustments. Significant common stock investments in unconsolidated financial institutions, as well as mortgage servicing rights and deferred tax assets, must then be deducted to the extent such items individually exceed 10%, or in the aggregate exceed 15%, of our adjusted Basel III common equity Tier 1 capital.

Basel III common equity Tier 1 capital ratio – Common equity Tier 1 capital divided by period-end risk-weighted assets (as applicable).

Basel III Tier 1 capital – Common equity Tier 1 capital, plus qualifying preferred stock, plus certain trust preferred capital securities, plus certain noncontrolling interests that are held by others and plus/less other adjustments.

Basel III Tier 1 capital ratio – Tier 1 capital divided by period-end risk-weighted assets (as applicable).

Basel III Total capital – Tier 1 capital plus qualifying subordinated debt, plus certain trust preferred securities, plus, under the Basel III transitional rules and the standardized approach, the allowance for loan and lease losses included in Tier 2 capital and other.

Basel III Total capital ratio – Total capital divided by period-end risk-weighted assets (as applicable).

Charge-off – Process of removing a loan or portion of a loan from our balance sheet because it is considered uncollectible. We also record a charge-off when a loan is transferred from portfolio holdings to held for sale by reducing the loan carrying amount to the fair value of the loan, if fair value is less than carrying amount.

Combined loan-to-value ratio (CLTV) – This is the aggregate principal balance(s) of the mortgages on a property divided by its appraised value or purchase price.

Common shareholders' equity – Total shareholders' equity less the liquidation value of preferred stock.

Credit valuation adjustment – Represents an adjustment to the fair value of our derivatives for our own and counterparties' non-performance risk.

Criticized commercial loans – Loans with potential or identified weaknesses based upon internal risk ratings that comply with the regulatory classification definitions of "Special Mention," "Substandard" or "Doubtful."

Discretionary client assets under management – Assets over which we have sole or shared investment authority for our customers/clients. We do not include these assets on our Consolidated Balance Sheet.

Duration of equity – An estimate of the rate sensitivity of our economic value of equity. A negative duration of equity is associated with asset sensitivity (i.e., positioned for rising interest rates), while a positive value implies liability sensitivity (i.e., positioned for declining interest rates). For example, if the duration of equity is -1.5 years, the economic value of equity increases by 1.5% for each 100 basis point increase in interest rates.

Earning assets – Assets that generate income, which include: interest-earning deposits with banks; loans held for sale; loans; investment securities; and certain other assets.

Effective duration – A measurement, expressed in years, that, when multiplied by a change in interest rates, would approximate the percentage change in value of on- and off- balance sheet positions.

Efficiency – Noninterest expense divided by total revenue.

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

Fee income – When referring to the components of Noninterest income, we use the term fee income to refer to the following categories within Noninterest income: Asset management; Consumer services; Corporate services; Residential mortgage; and Service charges on deposits.

FICO score – A credit bureau-based industry standard score created by Fair Isaac Co. which predicts the likelihood of borrower default. We use FICO scores both in underwriting and assessing credit risk in our consumer lending portfolio. Lower FICO scores indicate likely higher risk of default, while higher FICO scores indicate likely lower risk of default. FICO scores are updated on a periodic basis.

Foreign exchange contracts – Contracts that provide for the future receipt and delivery of foreign currency at previously agreed-upon terms.

Futures and forward contracts – Contracts in which the buyer agrees to purchase and the seller agrees to deliver a specific financial instrument at a predetermined price or yield. May be settled either in cash or by delivery of the underlying financial instrument.

GAAP – Accounting principles generally accepted in the United States of America.

Home price index (HPI) – A broad measure of the movement of single-family house prices in the U.S.

Impaired loans – Loans are determined to be impaired when, based on current information and events, it is probable that all contractually required payments will not be collected. Impaired loans include commercial nonperforming loans and consumer and commercial TDRs, regardless of nonperforming status. Excluded from impaired loans are nonperforming leases, loans held for sale, loans accounted for under the fair value option, smaller balance homogenous type loans and purchased impaired loans.

Interest rate swap contracts – Contracts that are entered into primarily as an asset/liability management strategy to reduce interest rate risk. Interest rate swap contracts are exchanges of interest rate payments, such as fixed-rate payments for floating-rate payments, based on notional principal amounts.

Intrinsic value – The difference between the price, if any, required to be paid for stock issued pursuant to an equity compensation arrangement and the fair market value of the underlying stock.

Leverage ratio – Tier 1 capital divided by average quarterly adjusted total assets.

LIBOR – Acronym for London InterBank Offered Rate. LIBOR is the average interest rate charged when banks in the London wholesale money market (or interbank market) borrow unsecured funds from each other. LIBOR rates are used as a benchmark for interest rates on a global basis. Our product set includes loans priced using LIBOR as a benchmark.

Loan-to-value ratio (LTV) – A calculation of a loan's collateral coverage that is used both in underwriting and assessing credit risk in our lending portfolio. LTV is the sum total of loan obligations secured by collateral divided by the market value of that same collateral. Market values of the collateral are based on an independent valuation of the collateral. For example, a LTV of less than 90% is better secured and has less credit risk than a LTV of greater than or equal to 90%.

Loss given default (LGD) – An estimate of loss, net of recovery based on collateral type, collateral value, loan exposure and other factors. Each loan has its own LGD. The LGD risk rating measures the percentage of exposure of a specific credit obligation that we expect to lose if default occurs. LGD is net of recovery, through any means, including but not limited to the liquidation of collateral or deficiency judgments rendered from foreclosure or bankruptcy proceedings.

Nonaccrual loans – Loans for which we do not accrue interest income. Nonaccrual loans include nonperforming loans, in addition to loans accounted for under fair value option and loans accounted for as held for sale for which full collection of contractual principal and/or interest is not probable.

Nondiscretionary client assets under administration – Assets we hold for our customers/clients in a nondiscretionary, custodial capacity. We do not include these assets on our Consolidated Balance Sheet.

Nonperforming assets – Nonperforming assets include nonperforming loans and OREO and foreclosed assets, but exclude certain government insured or guaranteed loans for which we expect to collect substantially all principal and interest, loans held for sale, loans accounted for under the fair value option and purchased impaired loans. We do not accrue interest income on assets classified as nonperforming.

Nonperforming loans – Loans accounted for at amortized cost for which we do not accrue interest income. Nonperforming loans include loans to commercial, commercial real estate, equipment lease financing, home equity, residential real estate, credit card and other consumer customers as well as TDRs which have not returned to performing status. Nonperforming loans exclude certain government insured or guaranteed loans for which we expect to collect substantially all principal and interest, loans held for sale, loans accounted for under the fair value option and purchased impaired loans. Nonperforming loans exclude purchased impaired loans as we are currently accreting interest income over the expected life of the loans.

Notional amount – A number of currency units, shares or other units specified in a derivative contract.

Operating leverage – The period to period dollar or percentage change in total revenue (GAAP basis) less the dollar or percentage change in noninterest expense. A positive variance indicates that revenue growth exceeded expense growth (i.e., positive operating leverage) while a negative variance implies expense growth exceeded revenue growth (i.e., negative operating leverage).

Options – Contracts that grant the purchaser, for a premium payment, the right, but not the obligation, to either purchase or sell the associated financial instrument at a set price during a specified period or at a specified date in the future.

Other real estate owned (OREO) and foreclosed assets –Assets taken in settlement of troubled loans primarily through deed-in-lieu of foreclosure or foreclosure. Foreclosed assets include real and personal property. Excludes certain assets that have a government-guarantee which are classified as other receivables.

Probability of default (PD) – An internal risk rating that indicates the likelihood that a credit obligor will enter into default status.

Recovery – Cash proceeds received on a loan that we had previously charged off. We credit the amount received to the allowance for loan and lease losses.

Risk – The potential that an event or series of events could occur that would threaten our ability to achieve our strategic objectives, thereby negatively affecting shareholder value or reputation.

Risk appetite – A dynamic, forward-looking view on the aggregate amount of risk we are willing and able to take in executing business strategy in light of the current business environment.

Risk limits – Quantitative measures based on forward-looking assumptions that allocate the firm's aggregate risk appetite (e.g., measure of loss or negative events) to business lines, legal entities, specific risk categories, concentrations and as appropriate, other levels.

Risk profile – The risk profile is a point-in-time assessment of risk. The profile represents overall risk position in relation to the desired risk appetite. The determination of the risk profile's position is based on qualitative and quantitative analysis of reported risk limits, metrics, operating guidelines and qualitative assessments.

Risk-weighted assets – Computed by the assignment of specific risk-weights (as defined by the Board of Governors of the Federal Reserve System) to assets and off-balance sheet instruments.

Servicing rights – An intangible asset or liability created by an obligation to service assets for others. Typical servicing rights include the right to receive a fee for collecting and forwarding payments on loans and related taxes and insurance premiums held in escrow.

Taxable-equivalent interest income – The interest income earned on certain assets that is completely or partially exempt from federal income tax. These tax-exempt instruments typically yield lower returns than taxable investments. To provide more meaningful comparisons of yields and margins for all interest-earning assets, we use interest income on a taxable-equivalent basis in calculating average yields and net interest margins by increasing the interest income earned on tax-exempt assets to make it fully equivalent to interest income earned on other taxable investments. This adjustment is not permitted under GAAP on the Consolidated Income Statement.

Transitional Basel III common equity Tier 1 capital – Common equity Tier 1 capital calculated under Basel III using phased-in definitions and deductions applicable to us during the related presentation period and standardized approach risk-weighted assets.

Troubled debt restructuring (TDR) – A loan whose terms have been restructured in a manner that grants a concession to a borrower experiencing financial difficulties.

Value-at-risk (VaR) – A statistically-based measure of risk that describes the amount of potential loss which may be incurred due to adverse market movements. The measure is of the maximum loss which should not be exceeded on 95 out of 100 days for a 95% VaR.

Yield curve – A graph showing the relationship between the yields on financial instruments or market indices of the same credit quality with different maturities. For example, a “normal” or “positive” yield curve exists when long-term bonds have higher yields than short-term bonds. A “flat” yield curve exists when yields are the same for short-term and long-term bonds. A “steep” yield curve exists when yields on long-term bonds are significantly higher than on short-term bonds. An “inverted” or “negative” yield curve exists when short-term bonds have higher yields than long-term bonds.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING INFORMATION

We make statements in this Report, and we may from time to time make other statements, regarding our outlook for earnings, revenues, expenses, tax rates, capital and liquidity levels and ratios, asset levels, asset quality, financial position, and other matters regarding or affecting us and our future business and operations that are forward-looking statements within the meaning of the Private Securities Litigation Reform Act. Forward-looking statements are typically identified by words such as “believe,” “plan,” “expect,” “anticipate,” “see,” “look,” “intend,” “outlook,” “project,” “f “estimate,” “goal,” “will,” “should” and other similar words and expressions. Forward-looking statements are subject to numerous assumptions, risks and uncertainties, which change over time.

Forward-looking statements speak only as of the date made. We do not assume any duty to update forward-looking statements. Actual results or future events could differ, possibly materially, from those anticipated in forward-looking statements, as well as from historical performance.

Our forward-looking statements are subject to the following principal risks and uncertainties.

- Our businesses, financial results and balance sheet values are affected by business and economic conditions, including the following:
  - Changes in interest rates and valuations in debt, equity and other financial markets.
  - Disruptions in the U.S. and global financial markets.
  - Actions by the Federal Reserve Board, U.S. Treasury and other government agencies, including those that impact money supply and market interest rates.
  - Changes in customer behavior due to recently enacted tax legislation, changing business and economic conditions or legislative or regulatory initiatives.
  - Changes in customers’, suppliers’ and other counterparties’ performance and creditworthiness.
  - Impacts of tariffs and other trade policies of the U.S. and its global trading partners.
  - Slowing or reversal of the current U.S. economic expansion.
  - Commodity price volatility.
-

Our forward-looking financial statements are subject to the risk that economic and financial market conditions will be substantially different than those we are currently expecting and do not take into account potential legal and regulatory contingencies. These statements are based on our views that:

- U.S. economic growth has accelerated over the past two years to above its long-run trend.
- However, growth is expected to slow over the course of 2019.
- We expect further gradual improvement in the labor market this year, including job gains and rising wages, which would be a positive indicator for consumer spending.
- Trade restrictions and geopolitical concerns are downside risks to the forecast.
- Inflation is expected to slow in the first half of 2019, to below the FOMC's 2% objective.
- Short-term interest rates and bond yields are expected to rise very slowly in 2019.
- Our baseline forecast is for one more increase in the federal funds rate, in September 2019, pushing the rate to a range of 2.50 to 2.75% in the second half of this year.

- Our ability to take certain capital actions, including returning capital to shareholders, is subject to review by the Federal Reserve Board as part of our comprehensive capital plan for the applicable period in connection with the Federal Reserve Board's Comprehensive Capital Analysis and Review (CCAR) process and to the acceptance of such capital plan and non-objection to such capital actions by the Federal Reserve Board.
- Our regulatory capital ratios in the future will depend on, among other things, the company's financial performance, the scope and terms of final capital regulations then in effect and management actions affecting the composition of our balance sheet. In addition, our ability to determine, evaluate and forecast regulatory capital ratios, and to take actions (such as capital distributions) based on actual or forecasted capital ratios, will be dependent at least in part on the development, validation and regulatory approval of related models.
- Legal and regulatory developments could have an impact on our ability to operate our businesses, financial condition, results of operations, competitive position, reputation, or pursuit of attractive acquisition opportunities. Reputational impacts could affect matters such as business generation and retention, liquidity, funding, and ability to attract and retain management. These developments could include:
  - Changes resulting from legislative and regulatory reforms, including changes affecting oversight of the financial services industry, consumer protection, pension, bankruptcy and other industry aspects, and changes in accounting policies and principles.
  - Changes to regulations governing bank capital and liquidity standards.
  - Unfavorable resolution of legal proceedings or other claims and regulatory and other governmental investigations or other inquiries. These matters may result in monetary judgments or settlements or other remedies, including fines, penalties, restitution or alterations in our business practices, and in additional expenses and collateral costs, and may cause reputational harm to us.
  - Results of the regulatory examination and supervision process, including our failure to satisfy requirements of agreements with governmental agencies.
  - Impact on business and operating results of any costs associated with obtaining rights in intellectual property claimed by others and of adequacy of our intellectual property protection in general.
- Business and operating results are affected by our ability to identify and effectively manage risks inherent in our businesses, including, where appropriate, through effective use of systems and controls, third-party insurance, derivatives, and capital management techniques, and to meet evolving regulatory capital and liquidity standards.
- Business and operating results also include impacts relating to our equity interest in BlackRock, Inc. and rely to a significant extent on information provided to us by BlackRock. Risks and uncertainties that could affect BlackRock are discussed in more detail by BlackRock in its SEC filings.
- We grow our business in part through acquisitions and new strategic initiatives. Risks and uncertainties include those presented by the nature of the business acquired and strategic initiative, including in some cases those associated with our entry into new businesses or new geographic or other markets and risks resulting from our inexperience in those new areas, as well as risks and uncertainties related to the acquisition transactions themselves, regulatory issues, and the integration of the acquired businesses into PNC after closing.
- Competition can have an impact on customer acquisition, growth and retention and on credit spreads and product pricing, which can affect market share, deposits and revenues. Our ability to anticipate and respond to technological changes can also impact our ability to respond to customer needs and meet competitive demands.
- Business and operating results can also be affected by widespread natural and other disasters, pandemics, dislocations, terrorist activities, system failures, security breaches, cyberattacks or international hostilities through impacts on the economy and financial markets generally or on us or our counterparties specifically.

We provide greater detail regarding these as well as other factors in this Report, including in the Risk Factors and Risk Management sections and the Legal Proceedings and Commitments Notes of the Notes To Consolidated Financial Statements in this Report. Our forward-looking statements may also be subject to other risks and uncertainties, including those discussed elsewhere in this Report or in our other filings with the SEC.

ITEM 7A – QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

This information is set forth in the Risk Management section of Item 7 and in Note 1 Accounting Policies, Note 6 Fair Value and Note 13 Financial Derivatives in the Notes To Consolidated Financial Statements in Item 8 of this Report.

ITEM 8 – FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of The PNC Financial Services Group, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of The PNC Financial Services Group, Inc. and its subsidiaries (the "Company") as of December 31, 2018 and 2017, and the related consolidated statements of income, comprehensive income, changes in equity and cash flows for each of the three years in the period ended December 31, 2018, including the related notes (collectively referred to as the “consolidated financial statements”). We also have audited the Company’s internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018 based on criteria established in Internal Control – Integrated Framework (2013) issued by the COSO.

Basis for Opinions

The Company’s management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management’s Report on Internal Control over Financial Reporting under Item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company’s internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company’s assets that could have

a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ PricewaterhouseCoopers LLP
Pittsburgh, Pennsylvania
February 28, 2019

We have served as the Company's auditor since 2007.

CONSOLIDATED INCOME STATEMENT
THE PNC FINANCIAL SERVICES GROUP, INC.

In millions, except per share data	Year ended December 31 2018	2017	2016
Interest Income			
Loans	$9,580	$8,238	$7,414
Investment securities	2,261	1,998	1,826
Other	741	578	412
Total interest income	12,582	10,814	9,652
Interest Expense			
Deposits	1,229	623	430
Borrowed funds	1,632	1,083	831
Total interest expense	2,861	1,706	1,261
Net interest income	9,721	9,108	8,391
Noninterest Income			
Asset management	1,825	1,942	1,521
Consumer services	1,502	1,415	1,388
Corporate services	1,849	1,742	1,589
Residential mortgage	316	350	567
Service charges on deposits	714	695	667
Other	1,205	1,077	1,039
Total noninterest income	7,411	7,221	6,771
Total revenue	17,132	16,329	15,162
Provision For Credit Losses	408	441	433
Noninterest Expense			
Personnel	5,471	5,268	4,873
Occupancy	818	868	861
Equipment	1,103	1,065	974
Marketing	285	244	247
Other	2,619	2,953	2,521
Total noninterest expense	10,296	10,398	9,476
Income before income taxes and noncontrolling interests	6,428	5,490	5,253
Income taxes	1,082	102	1,268
Net income	5,346	5,388	3,985
Less: Net income attributable to noncontrolling interests	45	50	82
Preferred stock dividends	236	236	209
Preferred stock discount accretion and redemptions	4	26	6
Net income attributable to common shareholders	$5,061	$5,076	$3,688
Earnings Per Common Share			
Basic	$10.79	$10.49	$7.42
Diluted	$10.71	$10.36	$7.30
Average Common Shares Outstanding			
Basic	467	481	494
Diluted	470	486	500

See accompanying Notes To Consolidated Financial Statements.

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME
THE PNC FINANCIAL SERVICES GROUP, INC.

	Year ended December 31		
In millions	2018	2017	2016
Net income	$5,346	$5,388	$3,985
Other comprehensive income (loss), before tax and net of reclassifications into Net income:			
Net unrealized gains (losses) on non-OTTI securities	(526)	16	(369)
Net unrealized gains (losses) on OTTI securities	(14)	172	63
Net unrealized gains (losses) on cash flow hedge derivatives	(178)	(287)	(153)
Pension and other postretirement benefit plan adjustments	16	169	1
Other	(37)	61	(59)
Other comprehensive income (loss), before tax and net of reclassifications into Net income	(739)	131	(517)
Income tax benefit (expense) related to items of other comprehensive income	156	(14)	122
Other comprehensive income (loss), after tax and net of reclassifications into Net income	(583)	117	(395)
Comprehensive income	4,763	5,505	3,590
Less: Comprehensive income attributable to noncontrolling interests	45	50	82
Comprehensive income attributable to PNC	$4,718	$5,455	$3,508

See accompanying Notes To Consolidated Financial Statements.

CONSOLIDATED BALANCE SHEET
THE PNC FINANCIAL SERVICES GROUP, INC.

In millions, except par value	December 31 2018	December 31 2017
Assets		
Cash and due from banks	$5,608	$5,249
Interest-earning deposits with banks	10,893	28,595
Loans held for sale (a)	994	2,655
Investment securities – available for sale	63,389	57,618
Investment securities – held to maturity	19,312	18,513
Loans (a)	226,245	220,458
Allowance for loan and lease losses	(2,629)	(2,611)
Net loans	223,616	217,847
Equity investments (b)	12,894	11,392
Mortgage servicing rights	1,983	1,832
Goodwill	9,218	9,173
Other (a)	34,408	27,894
Total assets	$382,315	$380,768
Liabilities		
Deposits		
Noninterest-bearing	$73,960	$79,864
Interest-bearing	193,879	185,189
Total deposits	267,839	265,053
Borrowed funds		
Federal Home Loan Bank borrowings	21,501	21,037
Bank notes and senior debt	25,018	28,062
Subordinated debt	5,895	5,200
Other (c)	5,005	4,789
Total borrowed funds	57,419	59,088
Allowance for unfunded loan commitments and letters of credit	285	297
Accrued expenses and other liabilities	9,002	8,745
Total liabilities	334,545	333,183
Equity		
Preferred stock (d)		
Common stock ($5 par value, Authorized 800 shares, issued 542 shares)	2,711	2,710
Capital surplus	16,277	16,374
Retained earnings	38,919	35,481
Accumulated other comprehensive income (loss)	(725)	(148)
Common stock held in treasury at cost: 85 and 69 shares	(9,454)	(6,904)
Total shareholders' equity	47,728	47,513
Noncontrolling interests	42	72
Total equity	47,770	47,585
Total liabilities and equity	$382,315	$380,768

(a) Our consolidated assets included the following for which we have elected the fair value option: Loans held for sale of $.9 billion, Loans of $.8 billion, and Other assets of
$.2 billion at December 31, 2018 and Loans held for sale of $1.7 billion, Loans of $.9 billion, and Other assets of $.3 billion at December 31, 2017.

(b) Amounts include our equity interest in BlackRock. Effective for the first quarter of 2018, $.6 billion of trading and available for sale securities, primarily money market funds, were reclassified to Equity investments on January 1,

2018 in accordance with the adoption of Accounting Standards Update 2016-01, Financial Instruments - Overall: Recognition and Measurement of Financial Assets and Financial Liabilities.

(c) Our consolidated liabilities included Other borrowed funds of $.1 billion at both December 31, 2018 and 2017, for which we have elected the fair value option.

(d) Par value less than $.5 million at each date.

See accompanying Notes To Consolidated Financial Statements.

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY
THE PNC FINANCIAL SERVICES GROUP, INC.

		Shareholders' Equity							
In millions	Shares Outstanding Common Stock	Common Stock	Capital Surplus - Preferred Stock	Capital Surplus - Common Stock and Other	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock	Noncontrolling Interests	Total Equity
Balance at December 31, 2015 (a)	504	$2,708	$3,452	$12,745	$29,043	$ 130	$(3,368)	$ 1,270	$45,980
Net income					3,903			82	3,985
Other comprehensive income (loss), net of tax						(395)			(395)
Cash dividends declared									
Common					(1,061)				(1,061)
Preferred					(209)				(209)
Preferred stock discount accretion			6		(6)				
Preferred stock issuance - Series S (b)			519						519
Common stock activity (c)		1		18					19
Treasury stock activity	(19)			(131)			(1,698)		(1,829)
Other				42				(197)	(155)
Balance at December 31, 2016 (a)	485	$2,709	$3,977	$12,674	$31,670	$ (265)	$(5,066)	$ 1,155	$46,854
Net income					5,338			50	5,388
Other comprehensive income (loss), net of tax						117			117
Cash dividends declared									
Common					(1,266)				(1,266)
Preferred					(236)				(236)
Preferred stock discount accretion			6		(6)				
Redemption of noncontrolling interests (d)					(19)			(981)	(1,000)
Common stock activity (c)		1		17					18
Treasury stock activity	(12)			(309)			(1,838)		(2,147)
Other			2	7				(152)	(143)
Balance at December 31, 2017 (a)	473	$2,710	$3,985	$12,389	$35,481	$ (148)	$(6,904)	$ 72	$47,585
Cumulative effect of ASU adoptions (e)					(22)	6			(16)
Balance at January 1, 2018 (a)	473	$2,710	$3,985	$12,389	$35,459	$ (142)	$(6,904)	$ 72	$47,569
Net income					5,301			45	5,346

Other comprehensive income (loss), net of tax						(583)			(583)
Cash dividends declared									
Common					(1,601)				(1,601)
Preferred					(236)				(236)
Preferred stock discount accretion			4		(4)				
Common stock activity (c)		1		19					20
Treasury stock activity	(16)			(101)			(2,550)		(2,651)
Other			(3)	(16)				(75)	(94)
Balance at December 31, 2018 (a)	457	$2,711	$3,986	$12,291	$38,919	$ (725)	$(9,454)	$ 42	$47,770

(a) The par value of our preferred stock outstanding was less than $.5 million at each date and, therefore, is excluded from this presentation.

(b) On November 1, 2016, PNC issued 5,250 shares of Series S preferred stock with a $1 par value.

(c) Common stock activity totaled less than .5 million shares issued.

(d) Relates to the redemption of Perpetual Trust Securities in the first quarter of 2017. See Note 15 in our 2017 Annual Report on Form 10-K for additional information.

(e) Represents the cumulative effect of adopting ASU 2014-09, ASU 2016-01, ASU 2017-12 and ASU 2018-02. See Recently Adopted Accounting Standards portion of Note 1 Accounting Policies for additional detail on the adoption of these ASUs.

See accompanying Notes To Consolidated Financial Statements.

CONSOLIDATED STATEMENT OF CASH FLOWS
THE PNC FINANCIAL SERVICES GROUP, INC.

In millions	Year ended December 31 2018	2017	2016
Operating Activities			
Net income	$5,346	$5,388	$3,985
Adjustments to reconcile net income to net cash provided (used) by operating activities			
Provision for credit losses	408	441	433
Depreciation and amortization	1,129	1,117	1,193
Deferred income taxes	133	(403)	326
Changes in fair value of mortgage servicing rights	172	323	179
Gain on sales of Visa Class B common shares			(126)
Undistributed earnings of BlackRock	(525)	(727)	(361)
Net change in			
Trading securities and other short-term investments	(893)	305	(1,167)
Loans held for sale	1,635	(1,148)	(935)
Other assets	108	647	(744)
Accrued expenses and other liabilities	295	(704)	652
Other	32	340	65
Net cash provided (used) by operating activities	$7,840	$5,579	$3,500
Investing Activities			
Sales			
Securities available for sale	$7,505	$5,647	$3,456
Loans	1,323	2,001	1,897
Repayments/maturities			
Securities available for sale	9,388	10,734	11,061
Securities held to maturity	2,447	2,948	3,209
Purchases			
Securities available for sale	(23,418)	(13,605)	(19,495)
Securities held to maturity	(3,370)	(5,605)	(4,305)
Loans	(690)	(841)	(1,334)
Net change in			
Federal funds sold and resale agreements	(5,837)	(245)	126
Interest-earning deposits with banks	17,702	(2,884)	4,835
Loans	(7,335)	(10,483)	(5,940)
Net cash paid for acquisition		(1,342)	
Other	(1,684)	(1,220)	(817)
Net cash provided (used) by investing activities	$(3,969)	$(14,895)	$(7,307)

(continued on following page)

CONSOLIDATED STATEMENT OF CASH FLOWS
THE PNC FINANCIAL SERVICES GROUP, INC.
(continued from previous page)

	Year ended December 31		
In millions	2018	2017	2016
Financing Activities			
Net change in			
Noninterest-bearing deposits	$(6,016)	$(264)	$1,212
Interest-bearing deposits	8,690	8,255	7,367
Federal funds purchased and repurchase agreements	392	(148)	18
Federal Home Loan Bank borrowings	1,500		
Commercial paper	(100)	100	
Other borrowed funds	20	459	272
Sales/issuances			
Federal Home Loan Bank borrowings	9,500	11,000	1,000
Bank notes and senior debt	3,238	7,062	5,601
Subordinated debt	1,243		
Other borrowed funds	500	427	165
Preferred stock			519
Common and treasury stock	69	132	151
Repayments/maturities			
Federal Home Loan Bank borrowings	(10,536)	(7,512)	(3,559)
Bank notes and senior debt	(6,175)	(1,800)	(3,750)
Subordinated debt	(575)	(2,758)	(488)
Other borrowed funds	(548)	(318)	(555)
Redemption of noncontrolling interests		(1,000)	
Acquisition of treasury stock	(2,877)	(2,447)	(2,062)
Preferred stock cash dividends paid	(236)	(236)	(209)
Common stock cash dividends paid	(1,601)	(1,266)	(1,061)
Net cash provided (used) by financing activities	$(3,512)	$9,686	$4,621
Net Increase (Decrease) In Cash And Due From Banks	$359	$370	$814
Cash and due from banks at beginning of period	5,249	4,879	4,065
Cash and due from banks at end of period	$5,608	$5,249	$4,879
Supplemental Disclosures			
Interest paid	$2,835	$1,743	$1,317
Income taxes paid	$372	$72	$658
Income taxes refunded	$468	$24	$111
Non-cash Investing and Financing Items			
Transfer from loans to loans held for sale, net	$403	$419	$606
Transfer from loans to foreclosed assets	$193	$215	$281
Transfer from trading securities to investment securities		$192	

See accompanying Notes To Consolidated Financial Statements.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
THE PNC FINANCIAL SERVICES GROUP, INC.

BUSINESS
The PNC Financial Services Group, Inc. (PNC) is one of the largest diversified financial services companies in the United States and is headquartered in Pittsburgh, Pennsylvania.
We have businesses engaged in retail banking, including residential mortgage, corporate and institutional banking and asset management, providing many of our products and services nationally. Our retail branch network is located in markets across the Mid-Atlantic, Midwest and Southeast. We also have strategic international offices in four countries outside the U.S.
NOTE 1 ACCOUNTING POLICIES
Basis of Financial Statement Presentation
Our consolidated financial statements include the accounts of the parent company and its subsidiaries, most of which are wholly-owned, certain partnership interests, and variable interest entities.
We prepared these consolidated financial statements in accordance with accounting principles generally accepted in the United States of America (GAAP). We have eliminated intercompany accounts and transactions. We have also reclassified certain prior year amounts to conform to the 2018 presentation, which did not have a material impact on our consolidated financial condition or results of operations.
We have also considered the impact of subsequent events on these consolidated financial statements.
Use of Estimates
We prepared these consolidated financial statements using financial information available at the time of preparation, which requires us to make estimates and assumptions that affect the amounts reported. Our most significant estimates pertain to our fair value measurements and allowances for loan and lease losses and unfunded loan commitments and letters of credit. Actual results may differ from the estimates and the differences may be material to the consolidated financial statements.
Investment in BlackRock, Inc.
We account for our investment in the common stock and Series B Preferred Stock of BlackRock (deemed to be in-substance common stock) under the equity method of accounting. The investment in BlackRock is reflected on our Consolidated Balance Sheet in Equity investments, while our equity in earnings of BlackRock is reported on our Consolidated Income Statement in Asset management noninterest income.
We also held shares of Series C Preferred Stock of BlackRock pursuant to our obligation to partially fund a portion of certain BlackRock long-term incentive plan (LTIP) programs. Since these preferred shares were not deemed to be in-substance common stock, we elected to account for these preferred shares at fair value and the changes in fair value offset the impact of marking-to-market the obligation to deliver these shares to BlackRock. Our investment in the BlackRock Series C Preferred Stock was included on our Consolidated Balance Sheet in Other assets. Our obligation to transfer these shares to BlackRock was classified as a derivative not designated as a hedging instrument under GAAP as disclosed in Note 13 Financial Derivatives.
See Note 24 Subsequent Events for information on our January 31, 2019 transfer of our remaining shares of Series C Preferred Stock to BlackRock to satisfy our obligation under the Share Surrender Agreement.
Variable Interest Entities
A variable interest entity (VIE) is a corporation, partnership, limited liability company, or any other legal structure used to conduct activities or hold assets generally that either:

- Does not have equity investors with voting rights that can directly or indirectly make decisions about the entity’s activities through those voting rights or similar rights; or
- Has equity investors that do not provide sufficient equity for the entity to finance its activities without additional subordinated financial support.

A VIE often holds financial assets, including loans or receivables, real estate or other property.
VIEs are assessed for consolidation under ASC 810 – Consolidation when we hold a variable interest in these entities. We consolidate a VIE if we are its primary beneficiary. The primary beneficiary of a VIE is determined to be the party that meets both of the following criteria: (i) has the power to make decisions that most significantly affect the

economic performance of the VIE; and (ii) has the

obligation to absorb losses or the right to receive benefits that in either case could potentially be significant to the VIE. Upon consolidation of a VIE, we recognize all of the VIE's assets, liabilities and noncontrolling interests on our Consolidated Balance Sheet. On a quarterly basis, we determine whether any changes occurred requiring a reassessment of whether we are the primary beneficiary of an entity.

See Note 2 Loan Sale and Servicing Activities and Variable Interest Entities for information about VIEs that we consolidate as well as those that we do not consolidate but in which we hold a significant variable interest.

Revenue Recognition

We earn interest and noninterest income from various sources, including:

- Lending;
- Securities portfolio;
- Asset management;
- Customer deposits;
- Loan sales, loan securitizations, and servicing;
- Brokerage services;
- Sale of loans and securities;
- Certain private equity activities; and
- Securities, derivatives and foreign exchange activities.

In addition, we earn fees and commissions from:

- Issuing loan commitments, standby letters of credit and financial guarantees;
- Deposit account services;
- Merchant services;
- Selling various insurance products;
- Providing treasury management services;
- Providing merger and acquisition advisory and related services;
- Debit and credit card transactions; and
- Participating in certain capital markets transactions.

Our Asset management noninterest income also includes our share of the earnings of BlackRock recognized under the equity method of accounting.

Service charges on deposit accounts are recognized when earned. Brokerage fees and gains and losses on the sale of securities and certain derivatives are recognized on a trade-date basis.

We record private equity income or loss based on changes in the valuation of the underlying investments or when we dispose of our interest.

We recognize gain/(loss) on changes in the fair value of certain financial instruments where we have elected the fair value option. These financial instruments include certain commercial and residential mortgage loans originated for sale, certain residential mortgage portfolio loans, resale agreements and our investment in BlackRock Series C preferred stock. We also recognize gain/(loss) on changes in the fair value of residential and commercial mortgage servicing rights (MSRs).

We recognize revenue from servicing residential mortgages, commercial mortgages and other consumer loans as earned based on the specific contractual terms. These revenues are reported on the Consolidated Income Statement in the line items Residential mortgage, Corporate services and Consumer services. We recognize revenue from securities, derivatives and foreign exchange customer-related trading, as well as securities underwriting activities, as these transactions occur or as services are provided. We generally recognize gains from the sale of loans upon receipt of cash. Mortgage revenue recognized is reported net of mortgage repurchase reserves.

For the fee-based revenue within the scope of ASC Topic 606 - Revenue from Contracts with Customers, revenue is recognized when or as those services are transferred to the customer. See Note 23 Fee-based Revenue from Contracts with Customers for additional information related to revenue within the scope of Topic 606.

Cash and Cash Equivalents

Cash and due from banks are considered "cash and cash equivalents" for financial reporting purposes.

Investments

We hold interests in various types of investments. The accounting for these investments is dependent on a number of factors including, but not limited to, items such as:

- Ownership interest;
- Our plans for the investment; and
- The nature of the investment.

Debt Securities

Debt securities are recorded on a trade-date basis. We classify debt securities as held to maturity and carry them at amortized cost if we have the positive intent and ability to hold the securities to maturity. Debt securities that we purchase for certain risk management activities or customer-related trading activities are carried at fair value and classified as trading securities and are reported in the Other assets line item on our Consolidated Balance Sheet. Realized and unrealized gains and losses on trading securities are included in Other noninterest income.

Debt securities not classified as held to maturity or trading are designated as securities available for sale and carried at fair value with unrealized gains and losses, net of income taxes, reflected in Accumulated other comprehensive income (AOCI).

On at least a quarterly basis, we review all debt securities that are in an unrealized loss position for other than temporary impairment (OTTI). An investment security is deemed impaired if the fair value of the investment is less than its amortized cost. Amortized cost includes adjustments (if any) made to the cost basis of an investment for accretion, amortization, previous other-than-temporary impairments and hedging gains and losses. After an investment security is determined to be impaired, we evaluate whether the decline in value is other-than-temporary. Declines in the fair value of available for sale and held to maturity debt securities that are deemed other-than-temporary and are attributable to credit deterioration are recognized in Other noninterest income on our Consolidated Income Statement in the period in which the determination is made. Declines in fair value which are deemed other-than-temporary and attributable to factors other than credit deterioration are recognized in AOCI on our Consolidated Balance Sheet.

We include all interest on debt securities, including amortization of premiums and accretion of discounts on investment securities, in net interest income using the constant effective yield method generally calculated over the contractual lives of the securities. Effective yields reflect either the effective interest rate implicit in the security at the date of acquisition or the effective interest rate determined based on improved cash flows subsequent to impairment.

We compute gains and losses realized on the sale of available for sale debt securities on a specific security basis. These securities gains/(losses) are included in Other noninterest income on the Consolidated Income Statement.

Equity Securities and Partnership Interests

We account for equity securities, equity investments other than BlackRock, private equity investments, and investments in limited partnerships, limited liability companies and other investments that are not required to be consolidated under one of the following methods:

- We use the equity method for general and limited partner ownership interests and limited liability companies in which we are considered to have significant influence over the operations of the investee. Under the equity method, we record our equity ownership share of net income or loss of the investee in Noninterest income and any dividends received on equity method investments are recorded as a reduction to the investment balance. When an equity investment experiences an other-than-temporary decline in value, we may be required to record a loss on the investment.
- We measure equity securities that have a readily determinable fair value at fair value through Net income. Both realized and unrealized gains and losses are included in Noninterest income. Dividend income on these equity securities is included in Other interest income on our Consolidated Income Statement.
- We generally use the practicability exception to fair value measurement for all other investments. When we elect this alternative measurement method, the carrying value is adjusted for impairment, if any, plus or minus changes in value resulting from observable price changes in orderly transactions for identical or similar instruments of the same issuer. These investments are written down to fair value if a qualitative assessment indicates impairment and the fair value is less than the carrying value. The amount of the write-down is accounted for as a loss included in Noninterest income. Distributions received on these investments are included in Noninterest income.

Investments described above are included in Equity investments on our Consolidated Balance Sheet.

Private Equity Investments

We report private equity investments, which include direct investments in companies, affiliated partnership interests and indirect investments in private equity funds, at estimated fair value. These estimates are based on available information and may not necessarily represent amounts that we will ultimately realize through distribution, sale or liquidation of the investments. Fair values of publicly-traded direct investments are determined using quoted market prices and are subject to various discount factors arising from security level restrictions, when appropriate. The valuation procedures applied to direct investments and indirect investments are detailed in Note 6 Fair Value. We include all private equity investments within Equity investments on our Consolidated Balance Sheet. Changes in fair value of private equity investments are recognized in Other noninterest income.

We consolidate affiliated partnerships when we have determined that we have control of the partnership or are the primary beneficiary if the entity is a VIE. The portion we do not own is reflected in Noncontrolling interests on our Consolidated Balance Sheet.

Loans

Loans are classified as held for investment when management has both the intent and ability to hold the loan for the foreseeable future, or until maturity or payoff. Management's intent and view of the foreseeable future may change based on changes in business strategies, the economic environment, market conditions and the availability of government programs.

Measurement of delinquency status is based on the contractual terms of each loan. Loans that are 30 days or more past due in terms of payment are considered delinquent.

Except as described below, loans held for investment are stated at recorded investment, which represents the principal amounts outstanding, net of unearned income, unamortized deferred fees and costs on originated loans, and premiums or discounts on purchased loans. Interest on performing loans (excluding interest on purchased impaired loans, which is further discussed below) is accrued based on the principal amount outstanding and recorded in Interest income as earned using the constant effective yield method. Loan origination fees, direct loan origination costs, and loan premiums and discounts are deferred and accreted or amortized into Net interest income using the constant effective yield method, over the contractual life of the loan.

In addition to originating loans, we also acquire loans through portfolio purchases or acquisitions of other financial services companies. For certain acquired loans that have experienced a deterioration of credit quality, we follow the guidance contained in ASC 310-30 – Loans and Debt Securities Acquired with Deteriorated Credit Quality. Under this guidance, acquired purchased impaired loans are to be recorded at fair value without the carryover of any existing valuation allowances. When evidence of credit quality deterioration and evidence that it is probable that we will be unable to collect all contractual amounts due exist, we consider the loans to be purchased credit impaired and we estimate the amount and timing of undiscounted expected cash flows at acquisition for each loan either individually or on a pool basis. The excess of undiscounted cash flows expected to be collected on a purchased impaired loan (or pool of loans) over its carrying value represents the accretable yield which is recognized into interest income over the remaining life of the loan (or pool of loans) using the constant effective yield method. Subsequent decreases in expected cash flows that are attributable, at least in part, to credit quality are recognized as impairments through a charge to the provision for credit losses resulting in an increase in the Allowance for Loan and Lease Losses (ALLL). Subsequent increases in expected cash flows are recognized as a provision recapture of previously recorded ALLL or prospectively through an adjustment of the loan's or pool's yield over its remaining life.

Loans Held for Sale

We designate loans as held for sale when we have the intent to sell them. We transfer loans to the Loans held for sale category at the lower of cost or estimated fair value less cost to sell. At the time of transfer, write-downs on the loans are recorded as charge-offs. We establish a new cost basis upon transfer. Any subsequent lower-of-cost-or-market adjustment is determined on an individual loan basis and is recognized as a valuation allowance with any charges included in Other noninterest income.

We have elected to account for certain commercial and residential mortgage loans held for sale at fair value. The changes in the fair value of the commercial mortgage loans are measured and recorded in Other noninterest income while the residential mortgage loans are measured and recorded in Residential mortgage noninterest income each period. See Note 6 Fair Value for additional information.

Interest income with respect to loans held for sale is accrued based on the principal amount outstanding and the loan's contractual interest rate.

In certain circumstances, loans designated as held for sale may be transferred to held for investment based on a change in strategy. We transfer these loans at the lower of cost or estimated fair value; however, any loans originated or purchased for held for sale and designated at fair value remain at fair value for the life of the loan.

Leases

We provide financing for various types of equipment, including aircraft, energy and power systems, and vehicles through a variety of lease arrangements. Direct financing leases are carried at the aggregate of lease payments plus estimated residual value of the leased equipment, less unearned income. Leveraged leases, a form of financing lease,

are carried net of nonrecourse debt. We recognize income over the term of the lease using the constant effective yield method. Lease residual values are reviewed for impairment at least annually. Gains or losses on the sale of leased assets are included in Other noninterest income while valuation adjustments on lease residuals are included in Other noninterest expense.

We adopted Accounting Standards Update (ASU) 2016-02 – Leases as of January 1, 2019 and recognized lease liabilities and right-of-use assets of $2.1 billion and $2.0 billion, respectively. In addition, we recognized a one-time adjustment of $83 million to retained earnings, related primarily to deferred gains on previous sale-leaseback transactions.

Loan Sales, Loan Securitizations and Retained Interests

We recognize the sale of loans or other financial assets when the transferred assets are legally isolated from our creditors and the appropriate accounting criteria are met. We have sold mortgage and other loans through securitization transactions. In a securitization, financial assets are transferred into trusts or to special purpose entities (SPEs) in transactions to effectively legally isolate the assets from us.

In a securitization, the trust or SPE issues beneficial interests in the form of senior and subordinated securities backed or collateralized by the assets sold to the trust. The senior classes of the asset-backed securities typically receive investment grade credit ratings at the time of issuance. These ratings are generally achieved through the creation of lower-rated subordinated classes of asset-backed securities, as well as subordinated or residual interests. In certain cases, we may retain a portion or all of the securities issued, interest-only strips, one or more subordinated tranches, servicing rights and, in some cases, cash reserve accounts. Securitized loans are removed from the balance sheet and a net gain or loss is recognized in Noninterest income at the time of initial sale. Gains or losses recognized on the sale of the loans depend on the fair value of the loans sold and the retained interests at the date of sale. We generally estimate the fair value of the retained interests based on the present value of future expected cash flows using assumptions as to discount rates, interest rates, prepayment speeds, credit losses and servicing costs, if applicable.

With the exception of loan sales to certain U.S. government-chartered entities, our loan sales and securitizations are generally structured without recourse to us except for representations and warranties and with no restrictions on the retained interests. We originate, sell and service commercial mortgage loans under the Federal National Mortgage Association (FNMA) Delegated Underwriting and Servicing (DUS) program. Under the provisions of the DUS program, we participate in a loss-sharing arrangement with FNMA. When we are obligated for loss-sharing or recourse, our policy is to record such liabilities initially at fair value and subsequently reserve for estimated losses in accordance with guidance contained in applicable GAAP.

Nonperforming Loans and Leases

The matrix below summarizes our policies for classifying certain loans as nonperforming loans and/or discontinuing the accrual of loan interest income.

Commercial loans

Loans Classified as Nonperforming and Accounted for as Nonaccrual	• Loans accounted for at amortized cost where: – The loan is 90 days or more past due. – The loan is rated substandard or worse due to the determination that full collection of principal and interest is not probable as demonstrated by the following conditions: • The collection of principal or interest is 90 days or more past due; • Reasonable doubt exists as to the certainty of the borrower's future debt service ability, according to the terms of the credit arrangement, regardless of whether 90 days have passed or not; • The borrower has filed or will likely file for bankruptcy; • The bank advances additional funds to cover principal or interest; • We are in the process of liquidating a commercial borrower; or • We are pursuing remedies under a guarantee.
Loans Excluded from Nonperforming Classification but Accounted for as Nonaccrual	• Loans accounted for under the fair value option and full collection of principal and interest is not probable. • Loans accounted for at the lower of cost or market less costs to sell (held for sale) and full collection of principal and interest is not probable.

Loans Excluded from Nonperforming Classification and Nonaccrual Accounting	• Loans that are well secured and in the process of collection.
Consumer loans	
Loans Classified as Nonperforming and Accounted for as Nonaccrual	• Loans accounted for at amortized cost where full collection of contractual principal and interest is not deemed probable as demonstrated in the policies below: – The loan is 90 days past due for home equity and installment loans, and 180 days past due for well secured residential real estate loans; – The loan has been modified and classified as a troubled debt restructuring (TDR); – Notification of bankruptcy has been received within the last 60 days; – The bank holds a subordinate lien position in the loan and the first lien mortgage loan is seriously stressed (i.e., 90 days or more past due); – Other loans within the same borrower relationship have been placed on nonaccrual or charge-offs have been taken on them; – The bank has repossessed non-real estate collateral securing the loan; or – The bank has charged-off the loan to the value of the collateral. • Loans accounted for under the fair value option and full collection of principal and interest is not probable. • Loans accounted for at the lower of cost or market less costs to sell (held for sale) and full collection of principal and interest is not probable.
Loans Excluded from Nonperforming Classification but Accounted for as Nonaccrual	• Purchased impaired loans because interest income is accreted through the accounting model.
Loans Excluded from Nonperforming Classification and Nonaccrual Accounting	• Certain government insured loans where substantially all principal and interest is insured. • Residential real estate loans that are well secured and in the process of collection. • Consumer loans and lines of credit, not secured by residential real estate or automobiles, as permitted by regulatory guidance.

See Note 3 Asset Quality in this Report for additional detail on nonperforming assets and asset quality indicators for commercial and consumer loans.

Commercial Loans
We generally charge off Commercial Lending (Commercial, Commercial Real Estate, and Equipment Lease Financing) nonperforming loans when we determine that a specific loan, or portion thereof, is uncollectible. This determination is based on the specific facts and circumstances of the individual loans. In making this determination, we consider the viability of the business or project as a going concern, the past due status when the asset is not well-secured, the expected cash flows to repay the loan, the value of the collateral, and the ability and willingness of any guarantors to perform.

Additionally, in general, for smaller commercial loans of $1 million or less, a partial or full charge-off occurs at 120 days past due for term loans and 180 days past due for revolvers. Certain small business credit card balances that are placed on nonaccrual status when they become 90 days or more past due are charged-off at 180 days past due.

Consumer Loans
Home equity installment loans, home equity lines of credit, and residential real estate loans that are not well-secured and in the process of collection are charged-off at no later than 180 days past due. At that time, the basis in the loan is reduced to the fair value of the collateral less costs to sell. In addition to this policy, the bank recognizes a charge-off on a secured consumer loan when:

- The bank holds a subordinate lien position in the loan and a foreclosure notice has been received on the first lien loan;
- The bank holds a subordinate lien position in the loan which is 30 days or more past due with a combined loan to value ratio of greater than or equal to 110% and the first lien loan is seriously stressed (i.e., 90 days or more past due);
- The loan is modified or otherwise restructured in a manner that results in the loan becoming collateral dependent;
- Notification of bankruptcy has been received within the last 60 days;
- The borrower has been discharged from personal liability through Chapter 7 bankruptcy and has not formally reaffirmed his or her loan obligation to us; or
- The collateral securing the loan has been repossessed and the value of the collateral is less than the recorded investment of the loan outstanding.

For loans that continue to meet any of the above policies, collateral values are updated annually and subsequent declines in collateral values are charged-off resulting in incremental provision for credit loss.
Most consumer loans and lines of credit, not secured by residential real estate, are charged off after 120-180 days past due.
Accounting for Nonperforming Assets and Leases and Other Nonaccrual Loans
For accrual loans, interest income is accrued on a monthly basis and certain fees and costs are deferred upon origination and recognized in income over the term of the loan utilizing an effective yield method. For nonaccrual loans, interest income accrual and deferred fee/cost recognition is discontinued. Additionally, the current year accrued and uncollected interest is reversed through Net interest income and prior year accrued and uncollected interest is charged-off. Nonaccrual loans may also be charged-off to reduce the basis to the fair value of collateral less costs to sell.
If payment is received on a nonaccrual loan, generally the payment is first applied to the recorded investment; payments are then applied to recover any charged-off amounts related to the loan. Finally, if both recorded investment and any charge-offs have been recovered, then the payment will be recorded as fee and interest income. For certain consumer loans, the receipt of interest payments is recognized as interest income on a cash basis. Cash basis income recognition is applied if a loan’s recorded investment is deemed fully collectible and the loan has performed for at least six months.
For TDRs, payments are applied based upon their contractual terms unless the related loan is deemed non-performing. TDRs are generally included in nonperforming and nonaccrual loans. However, after a reasonable period of time in which the loan performs under restructured terms and meets other performance indicators, it is returned to

performing/accruing status. This return to performing/accruing status demonstrates that the bank expects to collect all of the loan's remaining contractual principal and interest. TDRs resulting from 1) borrowers that have been discharged from personal liability through Chapter 7 bankruptcy and have not formally reaffirmed their loan obligations to us and 2) borrowers that are not currently obligated to make both principal and interest payments under the restructured terms are not returned to accrual status.

Other nonaccrual loans are generally not returned to accrual status until the borrower has performed in accordance with the contractual terms and other performance indicators for at least six months, the period of time which was determined to demonstrate the expected collection of the loan's remaining contractual principal and interest. When a nonperforming loan is returned to accrual status, it is then considered a performing loan.

See Note 3 Asset Quality and Note 4 Allowance for Loan and Lease Losses in this Report for additional TDR information.

Foreclosed assets consist of any asset seized or property acquired through a foreclosure proceeding or acceptance of a deed-in-lieu of foreclosure. Other real estate owned comprises principally commercial and residential real estate properties obtained in partial or total satisfaction of loan obligations. After obtaining a foreclosure judgment, or in some jurisdictions the initiation of proceedings under a power of sale in the loan instruments, the property will be sold. When we are awarded title or completion of deed-in-lieu of foreclosure, we transfer the loan to foreclosed assets included in Other assets on our Consolidated Balance Sheet. Property obtained in satisfaction of a loan is initially recorded at estimated fair value less cost to sell. Based upon the estimated fair value less cost to sell, the recorded investment of the loan is adjusted and, typically, a charge-off/recovery is recognized to the ALLL. We estimate fair values primarily based on appraisals, or sales agreements with third parties. Subsequently, foreclosed assets are valued at the lower of the amount recorded at acquisition date or estimated fair value less cost to sell. Valuation adjustments on these assets and gains or losses realized from disposition of such property are reflected in Other noninterest expense.

For certain mortgage loans that have a government guarantee, we establish a separate other receivable upon foreclosure. The receivable is measured based on the loan balance (inclusive of principal and interest) that is expected to be recovered from the guarantor.

Allowance for Loan and Lease Losses

We maintain the ALLL at a level that we believe to be appropriate to absorb estimated probable credit losses incurred in the loan and lease portfolios as of the balance sheet date. Our determination of the allowance is based on periodic evaluations of these loan and lease portfolios and other relevant factors. This critical estimate includes significant use of our own historical data and complex methods to interpret this data. These evaluations are inherently subjective, as they require material estimates and may be susceptible to significant change, and include, among others:

- Probability of default (PD);
- Loss given default (LGD);
- Exposure at default (EAD);
- Movement through delinquency stages;
- Amounts and timing of expected future cash flows;
- Value of collateral; and
- Qualitative factors, such as changes in current economic conditions, that may not be reflected in modeled results.

For all loans, except purchased impaired loans, the ALLL is the sum of three components: (i) asset specific/individual impaired reserves, (ii) quantitative (formulaic or pooled) reserves and (iii) qualitative (judgmental) reserves.

The reserve calculation and determination process is dependent on the use of key assumptions. Key reserve assumptions and estimation processes react to and are influenced by observed changes in loan portfolio performance experience, the financial strength of the borrower, and economic conditions. Key reserve assumptions are periodically updated.

See Note 4 Allowance for Loan and Lease Losses for additional detail on our ALLL.

Asset Specific/Individual Component

Nonperforming loans that are considered impaired under ASC 310 – Receivables, which include all commercial and consumer TDRs, are evaluated for a specific reserve. Specific reserve allocations are determined as follows:

- For commercial nonperforming loans and commercial TDRs greater than or equal to a defined dollar threshold, specific reserves are based on an analysis of the present value of the loan's expected future cash flows, the loan's observable market price or the fair value of the collateral.
- For commercial nonperforming loans and commercial TDRs below the defined dollar threshold, the individual loan's LGD percentage is multiplied by the loan balance and the results are aggregated for purposes of measuring specific reserve impairment.
- Consumer nonperforming loans are collectively reserved for unless classified as consumer TDRs. For consumer TDRs, specific reserves are determined through an analysis of the present value of the loan's expected future cash flows, except for those instances where loans have been deemed collateral dependent, including loans where borrowers have been discharged from personal liability through Chapter 7 bankruptcy and have not formally

reaffirmed their loan obligations to us. Once that determination has been made, those TDRs are charged down to the fair value of the collateral less costs to sell at each period end.

Commercial Lending Quantitative Component

The estimates of the quantitative component of ALLL for incurred losses within the commercial lending portfolio segment are determined through statistical loss modeling utilizing PD, LGD and outstanding balance of the loan. Based upon borrower and transaction characteristics, we assign PDs and LGDs. Each of these statistical parameters is determined based on internal historical data, supplemented with third party data and management judgment, as deemed necessary. PD is influenced by such factors as

liquidity, industry, obligor financial structure, access to capital and cash flow. LGD is influenced by collateral type, original and/or updated loan-to-value ratio (LTV), facility structure and other factors.

Consumer Lending Quantitative Component

Quantitative estimates within the consumer lending portfolio segment are calculated primarily using transition matrices, including using a roll-rate model. The roll-rate model uses statistical relationships, calculated from historical data that estimate the movement of loan outstandings through the various stages of delinquency and ultimately charge-off over our loss emergence period.

Qualitative Component

While our reserve methodologies strive to reflect all relevant risk factors, there continues to be uncertainty associated with, but not limited to, potential imprecision in the estimation process due to the inherent time lag of obtaining information and normal variations between estimates and actual outcomes. We provide additional reserves that are designed to provide coverage for losses attributable to such risks. The ALLL also includes factors that may not be directly measured in the determination of specific or pooled reserves. Such qualitative factors may include:

- Industry concentrations and conditions;
- Changes in market conditions;
- Recent credit quality trends;
- Recent loss experience in particular portfolios, including specific and unique events;
- Recent macro-economic factors;
- Model imprecision;
- Changes in lending policies and procedures;
- Timing of available information, including the performance of first lien positions; and
- Limitations of available historical data.

Allowance for Purchased Non-Impaired Loans

ALLL for purchased non-impaired loans is determined based upon a comparison between the methodologies described above and the remaining acquisition date fair value discount that has yet to be accreted into interest income. After making the comparison, an ALLL is recorded for the amount greater than the discount, or no ALLL is recorded if the discount is greater.

Allowance for Purchased Impaired Loans

ALLL for purchased impaired loans is determined in accordance with ASC 310-30 by comparing the net present value of management’s best estimate of cash flows expected to be collected over the life of the loan (or pool of loans) to the recorded investment for a given loan (or pool of loans). In cases where the net present value of expected cash flows is lower than the recorded investment, ALLL is established.

Allowance for Unfunded Loan Commitments and Letters of Credit

We maintain the allowance for unfunded loan commitments and letters of credit at a level we believe is appropriate to absorb estimated probable credit losses incurred on these unfunded credit facilities as of the balance sheet date. We determine the allowance based on periodic evaluations of the unfunded credit facilities, including an assessment of the probability of commitment usage, credit risk factors, and, solely for commercial lending, the terms and expiration dates of the unfunded credit facilities. Other than the estimation of the probability of funding, the reserve for unfunded loan commitments is estimated in a manner similar to the methodology used for determining reserves for funded exposures. The allowance for unfunded loan commitments and letters of credit is recorded as a liability on the Consolidated Balance Sheet. Net adjustments to the allowance for unfunded loan commitments and letters of credit are included in the provision for credit losses.

Mortgage Servicing Rights

We provide servicing under various loan servicing contracts for commercial and residential loans. These contracts are either purchased in the open market or retained as part of a loan securitization or loan sale. All acquired or originated servicing rights are measured at fair value. Fair value is based on the present value of the expected future net cash flows, including assumptions as to:

- Deposit balances and interest rates for escrow and commercial reserve earnings;
- Discount rates;
- Estimated prepayment speeds; and

- Estimated servicing costs.

We measure commercial and residential MSRs at fair value in order to reduce any potential measurement mismatch between our economic hedges and the MSRs. We manage the risk by hedging the fair value of the MSR with derivatives and securities which are expected to increase in value when the value of the servicing right declines. Changes in the fair value of MSRs are recognized as gains/(losses). The fair value of these servicing rights is estimated by using a discounted cash flow valuation model which calculates the present value of estimated future net servicing cash flows, taking into consideration actual and expected mortgage loan prepayment rates, discount rates, servicing costs, and other factors which are determined based on current market conditions.

Fair Value of Financial Instruments

The fair value of financial instruments and the methods and assumptions used in estimating fair value amounts and financial assets and liabilities for which fair value was elected are detailed in Note 6 Fair Value.

Goodwill

Goodwill arising from business acquisitions represents the value attributable to unidentifiable intangible elements in the business acquired. At least annually, in the fourth quarter, or more frequently if events occur or circumstances have changed significantly from the annual test date, management performs our goodwill impairment test at a reporting unit level.

If, after considering all relevant events and circumstances, PNC determines it is not more-likely-than-not that the fair value of a reporting unit is less than its carrying amount, then performing an impairment test is not necessary. If PNC elects to bypass the qualitative analysis, or concludes via qualitative analysis that it is more-likely-than-not that the fair value of a reporting unit is less than its carrying amount, a two-step goodwill impairment test is performed. In the first step, inputs are generated and used in calculating the fair value of the reporting unit, which is compared to its carrying amount. If the fair value is greater than the carrying amount, then the reporting unit's goodwill is deemed not to be impaired. If the fair value is less than the carrying amount, then the second step is performed. In the second step, the implied fair value of reporting unit goodwill, which is determined as if the reporting unit had been acquired in a business combination, would be compared to the carrying amount of that goodwill. If the carrying amount of goodwill exceeds the implied fair value of goodwill, the difference is recognized as an impairment loss.

Depreciation and Amortization

For financial reporting purposes, we depreciate premises and equipment, net of salvage value, principally using the straight-line method over their estimated useful lives.

We use estimated useful lives for furniture and equipment ranging from one to 10 years, and depreciate buildings over an estimated useful life of up to 40 years. We amortize leasehold improvements over their estimated useful lives of up to 15 years or the respective lease terms, whichever is shorter.

We purchase, as well as internally develop and customize, certain software to enhance or perform internal business functions. Software development costs incurred in the planning and post-development project stages are charged to Noninterest expense. Costs associated with designing software configuration and interfaces, installation, coding programs and testing systems are capitalized and amortized using the straight-line method over periods ranging from one to 10 years.

Other Comprehensive Income

Other comprehensive income, on an after-tax basis, primarily consists of unrealized gains or losses, excluding OTTI attributable to credit deterioration, on investment securities classified as available for sale, unrealized gains or losses on derivatives designated as cash flow hedges, and changes in pension and other postretirement benefit plan liability adjustments. Details of each component are included in Note 16 Other Comprehensive Income.

Treasury Stock

We record common stock purchased for treasury at cost. At the date of subsequent reissue, the treasury stock account is reduced by the cost of such stock on the first-in, first-out basis.

Derivative Instruments and Hedging Activities

We use a variety of financial derivatives as part of our overall asset and liability risk management process to help manage exposure to market (primarily interest rate) and credit risk inherent in our business activities. We also enter into derivatives with customers to facilitate their risk management activities. Financial derivatives involve, to varying degrees, market and credit risk. We manage these risks as part of our asset and liability management process and through credit policies and procedures.

We recognize all derivative instruments at fair value as either Other assets or Other liabilities on the Consolidated Balance Sheet and the related cash flows in the Operating Activities section of the Consolidated Statement of Cash Flows. Adjustments for counterparty credit risk are included in the determination of fair value. The accounting for changes in the fair value of a derivative instrument depends on whether it has been designated and qualifies as part of a cash flow or net investment hedging relationship. For all other derivatives, changes in fair value are recognized in earnings.

We utilize a net presentation for derivative instruments on the Consolidated Balance Sheet taking into consideration the effects of legally enforceable master netting agreements. Cash collateral exchanged with counterparties is also netted against the applicable

derivative exposures by offsetting obligations to return, or general rights to reclaim, cash collateral against the fair values of the net derivatives being collateralized.

For those derivative instruments that are designated and qualify as accounting hedges, we designate the hedging instrument, based on the exposure being hedged, as a fair value hedge, a cash flow hedge or a hedge of the net investment in a foreign operation.

We formally document the relationship between the hedging instruments and hedged items, as well as the risk management objective and strategy, before undertaking an accounting hedge. To qualify for hedge accounting, the derivatives and related hedged items must be designated as a hedge at inception of the hedge relationship. In addition, a derivative must be highly effective at reducing the risk associated with the exposure being hedged. For accounting hedge relationships, we formally assess, both at the inception of the hedge and on an ongoing basis, if the derivatives are highly effective in offsetting designated changes in the fair value or cash flows of the hedged item. If it is determined that the derivative instrument is not highly effective, hedge accounting is discontinued. We assess effectiveness using statistical regression analysis. Where the critical terms of the derivative and hedged item match, effectiveness may be assessed qualitatively.

For derivatives that are designated as fair value hedges (i.e., hedging the exposure to changes in the fair value of an asset or a liability attributable to a particular risk, such as changes in LIBOR), changes in the fair value of the hedging instrument are recognized in earnings and offset by also recognizing in earnings the changes in the fair value of the hedged item attributable to the hedged risk. To the extent the change in fair value of the derivative does not offset the change in fair value of the hedged item, the difference is reflected in the Consolidated Income Statement in the same income statement line as the hedged item.

For derivatives designated as cash flow hedges (i.e., hedging the exposure to variability in expected future cash flows), the gain or loss on derivatives is reported as a component of AOCI and subsequently reclassified to income in the same period or periods during which the hedged cash flows affect earnings and recorded in the same income statement line item as the hedged cash flows. For derivatives designated as a hedge of net investment in a foreign operation, the gain or loss on the derivatives is reported as a component of AOCI.

We discontinue hedge accounting when it is determined that the derivative no longer qualifies as an effective hedge; the derivative expires or is sold, terminated or exercised; or the derivative is de-designated as a fair value or cash flow hedge or, for a cash flow hedge, it is no longer probable that the forecasted transaction will occur by the end of the originally specified time period.

We purchase or originate financial instruments that contain an embedded derivative. For financial instruments not measured at fair value with changes in fair value reported in earnings, we assess, at inception of the transaction, if the economic characteristics of the embedded derivative are clearly and closely related to the economic characteristics of the host contract, and whether a separate instrument with the same terms as the embedded derivative would be a derivative. If the embedded derivative is not clearly and closely related to the host contract and meets the definition of a derivative, the embedded derivative is recorded separately from the host contract with changes in fair value recorded in earnings, unless we elect to account for the hybrid instrument at fair value.

We have elected, on an instrument-by-instrument basis, fair value measurement for certain financial instruments with embedded derivatives.

We enter into commitments to originate residential and commercial mortgage loans for sale. We also enter into commitments to purchase or sell commercial and residential real estate loans. These commitments are accounted for as free-standing derivatives which are recorded at fair value in Other assets or Other liabilities on the Consolidated Balance Sheet. Any gain or loss from the change in fair value after the inception of the commitment is recognized in Noninterest income.

Income Taxes

We account for income taxes under the asset and liability method. Deferred tax assets and liabilities are determined based on differences between the financial reporting and tax bases of assets and liabilities and are measured using the enacted tax rates and laws that we expect will apply at the time when we believe the differences will reverse. Changes in tax rates and tax law are accounted for in the period of enactment. Thus, at the enactment date, deferred taxes are remeasured and the change is recognized in Income Tax expense. The recognition of deferred tax assets requires an

assessment to determine the realization of such assets. Realization refers to the incremental benefit achieved through the reduction in future taxes payable or refunds receivable from the deferred tax assets, assuming that the underlying deductible differences and carryforwards are the last items to enter into the determination of future taxable income. We establish a valuation allowance for tax assets when it is more likely than not that they will not be realized, based upon all available positive and negative evidence.

We use the deferral method of accounting on investments that generate investment tax credits. Under this method, the investment tax credits are recognized as a reduction to the related asset.

Related Party Transactions - PNC Foundation

During 2017, we contributed $200 million of BlackRock common stock to the PNC Foundation.

Earnings Per Common Share

Basic earnings per common share is calculated using the two-class method to determine income attributable to common shareholders. Unvested share-based payment awards that contain nonforfeitable rights to dividends or dividend equivalents are considered participating securities under the two-class method. Distributed dividends and dividend equivalents related to participating securities and an allocation of undistributed net income to participating securities reduce the amount of income attributable to common shareholders. Income attributable to common shareholders is then divided by the weighted-average common shares outstanding for the period.

Diluted earnings per common share is calculated under the more dilutive of either the treasury method or the two-class method. For the diluted calculation, we increase the weighted-average number of shares of common stock outstanding by the assumed conversion of outstanding convertible preferred stock from the beginning of the year or date of issuance, if later, and the number of shares of common stock that would be issued assuming the exercise of stock options and warrants and the issuance of incentive shares using the treasury stock method.These adjustments to the weighted-average number of shares of common stock outstanding are made only when such adjustments will dilute earnings per common share. See Note 14 Earnings Per Share for additional information.

Recently Adopted Accounting Standards

Accounting Standards Update (ASU)	Description	Financial Statement Impact
Revenue Recognition - ASU 2014-09 ASU 2015-14 ASU 2016-08 ASU 2016-10 ASU 2016-12 ASU 2016-20 Issued May 2014	• Replaces nearly all existing revenue recognition guidance in U.S. GAAP. • Revenue recognized when an entity satisfies its performance obligation by transferring a promised good or service to a customer. • Additional qualitative and quantitative disclosures relating to the nature, amount, timing and uncertainty of revenue and cash flows arising from contracts with customers.	• Adopted January 1, 2018 under the modified retrospective approach. • Cumulative-effect adjustment was immaterial to our consolidated results of operations and financial position. • Most significant impact of adoption is expanded disclosures related to disaggregation of in-scope revenue, see Note 23 Fee-based Revenue from Contracts with Customers.
Financial Instruments - ASU 2016-01 ASU 2018-03 Issued January 2016	• Changes the accounting for certain equity investments, financial liabilities under the fair value option and presentation and disclosure requirements for financial instruments. • Equity investments not accounted for under the equity method of accounting are required to be measured at fair value with any changes in fair value recognized in net income. • For an equity investment which does not have a readily determinable fair value, an election can be made to measure the investment at cost, less any impairment, plus or minus changes in value resulting from observable price changes in identical or similar instruments of the issuer. • Simplifies the impairment assessment of equity investments for which fair value is not readily determinable. • Changes the presentation of certain fair value changes for financial liabilities measured at fair value and amends certain disclosure requirements relating to the fair value of financial instruments. In addition, separate presentation is required of financial assets and financial liabilities by	• Adopted January 1, 2018 under the modified retrospective approach, except for the amendment related to equity securities without readily determinable fair values, which is applied prospectively. • Cumulative-effect adjustment was immaterial to our consolidated results of operations and financial position. • For the standard's requirement for a separate presentation of financial assets and financial liabilities by measurement category, refer to the disclosures in this Note 1 and Note 6 Fair Value in this Report for further discussion of our measurement categories.

	measurement category and form of financial asset on the balance sheet or the notes to the financial statements.	
Statement of Cash Flows - ASU 2016-15 Issued August 2016	• Provides guidance on eight specific issues related to classification within the statement of cash flows with the objective of reducing existing diversity in practice. • The specific issues cover: • cash payments for debt prepayment or debt extinguishment costs; • cash outflows for settlement of zero-coupon debt instruments or other debt instruments with coupon interest rates that are insignificant; • contingent consideration payments that are not made soon after a business combination; • proceeds from the settlement of insurance claims; • proceeds from the settlement of corporate-owned life insurance policies, including bank-owned life insurance policies; • distributions received from equity method investees; • beneficial interests received in securitization transactions; and • when no specific GAAP guidance exists and the source of the cash flows are not separately identifiable, then the predominant source of cash flows should be used to determine the classification for the item.	• Adopted January 1, 2018 under the retrospective transition method. • Impact of adoption was immaterial to our consolidated statement of cash flows.

Compensation-Retirement Benefits - ASU 2017-07 Issued March 2017	• Requires the service cost component of net periodic pension cost and net periodic postretirement benefit cost (net benefit cost) to be included in the same income statement line as other employee compensation cost arising from services rendered during the period. • Other components of net benefit cost are required to be presented separately from the line item that includes the service cost component and outside a subtotal of income from operations, if one is presented. • Allows only the service cost component to be eligible for capitalization when applicable.	• Adopted January 1, 2018. • Presentation requirements in our Consolidated Income Statement have been applied retrospectively. • Impact of adoption was immaterial to our consolidated results of operations and financial position.
Derivatives and Hedging - ASU 2017-12 Issued August 2017	• Simplifies the application of hedge accounting by easing the requirements for effectiveness testing, hedge documentation and the application of the critical terms match method. • Provides new alternatives for applying hedge accounting to additional hedging strategies and measuring the hedged item in fair value hedges of interest rate risk.	• Adopted January 1, 2018 using the modified retrospective approach. • Amended presentation and disclosures are required prospectively. • One-time transition elections were available to modify existing hedge documentation. • Cumulative-effect adjustment was immaterial to our consolidated results of operations and financial position.
Comprehensive Income - ASU 2018-02 Issued February 2018	• Permits the reclassification to retained earnings of the income tax effects stranded within AOCI as a result of the enactment of the Tax Cuts and Jobs Act. • Requires qualitative disclosures of the accounting policy relating to releasing income tax effects from AOCI and if the reclassification election is made, the impacts of the change on the financial statements.	• Adopted January 1, 2018 and elected to reclassify the income tax effects from AOCI to Retained earnings at the beginning of the period of adoption. • The impact of adoption was immaterial to our consolidated financial position.

NOTE 2 LOAN SALE AND SERVICING ACTIVITIES AND VARIABLE INTEREST ENTITIES

Loan Sale and Servicing Activities

We have transferred residential and commercial mortgage loans in securitization or sales transactions in which we have continuing involvement. These transfers have occurred through Agency securitization, Non-agency securitization, and loan sale transactions. Agency securitizations consist of securitization transactions with FNMA, Federal Home Loan Mortgage Corporation (FHLMC) and Government National Mortgage Association (GNMA) (collectively, the Agencies). FNMA and FHLMC generally securitize our transferred loans into mortgage-backed securities for sale into the secondary market through SPEs that they sponsor. As an authorized GNMA issuer/servicer, we pool Federal Housing Administration (FHA) and Department of Veterans Affairs (VA) insured loans into mortgage-backed securities for sale into the secondary market. In Non-agency securitizations, we have transferred loans into securitization SPEs. In other instances, third-party investors have also purchased our loans in loan sale transactions and in certain instances have subsequently sold these loans into securitization SPEs. Securitization SPEs utilized in the Agency and Non-agency securitization transactions are VIEs.

Our continuing involvement in the FNMA, FHLMC, and GNMA securitizations, Non-agency securitizations, and loan sale transactions generally consists of servicing, repurchasing previously transferred loans under certain conditions

and loss share arrangements, and, in limited circumstances, holding of mortgage-backed securities issued by the securitization SPEs.

Depending on the transaction, we may act as the master, primary and/or special servicer to the securitization SPEs or third-party investors. Servicing responsibilities typically consist of collecting and remitting monthly borrower principal and interest payments, maintaining escrow deposits, performing loss mitigation and foreclosure activities, and, in certain instances, funding of servicing advances. Servicing advances, which are generally reimbursable, are made for principal and interest and collateral protection and are carried in Other assets at cost.

We earn servicing and other ancillary fees for our role as servicer and, depending on the contractual terms of the servicing arrangement, we can be terminated as servicer with or without cause. At the consummation date of each type of loan transfer where we retain the servicing, we recognize a servicing right at fair value. See Note 6 Fair Value and Note 7 Goodwill and Mortgage Servicing Rights for further discussion of our servicing rights.

Certain loans transferred to the Agencies contain removal of account provisions (ROAPs). Under these ROAPs, we hold an option to repurchase at par individual delinquent loans that meet certain criteria. In other limited cases, GNMA has granted us the right to repurchase current loans when we intend to modify the borrower's interest rate under established guidelines. When we have the unilateral ability to repurchase a loan, effective control over the loan has been regained and we recognize an asset (in either Loans or Loans held for sale) and a corresponding liability (in Other borrowed funds) on the balance sheet regardless of our intent to repurchase the loan.

The Agency and Non-agency mortgage-backed securities issued by the securitization SPEs that are purchased and held on our balance sheet are typically purchased in the secondary market. We do not retain any credit risk on our Agency mortgage-backed security positions as FNMA, FHLMC and the U.S. Government (for GNMA) guarantee losses of principal and interest.

We also have involvement with certain Agency and Non-agency commercial securitization SPEs where we have not transferred commercial mortgage loans. These SPEs were sponsored by independent third-parties and the loans held by these entities were purchased exclusively from other third-parties. Generally, our involvement with these SPEs is as servicer with servicing activities consistent with those described above.

We recognize a liability for our loss exposure associated with contractual obligations to repurchase previously transferred loans due to possible breaches of representations and warranties and also for loss sharing arrangements (recourse obligations) with the Agencies. Other than providing temporary liquidity under servicing advances and our loss exposure associated with our repurchase and recourse obligations, we have not provided nor are we required to provide any type of credit support, guarantees or commitments to the securitization SPEs or third-party investors in these transactions.

The following table provides cash flows associated with our loan sale and servicing activities:

Table 34: Cash Flows Associated with Loan Sale and Servicing Activities

In millions	Residential Mortgages	Commercial Mortgages (a)
Cash Flows - Year ended December 31, 2018		
Sales of loans (b)	$ 4,474	$ 4,140
Repurchases of previously transferred loans (c)	$ 393	$ 32
Servicing fees (d)	$ 362	$ 135
Servicing advances recovered/(funded), net	$ 45	$ (3)
Cash flows on mortgage-backed securities held (e)	$ 1,964	$ 109
Cash Flows - Year ended December 31, 2017		
Sales of loans (b)	$ 5,759	$ 5,276
Repurchases of previously transferred loans (c)	$ 464	
Servicing fees (d)	$ 374	$ 126
Servicing advances recovered/(funded), net	$ 101	$ 48
Cash flows on mortgage-backed securities held (e)	$ 1,527	$ 206

(a) Represents cash flow information associated with both commercial mortgage loan transfer and servicing activities.
(b) Gains/losses recognized on sales of loans were insignificant for the periods presented.
(c) Includes both residential and commercial mortgage government insured or guaranteed loans eligible for repurchase through the exercise of our ROAP option, as well as residential mortgage loans repurchased due to alleged breaches of origination covenants or representations and warranties made to purchasers.
(d) Includes contractually specified servicing fees, late charges and ancillary fees.
(e) Represents cash flows on securities where we transferred to, and/or service loans for, a securitization SPE and we hold securities issued by that SPE. The carrying values of such securities held were $13.3 billion in residential mortgage-backed securities and $.6 billion in commercial mortgage-backed securities at December 31, 2018 and $8.8 billion in residential mortgage-backed securities and $.6 billion in commercial mortgage-backed securities at December 31, 2017.

Table 35 presents information about the principal balances of transferred loans that we service and are not recorded on our Consolidated Balance Sheet. We would only experience a loss on these transferred loans if we were required to repurchase a loan due to a breach in representations and warranties or a loss sharing arrangement associated with our continuing involvement with these loans. The estimate of losses related to breaches in representations and warranties was insignificant at December 31, 2018.

Table 35: Principal Balance, Delinquent Loans and Net Charge-offs Related to Serviced Loans For Others

In millions	Residential Mortgages	Commercial Mortgages (a)
December 31, 2018		
Total principal balance	$ 54,028	$ 47,969
Delinquent loans (b)	$ 622	$ 234
December 31, 2017		
Total principal balance	$ 58,320	$ 49,116
Delinquent loans (b)	$ 899	$ 355
Year ended December 31, 2018		
Net charge-offs (c)	$ 47	$ 269
Year ended December 31, 2017		
Net charge-offs (c)	$ 78	$ 965

(a) Represents information at the securitization level in which we have sold loans and we are the servicer for the securitization.

(b) Serviced delinquent loans are 90 days or more past due or are in process of foreclosure.

(c) Net charge-offs for Residential mortgages represent credit losses less recoveries distributed and as reported to investors during the period. Net charge-offs for Commercial mortgages represent credit losses less recoveries distributed and as reported by the trustee for commercial mortgage backed securitizations. Realized losses for Agency securitizations are not reflected as we do not manage the underlying real estate upon foreclosure and, as such, do not have access to loss information.

Variable Interest Entities (VIEs)
We are involved with various entities in the normal course of business that are deemed to be VIEs. We assess VIEs for consolidation based upon the accounting policies described in Note 1 Accounting Policies. Our consolidated VIEs were insignificant at both December 31, 2018 and 2017. We have not provided additional financial support to these entities which we are not contractually required to provide.

The following table provides a summary of non-consolidated VIEs with which we have significant continuing involvement but are not the primary beneficiary. We have excluded certain transactions with non-consolidated VIEs from the balances presented in Table 36 where we have determined that our continuing involvement is not significant. We do not consider our continuing involvement to be significant when it relates to a VIE where we only invest in securities issued by the VIE and were not involved in the design of the VIE or where no transfers have occurred between us and the VIE. In addition, where we only have lending arrangements in the normal course of business with entities that could be VIEs, we have excluded these transactions with non-consolidated entities from the balances presented in Table 36. These loans are included as part of the asset quality disclosures that we make in Note 3 Asset Quality.

Table 36: Non-Consolidated VIEs

In millions	PNC Risk of Loss (a)	Carrying Value of Assets Owned by PNC		Carrying Value of Liabilities Owned by PNC	
December 31, 2018					
Mortgage-Backed Securitizations (b)	$ 14,266	$ 14,266	(c)		
Tax Credit Investments and Other	2,949	2,911	(d)	$ 806	(e)
Total	$ 17,215	$ 17,177		$ 806	
December 31, 2017					
Mortgage-Backed Securitizations (b)	$ 9,738	$ 9,738	(c)		
Tax Credit Investments and Other	3,069	3,001	(d)	$ 858	(e)
Total	$ 12,807	$ 12,739		$ 858	

(a) Represents loans, investments and other assets related to non-consolidated VIEs, net of collateral (if applicable).
(b) Amounts reflect involvement with securitization SPEs where we transferred to, and/or service loans for, an SPE and we hold securities issued by that SPE. Values disclosed in the PNC Risk of Loss column represent our maximum exposure to loss for those securities' holdings.
(c) Included in Investment securities, Mortgage servicing rights and Other assets on our Consolidated Balance Sheet.
(d) Included in Investment securities, Loans, Equity investments and Other assets on our Consolidated Balance Sheet.
(e) Included in Deposits and Other liabilities on our Consolidated Balance Sheet.

Mortgage-Backed Securitizations
In connection with each Agency and Non-agency residential and commercial mortgage-backed securitization discussed above, we evaluate each SPE utilized in these transactions for consolidation. In performing these assessments, we evaluate our level of continuing involvement in these transactions as the nature of our involvement ultimately determines whether or not we hold a variable interest and/or are the primary beneficiary of the SPE. Factors we consider in our consolidation assessment include the significance of (i) our role as servicer, (ii) our holdings of mortgage-backed securities issued by the securitization SPE and (iii) the rights of third-party variable interest holders.

The first step in our assessment is to determine whether we hold a variable interest in the securitization SPE. We hold variable interests in Agency and Non-agency securitization SPEs through our holding of residential and commercial mortgage-backed securities issued by the SPEs and/or our recourse obligations. Each SPE in which we hold a variable interest is evaluated to determine whether we are the primary beneficiary of the entity. For Agency securitization transactions, our contractual role as servicer does not give us the power to direct the activities that most significantly

affect the economic performance of the SPEs. Thus, we are not the primary beneficiary of these entities. For Non-agency securitization transactions, we would be the primary beneficiary to the extent our servicing activities give us the power to direct the activities that most significantly affect the economic performance of the SPE and we hold a more than insignificant variable interest in the entity.

Details about the Agency and Non-agency securitization SPEs where we hold a variable interest and are not the primary beneficiary are included in Table 36. Our maximum exposure to loss as a result of our involvement with these SPEs is the carrying value of the mortgage-backed securities, servicing assets, servicing advances and our liabilities associated with our recourse obligations. Creditors of the securitization SPEs have no recourse to our assets or general credit.

Tax Credit Investments and Other

For tax credit investments in which we do not have the right to make decisions that will most significantly impact the economic performance of the entity, we are not the primary beneficiary and thus do not consolidate the entity. These investments are disclosed in Table 36. The table also reflects our maximum exposure to loss exclusive of any potential tax credit recapture. Our maximum

exposure to loss is equal to our legally binding equity commitments adjusted for recorded impairment, partnership results or amortization for qualifying low income housing tax credit investments when applicable. For all legally binding unfunded equity commitments, we increase our recognized investment and recognize a liability. As of December 31, 2018, we had a liability for unfunded commitments of $.5 billion related to investments in qualified affordable housing projects which is reflected in Other liabilities on our Consolidated Balance Sheet.
Table 36 also includes our involvement in lease financing transactions with limited liability companies (LLCs) engaged in solar power generation that, to a large extent, provided returns in the form of tax credits. The outstanding financings and operating lease assets are reflected as Loans and Other assets, respectively, on our Consolidated Balance Sheet, whereas related liabilities are reported in Deposits and Other liabilities.
We make certain equity investments in various tax credit limited partnerships or LLCs. The purpose of these investments is to achieve a satisfactory return on capital and to assist us in achieving goals associated with the Community Reinvestment Act. During 2018 and 2017, we recognized $.2 billion of amortization, $.2 billion of tax credits and $.1 billion of other tax benefits associated with qualified investments in low income housing tax credits within Income taxes.

NOTE 3 ASSET QUALITY

We closely monitor economic conditions and loan performance trends to manage and evaluate our exposure to credit risk. Trends in delinquency rates may be a key indicator, among other considerations, of credit risk within the loan portfolios. The measurement of delinquency status is based on the contractual terms of each loan. Loans that are 30 days or more past due in terms of payment are considered delinquent.

Nonperforming assets include nonperforming loans and leases, OREO and foreclosed assets. Nonperforming loans are those loans accounted for at amortized cost whose credit quality has deteriorated to the extent that full collection of contractual principal and interest is not probable. Interest income is not recognized on these loans. Loans accounted for under the fair value option are reported as performing loans as these loans are accounted for at fair value. However, when nonaccrual criteria is met, interest income is not recognized on these loans. Additionally, certain government insured or guaranteed loans for which we expect to collect substantially all principal and interest are not reported as nonperforming loans and continue to accrue interest. Purchased impaired loans are excluded from nonperforming loans as we are currently accreting interest income over the expected life of the loans.

See Note 1 Accounting Policies for additional information on our loan related policies.

The following tables display the delinquency status of our loans and our nonperforming assets at December 31, 2018 and 2017, respectively.

Table 37: Analysis of Loan Portfolio (a)

	Accruing								
Dollars in millions	Current or Less Than 30 Days Past Due	30-59 Days Past Due	60-89 Days Past Due	90 Days Or More Past Due	Total Past Due (b)	Nonperforming Loans	Fair Value Option Nonaccrual Loans (c)	Purchased Impaired Loans	Total Loans (d)
December 31, 2018									
Commercial Lending									
Commercial	$116,300	$82	$54	$52	$188	$ 346			$116,834
Commercial real estate	28,056	6	3		9	75			28,140
Equipment lease financing	7,229	56	12		68	11			7,308
Total commercial lending	151,585	144	69	52	265	432			152,282
Consumer Lending									
Home equity	24,556	66	25		91	797		$679	26,123
Residential real estate	16,216	135	73	363	571 (b)	350	$ 182	1,338	18,657
Automobile	14,165	113	29	12	154	100			14,419
Credit card	6,222	46	29	53	128	7			6,357
Education	3,571	69	41	141	251 (b)				3,822
Other consumer	4,552	12	5	8	25	8			4,585
Total consumer lending	69,282	441	202	577	1,220	1,262	182	2,017	73,963
Total	$220,867	$585	$271	$629	$1,485	$ 1,694	$ 182	$2,017	$226,245
Percentage of total loans	97.62 %	.26 %	.12 %	.28 %	.66 %	.75 %	.08 %	.89 %	100.00 %
December 31, 2017									
Commercial Lending									
Commercial	$109,989	$45	$25	$39	$109	$ 429			$110,527
Commercial real estate	28,826	27	2		29	123			28,978
Equipment lease financing	7,914	17	1		18	2			7,934
Total commercial lending	146,729	89	28	39	156	554			147,439

Consumer Lending										
Home equity	26,561	78	26		104		818		$881	28,364
Residential real estate	14,389	151	74	486	711	(b)	400	$ 197	1,515	17,212
Automobile	12,697	79	20	8	107		76			12,880
Credit card	5,579	43	26	45	114		6			5,699
Education	4,154	90	58	152	300	(b)				4,454
Other consumer	4,371	15	6	7	28		11			4,410
Total consumer lending	67,751	456	210	698	1,364		1,311	197	2,396	73,019
Total	$214,480	$545	$238	$737	$1,520		$ 1,865	$ 197	$2,396	$220,458
Percentage of total loans	97.29 %	.25 %	.11 %	.33 %	.69 %		.85 %	.09 %	1.08 %	100.00 %

(a) Amounts in table represent recorded investment and exclude loans held for sale. Recorded investment does not include any associated valuation allowance.

(b) Past due loan amounts exclude purchased impaired loans, even if contractually past due (or if we do not expect to receive payment in full based on the original contractual terms), as we are currently accreting interest income over the expected life of the loans. Past due loan amounts include government insured or guaranteed Residential real estate mortgages totaling $.5 billion and $.6 billion at December 31, 2018 and 2017, respectively, and Education loans totaling $.2 billion and $.3 billion at December 31, 2018 and 2017, respectively.

(c) Consumer loans accounted for under the fair value option for which we do not expect to collect substantially all principal and interest are subject to nonaccrual accounting and classification upon meeting any of our nonaccrual policies. Given that these loans are not accounted for at amortized cost, these loans have been excluded from the nonperforming loan population.

(d) Net of unearned income, net deferred loan fees, unamortized discounts and premiums, and purchase discounts and premiums totaling $1.2 billion at both December 31, 2018 and 2017.

In the normal course of business, we originate or purchase loan products with contractual characteristics that, when concentrated, may increase our exposure as a holder of those loan products. Possible product features that may create a concentration of credit risk would include a high original or updated loan-to-value (LTV) ratio, terms that may expose the borrower to future increases in repayments above increases in market interest rates, and interest-only loans, among others.

We originate interest-only loans to commercial borrowers. Such credit arrangements are usually designed to match borrower cash flow expectations (e.g., working capital lines, revolvers). These products are standard in the financial services industry and product features

are considered during the underwriting process to mitigate the increased risk that the interest-only feature may result in borrowers not being able to make interest and principal payments when due. We do not believe that these product features create a concentration of credit risk.
At December 31, 2018, we pledged $17.3 billion of commercial loans to the Federal Reserve Bank (FRB) and $63.2 billion of residential real estate and other loans to the Federal Home Loan Bank (FHLB) as collateral for the ability to borrow, if necessary. The comparable amounts at December 31, 2017 were $18.7 billion and $62.8 billion, respectively. Amounts pledged reflect the unpaid principal balances.
Table 38: Nonperforming Assets

Dollars in millions	December 31 2018	December 31 2017
Nonperforming loans		
Total commercial lending	$ 432	$ 554
Total consumer lending (a)	1,262	1,311
Total nonperforming loans	1,694	1,865
OREO and foreclosed assets	114	170
Total nonperforming assets	$ 1,808	$ 2,035
Nonperforming loans to total loans	.75 %	.85 %
Nonperforming assets to total loans, OREO and foreclosed assets	.80 %	.92 %
Nonperforming assets to total assets	.47 %	.53 %
Interest on nonperforming loans (b)		
Computed on original terms	$ 123	$ 114
Recognized prior to nonperforming status	$ 17	$ 19

(a) Excludes most consumer loans and lines of credit not secured by residential real estate, which are charged off after 120 to 180 days past due and are not placed on nonperforming status.
(b) Amounts are for the year ended.

Nonperforming loans also include certain loans whose terms have been restructured in a manner that grants a concession to a borrower experiencing financial difficulties. In accordance with applicable accounting guidance, these loans are considered TDRs. See Note 1 Accounting Policies and the TDR section of this Note 3.

Total nonperforming loans in Table 38 include TDRs of $.9 billion at December 31, 2018 and $1.0 billion at December 31, 2017. TDRs that are performing, including consumer credit card TDR loans, totaled $1.0 billion and $1.1 billion at December 31, 2018 and 2017, respectively, and are excluded from nonperforming loans. Nonperforming TDRs are returned to accrual status and classified as performing after demonstrating a period of at least six months of consecutive performance under the restructured terms. Loans where borrowers have been discharged from personal liability through Chapter 7 bankruptcy and have not formally reaffirmed their loan obligations to us and loans to borrowers not currently obligated to make both principal and interest payments under the restructured terms are not returned to accrual status. See the TDRs section of this Note 3 for more information on TDRs.

Additional Asset Quality Indicators

We have two portfolio segments – Commercial Lending and Consumer Lending. Each of these two segments comprises multiple loan classes. Classes are characterized by similarities in initial measurement, risk attributes and the manner in which we monitor and assess credit risk. The Commercial Lending segment is composed of the commercial, commercial real estate and equipment lease financing loan classes. The Consumer Lending segment is composed of the home equity, residential real estate, automobile, credit card, education and other consumer loan classes.

Commercial Lending Asset Classes

Commercial Loan Class

For commercial loans, we monitor the performance of the borrower in a disciplined and regular manner based upon the level of credit risk inherent in the loan. To evaluate the level of credit risk, we assign internal risk ratings reflecting our estimates of the borrower's PD and LGD for each related credit facility. This two-dimensional credit risk rating methodology provides granularity in the risk monitoring process on an ongoing basis. These ratings are reviewed and updated, generally at least once per year. Additionally, no less frequently than on an annual basis, we review PD rates related to each rating grade based upon internal historical data. These rates are updated as needed and augmented by market data as deemed necessary. For small balance homogeneous pools of commercial loans, mortgages and leases, we apply statistical modeling to assist in determining the PD within these pools. Further, on a periodic basis, we

update our LGD estimation methodology based upon historical data. The combination of the PD and LGD ratings assigned to commercial loans, capturing both the combination of expectations of default and loss severity in event of default, reflects the relative estimated likelihood of loss at the reporting date. In general, loans with better PD and LGD tend to have a lower likelihood of loss compared to loans with worse PD and LGD. The loss amount also considers an estimate of EAD, which we also periodically update based upon historical data.

Based upon the amount of the lending arrangement and our risk rating assessment, we follow a formal schedule of written periodic review. Quarterly, we conduct formal reviews of a market's or business unit's loan portfolio, focusing on those loans which we perceive to be of higher risk, based upon PDs and LGDs, or loans for which credit quality is weakening. If circumstances warrant, it is our practice to review any customer obligation and its level of credit risk more frequently. We attempt to proactively manage our loans by using various procedures that are customized to the risk of a given loan, including ongoing outreach, contact, and assessment of obligor financial conditions, collateral inspection and appraisal.

Commercial Real Estate Loan Class

We manage credit risk associated with our commercial real estate loan class similar to commercial loans by analyzing PD and LGD. Additionally, risks associated with commercial real estate activities tend to be correlated to the loan structure and collateral location, project progress and business environment. As a result, these attributes are also monitored and utilized in assessing credit risk.

As with the commercial class, a formal schedule of periodic review is also performed to assess market/geographic risk and business unit/industry risk. Often as a result of these overviews, increased scrutiny can be placed on areas of higher risk, including adverse changes in risk ratings, deteriorating operating trends, and/or areas that concern management. These reviews are designed to assess risk and take actions to mitigate our exposure to such risks.

Equipment Lease Financing Loan Class

We manage credit risk associated with our equipment lease financing loan class similar to commercial loans by analyzing PD and LGD.

Based upon the dollar amount of the lease and the level of credit risk, we follow a formal schedule of periodic review. Generally, this occurs quarterly, although we have established practices to review such credit risk more frequently if circumstances warrant. Our review process entails analysis of the following factors: equipment value/residual value, exposure levels, jurisdiction risk, industry risk and guarantor requirements as applicable.

Table 39: Commercial Lending Asset Quality Indicators (a)

In millions	Pass Rated	Criticized	Total Loans
December 31, 2018			
Commercial	$111,276	$ 5,558	$116,834
Commercial real estate	27,682	458	28,140
Equipment lease financing	7,180	128	7,308
Total commercial lending	$146,138	$ 6,144	$152,282
December 31, 2017			
Commercial	$105,280	$ 5,247	$110,527
Commercial real estate	28,380	598	28,978
Equipment lease financing	7,754	180	7,934
Total commercial lending	$141,414	$ 6,025	$147,439

(a) Loans are classified as "Pass" and "Criticized" based on the Regulatory Classification definitions. The "Criticized" classification includes loans that were rated "Special Mention", "Substandard" or "Doubtful" as of December 31, 2018 and 2017. We use PD and LGD to rate loans in the commercial lending portfolio.

Consumer Lending Asset Classes

Home Equity and Residential Real Estate Loan Classes

We use several credit quality indicators, including delinquency information, nonperforming loan information, updated credit scores, and originated and updated LTV ratios to monitor and manage credit risk within the home equity and residential real estate loan classes. A summary of asset quality indicators follows:

Delinquency/Delinquency Rates: We monitor trending of delinquency/delinquency rates for home equity and residential real estate loans. See Table 37 for additional information.

Nonperforming Loans: We monitor trending of nonperforming loans for home equity and residential real estate loans. See Table 37 for additional information.

Credit Scores: We use a national third-party provider to update FICO credit scores for home equity loans and lines of credit and residential real estate loans at least quarterly. The updated scores are incorporated into a series of credit management reports, which are utilized to monitor the risk in the loan classes.

LTV (inclusive of combined loan-to-value (CLTV) for first and subordinate lien positions): At least annually, we update the property values of real estate collateral and calculate an updated LTV ratio. For open-end credit lines secured by real estate in regions experiencing significant declines in property values, more frequent valuations may occur. We examine LTV migration and stratify LTV into categories to monitor the risk in the loan classes.

We use a combination of original LTV and updated LTV for internal risk management and reporting purposes (e.g., line management, loss mitigation strategies). In addition to the fact that estimated property values by their nature are estimates, given certain data limitations it is important to note that updated LTVs may be based upon management's assumptions (e.g., if an updated LTV is not provided by the third-party service provider, home price index (HPI) changes will be incorporated in arriving at management's estimate of updated LTV).

Updated LTV is estimated using modeled property values. The related estimates and inputs are based upon an approach that uses a combination of third-party automated valuation models (AVMs), broker price opinions (BPOs), HPI indices, property location, internal and external balance information, origination data and management assumptions. We generally utilize origination lien balances provided by a third-party, where applicable, which do not include an amortization assumption when calculating updated LTV. Accordingly, the results of the calculations do not represent actual appraised loan level collateral or updated LTV based upon lien balances held by others, and as such, are necessarily imprecise and subject to change as we refine our methodology.
The following table presents certain asset quality indicators for the home equity and residential real estate loan classes.

Table 40: Asset Quality Indicators for Home Equity and Residential Real Estate Loans

	December 31, 2018		December 31, 2017	
In millions	Home equity	Residential real estate	Home equity	Residential real estate
Current estimated LTV ratios				
Greater than or equal to 125%	$461	$ 116	$583	$ 150
Greater than or equal to 100% to less than 125%	1,020	255	1,342	303
Greater than or equal to 90% to less than 100%	1,174	335	1,421	382
Less than 90%	22,644	15,922	24,105	14,033
No LTV ratio available	145	6	32	23
Government insured or guaranteed loans		685		806
Purchased impaired loans	679	1,338	881	1,515
Total loans	$26,123	$ 18,657	$28,364	$ 17,212
Updated FICO Scores				
Greater than 660	$22,996	$ 15,956	$24,876	$ 14,148
Less than or equal to 660	2,210	585	2,451	630
No FICO score available	238	93	156	113
Government insured or guaranteed loans		685		806
Purchased impaired loans	679	1,338	881	1,515
Total loans	$26,123	$ 18,657	$28,364	$ 17,212

Automobile, Credit Card, Education and Other Consumer Loan Classes

We monitor a variety of asset quality information in the management of these consumer loan classes. For all loan types, we generally use a combination of internal loan parameters as well as an updated FICO score. We use FICO scores as a primary asset quality indicator for automobile and credit card loans, as well as non-government guaranteed or non-insured education loans and other secured and unsecured lines and loans. Internal credit metrics, such as delinquency status, are relied upon heavily as asset quality indicators for government guaranteed or insured education

loans and consumer loans to high net worth individuals, as internal credit metrics tend to be more relevant than FICO scores for these types of loans.

Along with the monitoring of delinquency trends and losses for each class, FICO credit score updates are obtained at least quarterly along with a variety of credit bureau attributes. Loans with high FICO scores tend to have a lower likelihood of loss. Conversely, loans with low FICO scores tend to have a higher likelihood of loss.

The following table presents asset quality indicators for the automobile, credit card, education and other consumer loan classes.

Table 41: Asset Quality Indicators for Automobile, Credit Card, Education and Other Consumer Loans

Dollars in millions	Automobile	Credit Card	Education	Other Consumer
December 31, 2018				
FICO score greater than 719	$ 7,740	$3,809	$ 1,240	$ 1,280
650 to 719	4,365	1,759	194	641
620 to 649	1,007	280	26	106
Less than 620	1,027	332	24	105
No FICO score available or required (a)	280	177	57	25
Total loans using FICO credit metric	14,419	6,357	1,541	2,157
Consumer loans using other internal credit metrics			2,281	2,428
Total loans	$ 14,419	$6,357	$ 3,822	$ 4,585
Weighted-average updated FICO score (b)	726	733	774	732
December 31, 2017				
FICO score greater than 719	$ 7,825	$3,457	$ 1,315	$ 1,226
650 to 719	3,636	1,596	209	507
620 to 649	543	250	31	85
Less than 620	587	272	30	98
No FICO score available or required (a)	242	124	49	23
Total loans using FICO credit metric	12,833	5,699	1,634	1,939
Consumer loans using other internal credit metrics	47		2,820	2,471
Total loans	$ 12,880	$5,699	$ 4,454	$ 4,410
Weighted-average updated FICO score (b)	738	735	773	737

(a) Loans with no FICO score available or required generally refers to new accounts issued to borrowers with limited credit history, accounts for which we cannot obtain an updated FICO score (e.g., recent profile changes), cards issued with a business name and/or cards secured by collateral. Management proactively assesses the risk and size of this loan category and, when necessary, takes actions to mitigate the credit risk.

(b) Weighted-average updated FICO score excludes accounts with no FICO score available or required.

Troubled Debt Restructurings (TDRs)

A TDR is a loan whose terms have been restructured in a manner that grants a concession to a borrower experiencing financial difficulty. TDRs result from our loss mitigation activities, and include rate reductions, principal forgiveness, postponement/reduction of scheduled amortization, and extensions, which are intended to minimize economic loss and to avoid foreclosure or repossession of collateral. Additionally, TDRs also result from borrowers that have been discharged from personal liability through Chapter 7 bankruptcy and have not formally reaffirmed their loan obligations to us. In those situations where principal is forgiven, the amount of such principal forgiveness is immediately charged off.

Some TDRs may not ultimately result in the full collection of principal and interest, as restructured, and result in potential incremental losses. These potential incremental losses have been factored into our overall ALLL estimate. The level of any subsequent defaults will likely be affected by future economic conditions. Once a loan becomes a TDR, it will continue to be reported as a TDR until it is ultimately repaid in full, the collateral is foreclosed upon, or it is fully charged off. We held specific reserves in the ALLL of $.2 billion at both December 31, 2018 and 2017, for the total TDR portfolio.

Table 42 quantifies the number of loans that were classified as TDRs as well as the change in the loans’ recorded investment as a result of becoming a TDR during 2018, 2017 and 2016. Additionally, the table provides information about the types of TDR concessions. The Principal Forgiveness TDR category includes principal forgiveness and accrued interest forgiveness. The Rate Reduction TDR category includes reduced interest rate and interest deferral. The Other TDR category primarily includes consumer borrowers that have been discharged from personal liability

through Chapter 7 bankruptcy and have not formally reaffirmed their loan obligations to us, as well as postponement/reduction of scheduled amortization and contractual extensions for both consumer and commercial borrowers.

In some cases, there have been multiple concessions granted on one loan. This is most common within the commercial loan portfolio. When there have been multiple concessions granted in the commercial loan portfolio, the principal forgiveness concession was prioritized for purposes of determining the inclusion in Table 42. Second in priority would be rate reduction. In the event that multiple concessions are granted on a consumer loan, concessions resulting from discharge from personal liability through Chapter 7 bankruptcy without formal affirmation of the loan obligations to us would be prioritized and included in the Other type of concession in Table 42. After that, consumer loan concessions would follow the previously discussed priority of concessions for the commercial loan portfolio.

Table 42: Financial Impact and TDRs by Concession Type (a)

			Post-TDR Recorded Investment (c)			
During the year ended December 31, 2018 Dollars in millions	Number of Loans	Pre-TDR Recorded Investment (b)	Principal Forgiveness	Rate Reduction	Other	Total
Total commercial lending	85	$ 272	$2	$ 67	$179	$248
Total consumer lending	12,096	163	1	86	63	150
Total TDRs	12,181	$ 435	$3	$ 153	$242	$398
During the year ended December 31, 2017 Dollars in millions						
Total commercial lending	120	$ 293	$18	$ 7	$227	$252
Total consumer lending	11,993	248		146	97	243
Total TDRs	12,113	$ 541	$18	$ 153	$324	$495
During the year ended December 31, 2016 Dollars in millions						
Total commercial lending	143	$ 524		$ 57	$413	$470
Total consumer lending	11,262	245		157	76	233
Total TDRs	11,405	$ 769		$ 214	$489	$703

(a) Impact of partial charge-offs at TDR date are included in this table.

(b) Represents the recorded investment of the loans as of the quarter end prior to TDR designation, and excludes immaterial amounts of accrued interest receivable.

(c) Represents the recorded investment of the TDRs as of the end of the quarter in which the TDR occurs, and excludes immaterial amounts of accrued interest receivable.

After a loan is determined to be a TDR, we continue to track its performance under its most recent restructured terms. We consider a TDR to have subsequently defaulted when it becomes 60 days past due after the most recent date the loan was restructured. The recorded investment of loans that were both (i) classified as TDRs or were subsequently modified during each 12-month period preceding January 1, 2018, 2017 and 2016, and (ii) subsequently defaulted during the 12-month period following each of January 1, 2018, 2017 and 2016, totaled $.1 billion, $.1 billion and $.2 billion, respectively.

Impaired Loans

Impaired loans include commercial and consumer nonperforming loans and TDRs, regardless of nonperforming status. TDRs that were previously recorded at amortized cost and are now classified and accounted for as held for sale are also included. Excluded from impaired loans are nonperforming leases, loans accounted for as held for sale other than the TDRs described in the preceding sentence, loans accounted for under the fair value option, smaller balance homogeneous type loans and purchased impaired loans. We did not recognize any interest income on impaired loans that have not returned to performing status, while they were impaired during the year ended December 31, 2018 and December 31, 2017. Table 43 provides further detail on impaired loans individually evaluated for impairment and the associated allowance for loan and lease losses. Certain commercial and consumer impaired loans do not have a related ALLL as the valuation of these impaired loans exceeded the recorded investment.

Table 43: Impaired Loans

In millions	Unpaid Principal Balance	Recorded Investment	Associated Allowance	Average Recorded Investment (a)
December 31, 2018				
Impaired loans with an associated allowance				
Total commercial lending	$ 440	$ 315	$ 73	$ 349
Total consumer lending	863	817	136	904
Total impaired loans with an associated allowance	1,303	1,132	209	1,253

Impaired loans without an associated allowance				
Total commercial lending	413	326		294
Total consumer lending	1,042	625		645
Total impaired loans without an associated allowance	1,455	951		939
Total impaired loans	$ 2,758	$ 2,083	$ 209	$ 2,192
December 31, 2017				
Impaired loans with an associated allowance				
Total commercial lending	$ 580	$ 353	$ 76	$ 419
Total consumer lending	1,061	1,014	195	1,072
Total impaired loans with an associated allowance	1,641	1,367	271	1,491
Impaired loans without an associated allowance				
Total commercial lending	494	366		330
Total consumer lending	1,019	638		648
Total impaired loans without an associated allowance	1,513	1,004		978
Total impaired loans	$ 3,154	$ 2,371	$ 271	$ 2,469

(a) Average recorded investment is for the years ended December 31, 2018 and 2017.

NOTE 4 ALLOWANCE FOR LOAN AND LEASE LOSSES

We maintain the ALLL at levels that we believe to be appropriate to absorb estimated probable credit losses incurred in the portfolios as of the balance sheet date. We have two portfolio segments – Commercial Lending and Consumer Lending, and develop and document the ALLL under separate methodologies for each of these portfolio segments. See Note 1 Accounting Policies for a description of the accounting policies for the ALLL. A rollforward of the ALLL and associated loan data follows.

Table 44: Rollforward of Allowance for Loan and Lease Losses and Associated Loan Data

	2018			2017			2016		
At or for the year ended December 31 Dollars in millions	Commercial Lending	Consumer Lending	Total	Commercial Lending	Consumer Lending	Total	Commercial Lending	Consumer Lending	Total
Allowance for Loan and Lease Losses									
January 1	$1,582	$1,029	$2,611	$1,534	$1,055	$2,589	$1,605	$1,122	$2,727
Charge-offs	(124)	(640)	(764)	(221)	(565)	(786)	(363)	(523)	(886)
Recoveries	99	245	344	116	213	329	178	165	343
Net (charge-offs)	(25)	(395)	(420)	(105)	(352)	(457)	(185)	(358)	(543)
Provision for credit losses	97	311	408	147	294	441	153	280	433
Net decrease / (increase) in allowance for unfunded loan commitments and letters of credit	11	1	12	5	(1)	4	(39)	(1)	(40)
Other	(2)	20	18	1	33	34		12	12
December 31	$1,663	$966	$2,629	$1,582	$1,029	$2,611	$1,534	$1,055	$2,589
TDRs individually evaluated for impairment	$25	$136	$161	$35	$195	$230	$45	$226	$271
Other loans individually evaluated for impairment	48		48	41		41	60		60
Loans collectively evaluated for impairment	1,590	555	2,145	1,506	561	2,067	1,392	546	1,938
Purchased impaired loans		275	275		273	273	37	283	320
December 31	$1,663	$966	$2,629	$1,582	$1,029	$2,611	$1,534	$1,055	$2,589

Loan Portfolio									
TDRs individually evaluated for impairment	$409	$1,442	$1,851	$409	$1,652	$2,061	$428	$1,793	$2,221
Other loans individually evaluated for impairment	232		232	310		310	371		371
Loans collectively evaluated for impairment	151,641	69,722	221,363	146,720	68,102	214,822	137,047	67,345	204,392
Fair value option loans (a)		782	782		869	869		893	893
Purchased impaired loans		2,017	2,017		2,396	2,396	109	2,847	2,956
December 31	$152,282	$73,963	$226,245	$147,439	$73,019	$220,458	$137,955	$72,878	$210,833
Portfolio segment ALLL as a percentage of total ALLL	63 %	37 %	100 %	61 %	39 %	100 %	59 %	41 %	100 %
Ratio of ALLL to total loans	1.09 %	1.31 %	1.16 %	1.07 %	1.41 %	1.18 %	1.11 %	1.45 %	1.23 %

(a) Loans accounted for under the fair value option are not evaluated for impairment as these loans are accounted for at fair value. Accordingly there is no allowance recorded on these loans.

Net interest income less the provision for credit losses was $9.3 billion, $8.7 billion and $8.0 billion for 2018, 2017 and 2016, respectively.

NOTE 5 INVESTMENT SECURITIES

Table 45: Investment Securities Summary

In millions	December 31, 2018				December 31, 2017			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Securities Available for Sale								
Debt securities								
U.S. Treasury and government agencies	$18,104	$133	$(137)	$18,100	$14,432	$173	$(84)	$14,521
Residential mortgage-backed								
Agency	29,413	104	(524)	28,993	25,534	121	(249)	25,406
Non-agency	1,924	300	(13)	2,211	2,443	336	(21)	2,758
Commercial mortgage-backed								
Agency	2,630	13	(66)	2,577	1,960	2	(58)	1,904
Non-agency	2,689	5	(37)	2,657	2,603	19	(9)	2,613
Asset-backed	4,933	59	(20)	4,972	5,331	74	(8)	5,397
Other debt	3,821	96	(38)	3,879	4,322	129	(17)	4,434
Total debt securities	63,514	710	(835)	63,389	56,625	854	(446)	57,033
Other (a)					587		(2)	585
Total securities available for sale	$63,514	$710	$(835)	$63,389	$57,212	$854	$(448)	$57,618
Securities Held to Maturity								
Debt securities								
U.S. Treasury and government agencies	$758	$28	$(23)	$763	$741	$37	$(13)	$765
Residential mortgage-backed								
Agency	15,740	32	(358)	15,414	14,503	77	(139)	14,441
Non-agency	152	2		154	167	7		174
Commercial mortgage-backed								
Agency	143	1	(1)	143	407	4		411
Non-agency	488	1	(1)	488	538	10		548
Asset-backed	182	1		183	200	1		201
Other debt	1,849	53	(28)	1,874	1,957	88	(20)	2,025
Total securities held to maturity	$19,312	$118	$(411)	$19,019	$18,513	$224	$(172)	$18,565

(a) On January 1, 2018, $.6 billion of available for sale securities, primarily money market funds, were reclassified to equity investments in accordance with the adoption of ASU 2016-01. See the Recently Adopted Accounting Standards portion of Note 1 Accounting Policies for additional detail.

The fair value of investment securities is impacted by interest rates, credit spreads, market volatility and liquidity conditions. Net unrealized gains and losses in the securities available for sale portfolio are included in Shareholders' equity as AOCI unless credit-related. Securities held to maturity are carried at amortized cost. Investment securities at December 31, 2018 included $430 million of net unsettled purchases which represent non-cash investing activity, and accordingly, are not reflected on the Consolidated Statement of Cash Flows. The amount for December 31, 2017 was insignificant.

At December 31, 2018, AOCI included an insignificant amount of pretax gains from derivatives that hedged the purchase of investment securities classified as held to maturity. The gains will be accreted into interest income as an adjustment of yield on the securities.

Table 46 presents gross unrealized losses and fair value of debt securities at December 31, 2018 and 2017. The securities are segregated between investments that have been in a continuous unrealized loss position for less than twelve months and twelve months or more, based on the point in time that the fair value declined below the amortized cost basis. The table includes debt securities where the noncredit portion of OTTI has been recognized in AOCI.

Table 46: Gross Unrealized Loss and Fair Value of Debt Securities

In millions	Unrealized loss position less than 12 months		Unrealized loss position 12 months or more		Total	
	Unrealized Loss	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss	Fair Value
December 31, 2018						
Securities Available for Sale						
Debt securities						
U.S. Treasury and government agencies	$(21)	$4,125	$(116)	$5,423	$(137)	$9,548
Residential mortgage-backed						
Agency	(57)	4,823	(467)	13,830	(524)	18,653
Non-agency	(1)	74	(12)	310	(13)	384
Commercial mortgage-backed						
Agency	(1)	65	(65)	1,516	(66)	1,581
Non-agency	(23)	1,809	(14)	498	(37)	2,307
Asset-backed	(11)	2,149	(9)	1,032	(20)	3,181
Other debt	(12)	868	(26)	1,293	(38)	2,161
Total debt securities available for sale	$(126)	$13,913	$(709)	$23,902	$(835)	$37,815
Securities Held to Maturity						
Debt securities						
U.S. Treasury and government agencies			$(23)	$446	$(23)	$446
Residential mortgage-backed - Agency	$(58)	$4,191	(300)	7,921	(358)	12,112
Commerical mortgage-backed						
Agency	(1)	88			(1)	88
Non-agency	(1)	152			(1)	152
Other debt	(2)	75	(26)	123	(28)	198
Total debt securities held to maturity	$(62)	$4,506	$(349)	$8,490	$(411)	$12,996
December 31, 2017						
Securities Available for Sale						
Debt securities						
U.S. Treasury and government agencies	$(42)	$6,099	$(42)	$1,465	$(84)	$7,564
Residential mortgage-backed						
Agency	(47)	8,151	(202)	9,954	(249)	18,105
Non-agency			(21)	383	(21)	383
Commercial mortgage-backed						
Agency	(11)	524	(47)	1,302	(58)	1,826
Non-agency	(3)	400	(6)	333	(9)	733
Asset-backed	(4)	1,697	(4)	462	(8)	2,159
Other debt	(3)	966	(14)	798	(17)	1,764
Total debt securities available for sale	$(110)	$17,837	$(336)	$14,697	$(446)	$32,534
Securities Held to Maturity						
Debt securities						
U.S. Treasury and government agencies	$(3)	$195	$(10)	$255	$(13)	$450
Residential mortgage-backed - Agency	(10)	3,167	(129)	6,168	(139)	9,335
Other debt	(12)	83	(8)	67	(20)	150
Total debt securities held to maturity	$(25)	$3,445	$(147)	$6,490	$(172)	$9,935

Evaluating Investment Securities for Other-than-Temporary Impairments

For the securities in Table 46, as of December 31, 2018 we do not intend to sell and believe we will not be required to sell the securities prior to recovery of the amortized cost basis.
On at least a quarterly basis, we review all debt securities that are in an unrealized loss position for OTTI, as discussed in Note 1 Accounting Policies. For those securities on our balance sheet at December 31, 2018, where during our quarterly security-level impairment assessments we determined losses represented OTTI, we have recorded cumulative credit losses of $1.1 billion in earnings and accordingly have reduced the amortized cost of our securities. The majority of these cumulative impairment charges related to non-agency residential mortgage-backed and asset-backed securities rated BB or lower. During 2018, 2017 and 2016, the OTTI credit losses recognized in noninterest income and the OTTI noncredit losses recognized in AOCI on securities were not significant.

Information relating to gross realized securities gains and losses from the sales of securities is set forth in the following table.

Table 47: Gains (Losses) on Sales of Securities Available for Sale

Year ended December 31 In millions	Gross Gains	Gross Losses	Net Gains	Tax Expense
2018	$ 57	$ (57)		
2017	$ 38	$ (31)	$ 7	$ 2
2016	$ 24	$ (8)	$ 16	$ 6

The following table presents, by remaining contractual maturity, the amortized cost, fair value and weighted-average yield of debt securities at December 31, 2018.

Table 48: Contractual Maturity of Debt Securities

December 31, 2018 Dollars in millions	1 Year or Less	After 1 Year through 5 Years	After 5 Years through 10 Years	After 10 Years	Total
Securities Available for Sale					
U.S. Treasury and government agencies	$678	$ 13,285	$ 3,546	$595	$18,104
Residential mortgage-backed					
Agency	1	64	629	28,719	29,413
Non-agency				1,924	1,924
Commercial mortgage-backed					
Agency	4	596	306	1,724	2,630
Non-agency			425	2,264	2,689
Asset-backed	26	2,118	1,674	1,115	4,933
Other debt	572	1,616	713	920	3,821
Total debt securities available for sale	$1,281	$ 17,679	$ 7,293	$37,261	$63,514
Fair value	$1,277	$ 17,567	$ 7,343	$37,202	$63,389
Weighted-average yield, GAAP basis	2.33 %	2.27 %	3.03 %	3.19 %	2.90 %
Securities Held to Maturity					
U.S. Treasury and government agencies			$ 487	$271	$758
Residential mortgage-backed					
Agency		$ 74	529	15,137	15,740
Non-agency				152	152
Commercial mortgage-backed					
Agency	$46	42	4	51	143
Non-agency				488	488
Asset-backed		12	100	70	182
Other debt	24	573	790	462	1,849
Total debt securities held to maturity	$70	$ 701	$ 1,910	$16,631	$19,312
Fair value	$70	$ 713	$ 1,948	$16,288	$19,019
Weighted-average yield, GAAP basis	4.79 %	3.81 %	3.55 %	3.31 %	3.35 %

Weighted-average yields are based on historical cost with effective yields weighted for the contractual maturity of each security. At December 31, 2018, there were no securities of a single issuer, other than FNMA, that exceeded 10% of Total shareholders' equity. The FNMA investments had a total amortized cost of $37.4 billion and fair value of $36.8 billion.

The following table presents the fair value of securities that have been either pledged to or accepted from others to collateralize outstanding borrowings.

Table 49: Fair Value of Securities Pledged and Accepted as Collateral

In millions	December 31 2018	December 31 2017
Pledged to others	$ 7,597	$ 8,175

Accepted from others:		
Permitted by contract or custom to sell or repledge (a)	$ 6,905	$ 1,152
Permitted amount repledged to others	$ 923	$ 1,097

(a) Includes $6.0 billion in fair value of securities accepted from others to collateralize short-term investments in resale agreements at December 31, 2018 that were not repledged to others.

The securities pledged to others include positions held in our portfolio of investment securities, trading securities, and securities accepted as collateral from others that we are permitted by contract or custom to sell or repledge and were used to secure public and trust deposits and repurchase agreements, as well as for other purposes.

NOTE 6 FAIR VALUE
Fair Value Measurement
We measure certain financial assets and liabilities at fair value. Fair value is defined as the price that would be received to sell an asset or the price that would be paid to transfer a liability on the measurement date, and is determined using an exit price in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants. The fair value hierarchy established by GAAP requires us to maximize the use of observable inputs when measuring fair value. The three levels of the fair value hierarchy are:

- Level 1: Fair value is determined using a quoted price in an active market for identical assets or liabilities. Level 1 assets and liabilities may include debt securities, equity securities and listed derivative contracts that are traded in an active exchange market, and certain U.S. Treasury securities that are actively traded in over-the-counter markets.
- Level 2: Fair value is estimated using inputs other than quoted prices included within Level 1 that are observable for assets or liabilities, either directly or indirectly. The majority of Level 2 assets and liabilities include debt securities, equity securities and listed derivative contracts with quoted prices that are traded in markets that are not active, and certain debt and equity securities and over-the-counter derivative contracts whose fair value is determined using a pricing model without significant unobservable inputs.
- Level 3: Fair value is estimated using unobservable inputs that are significant to the fair value of the assets or liabilities. Level 3 assets and liabilities include financial instruments whose value is determined using pricing models and discounted cash flow methodologies, or similar techniques for which the significant valuation inputs are not observable and the determination of fair value requires significant management judgment or estimation.

We characterize active markets as those where transaction volumes are sufficient to provide objective pricing information, with reasonably narrow bid/ask spreads, and where dealer quotes received do not vary widely and are based on current information. Inactive markets are typically characterized by low transaction volumes, price quotations that vary substantially among market participants or are not based on current information, wide bid/ask spreads, a significant increase in implied liquidity risk premiums, yields, or performance indicators for observed transactions or quoted prices compared to historical periods, a significant decline or absence of a market for new issuance, or any combination of the above factors. We also consider nonperformance risks, including credit risk, as part of our valuation methodology for all assets and liabilities measured at fair value.
Assets and liabilities measured at fair value, by their nature, result in a higher degree of financial statement volatility. Assets and liabilities classified within Level 3 inherently require the use of various assumptions, estimates and judgments when measuring their fair value. As observable market activity is commonly not available to use when estimating the fair value of Level 3 assets and liabilities, we must estimate fair value using various modeling techniques. These techniques include the use of a variety of inputs/assumptions including credit quality, liquidity, interest rates or other relevant inputs across the entire population of our Level 3 assets and liabilities. Changes in the significant underlying factors or assumptions (either an increase or a decrease) in any of these areas underlying our estimates may result in a significant increase/decrease in the Level 3 fair value measurement of a particular asset and/or liability from period to period.
Any models used to determine fair values or to validate dealer quotes are subject to review and independent testing as part of our model validation and internal control testing processes. Our Model Risk Management Group reviews significant models on at least an annual basis. In addition, the Valuation Committee approves valuation methodologies and reviews the results of independent valuation reviews and processes for assets and liabilities measured at fair value on a recurring basis.

Assets and Liabilities Measured at Fair Value on a Recurring Basis
Residential Mortgage Loans Held for Sale
We account for certain residential mortgage loans originated for sale at fair value on a recurring basis. The election of the fair value option aligns the accounting for the residential mortgages with the related hedges. Residential mortgage loans are valued based on quoted market prices, where available, prices for other traded mortgage loans with similar characteristics, and purchase commitments and bid information received from market participants. The prices are adjusted as necessary to include the embedded servicing value in the loans and to take into consideration the specific characteristics of certain loans that are priced based on the pricing of similar loans. These adjustments represent

unobservable inputs to the valuation but are not considered significant given the relative insensitivity of the value to changes in these inputs to the fair value of the loans. Accordingly, the majority of residential mortgage loans held for sale are classified as Level 2.

Commercial Mortgage Loans Held for Sale

We account for certain commercial mortgage loans classified as held for sale in whole loan transactions at fair value. We determine the fair value of commercial mortgage loans held for sale based upon discounted cash flows. Fair value is determined using sale valuation assumptions that management believes a market participant would use in pricing the loans.

Valuation assumptions may include observable inputs based on the benchmark interest rate swap curve, whole loan sales and agency sales transactions. The significant unobservable input for commercial mortgage loans held for sale, excluding those to be sold to agencies, is management's assumption of the spread applied to the benchmark rate. The spread over the benchmark curve includes management's assumptions of the impact of credit and liquidity risk. Significant increases (decreases) in the spread applied to the benchmark would result in a significantly lower (higher) asset value. The wide range of the spread over the benchmark curve is due to the varying risk and underlying property characteristics within our portfolio. Based on the significance of the unobservable input we classified this portfolio as Level 3.

For loans to be sold to agencies with servicing retained, the fair value is adjusted for the estimated servicing cash flows, which is an unobservable input. This adjustment is not considered significant given the relative insensitivity of the value to changes in the input to the fair value of the loans. Accordingly, commercial mortgage loans held for sale to agencies are classified as Level 2.

Securities Available for Sale and Trading Securities

Securities accounted for at fair value include both the available for sale and trading portfolios. We primarily use prices obtained from pricing services, dealer quotes or recent trades to determine the fair value of securities. The majority of securities were priced by third-party vendors. The third-party vendors use a variety of methods when pricing securities that incorporate relevant market data to arrive at an estimate of what a buyer in the marketplace would pay for a security under current market conditions. We monitor and validate the reliability of vendor pricing on an ongoing basis through pricing methodology reviews, including detailed reviews of the assumptions and inputs used by the vendor to price individual securities, and through price validation testing. Securities not priced by one of our pricing vendors may be valued using a dealer quote, which are also subject to price validation testing. Price validation testing is performed independent of the risk-taking function and involves corroborating the prices received from third-party vendors and dealers with prices from another third party or through other sources, such as internal valuations or sales of similar securities. Security prices are also validated through actual cash settlement upon sale of a security.

Securities are classified within the fair value hierarchy after giving consideration to the activity level in the market for the security type and the observability of the inputs used to determine the fair value. When a quoted price in an active market exists for the identical security, this price is used to determine fair value and the security is classified within Level 1 of the hierarchy. Level 1 securities include U.S. Treasury securities.

When a quoted price in an active market for the identical security is not available, fair value is estimated using either an alternative market approach, such as a recent trade or matrix pricing, or an income approach, such as a discounted cash flow pricing model. If the inputs to the valuation are based primarily on market observable information, then the security is classified within Level 2 of the hierarchy. Level 2 securities include agency debt securities, agency residential mortgage-backed securities, agency and non-agency commercial mortgage-backed securities, certain non-agency residential mortgage-backed securities, asset-backed securities collateralized by non-mortgage-related corporate and consumer loans, and other debt securities. Level 2 securities are predominantly priced by third parties, either by a pricing vendor or dealer.

In certain cases where there is limited activity or less transparency around the inputs to the valuation, securities are classified within Level 3 of the hierarchy. Securities classified as Level 3 consist primarily of non-agency residential mortgage-backed and asset-backed securities collateralized by first- and second-lien residential mortgage loans. Fair value for these securities is primarily estimated using pricing obtained from third-party vendors. In some cases, fair value is estimated using a dealer quote, by reference to prices of securities of a similar vintage and collateral type or by reference to recent sales of similar securities. Market activity for these security types is limited with little price transparency. As a result, these securities are generally valued by the third-party vendor using a discounted cash flow approach that incorporates significant unobservable inputs and observable market activity where available. Significant inputs to the valuation include prepayment projections and credit loss assumptions (default rate and loss severity) and discount rates that are deemed representative of current market conditions. Significant increases (decreases) in any of those assumptions in isolation would result in a significantly lower (higher) fair value measurement.

Certain infrequently traded debt securities within Other debt securities available for sale and Trading securities are also classified in Level 3 and are included in the Insignificant Level 3 assets, net of liabilities line item in Table 52.

The significant unobservable inputs used to estimate the fair value of these securities include an estimate of expected credit losses and a discount for liquidity risk. These inputs are incorporated into the fair value measurement by either increasing the spread over the benchmark curve or by applying a credit and liquidity discount to the par value of the security. Significant increases (decreases) in credit and/or liquidity risk could result in a significantly lower (higher) fair value estimate.

Loans

Loans accounted for at fair value consist primarily of residential mortgage loans. These loans are generally valued similarly to residential mortgage loans held for sale and are classified as Level 2. However, similar to residential mortgage loans held for sale, if these loans are repurchased and unsalable, they are classified as Level 3. In addition, repurchased VA loans, where only a portion of the principal will be reimbursed, are classified as Level 3. The fair value is determined using a discounted cash flow calculation based on our historical loss rate. We have elected to account for certain home equity lines of credit at fair value. These loans are classified as

Level 3. Significant inputs to the valuation of these loans include credit and liquidity discount, cumulative default rate, loss severity and gross discount rate and are deemed representative of current market conditions. Significant increases (decreases) in any of these assumptions would result in a significantly lower (higher) fair value measurement.

Equity Investments

Equity investments includes money market mutual funds as well as direct and indirect private equity investments. Money market mutual funds are valued based on quoted prices in active markets for identical securities and classified within Level 1 of the hierarchy. The valuation of direct and indirect private equity investments requires significant management judgment due to the absence of quoted market prices, inherent lack of liquidity and the long-term nature of such investments. Various valuation techniques are used for direct investments, including multiples of adjusted earnings of the entity, independent appraisals, anticipated financing and sale transactions with third parties, or the pricing used to value the entity in a recent financing transaction. A multiple of adjusted earnings calculation is the valuation technique utilized most frequently and is the most significant unobservable input used in such calculation. Significant decreases (increases) in the multiple of earnings could result in a significantly lower (higher) fair value measurement. Direct equity investments are classified as Level 3.

Indirect investments are not redeemable; however, we receive distributions over the life of the partnerships from liquidation of the underlying investments by the investee, which we expect to occur over the next 12 years. We value indirect investments in private equity funds using the net asset value (NAV) practical expedient as provided in the financial statements that we receive from fund managers. Due to the time lag in our receipt of the financial information and based on a review of investments and valuation techniques applied, adjustments to the manager-provided value are made when available recent portfolio company information or market information indicates a significant change in value from that provided by the manager of the fund. Indirect investments valued using NAV are not classified in the fair value hierarchy.

Mortgage Servicing Rights (MSRs)

MSRs are carried at fair value on a recurring basis. Assumptions incorporated into the MSRs valuation model reflect management’s best estimate of factors that a market participant would use in valuing the MSRs. Although sales of MSRs do occur and can offer some market insight, MSRs do not trade in an active, open market with readily observable prices so the precise terms and conditions of sales are not available.

Residential MSRs

As a benchmark for the reasonableness of our residential MSRs fair value, we obtained opinions of value from independent brokers. These brokers provided a range (+/-10 bps) based upon their own discounted cash flow calculations of our portfolio that reflect conditions in the secondary market and any recently executed servicing transactions. We compare our internally-developed residential MSRs value to the ranges of values received from the brokers. If our residential MSRs fair value falls outside of the brokers’ ranges, management will assess whether a valuation adjustment is warranted. For the periods presented, our residential MSRs value did not fall outside of the brokers’ ranges. We consider our residential MSRs value to represent a reasonable estimate of fair value.

Due to the nature of the unobservable valuation inputs, residential MSRs are classified as Level 3. The significant unobservable inputs used in the fair value measurement of residential MSRs are constant prepayment rates and spread over the benchmark curve. Significant increases (decreases) in prepayment rates and spread over the benchmark curve would result in lower (higher) fair market value of residential MSRs.

Commercial MSRs

The fair value of commercial MSRs is estimated by using a discounted cash flow model incorporating unobservable inputs for assumptions such as constant prepayment rates, discount rates and other factors. Due to the nature of the unobservable valuation inputs and the limited availability of market pricing, commercial MSRs are classified as Level 3. Significant increases (decreases) in constant prepayment rates and discount rates would result in significantly lower (higher) commercial MSR value determined based on current market conditions and expectations.

Financial Derivatives

Exchange-traded derivatives are valued using quoted market prices and are classified as Level 1. The majority of derivatives that we enter into are executed over-the-counter and are valued using internal models. These derivatives are primarily classified as Level 2, as the readily observable market inputs to these models are validated to external sources, such as industry pricing services, or are corroborated through recent trades, dealer quotes, yield curves,

implied volatility or other market-related data. Level 2 financial derivatives are primarily estimated using a combination of Eurodollar future prices and observable benchmark interest rate swaps to construct projected discounted cash flows.

Financial derivatives that are priced using significant management judgment or assumptions are classified as Level 3. Unobservable inputs related to interest rate contracts include probability of funding of residential mortgage loan commitments and estimated servicing cash flows of commercial and residential mortgage loan commitments. Probability of default and loss severity are the significant unobservable inputs used in the valuation of risk participation agreements. The fair values of Level 3 assets and liabilities

related to these interest rate contract financial derivatives as of December 31, 2018 and 2017 are included in the Insignificant Level 3 assets, net of liabilities line item in Table 52 of this Note 6.

In connection with the sales of portions of our Visa Class B common shares, we entered into swap agreements with the purchasers of the shares to retain any future risk of decreases in the conversion rate of Class B common shares to Class A common shares resulting from increases in the escrow funded by Visa to pay for the costs of resolution of specified litigation (see Note 19 Legal Proceedings). These swaps also require PNC to make periodic payments based on the market price of the Class A common shares and a fixed rate of interest until the Visa litigation is resolved. An increase in the estimated length of litigation resolution date, a decrease in the estimated conversion rate, or an increase in the estimated growth rate of the Class A share price will each have a negative impact on the fair value of the swaps and vice versa.

The fair values of our derivatives include a credit valuation adjustment to reflect our own and our counterparties' nonperformance risk. Our credit valuation adjustment is computed using new loan pricing and considers externally available bond spreads, in conjunction with internal historical recovery observations.

Other Assets and Liabilities

Other assets held at fair value on a recurring basis primarily include assets related to PNC's deferred compensation and supplemental incentive savings plans and BlackRock Series C Preferred Stock.

The assets related to PNC's deferred compensation and supplemental incentive savings plans primarily consist of a prepaid forward contract referencing an amount of shares of PNC stock, equity mutual funds and fixed income funds, and are valued based on the underlying investments. These assets are valued either by reference to the market price of PNC's stock or by using the quoted market prices for investments other than PNC's stock and are classified in Levels 1 and 2.

We have elected to account for the shares of BlackRock Series C Preferred Stock received in a stock exchange with BlackRock at fair value as these shares economically hedge the BlackRock LTIP liability that is accounted for and reported as a derivative. The fair value of the Series C Preferred Stock is determined using a third-party modeling approach, which includes both observable and unobservable inputs. Due to the significance of unobservable inputs, this security is classified as Level 3. Significant increases (decreases) in the liquidity discount would result in a lower (higher) asset value for the BlackRock Series C Preferred Stock.

See Note 24 Subsequent Events for information on our January 31, 2019 transfer of our remaining shares of Series C Preferred Stock to BlackRock to satisfy our obligation under the Share Surrender Agreement.

All Level 3 other assets and liabilities are included in the Insignificant Level 3 assets, net of liabilities line item in Table 52 in this Note 6.

Other Borrowed Funds

Other borrowed funds primarily consist of U.S. Treasury securities sold short which are classified as Level 1. Other borrowed funds also includes the related liability for certain repurchased loans for which we have elected the fair value option and are classified as either Level 2 or Level 3, consistent with the level classification of the corresponding loans. All Level 3 amounts are included in the Insignificant Level 3 assets, net of liabilities line item in Table 52 in this Note 6.

The following table summarizes our assets and liabilities measured at fair value on a recurring basis, including instruments for which we have elected the fair value option.

Table 50: Fair Value Measurements – Recurring Basis Summary

	December 31, 2018				December 31, 2017			
In millions	Level 1	Level 2	Level 3	Total Fair Value	Level 1	Level 2	Level 3	Total Fair Value
Assets								
Residential mortgage loans held for sale		$493	$2	$ 495		$829	$3	$ 832
Commercial mortgage loans held for sale		309	87	396		723	107	830
Securities available for sale								
U.S. Treasury and government agencies	$17,753	347		18,100	$14,088	433		14,521
Residential mortgage-backed								
Agency		28,993		28,993		25,406		25,406
Non-agency		83	2,128	2,211		97	2,661	2,758
Commercial mortgage-backed								
Agency		2,577		2,577		1,904		1,904
Non-agency		2,657		2,657		2,613		2,613
Asset-backed		4,698	274	4,972		5,065	332	5,397
Other debt		3,795	84	3,879		4,347	87	4,434
Total debt securities	17,753	43,150	2,486	63,389	14,088	39,865	3,080	57,033
Other (a)					524	61		585
Total securities available for sale	17,753	43,150	2,486	63,389	14,612	39,926	3,080	57,618
Loans		510	272	782		571	298	869
Equity investments (b)	751		1,255	2,209			1,036	1,265
Residential mortgage servicing rights			1,257	1,257			1,164	1,164
Commercial mortgage servicing rights			726	726			668	668
Trading securities (c)	2,137	1,777	2	3,916	1,243	1,670	2	2,915
Financial derivatives (c) (d)	3	2,053	25	2,081		2,864	10	2,874
Other assets	291	157	45	493	278	253	107	638
Total assets	$20,935	$48,449	$6,157	$ 75,744	$16,133	$46,836	$6,475	$ 69,673
Liabilities								
Other borrowed funds	$868	$132	$7	$ 1,007	$1,079	$254	$11	$ 1,344
Financial derivatives (d) (e)	1	2,021	268	2,290		2,369	487	2,856
Other liabilities			58	58			33	33
Total liabilities	$869	$2,153	$333	$ 3,355	$1,079	$2,623	$531	$ 4,233

(a) Prior period amounts included $.6 billion of available for sale securities, primarily money market funds, that were reclassified to equity investments on January 1, 2018 as the result of the adoption of ASU 2016-01. See the Recently Adopted Accounting Standards portion of Note 1 Accounting Policies for additional details on this adoption.

(b) Certain investments that are measured at fair value using the NAV per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy.

(c) Included in Other assets on the Consolidated Balance Sheet.

(d) Amounts at December 31, 2018 and 2017 are presented gross and are not reduced by the impact of legally enforceable master netting agreements that allow us to net positive and negative positions and cash collateral held or placed with the same counterparty. See Note 13 Financial Derivatives for additional information related to derivative offsetting.

(e) Included in Other liabilities on the Consolidated Balance Sheet.

Reconciliations of assets and liabilities measured at fair value on a recurring basis using Level 3 inputs for 2018 and 2017 follow.

Table 51: Reconciliation of Level 3 Assets and Liabilities

Year Ended December 31, 2018

Level 3 Instruments Only In millions	Fair Value Dec. 31, 2017	Total realized / unrealized gains or losses for the period (a) Included in Earnings	Included in Other comprehensive income	Purchases	Sales	Issuances	Settlements	Transfers into Level 3	Transfers out of Level 3	Fair Value Dec. 31, 2018	Unrealized gains / losses on assets and liabilities held on Consolidated Balance Sheet at December 31, 2018 (a) (b)
Assets											
Residential mortgage loans held for sale	$3			$ 4	$(3)			$ 14	$ (16) (c)	$2	
Commercial mortgage loans held for sale	107						$ (20)			87	$ 1
Securities available for sale											
Residential mortgage-backed non-agency	2,661	$ 53	$ (24)				(562)			2,128	
Commercial mortgage-backed non-agency											
Asset-backed	332	5	(7)				(56)			274	
Other debt	87	5	6	7			(16)		(5)	84	
Total securities available for sale	3,080	63	(25)	7			(634)		(5)	2,486	
Loans	298	13		102	(25)		(74)	10	(52) (c)	272	2
Equity investments	1,036	204		411	(396)					1,255	110
Residential mortgage servicing rights	1,164	90		129		$ 44	(170)			1,257	83
Commercial mortgage servicing rights	668	51		93		57	(143)			726	51
Trading securities	2									2	
Financial derivatives	10	59		4			(48)			25	47
Other assets	107	(14)					(48)			45	(14)
Total assets	$6,475	$ 466	$ (25)	$ 750	$(424)	$ 101	$ (1,137)	$ 24	$ (73)	$6,157	$ 280
Liabilities											
Other borrowed funds	$11					$ 64	$ (68)			$7	
Financial derivatives	487	$ (53)			$12		(178)			268	$ (42)

Other liabilities	33	15	$ 12		103	(105)	58	13
Total liabilities	$531	$ (38)	$ 12	$12	$ 167	$ (351)	$333	$ (29)
Net gains (losses)		$ 504 (d)						$ 309 (e)

Year Ended December 31, 2017

Level 3 Instruments Only In millions	Fair Value Dec. 31, 2016	Total realized / unrealized gains or losses for the period (a) Included in Earnings	Included in Other comprehensive income	Purchases	Sales	Issuances	Settlements	Transfers into Level 3	Transfers out of Level 3	Fair Value Dec. 31, 2017	Unrealized gains / losses on assets and liabilities held on Consolidated Balance Sheet at December 31, 2017 (a) (b)
Assets											
Residential mortgage loans held for sale	$2			$8	$(1)			$10	$(16) (c)	$3	
Commercial mortgage loans held for sale	1,400	$81			(5,278)	$4,885	$(258)		(723) (f)	107	$4
Securities available for sale											
Residential mortgage-backed non-agency	3,254	77	$137		(33)		(774)			2,661	(1)
Commercial mortgage-backed non-agency		12			(12)						
Asset-backed	403	12	22		(25)		(80)			332	
Other debt	66		19	13	(1)		(10)			87	
Total securities available for sale	3,723	101	178	13	(71)		(864)			3,080	(1)
Loans	335			97	(28)		(68)	13	(51) (c)	298	(7)
Equity investments	1,331	239		214	(565)				(183) (g)	1,036	145
Residential mortgage servicing rights	1,182	(83)		185		55	(175)			1,164	(79)
Commercial mortgage servicing rights	576	46		69		88	(111)			668	45
Trading securities	2									2	
Financial derivatives	40	39		3			(67)		(5)	10	67
Other assets	239	23					(155)			107	24
Total assets	$8,830	$446	$178	$589	$(5,943)	$5,028	$(1,698)	$23	$(978)	$6,475	$198
Liabilities											
Other borrowed funds	$10					$72	$(71)			$11	
Financial derivatives	414	$293			$3		(221)		$(2)	487	$297
Other liabilities	9	25				173	(174)			33	26
Total liabilities	$433	$318			$3	$245	$(466)		$(2)	$531	$323
Net gains (losses)		$128 (d)									$(125) (e)

(a) Losses for assets are bracketed while losses for liabilities are not.

(b) The amount of the total gains or losses for the period included in earnings that is attributable to the change in unrealized gains or losses related to those assets and liabilities held at the end of the reporting period.

(c) Transfers out of Level 3 primarily reflect the reclassification of residential mortgage loans held for sale to held for investment and the transfer of residential mortgage loans to OREO.

(d) Net gains (losses) realized and unrealized included in earnings related to Level 3 assets and liabilities included amortization and accretion. The amortization and accretion amounts were included in Interest income on the Consolidated Income Statement and the remaining net gains (losses) realized and unrealized were included in Noninterest income on the Consolidated Income Statement.

(e) Net unrealized gains (losses) related to assets and liabilities held at the end of the reporting period were included in Noninterest income on the Consolidated Income Statement.

(f) Reflects a transfer from Level 3 to Level 2 due to an unobservable valuation input that was deemed to be not significant.

(g) Reflects transfers out of Level 3 associated with changes in valuation methodology for certain equity investments subject to the Volcker Rule provisions of the Dodd-Frank Act.

An instrument's categorization within the hierarchy is based on the lowest level of input that is significant to the fair value measurement. Changes from one quarter to the next related to the observability of inputs to a fair value measurement may result in a reclassification (transfer) of assets or liabilities between hierarchy levels. Our policy is to recognize transfers in and transfers out as of the end of the reporting period.

Quantitative information about the significant unobservable inputs within Level 3 recurring assets and liabilities follows.

Table 52: Fair Value Measurements – Recurring Quantitative Information
December 31, 2018

Level 3 Instruments Only Dollars in millions	Fair Value	Valuation Techniques	Unobservable Inputs	Range (Weighted Average)
Commercial mortgage loans held for sale	$ 87	Discounted cash flow	Spread over the benchmark curve (a)	535bps - 1,900bps (1,217bps)
Residential mortgage-backed non-agency securities	2,128	Priced by a third-party vendor using a discounted cash flow pricing model	Constant prepayment rate	1.0% - 33.0% (11.8%)
			Constant default rate	0.0% - 18.8% (5.1%)
			Loss severity	10.0% - 100.0% (50.8%)
			Spread over the benchmark curve (a)	216bps weighted-average
Asset-backed securities	274	Priced by a third-party vendor using a discounted cash flow pricing model	Constant prepayment rate	1.0% - 19.0% (8.5%)
			Constant default rate	1.0% - 18.5% (4.0%)
			Loss severity	15.0% - 100.0% (63.8%)
			Spread over the benchmark curve (a)	198bps weighted-average
Loans	129	Consensus pricing (b)	Cumulative default rate	11.0% - 100.0% (81.8%)
			Loss severity	0.0% - 100.0% (17.2%)
			Discount rate	5.5% - 8.3% (5.8%)
	90	Discounted cash flow	Loss severity	8.0% weighted-average
			Discount rate	5.8% weighted-average
	53	Consensus pricing (b)	Credit and Liquidity Discount	0.0% - 99.0% (61.3%)
Equity investments	1,255	Multiple of adjusted earnings	Multiple of earnings	4.5x - 16.0x (8.4x)
Residential mortgage servicing rights	1,257	Discounted cash flow	Constant prepayment rate	0.0% - 54.5% (8.7%)
			Spread over the benchmark curve (a)	492bps - 1,455bps (806bps)
Commercial mortgage servicing rights	726	Discounted cash flow	Constant prepayment rate	4.6% - 14.7% (5.7%)
			Discount rate	6.9% - 8.5% (8.4%)
Financial derivatives - Swaps related to sales of certain Visa Class B common shares	(210)	Discounted cash flow	Estimated conversion factor of Visa Class B shares into Class A shares	163.0% weighted-average
				16.0%

		Estimated annual growth rate of Visa Class A share price	
		Estimated length of litigation resolution date	Q4 2020
Insignificant Level 3 assets, net of liabilities (c)	35		
Total Level 3 assets, net of liabilities (d)	$ 5,824		

December 31, 2017 Level 3 Instruments Only Dollars in millions	Fair Value	Valuation Techniques	Unobservable Inputs	Range (Weighted Average)
Commercial mortgage loans held for sale	$ 107	Discounted cash flow	Spread over the benchmark curve (a)	525bps - 1,470bps (1,020bps)
Residential mortgage-backed non-agency securities	2,661	Priced by a third-party vendor using a discounted cash flow pricing model	Constant prepayment rate	1.0% - 31.6% (10.8%)
			Constant default rate	0.1% - 18.8% (5.4%)
			Loss severity	15.0% - 100.0% (51.5%)
			Spread over the benchmark curve (a)	190bps weighted-average
Asset-backed securities	332	Priced by a third-party vendor using a discounted cash flow pricing model	Constant prepayment rate	1.0% - 19.0% (7.9%)
			Constant default rate	2.0% - 11.8% (5.4%)
			Loss severity	15.0% - 100.0% (68.5%)
			Spread over the benchmark curve (a)	179bps weighted-average
Loans	133	Consensus pricing (b)	Cumulative default rate	11.0% - 100.0% (85.7%)
			Loss severity	0.0% - 100.0% (20.6%)
			Discount rate	5.5% - 8.0% (5.7%)
	104	Discounted cash flow	Loss severity	8.0% weighted-average
			Discount rate	4.9% weighted-average
	61	Consensus pricing (b)	Credit and Liquidity discount	0.0% - 99.0% (61.1%)
Equity investments	1,036	Multiple of adjusted earnings	Multiple of earnings	4.5x - 29.7x (8.3x)
Residential mortgage servicing rights	1,164	Discounted cash flow	Constant prepayment rate	0.0% - 36.7% (10.0%)
			Spread over the benchmark curve (a)	390bps - 1,839bps (830bps)
Commercial mortgage servicing rights	668	Discounted cash flow	Constant prepayment rate	7.7% - 14.2% (8.5%)
			Discount rate	6.4% - 7.9% (7.8%)
Financial derivatives - Swaps related to sales of certain Visa Class B	(380)	Discounted cash flow	Estimated conversion factor of Visa Class B shares into Class A shares	163.8% weighted-average
			Estimated annual growth rate of Visa Class A share price	16.0%
				Q2 2021

common shares		Estimated length of litigation resolution date
Insignificant Level 3 assets, net of liabilities (c)	58	
Total Level 3 assets, net of liabilities (d)	$ 5,944	

(a) The assumed yield spread over the benchmark curve for each instrument is generally intended to incorporate non-interest-rate risks, such as credit and liquidity risks.

(b) Consensus pricing refers to fair value estimates that are generally internally developed using information such as dealer quotes or other third-party provided valuations or comparable asset prices.

(c) Represents the aggregate amount of Level 3 assets and liabilities measured at fair value on a recurring basis that are individually and in the aggregate insignificant. The amount includes certain financial derivative assets and liabilities, trading securities, other debt securities, residential mortgage loans held for sale, other assets, other borrowed funds and other liabilities.

(d) Consisted of total Level 3 assets of $6.1 billion and total Level 3 liabilities of $.3 billion as of December 31, 2018 and $6.4 billion and $.5 billion as of December 31, 2017, respectively.

Financial Assets Accounted for at Fair Value on a Nonrecurring Basis

We may be required to measure certain financial assets at fair value on a nonrecurring basis. These adjustments to fair value usually result from the application of lower of amortized cost or fair value accounting or write-downs of individual assets due to impairment and are included in Table 53.

Nonaccrual Loans

Nonaccrual loans represent the fair value of those loans which have been adjusted due to impairment. The impairment is primarily based on the appraised value of the collateral.

Appraisals are obtained by licensed or certified appraisers at least annually and more recently in certain instances. All third-party appraisals are reviewed and any adjustments to the initial appraisal are incorporated into the final issued appraisal report. In instances where an appraisal is not obtained, collateral value is determined consistent with external third-party appraisal standards by an internal person independent of the asset manager.

OREO and Foreclosed Assets

The carrying value of OREO and foreclosed assets includes valuation adjustments recorded subsequent to the transfer to OREO and foreclosed assets. These valuation adjustments are based on the fair value less cost to sell of the property. Fair value is based on appraised value or sales price and the appraisal process for OREO and foreclosed assets is the same as described above for nonaccrual loans.

Long-Lived Assets

Long-lived assets consists of buildings for which valuation adjustments were recorded during the period. A facility classified as held and used is impaired to the extent its carrying value is not recoverable and exceeds fair value. Valuation adjustments on buildings held for sale are based on the fair value of the property less an estimated cost to sell and are recorded subsequent to the transfer of the asset

to held for sale status. Fair value is determined either by a third-party appraisal, recent sales offer, changes in market or property conditions, or, where we have agreed to sell the building to a third party, the contractual sales price. Impairment on these long-lived assets is recorded in Other noninterest expense on our Consolidated Income Statement.

Table 53: Fair Value Measurements – Nonrecurring (a) (b) (c)

Year ended December 31	Fair Value		Gains (Losses)		
In millions	2018	2017	2018	2017	2016
Assets					
Nonaccrual loans	$128	$100	$(28)	$(8)	$(106)
OREO and foreclosed assets	59	70	(7)	(10)	(16)
Long-lived assets	11	80	(4)	(168)	(15)
Total assets	$198	$250	$(39)	$(186)	$(137)

(a) All Level 3 for the periods presented.
(b) Valuation techniques applied were fair value of property or collateral.
(c) Unobservable inputs used were appraised value/sales price, broker opinions or projected income/required improvement costs. Additional quantitative information was not meaningful for the periods presented.

Financial Instruments Accounted for under Fair Value Option

We elect the fair value option to account for certain financial instruments. For more information on these financial instruments for which the fair value option election has been made, please refer to the Fair Value Measurement section of this Note 6. These financial instruments are initially measured at fair value. Gains and losses from initial measurement and any changes in fair value are subsequently recognized in earnings.

Interest income related to changes in the fair values of these financial instruments is recorded on the Consolidated Income Statement in Other interest income, except for certain Residential mortgage loans, for which income is also recorded in Loan interest income. Changes in the value on prepaid forward contracts included in Other Assets is reported in Noninterest expense and interest expense on the Other borrowed funds is reported in Borrowed funds interest expense.

Fair values and aggregate unpaid principal balances of items for which we elected the fair value option follow.

Table 54: Fair Value Option – Fair Value and Principal Balances

	December 31, 2018			December 31, 2017		
In millions	Fair Value	Aggregate Unpaid Principal Balance	Difference	Fair Value	Aggregate Unpaid Principal Balance	Difference
Assets						
Residential mortgage loans held for sale						
Performing loans	$489	$ 472	$ 17	$822	$ 796	$ 26
Accruing loans 90 days or more past due	2	2		3	3	
Nonaccrual loans	4	4		7	8	(1)
Total	$495	$ 478	$ 17	$832	$ 807	$ 25
Commercial mortgage loans held for sale (a)						
Performing loans	$396	$ 411	$ (15)	$828	$ 842	$ (14)
Nonaccrual loans				2	3	(1)
Total	$396	$ 411	$ (15)	$830	$ 845	$ (15)
Residential mortgage loans						
Performing loans	$279	$ 298	$ (19)	$251	$ 280	$ (29)
Accruing loans 90 days or more past due	321	329	(8)	421	431	(10)
Nonaccrual loans	182	292	(110)	197	317	(120)
Total	$782	$ 919	$ (137)	$869	$ 1,028	$ (159)
Other assets	$156	$ 176	$ (20)	$216	$ 212	$ 4

Liabilities						
Other borrowed funds	$64	$ 65	$ (1)	$84	$ 85	$ (1)

(a) There were no accruing loans 90 days or more past due within this category at December 31, 2018 or December 31, 2017.

The changes in fair value for items for which we elected the fair value option are as follows.

Table 55: Fair Value Option – Changes in Fair Value (a)

Year ended December 31	Gains (Losses)		
In millions	2018	2017	2016
Assets			
Residential mortgage loans held for sale	$38	$121	$152
Commercial mortgage loans held for sale	$67	$87	$76
Residential mortgage loans	$24	$27	$30
Other assets	$(40)	$60	$50

(a) The impact on earnings of offsetting hedged items or hedging instruments is not reflected in these amounts.

Additional Fair Value Information Related to Financial Instruments Not Recorded at Fair Value

This section presents fair value information for all other financial instruments that are not recorded on the Consolidated Balance Sheet at fair value. We used the following methods and assumptions to estimate the fair value amounts for these financial instruments.

Cash and Due from Banks and Interest-earning Deposits with Banks

Due to their short-term nature, the carrying amounts for Cash and due from banks and Interest-earning deposits with banks reported on our Consolidated Balance Sheet approximate fair value.

Securities Held to Maturity

We primarily use prices obtained from pricing services, dealer quotes or recent trades to determine the fair value of securities. Refer to the Fair Value Measurement section of this Note 6 for additional information relating to our pricing processes and procedures.

Net Loans

Fair values are estimated based on the discounted value of expected net cash flows incorporating assumptions about prepayment rates, net credit losses and servicing fees. Nonaccrual loans are valued at their estimated recovery value. Loans are presented net of the ALLL.

Other Assets

Other assets includes accrued interest receivable, cash collateral, federal funds sold and resale agreements, certain loans held for sale, and FHLB and FRB stock. The aggregate carrying value of our FHLB and FRB stock was $1.8 billion at both December 31, 2018 and 2017, which approximated fair value at each date.

Deposits

For time deposits, fair values are estimated by discounting contractual cash flows using current market rates for instruments with similar maturities. For deposits with no defined maturity, such as noninterest-bearing and interest-bearing demand and interest-bearing money market and savings deposits, carrying values approximate fair values.

Borrowed Funds

For short-term borrowed funds, including federal funds purchased, commercial paper, repurchase agreements and certain other short-term borrowings and payables, carrying values approximated fair values. For long-term borrowed funds, quoted market prices are used, when available, to estimate fair value. When quoted market prices are not available, fair value is estimated based on current market interest rates and credit spreads for debt with similar terms and maturities.

Unfunded Loan Commitments and Letters of Credit

The fair value of unfunded loan commitments and letters of credit is determined from a market participant's view including the impact of changes in interest rates and credit. We establish a liability on these facilities related to the creditworthiness of our counterparty.

Other Liabilities

Other liabilities includes interest-bearing cash collateral held related to derivatives and other accrued liabilities. Due to its short-term nature, the carrying value of Other liabilities reported on our Consolidated Balance Sheet approximates fair value.

The carrying amounts and estimated fair values, as well as the level within the fair value hierarchy, of these financial instruments as of December 31, 2018 and 2017 are as follows.

Table 56: Additional Fair Value Information Related to Other Financial Instruments

In millions	Carrying Amount	Fair Value Total	Level 1	Level 2	Level 3
December 31, 2018					
Assets					
Cash and due from banks	$5,608	$5,608	$5,608		
Interest-earning deposits with banks	10,893	10,893		$10,893	
Securities held to maturity	19,312	19,019	763	18,112	$144
Net loans (excludes leases)	215,525	216,492			216,492
Other assets	11,065	11,065		11,060	5
Total assets	$262,403	$263,077	$6,371	$40,065	$216,641
Liabilities					
Time deposits (a)	$18,507	$18,246		$18,246	
Borrowed funds	56,412	56,657		54,872	$1,785
Unfunded loan commitments and letters of credit	285	285			285
Other liabilities	393	393		393	
Total liabilities	$75,597	$75,581		$73,511	$2,070
December 31, 2017					
Assets					
Cash and due from banks	$5,249	$5,249	$5,249		
Interest-earning deposits with banks	28,595	28,595		$28,595	
Securities held to maturity	18,513	18,565	765	17,658	$142
Net loans (excludes leases)	209,044	211,175			211,175
Other assets	6,078	6,736		5,949	787
Total assets	$267,479	$270,320	$6,014	$52,202	$212,104
Liabilities					
Deposits	$265,053	$264,854		$264,854	
Borrowed funds	57,744	58,503		56,853	$1,650
Unfunded loan commitments and letters of credit	297	297			297
Other liabilities	399	399		399	
Total liabilities	$323,493	$324,053		$322,106	$1,947

(a) The amount at December 31, 2018 excludes deposit liabilities with no defined or contractual maturities in accordance with the adoption of ASU 2016-01. See the Recently Adopted Accounting Standards portion of Note 1 Accounting Policies for additional details on this adoption.

The aggregate fair value in Table 56 represents only a portion of the total market value of our total assets and liabilities as, in accordance with the guidance related to fair values about financial instruments, we exclude the following:

- financial instruments recorded at fair value on a recurring basis (as they are disclosed in Table 50);
- investments accounted for under the equity method;
- equity securities without a readily determinable fair value that apply for the alternative measurement approach to fair value under ASU 2016-01;
- real and personal property;
- lease financing;
- loan customer relationships;
- deposit customer intangibles;
-

mortgage servicing rights;

- retail branch networks;
- fee-based businesses, such as asset management and brokerage;
- trademarks and brand names;
- trade receivables and payables due in one year or less; and
- deposit liabilities with no defined or contractual maturities under ASU 2016-01.

NOTE 7 GOODWILL AND MORTGAGE SERVICING RIGHTS

Assets and liabilities of acquired entities are recorded at estimated fair value as of the acquisition date.

Goodwill

Allocations of Goodwill by business segment during 2018, 2017 and 2016 follow:

Table 57: Goodwill by Business Segment (a)

In millions	Retail Banking	Corporate & Institutional Banking	Asset Management Group	Total
December 31, 2016	$ 5,795	$ 3,244	$ 64	$9,103
December 31, 2017 (b)	$ 5,795	$ 3,314	$ 64	$9,173
December 31, 2018 (b)	$ 5,795	$ 3,359	$ 64	$9,218

(a) The BlackRock business segment did not have any allocated goodwill during 2018, 2017 and 2016.

(b) Corporate & Institutional Banking's goodwill balances include the impacts of $45 million at December 31, 2018 and $70 million at December 31, 2017 resulting from business acquisitions.

We review goodwill in each of our reporting units for impairment at least annually, in the fourth quarter, or more frequently if events occur or circumstances have changed significantly from the annual test date. The fair value of our reporting units with goodwill is determined by using discounted cash flow and market comparability methodologies. Based on the results of our analysis, there were no impairment charges related to goodwill in 2018, 2017 or 2016.

Mortgage Servicing Rights

We recognize the right to service mortgage loans for others when we recognize it as an intangible asset and the servicing income we receive is more than adequate compensation. MSRs are purchased or originated when loans are sold with servicing retained. MSRs totaled $2.0 billion at December 31, 2018 and $1.8 billion at December 31, 2017, and consisted of loan servicing contracts for commercial and residential mortgages measured at fair value.

Commercial Mortgage Servicing Rights

We recognize gains/(losses) on changes in the fair value of commercial MSRs. Commercial MSRs are subject to changes in value from actual or expected prepayment of the underlying loans and defaults as well as market driven changes in interest rates. We manage this risk by economically hedging the fair value of commercial MSRs with securities and derivative instruments which are expected to increase (or decrease) in value when the value of commercial MSRs declines (or increases).

The fair value of commercial MSRs is estimated by using a discounted cash flow model incorporating inputs for assumptions as to constant prepayment rates, discount rates and other factors determined based on current market conditions and expectations.

Changes in the commercial MSRs follow:

Table 58: Commercial Mortgage Servicing Rights

In millions	2018	2017	2016
January 1	$668	$576	$526
Additions:			
From loans sold with servicing retained	57	88	61
Purchases	93	69	36
Changes in fair value due to:			

Time and payoffs (a)	(143)	(111)	(92)
Other (b)	51	46	45
December 31	$726	$668	$576
Related unpaid principal balance at December 31	$180,496	$162,182	$143,139
Servicing advances at December 31	$220	$217	$265

(a) Represents decrease in MSR value due to passage of time, including the impact from both regularly scheduled loan principal payments and loans that were paid down or paid off during the period.

(b) Represents MSR value changes resulting primarily from market-driven changes in interest rates.

Residential Mortgage Servicing Rights

Residential MSRs are subject to changes in value from actual or expected prepayment of the underlying loans and defaults as well as market driven changes in interest rates. We manage this risk by economically hedging the fair value of residential MSRs with

securities and derivative instruments which are expected to increase (or decrease) in value when the value of residential MSRs declines (or increases).

The fair value of residential MSRs is estimated by using a discounted cash flow valuation model which calculates the present value of estimated future net servicing cash flows, taking into consideration actual and expected mortgage loan prepayment rates, discount rates, servicing costs, and other factors which are determined based on current market conditions.

Changes in the residential MSRs follow:

Table 59: Residential Mortgage Servicing Rights

In millions	2018	2017	2016
January 1	$1,164	$1,182	$1,063
Additions:			
From loans sold with servicing retained	44	55	62
Purchases	129	185	188
Changes in fair value due to:			
Time and payoffs (a)	(170)	(175)	(168)
Other (b)	90	(83)	37
December 31	$1,257	$1,164	$1,182
Unpaid principal balance of loans serviced for others at December 31	$125,388	$126,769	$125,381
Servicing advances at December 31	$156	$201	$302

(a) Represents decrease in MSR value due to passage of time, including the impact from both regularly scheduled loan principal payments and loans that were paid down or paid off during the period.

(b) Represents MSR value changes resulting from market-driven changes in interest rates and changes in model assumptions.

Sensitivity Analysis

The fair value of commercial and residential MSRs and significant inputs to the valuation models as of December 31, 2018 are shown in Tables 60 and 61. The expected and actual rates of mortgage loan prepayments are significant factors driving the fair value. Management uses both internal proprietary models and a third-party model to estimate future commercial mortgage loan prepayments and a third-party model to estimate future residential mortgage loan prepayments. These models have been refined based on current market conditions and management judgment. Future interest rates are another important factor in the valuation of MSRs. Management utilizes market implied forward interest rates to estimate the future direction of mortgage and discount rates. The forward rates utilized are derived from the current yield curve for U.S. dollar interest rate swaps and are consistent with pricing of capital markets instruments. Changes in the shape and slope of the forward curve in future periods may result in volatility in the fair value estimate.

A sensitivity analysis of the hypothetical effect on the fair value of MSRs to adverse changes in key assumptions is presented in Tables 60 and 61. These sensitivities do not include the impact of the related hedging activities. Changes in fair value generally cannot be extrapolated because the relationship of the change in the assumption to the change in fair value may not be linear. Also, the effect of a variation in a particular assumption on the fair value of the MSRs is calculated independently without changing any other assumption. In reality, changes in one factor may result in changes in another (for example, changes in mortgage interest rates, which drive changes in prepayment rate estimates, could result in changes in the interest rate spread), which could either magnify or counteract the sensitivities.

The following tables set forth the fair value of commercial and residential MSRs and the sensitivity analysis of the hypothetical effect on the fair value of MSRs to immediate adverse changes of 10% and 20% in those assumptions:

Table 60: Commercial Mortgage Servicing Rights –Key Valuation Assumptions

Dollars in millions	December 31 2018	December 31 2017
Fair value	$ 726	$ 668
Weighted-average life (years)	4.1	4.4
Weighted-average constant prepayment rate	5.65 %	8.51 %
Decline in fair value from 10% adverse change	$ 10	$ 12
Decline in fair value from 20% adverse change	$ 19	$ 23
Effective discount rate	8.39 %	7.81 %
Decline in fair value from 10% adverse change	$ 19	$ 18
Decline in fair value from 20% adverse change	$ 39	$ 36

Table 61: Residential Mortgage Servicing Rights – Key Valuation Assumptions

Dollars in millions	December 31 2018		December 31 2017	
Fair value	$ 1,257		$ 1,164	
Weighted-average life (years)	6.9		6.4	
Weighted-average constant prepayment rate	8.69	%	10.04	%
Decline in fair value from 10% adverse change	$ 41		$ 44	
Decline in fair value from 20% adverse change	$ 79		$ 85	
Weighted-average option adjusted spread	806	bps	830	bps
Decline in fair value from 10% adverse change	$ 37		$ 35	
Decline in fair value from 20% adverse change	$ 73		$ 67	

Fees from mortgage loan servicing, which includes contractually specified servicing fees, late fees and ancillary fees were $.5 billion for each of 2018, 2017 and 2016. We also generate servicing fees from fee-based activities provided to others for which we do not have an associated servicing asset. Fees from commercial and residential MSRs are reported on our Consolidated Income Statement in Corporate services and Residential mortgage, respectively.

NOTE 8 PREMISES, EQUIPMENT AND LEASEHOLD IMPROVEMENTS

Premises, equipment and leasehold improvements, stated at cost less accumulated depreciation and amortization, were as follows:

Table 62: Premises, Equipment and Leasehold Improvements

In millions	December 31 2018		December 31 2017	
Premises, equipment and leasehold improvements	$ 11,864		$ 10,939	
Accumulated depreciation and amortization	(6,137	)	(5,503	)
Net book value	$ 5,727		$ 5,436	

The following table includes depreciation expense on premises, equipment and leasehold improvements, as well as amortization expense, excluding intangible assets, primarily for capitalized internally developed software.

Table 63: Depreciation and Amortization Expense

Year ended December 31 In millions	2018	2017	2016
Depreciation	$754	$743	$683
Amortization	78	56	46
Total depreciation and amortization	$832	$799	$729

We lease certain facilities and equipment under agreements expiring at various dates through the year 2081. We account for these as operating leases. Rental expense on such leases was $416 million, $431 million and $442 million at December 31, 2018, 2017 and 2016, respectively.

Required minimum annual rentals that we owe on noncancelable leases having initial or remaining terms in excess of one year totaled $2.5 billion at December 31, 2018.

Future minimum annual rentals are as follows:

Table 64: Minimum Annual Lease Rentals

In millions	
2019	$374

2020	$346
2021	$308
2022	$258
2023	$228
2024 and thereafter	$941

NOTE 9 TIME DEPOSITS

Total time deposits of $18.5 billion at December 31, 2018 have future contractual maturities as follows:

Table 65: Time Deposits

In billions	
2019	$12.0
2020	$3.9
2021	$.9
2022	$.7
2023	$.4
2024 and thereafter	$.6

NOTE 10 BORROWED FUNDS

The following shows the carrying value of total borrowed funds of $57.4 billion at December 31, 2018 (including adjustments related to purchase accounting, accounting hedges and unamortized original issuance discounts) by remaining contractual maturity:

Table 66: Borrowed Funds

In billions	
2019	$20.0
2020	$14.8
2021	$6.5
2022	$4.9
2023	$2.3
2024 and thereafter	$8.9

The following table presents the contractual rates and maturity dates of our FHLB borrowings, senior debt and subordinated debt as of December 31, 2018 and the carrying values as of December 31, 2018 and 2017.

Table 67: FHLB Borrowings, Senior Debt and Subordinated Debt

	Stated Rate	Maturity	Carrying Value	
Dollars in millions	2018	2018	2018	2017
Parent Company				
Senior debt	2.85%-6.70%	2019-2027	$5,063	$5,203
Subordinated debt	3.90%-6.88%	2019-2024	1,447	1,440
Junior subordinated debt	3.31%	2028	205	205
Subtotal			6,715	6,848
Bank				
FHLB (a)	zero-6.35%	2019-2030	21,501	21,037
Senior debt	1.45%-3.50%	2019-2043	19,955	22,859
Subordinated debt	2.70%-4.20%	2022-2028	4,243	3,555
Subtotal			45,699	47,451
Total			$52,414	$54,299

(a) FHLB borrowings are generally collateralized by residential mortgage loans, other mortgage-related loans and commercial mortgage-backed securities.

In Table 67, the carrying values for Parent Company senior and subordinated debt include basis adjustments of $(29) million and $8 million, respectively, whereas Bank senior and subordinated debt include basis adjustments of $(246) million and $7 million, respectively, related to fair value accounting hedges as of December 31, 2018.

Certain borrowings are reported at fair value, refer to Note 6 Fair Value for more information on those borrowings.

Junior Subordinated Debentures

PNC Capital Trust C, a wholly-owned finance subsidiary of The PNC Financial Services Group, Inc., owns junior subordinated debentures issued by PNC with a carrying value of $205 million. In June 1998, PNC Capital Trust C issued $200 million of trust preferred securities which bear interest at an annual rate of 3 month LIBOR plus 57 basis

points. The trust preferred securities are

currently redeemable by PNC Capital Trust C at par. In accordance with GAAP, the financial statements of the Trust are not included in our consolidated financial statements.
The obligations of The PNC Financial Services Group, Inc., as the parent of the Trust, when taken collectively, are the equivalent of a full and unconditional guarantee of the obligations of the Trust under the terms of the trust preferred securities. Such guarantee is subordinate in right of payment in the same manner as other junior subordinated debt.
There are certain restrictions on our overall ability to obtain funds from our subsidiaries. For additional disclosure on these funding restrictions, see Note 18 Regulatory Matters.

We are subject to certain restrictions, including restrictions on dividend payments, in connection with the outstanding junior subordinated debentures. Generally, if there is (i) an event of default under the debenture, (ii) we elect to defer interest on the debenture, (iii) we exercise our right to defer payments on the related trust preferred securities, or (iv) there is a default under our guarantee of such payment obligations, subject to certain limited exceptions, we would be unable during the period of such default or deferral to make payments on our debt securities that rank equal or junior to the debentures as well as to make payments on our equity securities, including dividend payments.

NOTE 11 EMPLOYEE BENEFIT PLANS

Pension and Postretirement Plans

We have a noncontributory, qualified defined benefit pension plan covering eligible employees. Benefits are determined using a cash balance formula where earnings credits are a percentage of eligible compensation. Earnings credit percentages for those employees who were plan participants on December 31, 2009 are frozen at the level earned to that point. Earnings credits for all employees who became participants on or after January 1, 2010 are a flat 3% of eligible compensation. All plan participants earn interest on their cash balances based on 30-year Treasury securities rates with those who were participants at December 31, 2009 earning a minimum rate. New participants on or after January 1, 2010 are not subject to the minimum rate. Beginning in 2018, the plan provides for a minimum annual earnings credit amount of $2,000, subject to eligibility criteria. Pension contributions to the plan are typically based on an actuarially determined amount necessary to fund total benefits payable to plan participants. We made a voluntary contribution of $200 million in September 2018 to the qualified pension plan. Assets of the qualified pension plan are held in a separate Trust (Trust).

We also maintain nonqualified supplemental retirement plans for certain employees and provide certain health care and life insurance benefits for qualifying retired employees (postretirement benefits) through various plans. PNC reserves the right to terminate or make changes to these plans at any time. The nonqualified pension plan is unfunded. Contributions from PNC and, in the case of the postretirement benefit plans, participant contributions cover all benefits paid under the nonqualified pension plan and postretirement benefit plans. The postretirement plan provides benefits to certain retirees that are at least actuarially equivalent to those provided by Medicare Part D and accordingly, we receive a federal subsidy as shown in Table 68. In November of 2015, we established a voluntary employee beneficiary association (VEBA) to partially fund postretirement medical and life insurance benefit obligations.
We use a measurement date of December 31 for plan assets and benefit obligations. A reconciliation of the changes in the projected benefit obligation for qualified pension, nonqualified pension and postretirement benefit plans as well as the change in plan assets for the qualified pension plan follows.

Table 68: Reconciliation of Changes in Projected Benefit Obligation and Change in Plan Assets

	Qualified Pension		Nonqualified Pension		Postretirement Benefits	
December 31 (Measurement Date) – in millions	2018	2017	2018	2017	2018	2017
Accumulated benefit obligation at end of year	$4,315	$4,726	$253	$280		
Projected benefit obligation at beginning of year	$4,789	$4,547	$286	$289	$355	$373
Service cost	116	160	3	3	5	5
Interest cost	171	179	9	10	12	14
Amendments		17				2
Actuarial (gains)/losses and changes in assumptions	(424)	172	(16)	8	(28)	(18)
Participant contributions					3	3
Federal Medicare subsidy on benefits paid					1	1
Benefits paid	(297)	(286)	(24)	(24)	(26)	(25)
Projected benefit obligation at end of year	$4,355	$4,789	$258	$286	$322	$355
Fair value of plan assets at beginning of year	$5,253	$4,617			$230	$208
Actual return on plan assets	(193)	722			3	9
Employer contribution	200	200	$24	$24	21	34
Participant contributions					3	3
Federal Medicare subsidy on benefits paid					1	1
Benefits paid	(297)	(286)	(24)	(24)	(26)	(25)
Fair value of plan assets at end of year	$4,963	$5,253	$—	$—	$232	$230
Funded status	$608	$464	$(258)	$(286)	$(90)	$(125)
Amounts recognized on the consolidated balance sheet						
Noncurrent asset	$608	$464				
Current liability			$(26)	$(28)	$(2)	$(2)
Noncurrent liability			(232)	(258)	(88)	(123)
Net amount recognized on the consolidated balance sheet	$608	$464	$(258)	$(286)	$(90)	$(125)
Amounts recognized in AOCI consist of:						
Prior service cost (credit)	$12	$13			$1	$1
Net actuarial loss (gain)	608	534	$57	$77	(7)	18
Amount recognized in AOCI	$620	$547	$57	$77	$(6)	$19

PNC Pension Plan Assets

The long-term investment strategy for pension plan assets in our qualified pension plan (the Plan) is to:

- Meet present and future benefit obligations to all participants and beneficiaries;
- Cover reasonable expenses incurred to provide such benefits, including expenses incurred in the administration of the Trust and the Plan;
- Provide sufficient liquidity to meet benefit and expense payment requirements on a timely basis; and
- Provide a total return that, over the long term, maximizes the ratio of trust assets to liabilities by maximizing investment return, at an appropriate level of risk.

The Plan's named investment fiduciary has the ability to make short to intermediate term asset allocation shifts under the dynamic asset allocation strategy based on factors such as the Plan's funded status, the named investment fiduciary's view of return on equities relative to long term expectations, the named investment fiduciary's view on the direction of interest rates and credit spreads, and other relevant financial or economic factors which would be expected to impact the ability of the Trust to meet its obligation to participants and beneficiaries. Accordingly, the allowable asset allocation ranges have been updated to incorporate the flexibility required by the dynamic allocation policy.

The asset strategy allocations for the Trust at the end of 2018 and 2017, and the target allocation range at the end of 2018, by asset category, are as follows.

Table 69: Asset Strategy Allocations

PNC Pension Plan	Target Allocation Range	Percentage of Plan Assets by Strategy at December 31	
		2018	2017
Asset Category			
Domestic Equity	20 – 40%	27 %	30 %
International Equity	10 – 25%	22 %	24 %
Private Equity	0 – 15%	11 %	9 %
Total Equity	40 – 70%	60 %	63 %
Domestic Fixed Income	10 – 40%	18 %	16 %
High Yield Fixed Income	0 – 25%	9 %	10 %
Total Fixed Income	10 – 65%	27 %	26 %
Real estate	0 – 10%	5 %	5 %
Other	0 – 15%	8 %	6 %
Total	100 %	100 %	100 %

The asset category represents the allocation of Plan assets in accordance with the investment objective of each of the Plan's investment managers. Certain domestic equity investment managers utilize derivatives and fixed income securities as described in their Investment Management Agreements to achieve their investment objective under the Investment Policy Statement. Other investment managers may invest in eligible securities outside of their assigned asset category to meet their investment objectives. The actual percentage of the fair value of total Plan assets held as of December 31, 2018 for equity securities, fixed income securities, real estate and all other assets are 66%, 25%, 5% and 4%, respectively.

We believe that, over the long term, asset allocation is the single greatest determinant of risk. Asset allocation will deviate from the target percentages due to market movement, cash flows, investment manager performance and implementation of shifts under the dynamic asset allocation policy. Material deviations from the asset allocation targets can alter the expected return and risk of the Trust. On the other hand, frequent rebalancing of the asset allocation targets may result in significant transaction costs, which can impair the Trust's ability to meet its investment objective. Accordingly, the Trust portfolio is periodically rebalanced to maintain asset allocation within the target ranges described above.

In addition to being diversified across asset classes, the Trust is diversified within each asset class. Secondary diversification provides a reasonable basis for the expectation that no single security or class of securities will have a disproportionate impact on the total risk and return of the Trust.

Where investment strategies permit the use of derivatives and/or currency management, language is incorporated in the managers' guidelines to define allowable and prohibited transactions and/or strategies. Derivatives are typically employed by investment managers to modify risk/return characteristics of their portfolio(s), implement asset allocation changes in a cost effective manner, or reduce transaction costs. Under the managers' investment guidelines, derivatives may not be used solely for speculation or leverage. Derivatives are to be used only in circumstances where they offer the most efficient economic means of improving the risk/reward profile of the portfolio.

Fair Value Measurements

As further described in Note 6 Fair Value, GAAP establishes the framework for measuring fair value, including a hierarchy used to classify the inputs used in measuring fair value.

A description of the valuation methodologies used for assets measured at fair value at both December 31, 2018 and 2017 follows:

Asset	Valuation Methodology
Money market funds	• Valued at the net asset value of the shares held by the pension plan at year end.
U.S. government and agency securities Corporate debt Common stock	• Valued at the closing price reported on the active market on which the individual securities are traded. • If quoted market prices are not available for the specific security, then fair values are estimated by using pricing models or quoted prices of securities with similar characteristics. Such securities are generally classified within Level 2 of the valuation hierarchy but may be a Level 3 depending on the level of liquidity and activity in the market for the security.
Mutual funds	• Valued based on third-party pricing of the fund which is not actively traded.
Other investments	
Derivative financial instruments Group annuity contracts Preferred stock	• Derivative financial instruments - recorded at estimated fair value as determined by third-party appraisals and pricing models. • Group annuity contracts - measured at fair value by discounting the related cash flows based on current yields of similar instruments with comparable durations considering the credit-worthiness of the issuer. • Preferred stock - Valued at the closing price reported on an active market on which the securities are traded.
Investments measured at NAV Collective trust fund investments Limited partnerships	• Collective trust fund investments - Valued based upon the units of such collective trust fund held by the Plan at year end multiplied by the respective unit value. The unit value of the collective trust fund is based upon significant observable inputs, although it is not based upon quoted marked prices in an active market. The underlying investments of the collective trust funds consist primarily of equity securities, debt obligations, short-term investments, and other marketable securities. Due to the nature of these securities, there are no unfunded commitments or redemption restrictions. • Limited partnerships - Valued by investment managers based on recent financial information used to estimate fair value. The unit value of limited partnerships is based upon significant observable inputs, although it is not based upon quoted marked prices in an active market.

These methods may result in fair value calculations that may not be indicative of net realizable values or future fair values. Furthermore, while the pension plan believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

The following table sets forth by level, within the fair value hierarchy, the Plan's assets at fair value as of December 31, 2018 and 2017.

Table 70: Pension Plan Assets - Fair Value Hierarchy

In millions	December 31, 2018	December 31, 2017

	Level 1	Level 2	Level 3	Total Fair Value	Level 1	Level 2	Level 3	Total Fair Value
Interest bearing cash	$7	$2		$9	$10	$1		$11
Money market funds	149			149	339			339
U.S. government and agency securities	512	130		642	233	105		338
Corporate debt		580	$ 6	586		578	$ 5	583
Common stock	623	6		629	791	13		804
Mutual funds		236		236		271		271
Other	4	42	4	50	1	69	7	77
Investments measured at net asset value (a)				2,662				2,830
Total	$1,295	$996	$ 10	$4,963	$1,374	$1,037	$ 12	$5,253

(a) In accordance with ASC 820-10, collective trust fund investments and limited partnerships are measured at fair value using the NAV per share (or its equivalent) practical expedient and have not been classified in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the amounts presented in Table 68: Reconciliation of Changes in Projected Benefit Obligation and Change in Plan Assets.

The following table provides information regarding our estimated future cash flows related to our various plans.
Table 71: Estimated Cash Flows

In millions	Pension Plans		Postretirement Benefits
	Qualified Pension	Nonqualified Pension	Gross PNC Benefit Payments
Estimated 2019 employer contributions		$ 26	$ 28
Estimated future benefit payments			
2019	$293	$ 26	$ 28
2020	$308	$ 26	$ 27
2021	$322	$ 25	$ 27
2022	$322	$ 22	$ 26
2023	$314	$ 21	$ 25
2024-2028	$1,555	$ 94	$ 117

The qualified pension plan contributions are deposited into the Trust, and the qualified pension plan benefit payments are paid from the Trust. We do not expect to be required to make a contribution to the qualified plan for 2019 based on the funding calculations under the Pension Protection Act of 2006. For the other plans, total contributions and the benefit payments are the same and represent expected benefit amounts, which are paid from general assets. Postretirement benefits are net of participant contributions. Estimated cash flows reflect the partial funding of postretirement medical and life insurance obligations in the VEBA.
The components of net periodic benefit cost/(income) and other amounts recognized in Other comprehensive income (OCI) were as follows.

Table 72: Components of Net Periodic Benefit Cost (a)

Year ended December 31 – in millions	Qualified Pension Plan			Nonqualified Pension Plan			Postretirement Benefits		
	2018	2017	2016	2018	2017	2016	2018	2017	2016
Net periodic cost consists of:									
Service cost (b)	$116	$160	$102	$ 3	$ 3	$ 3	$ 5	5	$ 6
Interest cost	171	179	186	9	10	12	12	14	15
Expected return on plan assets	(306)	(285)	(281)				(6)	(5)	(6)
Amortization of prior service cost/(credit)	1	(3)	(7)					(1)	(1)
Amortization of actuarial (gain)/loss		43	45	5	4	5			
Net periodic cost (benefit)	(18)	94	45	17	17	20	11	13	14
Other changes in plan assets and benefit obligations recognized in OCI:									
Current year prior service cost/(credit)		17						2	
Amortization of prior service (cost)/credit	(1)	3	7					1	1
Current year actuarial loss/(gain)	75	(264)	91	(16)	7	7	(25)	(22)	17
Amortization of actuarial gain/(loss)		(43)	(45)	(5)	(4)	(5)			
Total recognized in OCI	74	(287)	53	(21)	3	2	(25)	(19)	18
Total amounts recognized in net periodic cost and OCI	$56	$(193)	$98	$ (4)	$ 20	$ 22	$ (14)	$ (6)	$ 32

(a) The service cost component is included in Personnel expense on the Consolidated Income Statement. All other components are included in Other noninterest expense on the Consolidated Income Statement.
(b) 2017 Qualified Pension service cost includes $57 million of additional service cost due to the special, one-time cash balance credit announced at the end of 2017.
The weighted-average assumptions used (as of the beginning of each year) to determine the net periodic costs shown in Table 72 were as follows.

Table 73: Net Period Costs - Assumptions

	Net Periodic Cost Determination		
As of January 1	2018	2017	2016
Discount rate			
Qualified pension	3.60 %	4.00 %	4.25 %
Nonqualified pension	3.45 %	3.80 %	3.95 %
Postretirement benefits	3.55 %	3.90 %	4.15 %
Rate of compensation increase (average)	3.50 %	3.50 %	3.50 %
Assumed health care cost trend rate			
Initial trend	6.75 %	7.00 %	7.25 %
Ultimate trend	5.00 %	5.00 %	5.00 %
Year ultimate trend reached	2025	2025	2025
Expected long-term return on plan assets	6.00 %	6.38 %	6.75 %

The weighted-average assumptions used (as of the end of each year) to determine year end obligations for pension and postretirement benefits were as follows.

Table 74: Other Pension Assumptions

Year ended December 31	2018	2017
Discount rate		
Qualified pension	4.30 %	3.60 %
Nonqualified pension	4.15 %	3.45 %
Postretirement benefits	4.20 %	3.55 %
Rate of compensation increase (average)	3.50 %	3.50 %
Assumed health care cost trend rate		
Initial trend	6.50 %	6.75 %
Ultimate trend	5.00 %	5.00 %
Year ultimate trend reached	2025	2025

The discount rates are determined independently for each plan by comparing the expected future benefits that will be paid under each plan with yields available on high quality corporate bonds of similar duration. For this analysis, 10% of bonds with the highest yields and 40% with the lowest yields were removed from the bond universe.

The expected return on plan assets is a long-term assumption established by considering historical and anticipated returns of the asset classes invested in by the pension plan and the allocation strategy currently in place among those classes. For purposes of setting and reviewing this assumption, "long- term" refers to the period over which the plan's projected benefit obligations will be disbursed. We review this assumption at each measurement date and adjust it if warranted. Our selection process references certain historical data and the current environment, but primarily utilizes qualitative judgment regarding future return expectations. We also examine the assumption used by other companies with similar pension investment strategies. Taking into account all of these factors, the expected long-term return on plan assets for determining net periodic pension cost for 2018 was 6.00%. We are reducing our expected long-term return on assets to 5.75% for determining pension cost for 2019. This decision was made after considering the views of both internal and external capital market advisors, particularly with regard to the effects of the recent economic environment on long-term prospective equity and fixed income returns.

PNC's net periodic benefit cost recognized for the plans is sensitive to the discount rate and expected long-term return on plan assets. With all other assumptions held constant, a .5% decline in the discount rate would have resulted in an immaterial increase in net periodic benefit cost for the qualified pension plan in 2018, and to be recognized in 2019. For the nonqualified pension plan and postretirement benefits, a .5% decline in the discount rate would also have resulted in an immaterial increase in net periodic benefit cost.

The health care cost trend rate assumptions shown in Tables 73 and 74 relate only to the postretirement benefit plans. The effect of a one-percentage-point increase or decrease in assumed health care cost trend rates would be insignificant.

Defined Contribution Plans

The PNC Incentive Savings Plan (ISP) is a qualified defined contribution plan that covers all of our eligible employees. Effective January 1, 2015, newly-hired full time employees and part-time employees who became eligible to participate in the ISP after that date are automatically enrolled in the ISP with a deferral rate equal to 4% of eligible compensation in the absence of an affirmative election otherwise. Employee benefits expense related to the ISP was $139 million in 2018, $125 million in 2017 and $122 million in 2016, representing cash contributed to the ISP by PNC.

The ISP is a 401(k) Plan and includes an employee stock ownership (ESOP) feature. Employee contributions are invested in a number of investment options, including pre mixed portfolios and individual core funds, available under the ISP at the direction of the employee.

NOTE 12 STOCK BASED COMPENSATION PLANS

We have long-term incentive award plans (Incentive Plans) that provide for the granting of incentive stock options, nonqualified stock options, stock appreciation rights, incentive shares/performance units, restricted shares, restricted

share units, other share-based awards and dollar-denominated awards to executives and, other than incentive stock options, to non-employee directors. Certain Incentive Plan awards may be paid in stock, cash or a combination of stock and cash. We typically grant a substantial portion of our stock-based compensation awards during the first quarter of each year.

Incentive/Performance Unit Awards and Restricted Share/Restricted Share Unit Awards

The fair value of nonvested incentive/performance unit awards and restricted share/restricted share unit awards is initially determined based on prices not less than the market value of our common stock on the date of grant with a reduction for estimated forfeitures. The value of certain incentive/performance unit awards is subsequently remeasured based on the achievement of one or more financial and other performance goals. Additionally, certain incentive/performance unit awards require subsequent adjustment to their current market value due to certain discretionary risk review triggers.

The weighted-average grant date fair value of incentive/performance unit awards and restricted share/restricted share unit awards granted in 2018, 2017 and 2016 was $149.38, $122.10 and $78.37 per share, respectively. The total intrinsic value of incentive/performance unit and restricted share/restricted share unit awards vested during 2018, 2017 and 2016 was approximately $254 million, $235 million and $147 million, respectively. We recognize compensation expense for such awards ratably over the corresponding vesting and/or performance periods for each type of program.

Table 75: Nonvested Incentive/Performance Unit Awards and Restricted Share/Restricted Share Unit Awards Rollforward (a)

Shares in millions	Nonvested Incentive/Performance Units Shares	Weighted-Average Grant Date Fair Value	Nonvested Restricted Share/Restricted Share Units	Weighted-Average Grant Date Fair Value
December 31, 2017	2	$ 94.29	3	$ 95.64
Granted (b)	—	$ 133.74	1	$ 152.25
Vested/Released (b)	(1)	$ 89.56	(1)	$ 92.28
December 31, 2018	1	$ 104.02	3	$ 115.57

(a) Forfeited awards during 2018 were insignificant.

(b) Includes adjustments for achieving specific performance goals for Incentive/Performance Unit Share Awards granted in prior periods.

In Table 75, the units and related weighted-average grant date fair value of the incentive/performance unit share awards exclude the effect of dividends on the underlying shares, as those dividends will be paid in cash if and when the underlying shares are issued to the participants.

BlackRock Long-term Incentive Plans (LTIP)

BlackRock adopted the 2002 LTIP program to help attract and retain qualified professionals. At that time, we agreed to transfer up to four million shares of BlackRock common stock to fund a portion of the 2002 LTIP program and future LTIP programs approved by BlackRock’s Board of Directors.

In 2009, our obligation to deliver any remaining BlackRock common shares was replaced with an obligation to deliver shares of BlackRock’s Series C Preferred Stock held by us.

In 2018, we transferred 103,064 shares of BlackRock Series C Preferred Stock to BlackRock in connection with our obligation. At December 31, 2018, we held 143,458 shares of BlackRock Series C Preferred Stock which were available to fund our obligation.

See Note 24 Subsequent Events in Item 8 of this Report for information on our January 31, 2019 transfer of our remaining shares of Series C Preferred Stock to BlackRock to satisfy our obligation under the Share Surrender Agreement.

NOTE 13 FINANCIAL DERIVATIVES

We use a variety of financial derivatives as part of our overall asset and liability risk management process to help manage exposure to market (primarily interest rate) and credit risk inherent in our business activities.We also enter into derivatives with customers to facilitate their risk management activities. Derivatives represent contracts between parties that usually require little or no initial net investment and result in one party delivering cash or another type of asset to the other party based on a notional amount and an underlying as specified in the contract.

Derivative transactions are often measured in terms of notional amount, but this amount is generally not exchanged and it is not recorded on the balance sheet. The notional amount is the basis to which the underlying is applied to determine required payments under the derivative contract. The underlying is a referenced interest rate (commonly LIBOR), security price, credit spread or other index. Residential and commercial real estate loan commitments associated with loans to be sold also qualify as derivative instruments.

The following table presents the notional amounts and gross fair values of all derivative assets and liabilities held by us.

Table 76: Total Gross Derivatives

In millions	December 31, 2018 Notional /Contract Amount	Asset Fair Value (a)	Liability Fair Value (b)	December 31, 2017 Notional /Contract Amount	Asset Fair Value (a)	Liability Fair Value (b)
Derivatives used for hedging under GAAP						
Interest rate contracts (c):						
Fair value hedges	$30,919	$ 7		$34,059	$ 114	$ 94
Cash flow hedges	17,337	1		23,875	60	6
Foreign exchange contracts:						
Net investment hedges	1,012		$ 10	1,060		11
Total derivatives designated for hedging	$49,268	$ 8	$ 10	$58,994	$ 174	$ 111
Derivatives not used for hedging under GAAP						
Derivatives used for mortgage banking activities (d):						
Interest rate contracts:						
Swaps	$43,084		$ 3	$48,335	$ 162	$ 42
Futures (e) (f)	10,658			47,494		
Mortgage-backed commitments	5,771	$ 47	39	8,999	19	9
Other	6,509	10	3	2,530	11	2
Subtotal	66,022	57	45	107,358	192	53
Derivatives used for customer-related activities:						
Interest rate contracts:						
Swaps	218,496	1,352	1,432	194,042	2,079	1,772
Futures (e) (f)	914			3,453		
Mortgage-backed commitments	2,246	7	10	2,228	2	2
Other	20,109	77	33	17,775	75	36
Subtotal	241,765	1,436	1,475	217,498	2,156	1,810
Commodity contracts:						
Swaps	4,813	244	238	3,339	108	104
Other	1,418	67	67	868	22	22
Subtotal	6,231	311	305	4,207	130	126
Foreign exchange contracts and other	23,253	194	192	23,123	219	206
Subtotal	271,249	1,941	1,972	244,828	2,505	2,142
Derivatives used for other risk management activities:						