CITIGROUP INC
Form 10-K
February 22, 2019

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549
FORM 10-K
ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF
THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2018
Commission file number 1-9924
Citigroup Inc.
(Exact name of registrant as specified in its charter)

Delaware	52-1568099
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
388 Greenwich Street, New York, NY	10013
(Address of principal executive offices)	(Zip code)

(212) 559-1000
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act: See Exhibit 99.01

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

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes o No x
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 o 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 o
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 o
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) 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, smaller reporting, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and “emerging growth company” in Rule 12b-2 of the Exchange Act.

Large accelerated filer x	Accelerated filer o	Non-accelerated filer o	Smaller reporting company o Emerging growth company o

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. Yes o
Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes o No x
The aggregate market value of Citigroup Inc. common stock held by non-affiliates of Citigroup Inc. on June 30, 2018 was approximately $168.1 billion.
Number of shares of Citigroup Inc. common stock outstanding on January 31, 2019: 2,351,523,709

Documents Incorporated by Reference: Portions of the registrant's proxy statement for the annual meeting of stockholders scheduled to be held on April 16, 2019 are incorporated by reference in this Form 10-K in response to Items 10, 11, 12, 13 and 14 of Part III.
Available on the web at www.citigroup.com

FORM 10-K CROSS-REFERENCE INDEX

*	For additional information regarding Citigroup's Directors, see "Corporate Governance," "Proposal 1: Election of Directors" and "Section 16(a) Beneficial Ownership Reporting Compliance" in the definitive Proxy Statement for Citigroup's Annual Meeting of Stockholders scheduled to be held on April 16, 2019, to be filed with the SEC (the Proxy Statement), incorporated herein by reference.
**	See "Compensation Discussion and Analysis," "The Personnel and Compensation Committee Report," "2018 Summary Compensation Table and Compensation Information" and "CEO Pay Ratio" in the Proxy Statement, incorporated herein by reference.
***	See "About the Annual Meeting," "Stock Ownership" and "Equity Compensation Plan Information" in the Proxy Statement, incorporated herein by reference.
****	See "Corporate Governance—Director Independence," "—Certain Transactions and Relationships, Compensation Committee Interlocks and Insider Participation" and "—Indebtedness" in the Proxy Statement, incorporated herein by reference.
*****	See "Proposal 2: Ratification of Selection of Independent Registered Public Accounting Firm" in the Proxy Statement, incorporated herein by reference.

CITIGROUP'S 2018 ANNUAL REPORT ON FORM 10-K

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OVERVIEW

Citigroup's history dates back to the founding of the City Bank of New York in 1812.

Citigroup is a global diversified financial services holding company whose businesses provide consumers, corporations, governments and institutions with a broad, yet focused, range of financial products and services, including consumer banking and credit, corporate and investment banking, securities brokerage, trade and securities services and wealth management. Citi has approximately 200 million customer accounts and does business in more than 160 countries and jurisdictions.

At December 31, 2018, Citi had approximately 204,000 full-time employees, compared to approximately 209,000 full-time employees at December 31, 2017.

Citigroup currently operates, for management reporting purposes, via two primary business segments: Global Consumer Banking and Institutional Clients Group, with the remaining operations in Corporate/Other. For a further description of the business segments and the products and services they provide, see "Citigroup Segments" below, "Management's Discussion and Analysis of Financial Condition and Results of Operations" and Note 3 to the Consolidated Financial Statements.

Throughout this report, "Citigroup," "Citi" and "the Company" refer to Citigroup Inc. and its consolidated subsidiaries.

Additional information about Citigroup is available on Citi's website at www.citigroup.com. Citigroup's recent annual reports on Form 10-K, quarterly reports on Form 10-Q and proxy statements, as well as other filings with the U.S. Securities and Exchange Commission (SEC), are available free of charge through Citi's website by clicking on the "Investors" page and selecting "All SEC Filings." The SEC's website also contains current reports on Form 8-K and other information regarding Citi at www.sec.gov.

Certain reclassifications, including a realignment of certain businesses, have been made to the prior periods' financial statements to conform to the current period's presentation. For information on certain recent such reclassifications, see Note 3 to the Consolidated Financial Statements.

Please see "Risk Factors" below for a discussion of the most significant risks and uncertainties that could impact Citigroup's businesses, financial condition and results of operations.

As described above, Citigroup is managed pursuant to two business segments: Global Consumer Banking and Institutional Clients Group, with the remaining operations in Corporate/Other.
The following are the four regions in which Citigroup operates. The regional results are fully reflected in the segment results above.

(1) Latin America GCB consists of Citi's consumer banking business in Mexico.
(2) Asia GCB includes the results of operations of GCB activities in certain EMEA countries for all periods presented.
(3) North America includes the U.S., Canada and Puerto Rico, Latin America includes Mexico and Asia includes Japan.

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MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

EXECUTIVE SUMMARY

As described further throughout this Executive Summary, Citi made steady progress in 2018 toward improving its profitability and returns, despite a more challenging revenue environment, particularly in certain market-sensitive businesses and given macroeconomic uncertainties. During 2018, Citi reported 3% underlying revenue growth in Global Consumer Banking (GCB) and Institutional Clients Group (ICG), excluding the impact of gains on sale in 2018 and 2017 (see "Citigroup" below). Citi had solid revenue growth across treasury and trade solutions, private bank, securities services, equity markets and corporate lending in ICG, partially offset by weakness in fixed income as well as softness in equity and debt underwriting. Citi reported revenue growth in all regions in GCB, reflecting continued loan and overall deposit growth, partially offset by the near-term impact of weak market sentiment on Asia wealth management revenues, as well as the impact from partnership renewal terms that went into effect in 2018 in Citi-branded cards in North America GCB.

Citi demonstrated strong expense discipline, resulting in a 1% decrease in expenses, as well as positive operating leverage, even as Citi continued to make ongoing investments. Citi's positive operating leverage, combined with continued credit discipline, resulted in an improvement in pretax earnings. Citi also generated continued loan and deposit growth during the year.

Moreover, Citi continued to return capital to its shareholders. In 2018, Citi returned $18.4 billion in the form of common stock repurchases and dividends. Citi repurchased over 200 million shares during the last year, resulting in an 8% reduction in outstanding common shares. While Citi made continued progress in returning capital to shareholders, each of Citi's key regulatory capital metrics remained strong (see "Capital" below).

Going into 2019, while global economic growth has continued and the underlying macroeconomic environment remains largely positive, there continue to be various economic, political and other risks and uncertainties that could create a more volatile operating environment and impact Citi's businesses and future results. For a more detailed discussion of the risks and uncertainties that could impact Citi's businesses, results of operations and financial condition during 2019, see each respective business's results of operations, "Risk Factors" and "Managing Global Risk" below. Despite these risks and uncertainties, Citi intends to continue to build on the progress made during 2018 with a focus on further optimizing its performance to benefit shareholders, while remaining flexible and adapting to market and economic conditions as they develop.

2018 Summary Results

Citigroup

Citigroup reported net income of $18.0 billion, or $6.68 per share, compared to a net loss of $6.8 billion, or $2.98 per share, in the prior year. Results in 2017 included a one-time,

non-cash charge of $22.6 billion, related to the enactment of the Tax Cuts and Jobs Act (Tax Reform), which impacted the tax line within Corporate/Other, as well as the tax lines in North America GCB and ICG. Results in 2018 included a one-time benefit of $94 million, due to the finalization of the provisional component of the impact based on Citi's analysis as well as additional guidance received from the U.S. Treasury Department related to Tax Reform, which impacted the tax line within Corporate/Other (for additional information, see "Significant Accounting Policies and Estimates—Income Taxes" below).

Excluding the one-time impact of Tax Reform in both the current and prior year, Citigroup net income of $18.0 billion increased 14% compared to the prior year, reflecting a lower effective tax rate, higher revenues and lower expenses, partially offset by higher cost of credit. On this basis, earnings per share increased 25%, due to growth in net income and the 8% reduction in average shares outstanding, driven by the common stock repurchases. (Citi's results of operations excluding the impact of Tax Reform are non-GAAP financial measures. Citi believes the presentation of its results of operations excluding the one-time impact of Tax Reform in both the current and prior year provides a meaningful depiction for investors of the underlying fundamentals of its businesses.)

Citigroup revenues of $72.9 billion in 2018 increased 1%, as 3% growth in GCB and 1% growth in ICG were largely offset by a 33% decrease in Corporate/Other, primarily due to the continued wind-down of legacy assets. Results in 2017 included a one-time gain (approximately $580 million) on the sale of a fixed income analytics business in ICG, and results in 2018 included a one-time gain (approximately $250 million) on the sale of an asset management business in Latin America GCB. Excluding the gains on sale in both periods, aggregate revenues in ICG and GCB grew 3% from the prior year.

Citigroup's end-of-period loans increased 3% to $684 billion versus the prior year. Excluding the impact of foreign currency translation into U.S. dollars for reporting purposes (FX translation), Citigroup's end-of-period loans grew 4%, as 8% growth in ICG and 3% growth in GCB were partially offset by the continued wind-down of legacy assets in Corporate/Other. (Citi's results of operations excluding the impact of gains on sales and FX translation are non-GAAP financial measures. Citi believes the presentation of its results of operations excluding the impact of gains on sales and FX translation provides a meaningful depiction for investors of the underlying fundamentals of its businesses.)

Citigroup's end-of-period deposits increased 6% to $1.0 trillion versus the prior year. Excluding the impact of FX translation, Citigroup's deposits were up 7%, primarily reflecting a 10% increase in ICG and a 1% increase in GCB.

Expenses

Citigroup operating expenses of $41.8 billion decreased 1% versus the prior year, as efficiency savings and the wind-down of legacy assets more than offset the impact of higher volume-related expenses and ongoing investments. Operating expenses in both ICG and GCB were up 3%, while Corporate/Other operating expenses declined 40%, all versus the prior year.

Cost of Credit

Citi's total provisions for credit losses and for benefits and claims of $7.6 billion increased 2% from the prior year, driven by higher net loan loss reserve builds and higher net credit losses. The net loan loss reserve build of $354 million compared to a net loan loss reserve build of $266 million in the prior year. The increase largely reflected a modest net loan loss reserve build in ICG, compared to a net loan loss reserve release in the prior year, partially offset by lower net loan loss reserve builds in North America GCB.

Net credit losses of $7.1 billion increased 1% versus the prior year. Consumer net credit losses increased 4% to $6.9 billion, largely reflecting volume growth and seasoning in the North America cards portfolios, partially offset by the continued wind-down of legacy assets in Corporate/Other. Corporate net credit losses decreased 55% to $169 million, primarily reflecting the impact of an episodic charge-off incurred in the prior year.

For additional information on Citi's consumer and corporate credit costs and allowance for loan losses, see each respective business's results of operations and "Credit Risk" below.

Capital

Citigroup's Common Equity Tier 1 Capital and Tier 1 Capital ratios were 11.9% and 13.5% as of December 31, 2018, respectively, compared to 12.4% and 14.1% as of December 31, 2017, both based on the Basel III Standardized Approach for determining risk-weighted assets. The decline in regulatory capital largely reflected the return of capital to common shareholders, partially offset by earnings growth. Citigroup's Supplementary Leverage ratio as of December 31, 2018 was 6.4%, compared to 6.7% as of December 31, 2017. For additional information on Citi's capital ratios and related components, see "Capital Resources" below.

Global Consumer Banking

GCB net income of $5.8 billion increased 49%. Excluding the one-time impact of Tax Reform in the prior year, GCB net income increased 25%, driven primarily by a lower effective tax rate and higher revenues, partially offset by higher expenses. Operating expenses were $18.6 billion, up 3%, as higher volume-related expenses and continued investments were partially offset by efficiency savings.

GCB revenues of $33.8 billion increased 3% versus the prior year, driven by growth across all regions. North America GCB revenues increased 1% to $20.5 billion, driven by higher revenues across all businesses. Citi-branded cards revenues of $8.6 billion were up 1% versus the prior year, as growth in interest-earning balances was largely offset by the previously disclosed impact of partnership renewal terms. Citi retail services revenues of $6.6 billion increased 3% versus the prior year, primarily reflecting organic loan growth and the benefit of the L.L.Bean portfolio acquisition, partially offset by higher partner payments. Retail banking revenues increased 1% from

the prior year to $5.3 billion. Excluding mortgage revenues, retail banking revenues of $4.8 billion were up 6% from the prior year, driven by continued growth in deposit margins, partially offset by lower deposit volumes.

North America GCB average deposits of $180 billion decreased a net 2% year-over-year, primarily driven by a reduction in money market balances, as clients transferred money to investments. North America GCB average retail loans of $56 billion grew 1% from the prior year. Assets under management of $60 billion were largely unchanged from the prior year, as 5% underlying growth was offset by the impact of market movements, due to the equity market sell-off at the end of 2018. Average Citi-branded card loans of $88 billion increased 4%, while Citi-branded card purchase sales of $344 billion increased 8% versus the prior year. Average Citi retail services loans of $48 billion increased 6% versus the prior year, while Citi retail services purchase sales of $87 billion were up 7%. For additional information on the results of operations of North America GCB for 2018, see "Global Consumer Banking—North America GCB" below.

International GCB revenues (consisting of Latin America GCB and Asia GCB (which includes the results of operations in certain EMEA countries)) increased 5% versus the prior year to $13.2 billion. Excluding the impact of FX translation, international GCB revenues increased 6% versus the prior year. Latin America GCB revenues

increased 13% versus the prior year, including the gain on sale in 2018. Excluding the gain on sale, Latin America GCB revenues increased 8%, driven by growth in loans and deposits as well as improved deposit spreads. Asia GCB revenues increased 2% versus the prior year, as continued growth in deposit, cards and insurance revenues was largely offset by lower investment revenues due to weak market sentiment. For additional information on the results of operations of Latin America GCB and Asia GCB for 2018, including the impact of FX translation, see “Global Consumer Banking—Latin America GCB” and “Global Consumer Banking—Asia GCB” below.
Year-over-year, international GCB average deposits of $127 billion increased 4%, average retail loans of $90 billion increased 3%, assets under management of $98 billion decreased 1%, average card loans of $24 billion increased 2% and card purchase sales of $104 billion increased 7%, all excluding the impact of FX translation.

Institutional Clients Group
ICG net income of $12.2 billion increased 35%. Excluding the one-time impact of Tax Reform in the prior year, ICG net income increased 11%, driven by a lower effective tax rate and higher revenues, partially offset by higher operating expenses and higher cost of credit. ICG operating expenses increased 3% to $21.0 billion, as higher compensation costs, volume-related expenses and continued investments were partially offset by efficiency savings.
ICG revenues were $37.0 billion in 2018, up 1% from the prior year, as a 6% increase in Banking revenues was largely offset by a 3% decrease in Markets and securities services, including the impact of the gain on sale in the prior year. Excluding the gain on sale in the prior year, revenues increased 3%, primarily driven by a 6% increase in Banking

revenues, as Markets and securities services revenues were largely unchanged versus the prior year. The increase in Banking revenues included the impact of $45 million of gains on loan hedges within corporate lending, compared to losses of $133 million in the prior year.
Banking revenues of $19.9 billion (excluding the impact of gains (losses) on loan hedges within corporate lending) increased 5%, driven by solid growth in treasury and trade solutions, private bank and corporate lending, partially offset by lower revenues in investment banking. Investment banking revenues of $5.0 billion decreased 7% versus the prior year, as growth in advisory was more than offset by a decline in both debt and equity underwriting, largely reflecting lower market activity. Advisory revenues increased 16% to $1.3 billion, equity underwriting revenues decreased 12% to $991 million and debt underwriting revenues decreased 13% to $2.7 billion, all versus the prior year.
Treasury and trade solutions revenues of $9.3 billion increased 8% versus the prior year, reflecting volume growth and improved deposit spreads, with solid growth across net interest and fee income. Private bank revenues increased 9% to $3.4 billion from the prior year, driven by growth in investments, as well as improved deposit spreads. Corporate lending revenues increased 26% to $2.3 billion. Excluding the impact of gains (losses) on loan hedges, corporate lending revenues increased 15% versus the prior year, primarily driven by loan growth and lower hedging costs.
Markets and securities services revenues of $17.0 billion decreased 3% from the prior year. Excluding the gain on sale in the prior year, Markets and securities services revenues were largely unchanged from the prior year, as a decline in fixed income markets revenues was offset by an increase in both equity markets and securities services revenues.
Fixed income markets revenues of $11.6 billion decreased 6% from the prior year, driven by lower revenues in both rates and currencies and spread products, reflecting the more challenging environment. Equity markets revenues of $3.4 billion increased 19% from the prior year (14% excluding an episodic loss in derivatives in the prior year), driven by growth in derivatives and prime finance as well as higher investor client revenue, partially offset by a modest decline in cash equities. Securities services revenues of $2.6 billion increased 11%, driven by growth in client volumes and higher interest revenue. For additional information on the results of operations of ICG for 2018, see "Institutional Clients Group" below.

Corporate/Other
Corporate/Other net income was $107 million in 2018, compared to a net loss of $19.7 billion in the prior year. Excluding the one-time impact of Tax Reform in both periods, Corporate/Other net income declined 92% to $13 million, largely reflecting lower revenues, partially offset by lower operating expenses and lower cost of credit. Operating expenses of $2.3 billion declined 40% from the prior year, largely reflecting the wind-down of legacy assets, lower infrastructure costs and lower legal expenses. Corporate/Other revenues were $2.1 billion, down 33% from the prior year, primarily reflecting the continued wind-down of legacy assets. For additional information on the results of operations of Corporate/Other for 2018, see "Corporate/Other" below.

RESULTS OF OPERATIONS
SUMMARY OF SELECTED FINANCIAL DATA—PAGE 1
Citigroup Inc. and Consolidated Subsidiaries

In millions of dollars, except per share amounts and ratios	2018	2017	2016	2015	2014
Net interest revenue	$46,562	$45,061	$45,476	$47,093	$48,445
Non-interest revenue	26,292	27,383	25,321	30,184	29,731
Revenues, net of interest expense	$72,854	$72,444	$70,797	$77,277	$78,176
Operating expenses	41,841	42,232	42,338	44,538	56,008
Provisions for credit losses and for benefits and claims	7,568	7,451	6,982	7,913	7,467
Income from continuing operations before income taxes	$23,445	$22,761	$21,477	$24,826	$14,701
Income taxes[(1)]	5,357	29,388	6,444	7,440	7,197
Income (loss) from continuing operations	$18,088	$(6,627)	$15,033	$17,386	$7,504
Income (loss) from discontinued operations, net of taxes[(2)]	(8)	(111)	(58)	(54)	(2)
Net income (loss) before attribution of noncontrolling interests	$18,080	$(6,738)	$14,975	$17,332	$7,502
Net income attributable to noncontrolling interests	35	60	63	90	192
Citigroup's net income (loss)[(1)]	$18,045	$(6,798)	$14,912	$17,242	$7,310
Less:					
Preferred dividends—Basic	$1,173	$1,213	$1,077	$769	$511
Dividends and undistributed earnings allocated to employee restricted and deferred shares that contain nonforfeitable rights to dividends, applicable to basic EPS	200	37	195	224	110
Income (loss) allocated to unrestricted common shareholders for basic and diluted EPS	$16,672	$(8,048)	$13,640	$16,249	$6,689
Earnings per share					
Basic					
Income (loss) from continuing operations	$6.69	$(2.94)	$4.74	$5.43	$2.21
Net income (loss)	6.69	(2.98)	4.72	5.41	2.21
Diluted					
Income (loss) from continuing operations	$6.69	$(2.94)	$4.74	$5.42	$2.20
Net income (loss)	6.68	(2.98)	4.72	5.40	2.20
Dividends declared per common share	1.54	0.96	0.42	0.16	0.04

Table continues on the next page, including footnotes.

SUMMARY OF SELECTED FINANCIAL DATA—PAGE 2

In millions of dollars, except per share amounts, ratios and direct staff	2018	2017	2016	2015	2014
At December 31:					
Total assets	$1,917,383	$1,842,465	$1,792,077	$1,731,210	$1,842,181
Total deposits	1,013,170	959,822	929,406	907,887	899,332
Long-term debt	231,999	236,709	206,178	201,275	223,080
Citigroup common stockholders' equity[1]	177,760	181,487	205,867	205,139	199,717
Total Citigroup stockholders' equity[1]	196,220	200,740	225,120	221,857	210,185
Direct staff (in thousands)	204	209	219	231	241
Performance metrics					
Return on average assets	0.94%	(0.36)%	0.82%	0.95%	0.39%
Return on average common stockholders' equity[1][3]	9.4	(3.9)	6.6	8.1	3.4
Return on average total stockholders' equity[1][3]	9.1	(3.0)	6.5	7.9	3.5
Efficiency ratio (total operating expenses/total revenues)	57.4	58.3	59.8	57.6	71.6
Basel III ratios—full implementation[1][4]					
Common Equity Tier 1 Capital[5]	11.86%	12.36%	12.57%	12.07%	10.57%
Tier 1 Capital[5]	13.46	14.06	14.24	13.49	11.45
Total Capital[5]	16.18	16.30	16.24	15.30	12.80
Supplementary Leverage ratio	6.41	6.68	7.22	7.08	5.94
Citigroup common stockholders' equity to assets[1]	9.27%	9.85%	11.49%	11.85%	10.84%
Total Citigroup stockholders' equity to assets[1]	10.23	10.90	12.56	12.82	11.41
Dividend payout ratio[6]	23.1	NM	8.9	3.0	1.8
Total payout ratio[7]	109.1	NM	77.1	36.0	19.9
Book value per common share[1]	$75.05	$70.62	$74.26	$69.46	$66.05
Tangible book value (TBV) per share[1][8]	63.79	60.16	64.57	60.61	56.71

(1) 2017 includes the one-time impact related to the enactment of Tax Reform. 2018 reflects the tax rate structure under Tax Reform. For additional information, see "Significant Accounting Policies and Estimates—Income Taxes" below.

(2) See Note 2 to the Consolidated Financial Statements for additional information on Citi's discontinued operations.

(3) The return on average common stockholders' equity is calculated using net income less preferred stock dividends divided by average common stockholders' equity. The return on average total Citigroup stockholders' equity is calculated using net income divided by average Citigroup stockholders' equity.

(4) Citi's risk-based capital and leverage ratios for 2017 and prior years are non-GAAP financial measures, which reflect full implementation of regulatory capital adjustments and deductions prior to the effective date of January 1, 2018.

(5) As of December 31, 2018 and 2017, Citi's reportable Common Equity Tier 1 Capital and Tier 1 Capital ratios were the lower derived under the Basel III Standardized Approach, whereas the reportable Total Capital ratio was the lower derived under the Basel III Advanced Approaches framework. For all prior periods presented, Citi's Common Equity Tier 1 Capital, Tier 1 Capital and Total Capital ratios were the lower derived under the Basel III Advanced Approaches framework.

(6) Dividends declared per common share as a percentage of net income per diluted share.

(7) Total common dividends declared plus common stock repurchases as a percentage of net income available to common shareholders. See "Consolidated Statement of Changes in Stockholders' Equity," Note 10 to the Consolidated Financial Statements and "Equity Security Repurchases" below for the component details.

(8)

For information on TBV, see “Capital Resources—Tangible Common Equity, Book Value Per Share, Tangible Book Value Per Share and Returns on Equity” below.

NM Not meaningful

SEGMENT AND BUSINESS—INCOME (LOSS) AND REVENUES
CITIGROUP INCOME

In millions of dollars	2018	2017[1]	2016	% Change 2018 vs. 2017	% Change 2017 vs. 2016
Income (loss) from continuing operations					
Global Consumer Banking					
North America	$3,340	$1,990	$3,239	68 %	(39)%
Latin America	928	610	633	52	(4)
Asia[2]	1,494	1,278	1,059	17	21
Total	$5,762	$3,878	$4,931	49 %	(21)%
Institutional Clients Group					
North America	$3,500	$2,355	$3,515	49 %	(33)%
EMEA	3,891	2,832	2,345	37	21
Latin America	1,889	1,544	1,454	22	6
Asia	2,920	2,335	2,211	25	6
Total	$12,200	$9,066	$9,525	35 %	(5)%
Corporate/Other	$126	$(19,571)	$577	NM	NM
Income (loss) from continuing operations	$18,088	$(6,627)	$15,033	NM	NM
Discontinued operations	$(8)	$(111)	$(58)	93 %	(91)%
Net income attributable to noncontrolling interests	35	60	63	(42)	(5)
Citigroup's net income (loss)	$18,045	$(6,798)	$14,912	NM	NM

(1) 2017 includes the one-time impact related to the enactment of Tax Reform. For additional information, see "Significant Accounting Policies and Estimates—Income Taxes" below.
(2) Asia GCB includes the results of operations of GCB activities in certain EMEA countries for all periods presented.
NM Not meaningful

CITIGROUP REVENUES

In millions of dollars	2018	2017	2016	% Change 2018 vs. 2017	% Change 2017 vs. 2016
Global Consumer Banking					
North America	$20,544	$20,270	$19,764	1 %	3 %
Latin America	5,760	5,222	4,971	10	5
Asia[(1)]	7,473	7,346	6,889	2	7
Total	$33,777	$32,838	$31,624	3 %	4 %
Institutional Clients Group					
North America	$12,914	$13,923	$12,767	(7)%	9 %
EMEA	11,770	10,879	10,012	8	9
Latin America	4,504	4,385	4,125	3	6
Asia	7,806	7,287	7,036	7	4
Total	$36,994	$36,474	$33,940	1 %	7 %
Corporate/Other	$2,083	$3,132	$5,233	(33)%	(40)%
Total Citigroup net revenues	$72,854	$72,444	$70,797	1 %	2 %

(1) Asia GCB includes the results of operations of GCB activities in certain EMEA countries for all periods presented.

SEGMENT BALANCE SHEET[1]

In millions of dollars	Global Consumer Banking	Institutional Clients Group	Corporate/Other and consolidating eliminations[2]	Citigroup parent company-issued long-term debt and stockholders' equity[3]	Total Citigroup consolidated
Assets					
Cash and deposits with banks	$8,338	$66,963	$ 112,804	$—	$188,105
Federal funds sold and securities borrowed and purchased under agreements to resell	140	270,322	222	—	270,684
Trading account assets	949	245,521	9,647	—	256,117
Investments	1,152	116,006	241,449	—	358,607
Loans, net of unearned income and allowance for loan losses	305,631	351,333	14,917	—	671,881
Other assets	37,551	99,638	34,800	—	171,989
Net inter-segment liquid assets[4]	78,378	244,387	(322,765)	—	—
Total assets	$432,139	$1,394,170	$ 91,074	$—	$1,917,383
Liabilities and equity					
Total deposits	$308,106	$689,983	$ 15,081	$—	$1,013,170
Federal funds purchased and securities loaned and sold under agreements to repurchase	4,459	173,302	7	—	177,768
Trading account liabilities	140	143,751	414	—	144,305
Short-term borrowings	491	22,381	9,474	—	32,346
Long-term debt[3]	1,865	42,557	43,809	143,768	231,999
Other liabilities	18,854	88,036	13,831	—	120,721
Net inter-segment funding (lending)[3]	98,224	234,160	7,604	(339,988)	—
Total liabilities	$432,139	$1,394,170	$ 90,220	$(196,220)	$1,720,309
Total stockholders' equity[5]	—	—	854	196,220	197,074
Total liabilities and equity	$432,139	$1,394,170	$ 91,074	$—	$1,917,383

(1) The supplemental information presented in the table above reflects Citigroup's consolidated GAAP balance sheet by reporting segment as of December 31, 2018. The respective segment information depicts the assets and liabilities managed by each segment as of such date.

(2) Consolidating eliminations for total Citigroup and Citigroup parent company assets and liabilities are recorded within Corporate/Other.

(3) The total stockholders' equity and the majority of long-term debt of Citigroup reside in the Citigroup parent company Consolidated Balance Sheet. Citigroup allocates stockholders' equity and long-term debt to its businesses through inter-segment allocations as shown above.

(4) Represents the attribution of Citigroup's liquidity assets (primarily consisting of cash, marketable equity securities and available-for-sale debt securities) to the various businesses based on Liquidity Coverage Ratio (LCR) assumptions.

(5) Corporate/Other equity represents noncontrolling interests.

GLOBAL CONSUMER BANKING

Global Consumer Banking (GCB) consists of consumer banking businesses in North America, Latin America (consisting of Citi's consumer banking business in Mexico) and Asia. GCB provides traditional banking services to retail customers through retail banking, including commercial banking, and Citi-branded cards and Citi retail services (for additional information on these businesses, see "Citigroup Segments" above and "Managing Global Risk—Consumer Credit" below). GCB is focused on its priority markets in the U.S., Mexico and Asia with 2,410 branches in 19 countries and jurisdictions as of December 31, 2018. Asia GCB also includes traditional retail banking and Citi-branded card products that are provided to retail customers in certain EMEA countries. At December 31, 2018, GCB had approximately $432 billion in assets and $308 billion in deposits.

GCB's overall strategy is to leverage Citi's global footprint and be the pre-eminent bank for the emerging affluent and affluent consumers in large urban centers. In credit cards and in certain retail markets (including commercial banking), Citi serves customers in a somewhat broader set of segments and geographies.

In millions of dollars, except as otherwise noted	2018	2017	2016	% Change 2018 vs. 2017	% Change 2017 vs. 2016
Net interest revenue	$28,583	$27,425	$26,232	4 %	5 %
Non-interest revenue	5,194	5,413	5,392	(4)	—
Total revenues, net of interest expense	$33,777	$32,838	$31,624	3 %	4 %
Total operating expenses	$18,590	$18,003	$17,627	3 %	2 %
Net credit losses	$6,920	$6,562	$5,610	5 %	17 %
Credit reserve build (release)	563	965	708	(42)	36
Provision (release) for unfunded lending commitments	—	(2)	3	100	NM
Provision for benefits and claims	103	116	106	(11)	9
Provisions for credit losses and for benefits and claims (LLR & PBC)	$7,586	$7,641	$6,427	(1)%	19 %
Income from continuing operations before taxes	$7,601	$7,194	$7,570	6 %	(5)%
Income taxes	1,839	3,316	2,639	(45)	26
Income from continuing operations	$5,762	$3,878	$4,931	49 %	(21)%
Noncontrolling interests	7	9	7	(22)	29
Net income	$5,755	$3,869	$4,924	49 %	(21)%
Balance Sheet data and ratios (in billions of dollars)					
Total EOP assets	$432	$428	$411	1 %	4 %
Average assets	423	417	395	1	6
Return on average assets	1.36 %	0.93 %	1.25 %		
Efficiency ratio	55	55	56		
Average deposits	$307	$306	$298	—	3
Net credit losses as a percentage of average loans	2.26 %	2.21 %	2.01 %		
Revenue by business					
Retail banking	$14,065	$13,481	$12,990	4 %	4 %
Cards[(1)]	19,712	19,357	18,634	2	4
Total	$33,777	$32,838	$31,624	3 %	4 %
Income from continuing operations by business					
Retail banking	$2,304	$1,656	$1,538	39 %	8 %
Cards[(1)]	3,458	2,222	3,393	56	(35)
Total	$5,762	$3,878	$4,931	49 %	(21)%

Table continues on the next page, including footnotes.

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Foreign currency (FX) translation impact					
Total revenue—as reported	$33,777	$32,838	$31,624	3 %	4 %
Impact of FX translation(2)	—	(132)	(54)		
Total revenues—ex-FX(3)	$33,777	$32,706	$31,570	3 %	4 %
Total operating expenses—as reported	$18,590	$18,003	$17,627	3 %	2 %
Impact of FX translation(2)	—	(54)	7		
Total operating expenses—ex-FX(3)	$18,590	$17,949	$17,634	4 %	2 %
Total provisions for LLR & PBC—as reported	$7,586	$7,641	$6,427	(1)%	19 %
Impact of FX translation(2)	—	(32)	(31)		
Total provisions for LLR & PBC—ex-FX(3)	$7,586	$7,609	$6,396	— %	19 %
Net income—as reported	$5,755	$3,869	$4,924	49 %	(21)%
Impact of FX translation(2)	—	(28)	(19)		
Net income—ex-FX(3)	$5,755	$3,841	$4,905	50 %	(22)%

(1) Includes both Citi-branded cards and Citi retail services.

(2) Reflects the impact of FX translation into U.S. dollars at the 2018 average exchange rates for all periods presented.

(3) Presentation of this metric excluding FX translation is a non-GAAP financial measure.

NORTH AMERICA GCB

North America GCB provides traditional retail banking, including commercial banking, Citi-branded cards products and Citi retail services card products to retail customers and small to mid-size businesses, as applicable, in the U.S. North America GCB's U.S. cards product portfolio includes its proprietary portfolio (including the Citi Double Cash, Thank You and Value cards) and co-branded cards (including, among others, American Airlines and Costco) within Citi-branded cards, as well as its co-brand and private label relationships (including, among others, Sears, The Home Depot, Best Buy and Macy's) within Citi retail services.

As of December 31, 2018, North America GCB's 689 retail bank branches were concentrated in the six key metropolitan areas of New York, Chicago, Miami, Washington, D.C., Los Angeles and San Francisco. Also as of December 31, 2018, North America GCB had approximately 9.1 million retail banking customer accounts, $56.8 billion in retail banking loans and $181.2 billion in deposits. In addition, North America GCB had approximately 121 million Citi-branded and Citi retail services credit card accounts with $144.5 billion in outstanding card loan balances.

In millions of dollars, except as otherwise noted	2018	2017	2016	% Change 2018 vs. 2017	% Change 2017 vs. 2016
Net interest revenue	$19,621	$18,879	$18,131	4 %	4 %
Non-interest revenue	923	1,391	1,633	(34)	(15)
Total revenues, net of interest expense	$20,544	$20,270	$19,764	1 %	3 %
Total operating expenses	$10,631	$10,245	$10,067	4 %	2 %
Net credit losses	$5,097	$4,796	$3,919	6 %	22 %
Credit reserve build	438	869	653	(50)	33
Provision for unfunded lending commitments	—	4	6	(100)	(33)
Provision for benefits and claims	22	33	34	(33)	(3)
Provisions for credit losses and for benefits and claims	$5,557	$5,702	$4,612	(3)%	24 %
Income from continuing operations before taxes	$4,356	$4,323	$5,085	1 %	(15)%
Income taxes	1,016	2,333	1,846	(56)	26
Income from continuing operations	$3,340	$1,990	$3,239	68 %	(39)%
Noncontrolling interests	—	(1)	(2)	100	50
Net income	$3,340	$1,991	$3,241	68 %	(39)%
Balance Sheet data and ratios (in billions of dollars)					
Average assets	$249	$248	$229	— %	8 %
Return on average assets	1.34 %	0.80 %	1.42 %		
Efficiency ratio	52	51	51		
Average deposits	$180.4	$184.1	$183.2	(2)	—
Net credit losses as a percentage of average loans	2.66 %	2.58 %	2.29 %		
Revenue by business					
Retail banking	$5,315	$5,264	$5,227	1 %	1 %
Citi-branded cards	8,628	8,579	8,150	1	5
Citi retail services	6,601	6,427	6,387	3	1
Total	$20,544	$20,270	$19,764	1 %	3 %
Income from continuing operations by business					
Retail banking	$565	$412	$534	37 %	(23)%
Citi-branded cards	1,581	1,009	1,441	57	(30)
Citi retail services	1,194	569	1,264	NM	(55)
Total	$3,340	$1,990	$3,239	68 %	(39)%

NM Not meaningful

2018 vs. 2017

Net income increased 68%, largely reflecting the impact of the $750 million one-time, non-cash charge recorded in the tax line due to the impact of Tax Reform in 2017 (for additional information, see "Significant Accounting Policies and Significant Estimates—Income Taxes" below). Excluding the one-time impact of Tax Reform, net income increased 22%, driven primarily by a lower effective tax rate due to Tax Reform, higher revenues and lower cost of credit, partially offset by higher expenses.

Revenues increased 1%, driven by higher revenues across all businesses.

Retail banking revenues increased 1%. Excluding mortgage revenues (decline of 27%), retail banking revenues were up 6%, driven by continued growth in deposit margins, partially offset by lower deposit volumes. Average deposits decreased 2% year-over-year, primarily driven by a reduction in money market balances, as clients transferred money to investments. Assets under management were largely unchanged from the prior year as 5% underlying growth was offset by the impact of market movements, due to the equity market sell-off at the end of 2018. The decline in mortgage revenues was driven by lower origination activity and higher cost of funds, reflecting the higher interest rate environment.

Cards revenues increased 1%. In Citi-branded cards, revenues increased 1%, as growth in interest-earning balances, driven by maturity of recent vintages and strength in loan balance retention, was largely offset by the impact of previously disclosed partnership terms that went into effect in 2018. Citi sold its Hilton portfolio in the first quarter of 2018, which resulted in a gain of approximately $150 million. This gain was offset by the loss of operating revenue in the portfolio in 2018. Average loans increased 4% and purchase sales increased 8%.

Citi retail services revenues increased 3%, primarily reflecting organic loan growth and the benefit of the L.L.Bean portfolio acquisition in June 2018, partially offset by higher partner payments. Average loans increased 6% and purchase sales increased 7%.

Expenses increased 4%, as volume growth and ongoing investments were partially offset by efficiency savings.

Provisions decreased 3% from the prior year, driven by a lower net loan loss reserve build, partially offset by higher net credit losses. The net loan loss reserve build was $438 million in 2018, primarily reflecting volume growth and seasoning in both cards portfolios. This compares to a build of $873 million in the prior year, which included $300 million related to an increase in net flow rates in later delinquency buckets in Citi retail services and a slight increase in delinquencies for the Citi-branded cards portfolio.

Net credit losses increased 6% to $5.1 billion, driven by higher net credit losses in both Citi-branded cards (up 6% to $2.6 billion) and Citi retail services (up 9% to $2.4 billion). The increase in the cards net credit losses primarily reflected volume growth and seasoning in both portfolios.

For additional information on North America GCB's retail banking, including commercial banking, and its Citi-branded cards and Citi retail services portfolios, see "Credit Risk—Consumer Credit" below.

As part of its Citi retail services business, Citi issues co-brand and private label credit card products with Sears. As previously disclosed, in October 2018, Sears filed for Chapter 11 bankruptcy protection and in connection with the filing Sears has closed, or announced plans to close, additional stores. On February 11, 2019, after bankruptcy court approval, ESL Investments, Inc. purchased substantially all of Sears' assets on a going concern basis, including its credit card program agreement with Citi. The impact to Citi retail services, from reduced new account acquisitions or lower purchase sales, will depend in part on the magnitude and timing of additional Sears store closures and continued customer attrition. Citi does not currently expect that the sale of Sears to ESL will have an immediate or ongoing material impact on Citi's consolidated results. For additional information on the potential impact from a deterioration in or failure to maintain Citi's co-branding and private label credit card relationships, see "Risk Factors—Strategic Risks" below.

2017 vs. 2016

Net income decreased 39% largely due to the one-time impact of Tax Reform. Excluding the one-time impact of Tax Reform, net income decreased 15%, due to higher cost of credit and higher expenses, partially offset by higher revenues.

Revenues increased 3%, driven by higher revenues across all businesses.

Retail banking revenues increased 1%. Excluding mortgage revenues (down 32%), retail banking revenues were up 9%, driven by growth in checking deposits, loans (average loans up 3%) and assets under management (up 14%) and increased commercial banking activity, as well as a benefit from higher interest rates.

Cards revenues increased 3%. In Citi-branded cards, revenues increased 5%, primarily reflecting the acquisition of the Costco portfolio, as well as modest growth in interest-earning balances, partially offset by the continued run-off of non-core portfolios and the higher cost to fund growth in transactor and promotional balances.

Citi retail services revenues increased 1%, as loan growth was partially offset by the impact of the renewal and extension of certain partnerships within the portfolio, as well as the absence of gains on sales of two cards portfolios in 2016.

Expenses increased 2%, driven by the addition of the Costco portfolio, higher volume-related expenses and investments as well as remediation costs related to a CARD Act matter, partially offset by efficiency savings.

Provisions increased 24%, driven by higher net credit losses and a higher net loan loss reserve build.

Net credit losses increased 22%, largely driven by higher net credit losses in both cards portfolios, primarily reflecting volume growth and seasoning, as well as the impact of acquiring the Costco portfolio.

The net loan loss reserve build was $873 million, compared to a build of $659 million in the prior year, driven by volume growth and seasoning in both cards portfolios, as well as the increase in net flow rates in later delinquency buckets, primarily in Citi retail services.

LATIN AMERICA GCB

Latin America GCB provides traditional retail banking, including commercial banking, and its Citi-branded card products to retail customers and small to mid-size businesses in Mexico through Citibanamex, one of Mexico's largest banks.

At December 31, 2018, Latin America GCB had 1,463 retail branches in Mexico, with approximately 29.4 million retail banking customer accounts, $19.7 billion in retail banking loans and $27.7 billion in deposits. In addition, the business had approximately 5.6 million Citi-branded card accounts with $5.7 billion in outstanding loan balances.

In millions of dollars, except as otherwise noted	2018	2017	2016	% Change 2018 vs. 2017	% Change 2017 vs. 2016
Net interest revenue	$4,058	$3,844	$3,606	6%	7%
Non-interest revenue[1]	1,702	1,378	1,365	24	1
Total revenues, net of interest expense	$5,760	$5,222	$4,971	10%	5%
Total operating expenses	$3,156	$2,959	$2,885	7%	3%
Net credit losses	$1,153	$1,117	$1,040	3%	7%
Credit reserve build	83	125	83	(34)	51
Provision (release) for unfunded lending commitments	—	(1)	1	100	NM
Provision for benefits and claims	81	83	72	(2)	15
Provisions for credit losses and for benefits and claims (LLR & PBC)	$1,317	$1,324	$1,196	(1)%	11%
Income from continuing operations before taxes	$1,287	$939	$890	37%	6%
Income taxes	359	329	257	9	28
Income from continuing operations	$928	$610	$633	52%	(4)%
Noncontrolling interests	—	5	5	(100)	—
Net income	$928	$605	$628	53%	(4)%
Balance Sheet data and ratios (in billions of dollars)					
Average assets	$44	$45	$47	(2)%	(4)%
Return on average assets	2.11%	1.34%	1.34%		
Efficiency ratio	55	57	58		
Average deposits	$28.7	$27.4	$25.7	5	7
Net credit losses as a percentage of average loans	4.47%	4.42%	4.32%		
Revenue by business					
Retail banking[1]	$4,195	$3,752	$3,493	12%	7%
Citi-branded cards	1,565	1,470	1,478	6	(1)
Total	$5,760	$5,222	$4,971	10%	5%
Income from continuing operations by business					
Retail banking[1]	$722	$426	$352	69%	21%
Citi-branded cards	206	184	281	12	(35)
Total	$928	$610	$633	52%	(4)%
FX translation impact					
Total revenues—as reported	$5,760	$5,222	$4,971	10%	5%
Impact of FX translation[2]	—	(105)	(145)		
Total revenues—ex-FX[3]	$5,760	$5,117	$4,826	13%	6%
Total operating expenses—as reported	$3,156	$2,959	$2,885	7%	3%
Impact of FX translation[2]	—	(50)	(66)		
Total operating expenses—ex-FX[3]	$3,156	$2,909	$2,819	8%	3%
Provisions for LLR & PBC—as reported	$1,317	$1,324	$1,196	(1)%	11%
Impact of FX translation[2]	—	(27)	(34)		
Provisions for LLR & PBC—ex-FX[3]	$1,317	$1,297	$1,162	2%	12%
Net income—as reported	$928	$605	$628	53%	(4)%

Impact of FX translation[2]	—	(19)	(30)		
Net income—ex-FX[3]	$928	$586	$598	58 %	(2)%

(1) 2018 includes an approximate $250 million gain on the sale of an asset management business. See Note 2 to the Consolidated Financial Statements.
(2) Reflects the impact of FX translation into U.S. dollars at the 2018 average exchange rates for all periods presented.
(3) Presentation of this metric excluding FX translation is a non-GAAP financial measure.

The discussion of the results of operations for Latin America GCB below excludes the impact of FX translation for all periods presented. Presentations of the results of operations, excluding the impact of FX translation, are non-GAAP financial measures. For a reconciliation of certain of these metrics to the reported results, see the table above.

2018 vs. 2017

Net income increased 58% to $928 million, reflecting higher revenues and a lower effective tax rate as a result of Tax Reform, partially offset by higher expenses and cost of credit.

Revenues increased 13%, including the gain on sale of an asset management business (approximately $250 million). Excluding the gain on sale, revenues were up 8%, driven by increases in both retail banking and cards.

Retail banking revenues increased 14%. Excluding the gain on sale, retail banking revenues increased 7%, driven by continued growth across commercial loans and deposits, as well as improved deposit spreads due to higher interest rates. Average loans grew 3%, and average deposits grew 6%, while assets under management declined 5%, primarily driven by market performance during the second half of 2018. Cards revenues increased 9%, due to continued volume growth, reflecting higher purchase sales (up 11%) and full-rate revolving loans. Average cards loans grew 6%.

Expenses increased 8%, driven by volume growth, ongoing investment spending and higher repositioning charges, partially offset by efficiency savings. As previously disclosed, Citi continues to execute on its investment plans for Citibanamex (totaling more than $1 billion through 2020), including initiatives to modernize the branch network, enhance digital capabilities and upgrade core operating platforms.

Provisions increased 2%, as higher net credit losses were largely offset by a lower net loan loss reserve build. The increase in net credit losses was primarily due to volume growth and seasoning in cards.

For additional information on Latin America GCB's retail banking, including commercial banking, and its Citi-branded cards portfolios, see "Credit Risk—Consumer Credit" below.

For additional information on potential macroeconomic and geopolitical challenges and other risks facing Latin America GCB, see "Risk Factors—Strategic Risks" below.

2017 vs. 2016

Net income decreased 2%, primarily driven by higher credit costs and expenses, partially offset by higher revenues.

Revenues increased 6%, driven by higher revenues in retail banking.

Retail banking revenues increased 8%, reflecting continued growth in volumes, including increases in average deposits (8%), average loans (6%) and assets under management (4%), as well as improved deposit spreads, driven by higher interest rates. Cards revenues were largely unchanged, as continued improvement in full-rate revolving loans was offset by a higher cost to fund non-revolving loans.

Expenses increased 3%, as ongoing investment spending and business growth were partially offset by efficiency savings.

Provisions increased 12%, primarily driven by higher net credit losses and an increase in the net loan loss reserve build, largely reflecting volume growth and seasoning, as well as a Mexico earthquake-related loan loss reserve build.

ASIA GCB

Asia GCB provides traditional retail banking, including commercial banking, and its Citi-branded card products to retail customers and small to mid-size businesses, as applicable. During 2018, Asia GCB's most significant revenues were from Singapore, Hong Kong, Korea, India, Australia, Taiwan, Thailand, Philippines, Indonesia and Malaysia. Asia GCB also includes traditional retail banking and Citi-branded card products that are provided to retail customers in certain EMEA countries, primarily in Poland, Russia and the United Arab Emirates.

At December 31, 2018, on a combined basis, the businesses had 258 retail branches, approximately 16.0 million retail banking customer accounts, $69.2 billion in retail banking loans and $99.2 billion in deposits. In addition, the businesses had approximately 15.3 million Citi-branded card accounts with $19.3 billion in outstanding loan balances.

In millions of dollars, except as otherwise noted[1]	2018	2017	2016	% Change 2018 vs. 2017	% Change 2017 vs. 2016
Net interest revenue	$4,904	$4,702	$4,495	4 %	5 %
Non-interest revenue	2,569	2,644	2,394	(3)	10
Total revenues, net of interest expense	$7,473	$7,346	$6,889	2 %	7 %
Total operating expenses	$4,803	$4,799	$4,675	— %	3 %
Net credit losses	$670	$649	$651	3 %	— %
Credit reserve build (release)	42	(29)	(28)	NM	(4)
Provision (release) for unfunded lending commitments	—	(5)	(4)	100	(25)
Provisions for credit losses	$712	$615	$619	16 %	(1)%
Income from continuing operations before taxes	$1,958	$1,932	$1,595	1 %	21 %
Income taxes	464	654	536	(29)	22
Income from continuing operations	$1,494	$1,278	$1,059	17 %	21 %
Noncontrolling interests	7	5	4	40	25
Net income	$1,487	$1,273	$1,055	17 %	21 %
Balance Sheet data and ratios (in billions of dollars)					
Average assets	$131	$124	$119	6 %	4 %
Return on average assets	1.14 %	1.03 %	0.89 %		
Efficiency ratio	64	65	68		
Average deposits	$98.0	$94.6	$89.5	4	6
Net credit losses as a percentage of average loans	0.76 %	0.76 %	0.77 %		
Revenue by business					
Retail banking	$4,555	$4,465	$4,270	2 %	5 %
Citi-branded cards	2,918	2,881	2,619	1	10
Total	$7,473	$7,346	$6,889	2 %	7 %
Income from continuing operations by business					
Retail banking	$1,017	$818	$652	24 %	25 %
Citi-branded cards	477	460	407	4	13
Total	$1,494	$1,278	$1,059	17 %	21 %

FX translation impact					
Total revenues—as reported	$7,473	$7,346	$6,889	2 %	7 %
Impact of FX translation[2]	—	(27)	91		
Total revenues—ex-FX[3]	$7,473	$7,319	$6,980	2 %	5 %
Total operating expenses—as reported	$4,803	$4,799	$4,675	— %	3 %
Impact of FX translation[2]	—	(4)	73		
Total operating expenses—ex-FX[3]	$4,803	$4,795	$4,748	— %	1 %
Provisions for credit losses—as reported	$712	$615	$619	16 %	(1)%
Impact of FX translation[2]	—	(5)	3		
Provisions for credit losses—ex-FX[3]	$712	$610	$622	17 %	(2)%
Net income—as reported	$1,487	$1,273	$1,055	17 %	21 %
Impact of FX translation[2]	—	(9)	11		
Net income—ex-FX[3]	$1,487	$1,264	$1,066	18 %	19 %

(1) Asia GCB includes the results of operations of GCB activities in certain EMEA countries for all periods presented.
(2) Reflects the impact of FX translation into U.S. dollars at the 2018 average exchange rates for all periods presented.
(3) Presentation of this metric excluding FX translation is a non-GAAP financial measure.

The discussion of the results of operations for Asia GCB below excludes the impact of FX translation for all periods presented. Presentations of the results of operations, excluding the impact of FX translation, are non-GAAP financial measures. For a reconciliation of certain of these metrics to the reported results, see the table above.

2018 vs. 2017

Net income increased 18%, reflecting higher revenues and a lower effective tax rate as a result of Tax Reform, partially offset by higher cost of credit.

Revenues increased 2%, driven by higher retail banking and cards revenues.

Retail banking revenues increased 2%, as continued growth in deposit and insurance revenues was partially offset by lower investment revenues due to weak market sentiment. Average deposits increased 3% and assets under management grew 1%, while investment sales decreased 8%. Retail lending revenues increased 1%, as volume growth in personal and commercial loans was largely offset by lower mortgage revenues due to spread compression. Average retail banking loans grew 3%.

Cards revenues increased 2%. Excluding the benefit of modest one-time gains in the prior year, revenues increased 4%, driven by continued growth in purchase sales (up 6%) and average loans (up 2%).

Expenses were largely unchanged, as volume-driven growth and ongoing investment spending were offset by efficiency savings.

Provisions increased 17%, primarily driven by higher net credit losses and a modest net loan loss reserve build compared to a modest net loan loss reserve release in the prior year due to volume growth. Overall credit quality continued to remain stable in the region.

For additional information on Asia GCB's retail banking portfolios, including commercial banking, and its Citi-branded cards portfolio, see "Credit Risk—Consumer Credit" below.

2017 vs. 2016

Net income increased 19%, reflecting higher revenues and lower cost of credit, partially offset by higher expenses.

Revenues increased 5%, driven by improvement in cards and wealth management revenues, partially offset by continued lower retail lending revenues.

Retail banking revenues increased 3%, primarily due to higher investment revenues, driven by improved investor sentiment, partially offset by the repositioning of the retail loan portfolio. The lower retail lending revenues (down 4%) reflected lower average loans (down 1%) due to the continued optimization of the portfolio away from lower yielding mortgage loans.

Cards revenues increased 8%, reflecting 5% growth in average loans and 6% growth in purchase sales, both of which benefited from the portfolio acquisition in Australia, as well as modest gains related to sales of merchant acquiring businesses in certain countries.

Expenses increased 1%, resulting from volume-driven growth and ongoing investment spending, partially offset by efficiency savings.

Provisions decreased 2%, primarily driven by a decrease in net credit losses.

INSTITUTIONAL CLIENTS GROUP

Institutional Clients Group (ICG) includes Banking and Markets and securities services (for additional information on these businesses, see “Citigroup Segments” above). ICG provides corporate, institutional, public sector and high-net-worth clients around the world with a full range of wholesale banking products and services, including fixed income and equity sales and trading, foreign exchange, prime brokerage, derivative services, equity and fixed income research, corporate lending, investment banking and advisory services, private banking, cash management, trade finance and securities services. ICG transacts with clients in both cash instruments and derivatives, including fixed income, foreign currency, equity and commodity products.

ICG revenue is generated primarily from fees and spreads associated with these activities. ICG earns fee income for assisting clients with transactional services and clearing and providing brokerage and investment banking services and other such activities. Such fees are recognized at the point in time when Citigroup’s performance under the terms of a contractual arrangement is completed, which is typically at the trade/execution date or closing of a transaction. Revenue generated from these activities is recorded in Commissions and fees and Investment banking. Revenue is also generated from assets under custody and administration, which is recognized as/when the associated promised service is satisfied, which normally occurs at the point in time the service is requested by the customer and provided by Citi. Revenue generated from these activities is primarily recorded in Administration and other fiduciary fees. For additional information on these various types of revenues, see Note 5 to the Consolidated Financial Statements.

In addition, as a market maker, ICG facilitates transactions, including holding product inventory to meet client demand, and earns the differential between the price at which it buys and sells the products. These price differentials and the unrealized gains and losses on the inventory are recorded in Principal transactions (for additional information on Principal transactions revenue, see Note 6 to the Consolidated Financial Statements). Other primarily includes mark-to-market gains and losses on certain credit derivatives, realized gains and losses on available-for-sale (AFS) debt securities, gains and losses on equity securities not held in trading accounts and other non-recurring gains and losses. Interest income earned on assets held, less interest paid on long- and short-term debt and to customers on deposits, is recorded as Net interest revenue.

The amount and types of Markets revenues are impacted by a variety of interrelated factors, including market liquidity; changes in market variables such as interest rates, foreign exchange rates, equity prices, commodity prices and credit spreads, as well as their implied volatilities; investor confidence and other macroeconomic conditions. Assuming all other market conditions do not change, increases in client activity levels or bid/offer spreads generally result in increases in revenues. However, changes in market conditions can significantly impact client activity levels, bid/offer spreads and the fair value of product inventory. For example, a decrease in

market liquidity may increase bid/offer spreads, decrease client activity levels and widen credit spreads on product inventory positions.

ICG’s management of the Markets businesses involves daily monitoring and evaluation of the above factors at the trading desk as well as the country level. ICG does not separately track the impact on total Markets revenues of the volume of transactions, bid/offer spreads, fair value changes of product inventory positions and economic hedges because, as noted above, these components are interrelated and are not deemed useful or necessary individually to manage the Markets businesses at an aggregate level.

In the Markets businesses, client revenues are those revenues directly attributable to client transactions at the time of inception, including commissions, interest or fees earned. Client revenues do not include the results of client facilitation activities (e.g., holding product inventory in anticipation of client demand) or the results of certain economic hedging activities.

ICG’s international presence is supported by trading floors in approximately 80 countries and a proprietary network in 98 countries and jurisdictions. At December 31, 2018, ICG had approximately $1.4 trillion of assets and $690 billion of deposits, while two of its businesses—securities services and issuer services—managed approximately $17.5 trillion of assets under custody as of December 31, 2018 and 2017.

In millions of dollars, except as otherwise noted	2018	2017	2016	% Change 2018 vs. 2017	% Change 2017 vs. 2016
Commissions and fees	$4,516	$4,318	$3,998	5 %	8 %
Administration and other fiduciary fees	2,755	2,668	2,448	3	9
Investment banking	4,352	4,661	3,868	(7)	21
Principal transactions	8,852	8,012	7,570	10	6
Other(1)	794	1,179	(143)	(33)	NM
Total non-interest revenue	$21,269	$20,838	$17,741	2 %	17 %
Net interest revenue (including dividends)	15,725	15,636	16,199	1	(3)
Total revenues, net of interest expense	$36,994	$36,474	$33,940	1 %	7 %
Total operating expenses	$20,979	$20,415	$19,669	3 %	4 %
Net credit losses	$172	$365	$516	(53)%	(29)%
Credit reserve build (release)	(104)	(221)	(64)	53	NM
Provision (release) for unfunded lending commitments	116	(159)	34	NM	NM
Provisions for credit losses	$184	$(15)	$486	NM	NM
Income from continuing operations before taxes	$15,831	$16,074	$13,785	(2)%	17 %
Income taxes	3,631	7,008	4,260	(48)	65
Income from continuing operations	$12,200	$9,066	$9,525	35 %	(5)%
Noncontrolling interests	17	57	58	(70)	(2)
Net income	$12,183	$9,009	$9,467	35 %	(5)%
EOP assets (in billions of dollars)	$1,394	$1,336	$1,277	4 %	5 %
Average assets (in billions of dollars)	1,404	1,358	1,298	3	5
Return on average assets	0.87 %	0.66 %	0.73 %		
Efficiency ratio	57	56	58		
Revenues by region					
North America	$12,914	$13,923	$12,767	(7)%	9 %
EMEA	11,770	10,879	10,012	8	9
Latin America	4,504	4,385	4,125	3	6
Asia	7,806	7,287	7,036	7	4
Total	$36,994	$36,474	$33,940	1 %	7 %
Income from continuing operations by region					
North America	$3,500	$2,355	$3,515	49 %	(33)%
EMEA	3,891	2,832	2,345	37	21
Latin America	1,889	1,544	1,454	22	6
Asia	2,920	2,335	2,211	25	6
Total	$12,200	$9,066	$9,525	35 %	(5)%
Average loans by region (in billions of dollars)					
North America	$165	$151	$145	9 %	4 %
EMEA	81	69	66	17	5
Latin America	34	34	35	—	(3)
Asia	66	62	57	6	9
Total	$346	$316	$303	9 %	4 %
EOP deposits by business (in billions of dollars)					
Treasury and trade solutions	$472	$432	$412	9 %	5 %
All other ICG businesses	218	208	200	5	4
Total	$690	$640	$612	8 %	5 %

(1)

2017 includes the approximate $580 million gain on the sale of a fixed income analytics business. 2016 includes a charge of approximately $180 million, primarily reflecting the write-down of Citi's net investment in Venezuela due to changes in the exchange rate.

NM Not meaningful

ICG Revenue Details—Excluding Gains (Losses) on Loan Hedges

In millions of dollars	2018	2017	2016	% Change 2018 vs. 2017	% Change 2017 vs. 2016
Investment banking revenue details					
Advisory	$1,301	$1,123	$1,013	16 %	11 %
Equity underwriting	991	1,121	663	(12)	69
Debt underwriting	2,719	3,126	2,776	(13)	13
Total investment banking	$5,011	$5,370	$4,452	(7)%	21 %
Treasury and trade solutions	9,289	8,635	8,022	8	8
Corporate lending—excluding gains (losses) on loan hedges[1]	2,232	1,938	1,734	15	12
Private bank	3,398	3,108	2,728	9	14
Total Banking revenues (ex-gains (losses) on loan hedges)	$19,930	$19,051	$16,936	5 %	12 %
Corporate lending—gains (losses) on loan hedges[1]	$45	$(133)	$(594)	NM	78 %
Total Banking revenues (including gains (losses) on loan hedges), net of interest expense	$19,975	$18,918	$16,342	6 %	16 %
Fixed income markets	$11,635	$12,351	$13,063	(6)%	(5)%
Equity markets	3,427	2,879	2,933	19	(2)
Securities services	2,631	2,366	2,181	11	8
Other[2]	(674)	(40)	(579)	NM	93
Total Markets and securities services revenues, net of interest expense	$17,019	$17,556	$17,598	(3)%	— %
Total revenues, net of interest expense	$36,994	$36,474	$33,940	1 %	7 %
Commissions and fees	$706	$641	$498	10 %	29 %
Principal transactions[3]	7,108	6,995	6,680	2	5
Other	380	596	595	(36)	—
Total non-interest revenue	$8,194	$8,232	$7,773	— %	6 %
Net interest revenue	3,441	4,119	5,290	(16)	(22)
Total fixed income markets	$11,635	$12,351	$13,063	(6)%	(5)%
Rates and currencies	$8,461	$8,885	$9,381	(5)%	(5)%
Spread products/other fixed income	3,174	3,466	3,682	(8)	(6)
Total fixed income markets	$11,635	$12,351	$13,063	(6)%	(5)%
Commissions and fees	$1,268	$1,271	$1,338	— %	(5)%
Principal transactions[3]	1,240	478	218	NM	NM
Other	109	7	139	NM	(95)
Total non-interest revenue	$2,617	$1,756	$1,695	49 %	4 %
Net interest revenue	810	1,123	1,238	(28)	(9)
Total equity markets	$3,427	$2,879	$2,933	19 %	(2)%

(1) Credit derivatives are used to economically hedge a portion of the corporate loan portfolio that includes both accrual loans and loans at fair value. Gains (losses) on loan hedges includes the mark-to-market on the credit derivatives and the mark-to-market on the loans in the portfolio that are at fair value. The fixed premium costs of these hedges are netted against the corporate lending revenues to reflect the cost of credit protection. Citigroup's results of operations excluding the impact of gains (losses) on loan hedges are non-GAAP financial measures.

(2) 2017 includes the approximate $580 million gain on the sale of a fixed income analytics business. 2016 includes a charge of approximately $180 million, primarily reflecting the write-down of Citi's net investment in Venezuela due to changes in the exchange rate.

(3)

Excludes principal transactions revenues of ICG businesses other than Markets and securities services, primarily treasury and trade solutions and the private bank.

NM Not meaningful

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The discussion of the results of operations for ICG below excludes (where noted) the impact of gains (losses) on hedges of accrual loans, which are non-GAAP financial measures. For a reconciliation of these metrics to the reported results, see the table above.

2018 vs. 2017

Net income increased 35%, reflecting the impact of a $2.0 billion one-time, non-cash charge recorded in the tax line due to the impact of Tax Reform in 2017 (for additional information, see "Significant Accounting Policies and Significant Estimates—Income Taxes" below). Excluding the one-time impact of Tax Reform, net income increased 11%, driven primarily by a lower effective tax rate as a result of Tax Reform and higher revenues, partially offset by higher expenses and higher cost of credit.

- Revenues increased 1%, reflecting a 6% increase in Banking (including the gains (losses) on loan hedges), largely offset by a 3% decrease in Markets and securities services. Excluding the impact of a gain of approximately $580 million on the sale of a fixed income analytics business in the prior year, revenues increased 3%, primarily driven by a 6% increase in Banking revenue, as Markets and securities services revenues were largely unchanged versus the prior year. Excluding the impact of the gains (losses) on loan hedges, Banking revenues increased 5%, driven by solid growth across treasury and trade solutions, private bank and corporate lending. Excluding the gain on sale in the prior year, Markets and securities services revenues were largely unchanged, as increases in equity markets and securities services revenues were offset by a decrease in fixed income markets revenues. Citi expects that revenues in its markets and investment banking businesses will likely reflect the overall market environment during 2019.

Within Banking:

- Investment banking revenues decreased 7%, largely reflecting a decline in market wallet and market share across debt and equity underwriting as well as the comparison to the particularly strong performance in the prior year. Advisory revenues increased 16%, reflecting strength in North America, driven by gains in wallet share and increased market activity. Equity underwriting revenues decreased 12%, primarily driven by lower revenues in EMEA. Debt underwriting revenues decreased 13%, primarily driven by lower revenues in North America.
- Treasury and trade solutions revenues increased 8%. Excluding the impact of FX translation, revenues increased 9%, reflecting strength in all regions, driven by growth across both net interest and fee income. Revenues increased in the cash business, primarily driven by continued growth in deposit balances and improved deposit spreads due to higher interest rates, as well as higher transaction volumes from both new and existing clients. The trade business experienced strong revenue growth, as the business continued to focus on high-quality loan growth, while spreads remained largely stable throughout the year. Average deposits increased 6%, with

growth across regions. Average trade loans increased 4%, driven by growth in EMEA and Asia.

- Corporate lending revenues increased 26%. Excluding the impact of gains (losses) on loan hedges, revenues increased 15%, driven by higher loan volumes and lower hedging costs. Average loans increased 9% versus the prior year.
- Private bank revenues increased 9%, driven by underlying growth across all regions, reflecting improved deposit spreads due to higher interest rates and higher managed investment revenues.

Within Markets and securities services:

- Fixed income markets revenues decreased 6%, driven by lower revenues in North America and Asia. The decrease in revenues was due to lower net interest revenue (decrease of 16%), as non-interest revenues were largely unchanged. The decline in net interest revenues was driven by rates and currencies as well as spread products and other fixed income revenues, mainly reflecting a change in the mix of trading positions in support of client activity, as well as higher funding costs, given the higher interest rate environment.

Rates and currencies revenues decreased 5%, primarily driven by lower G10 rates revenues in North America, Asia and EMEA, reflecting lower client activity given the uncertain macroenvironment and challenging trading environment, and comparison to a strong prior year, particularly in EMEA. This decrease in revenues was partially offset by higher G10 FX revenues, particularly in EMEA, reflecting the continued benefit from the return of volatility in FX markets as well as strong corporate and investor client activity. Spread products and other fixed income revenues decreased 8%, driven by North America, primarily due to the challenging trading environment characterized by widening spreads and lower investor client activity.

Equity markets revenues increased 19%. Excluding an episodic loss in derivatives of approximately $130 million related to a single client event in the prior year, revenues increased 14%, as growth in equity derivatives and prime finance was partially offset by lower cash equities revenues. Excluding the episodic loss in the prior year, equity derivatives revenues increased in all regions, driven by strong investor and corporate client activity as well as a more favorable market environment. Principal transaction revenues increased, partially offset by a decrease in net interest revenue, mainly reflecting a change in the mix of trading positions in support of client activity. Prime finance revenues increased, particularly in EMEA and Asia, reflecting growth in client balances and higher investor client activity. Cash equities revenues decreased modestly, primarily driven by Asia, due to a more challenging trading environment.

- Securities services revenues increased 11%. Excluding the impact of FX translation, revenues increased 13%, reflecting continued strength in EMEA and Asia. The increase in revenues was driven by higher fee revenues, reflecting growth in client volumes, as well as higher net interest revenue driven by higher deposit volumes and higher interest rates.

Expenses increased 3%, as higher compensation, volume-related expenses and continued investments were partially offset by efficiency savings.
Provisions increased $199 million, driven by a net loan loss reserve build of $12 million (compared to a net release of $380 million in the prior year), partially offset by a 53% decline in net credit losses. The modest net loan loss reserve build was driven by volume-related reserve builds for both funded loans and unfunded lending commitments, despite credit quality remaining stable during 2018. The decline in net credit losses was largely driven by the absence of a single client event in the fourth quarter of 2017.

2017 vs. 2016
Net income decreased 5%, reflecting the one-time impact of Tax Reform in 2017. Excluding the one-time impact of Tax Reform in 2017, net income increased 16%, primarily driven by higher revenues and lower cost of credit, partially offset by higher expenses.

- Revenues increased 7%, reflecting a 16% increase in Banking (including the losses on loan hedges). Excluding the impact of the losses on loan hedges, Banking revenues increased 12%. Markets and securities services revenues were largely unchanged, as growth in securities services revenues (increase of 8%) as well as the gain on the sale of the fixed income analytics business in 2017 were offset by a 5% decrease in fixed income markets and a 2% decrease in equity markets revenues.

Within Banking:

- Investment banking revenues increased 21%, largely reflecting gains in wallet share and increased market activity. Advisory revenues increased 11%, equity underwriting revenues increased 69% and debt underwriting revenues increased 13%.
- Treasury and trade solutions revenues increased 8%. Excluding the impact of FX translation, revenues increased 7%, primarily due to continued growth in transaction volumes and deposit balances and improved spreads. Trade revenues increased modestly, driven by steady loan growth, partially offset by an industry-wide tightening of loan spreads.
- Corporate lending revenues increased 58%. Excluding the impact of losses on loans hedges, revenues increased 12%, driven by lower hedging costs and the absence of a prior-year adjustment to the residual value of a lease financing transaction.
- Private bank revenues increased 14%, primarily due to higher loan and deposit volumes, higher deposit spreads

and increased managed investments and capital markets activity.

Within Markets and securities services:

- Fixed income markets revenues decreased 5%, primarily due to low volatility as well as the comparison to higher revenues in the prior year from a more robust trading environment. The decline in revenues was driven by lower net interest revenue, largely due to higher funding costs and a change in the mix of trading positions in support of client activity. The decline was partially offset by higher principal transactions revenues and commissions and fees revenues.

Rates and currencies revenues decreased 5%, driven by lower G10 rates and currencies revenues. Spread products and other fixed income revenues decreased 6%, due to a difficult trading environment in 2017 given low volatility, driving lower credit markets and commodities revenues, partially offset by higher municipals revenues, as well as higher securitized markets revenues.

- Equity markets revenues decreased 2%. Excluding the episodic loss in derivatives of approximately $130 million related to a single client event in 2017, revenues increased 3%, as continued growth in prime finance and delta one client balances and higher investor client activity were partially offset by lower episodic activity with corporate clients. Excluding the episodic loss in derivatives, equity derivatives revenues increased, driven by the stronger investor client activity. Cash equities revenues were modestly higher as well, partially offset by lower cash commissions, as clients continued to move toward automated execution platforms across the industry.
- Securities services revenues increased 8%. Excluding the impact of the divestiture of a private equity fund services business in 2016, revenues increased 12%, driven by growth in client volumes and higher interest revenue due to a more favorable rate environment.

Expenses increased 4%, as higher compensation, volume-related expenses and investments were partially offset by efficiency savings.

Provisions improved $501 million, driven by a net loan loss release of $380 million (compared to a net release of $30 million in 2016) and a 29% decline in net credit losses. The increase in net loan loss reserve releases was driven by an improvement in the provision for unfunded lending commitments in the corporate loan portfolio, as well as a favorable credit environment, stability in commodity prices and continued improvement in the portfolio. The decline in net credit losses was largely driven by improvement in the energy sector, partially offset by the impact of the single client event noted above.

CORPORATE/OTHER

Corporate/Other includes certain unallocated costs of global staff functions (including finance, risk, human resources, legal and compliance), other corporate expenses and unallocated global operations and technology expenses and income taxes, as well as Corporate Treasury, certain North America legacy consumer loan portfolios, other legacy assets and discontinued operations (for additional information on Corporate/Other, see “Citigroup Segments” above). At December 31, 2018, Corporate/Other had $91 billion in assets, an increase of 17% from the prior year.

In millions of dollars	2018	2017	2016	% Change 2018 vs. 2017	% Change 2017 vs. 2016
Net interest revenue	$2,254	$2,000	$3,045	13 %	(34)%
Non-interest revenue	(171)	1,132	2,188	NM	(48)
Total revenues, net of interest expense	$2,083	$3,132	$5,233	(33)%	(40)%
Total operating expenses	$2,272	$3,814	$5,042	(40)%	(24)%
Net credit losses	$21	$149	$435	(86)%	(66)%
Credit reserve build (release)	(218)	(317)	(456)	31	30
Provision (release) for unfunded lending commitments	(3)	—	(8)	—	100
Provision for benefits and claims	(2)	(7)	98	71	NM
Provisions for credit losses and for benefits and claims	$(202)	$(175)	$69	(15)	NM
Income (loss) from continuing operations before taxes	$13	$(507)	$122	NM	NM
Income taxes (benefits)	(113)	19,064	(455)	NM	NM
Income (loss) from continuing operations	$126	$(19,571)	$577	NM	NM
Income (loss) from discontinued operations, net of taxes	(8)	(111)	(58)	93	(91)
Net income (loss) before attribution of noncontrolling interests	$118	$(19,682)	$519	NM	NM
Noncontrolling interests	11	(6)	(2)	NM	NM
Net income (loss)	$107	$(19,676)	$521	NM	NM

NM Not meaningful

2018 vs. 2017

Net income was $107 million in 2018, compared to a net loss of $19.7 billion in the prior year, primarily driven by the $19.8 billion one-time, non-cash charge recorded in the tax line in 2017 due to the impact of Tax Reform. Results in 2018 included the one-time benefit of $94 million in the tax line, related to Tax Reform. For additional information, see “Significant Accounting Policies and Significant Estimates—Income Taxes” below.

Excluding the one-time impact of Tax Reform in 2018 and 2017, net income decreased 92%, reflecting lower revenues, partially offset by lower expenses, lower cost of credit and tax benefits related to the reorganization of certain non-U.S. subsidiaries. The tax benefits were largely offset by the release of a foreign currency translation adjustment (CTA) from AOCI to earnings (for additional information on the CTA release, see Note 19 to the Consolidated Financial Statements).

Revenues decreased 33%, driven by the continued wind-down of legacy assets.

Expenses decreased 40%, primarily driven by the wind-down of legacy assets, lower infrastructure costs and lower legal expenses.

Provisions decreased $27 million to a net benefit of $202 million, primarily due to lower net credit losses, partially offset by a lower net loan loss reserve release. Net credit losses declined 86% to $21 million, primarily reflecting the impact of ongoing divestiture activity and the continued wind-

down of the North America mortgage portfolio. The net reserve release declined by $96 million to $221 million, and reflected the continued wind-down of the legacy North America mortgage portfolio and divestitures.

2017 vs. 2016

The net loss was $19.7 billion, compared to net income of $521 million in the prior year, primarily driven by the one-time impact of Tax Reform. Excluding the one-time impact of Tax Reform, net income declined 69% to $168 million, reflecting lower revenues, partially offset by lower expenses and lower cost of credit.

Revenues declined 40%, primarily reflecting the continued wind-down of legacy assets and the absence of gains related to debt buybacks in 2016. Revenues included approximately $750 million in gains on asset sales in the first quarter of 2017, which more than offset a roughly $300 million charge related to the exit of Citi's U.S. mortgage servicing operations in the quarter.

Expenses declined 24%, reflecting the wind-down of legacy assets and lower legal expenses, partially offset by approximately $100 million in episodic expenses primarily related to the exit of the U.S. mortgage servicing operations. Also included in expenses is an approximately $255 million provision for remediation costs related to a CARD Act matter in 2017.

Provisions decreased $244 million to a net benefit of $175 million, primarily due to lower net credit losses and a lower provision for benefits and claims, partially offset by a lower net loan loss reserve release. Net credit losses declined 66%, primarily reflecting the impact of ongoing divestiture activity and the continued wind-down of the North America mortgage portfolio. The decline in the provision for benefits and claims was primarily due to lower insurance activity. The net reserve release declined $147 million, and reflected the continued wind-down of the legacy North America mortgage portfolio and divestitures.

OFF-BALANCE SHEET ARRANGEMENTS

Citigroup enters into various types of off-balance sheet arrangements in the ordinary course of business. Citi's involvement in these arrangements can take many different forms, including without limitation:

- purchasing or retaining residual and other interests in unconsolidated special purpose entities, such as mortgage-backed and other asset-backed securitization entities;
- holding senior and subordinated debt, interests in limited and general partnerships and equity interests in other unconsolidated special purpose entities;
- providing guarantees, indemnifications, loan commitments, letters of credit and representations and warranties; and
- entering into operating leases for property and equipment.

Citi enters into these arrangements for a variety of business purposes. For example, securitization arrangements offer investors access to specific cash flows and risks created through the securitization process. Securitization arrangements also assist Citi and its customers in monetizing their financial assets and securing financing at more favorable rates than Citi or the customers could otherwise obtain.
The table below shows where a discussion of Citi's various off-balance sheet arrangements may be found in this Form 10-K. In addition, see Note 1 to the Consolidated Financial Statements.

Types of Off-Balance Sheet Arrangements	Disclosures in this Form 10-K
Variable interests and other obligations, including contingent obligations, arising from variable interests in nonconsolidated VIEs	See Note 21 to the Consolidated Financial Statements.
Letters of credit, and lending and other commitments	See Note 26 to the Consolidated Financial Statements.
Guarantees	See Note 26 to the Consolidated Financial Statements.
Leases	See Note 26 to the Consolidated Financial Statements.

CONTRACTUAL OBLIGATIONS

The following table includes information on Citigroup's contractual obligations, as specified and aggregated pursuant to SEC requirements:

	Contractual obligations by year						
In millions of dollars	2019	2020	2021	2022	2023	Thereafter	Total
Long-term debt obligations—principal[(1)]	$38,590	$37,303	$28,542	$14,095	$19,061	$94,408	$231,999
Long-term debt obligations—interest payments[(2)]	8,232	6,763	5,489	4,664	4,022	37,617	66,787
Operating and capital lease obligations	925	748	657	525	394	1,890	5,139
Purchase obligations[(3)]	535	494	509	501	329	1,024	3,392
Other liabilities[(4)]	33,077	523	132	79	75	1,718	35,604
Total	$81,359	$45,831	$35,329	$19,864	$23,881	$136,657	$342,921

(1) For additional information about long-term debt obligations, see "Liquidity Risk—Long-Term Debt" below and Note 17 to the Consolidated Financial Statements.

(2) Contractual obligations related to interest payments on long-term debt for 2019–2023 are calculated by applying the December 31, 2018 weighted-average interest rate (3.87%) on average outstanding long-term debt to the average remaining contractual obligations on long-term debt for each of those years. The "Thereafter" interest payments on long-term debt for the remaining years to maturity (2024–2098) are calculated by applying current interest rates on the remaining contractual obligations on long-term debt for each of those years.

(3) Purchase obligations consist of obligations to purchase goods or services that are enforceable and legally binding on Citi. For presentation purposes, purchase obligations are included in the table above through the termination date of the respective agreements, even if the contract is renewable. Many of the purchase agreements for goods or services include clauses that would allow Citi to cancel the agreement with specified notice; however, that impact is not included in the table above (unless Citi has already notified the counterparty of its intention to terminate the agreement).

(4) Other liabilities reflected on Citigroup's Consolidated Balance Sheet includes accounts payable, accrued expenses, uncertain tax positions and other liabilities that have been incurred and will ultimately be paid in cash; legal reserve accruals are not included in the table above. Also includes discretionary contributions in 2018 for Citi's employee-defined benefit obligations for the pension, postretirement and post employment plans and defined contribution plans.

CAPITAL RESOURCES

Overview

Capital is used principally to support assets in Citi's businesses and to absorb credit, market and operational losses. Citi primarily generates capital through earnings from its operating businesses. Citi may augment its capital through issuances of common stock, noncumulative perpetual preferred stock and equity issued through awards under employee benefit plans, among other issuances. Further, Citi's capital levels may also be affected by changes in accounting and regulatory standards, as well as U.S. corporate tax laws and the impact of future events on Citi's business results, such as changes in interest and foreign exchange rates, as well as business and asset dispositions.
During 2018, Citi returned a total of $18.4 billion of capital to common shareholders in the form of share repurchases (approximately 212 million common shares) and dividends.

Capital Management

Citi's capital management framework is designed to ensure that Citigroup and its principal subsidiaries maintain sufficient capital consistent with each entity's respective risk profile, management targets and all applicable regulatory standards and guidelines. Citi assesses its capital adequacy against a series of internal quantitative capital goals, designed to evaluate its capital levels in expected and stressed economic environments. Underlying these internal quantitative capital goals are strategic capital considerations, centered on preserving and building financial strength.
The Citigroup Capital Committee, with oversight from the Risk Management Committee of Citigroup's Board of Directors, has responsibility for Citi's aggregate capital structure, including the capital assessment and planning process, which is integrated into Citi's capital plan. Balance sheet management, including oversight of capital adequacy, for Citigroup's subsidiaries is governed by each entity's Asset and Liability Committee, where applicable.
Based on Citigroup's current regulatory capital requirements, as well as consideration of potential future changes to the U.S. Basel III rules, management currently believes that a targeted Common Equity Tier 1 Capital ratio of approximately 11.5% represents the amount necessary to prudently operate and invest in Citi's franchise, including when considering future growth plans, capital return projections and other factors that may impact Citi's businesses. However, management may revise Citigroup's targeted Common Equity Tier 1 Capital ratio in response to changing regulatory capital requirements as well as other relevant factors.
For additional information regarding Citi's capital planning and stress testing exercises, see "Stress Testing Component of Capital Planning" below.

Current Regulatory Capital Standards

Citi is subject to regulatory capital standards issued by the Federal Reserve Board, which constitute the U.S. Basel III rules. These rules establish an integrated capital adequacy framework, encompassing both risk-based capital ratios and leverage ratios.

Risk-Based Capital Ratios

The U.S. Basel III rules set forth the composition of regulatory capital (including the application of regulatory capital adjustments and deductions), as well as two comprehensive methodologies (a Standardized Approach and Advanced Approaches) for measuring total risk-weighted assets. Total risk-weighted assets under the Advanced Approaches, which are primarily models based, include credit, market, and operational risk-weighted assets. The Standardized Approach generally applies prescribed supervisory risk weights to broad categories of credit risk exposures. As a result, credit risk-weighted assets calculated under the Advanced Approaches are more risk sensitive than those calculated under the Standardized Approach. Market risk-weighted assets are currently calculated on a generally consistent basis under both approaches. The Standardized Approach excludes operational risk-weighted assets.
The U.S. Basel III rules establish stated minimum Common Equity Tier 1 Capital, Tier 1 Capital and Total Capital ratios for substantially all U.S. banking organizations, including Citi and Citibank, N.A. (Citibank). Moreover, these rules provide for both a fixed 2.5% Capital Conservation Buffer and, for Advanced Approaches banking organizations, such as Citi and Citibank, a discretionary Countercyclical Capital Buffer. These capital buffers would

be available to absorb losses in advance of any potential impairment of regulatory capital below the stated minimum risk-based capital ratio requirements. Any breach of the buffers to absorb losses during periods of financial or economic stress would result in restrictions on earnings distributions (e.g., dividends, equity repurchases, and discretionary executive bonuses), with the degree of such restrictions based upon the extent to which the buffers are breached. The Federal Reserve Board last voted to affirm the Countercyclical Capital Buffer amount at the current level of 0% in December 2017.
Further, the U.S. Basel III rules implement the "capital floor provision" of the so-called "Collins Amendment" of the Dodd-Frank Act, which requires Advanced Approaches
banking organizations to calculate each of the three risk-based capital ratios (Common Equity Tier 1 Capital, Tier 1 Capital, and Total Capital) under both the U.S. Basel III Standardized Approach and the Advanced Approaches and comply with the lower of each of the resulting risk-based capital ratios.

GSIB Surcharge

The Federal Reserve Board imposes a risk-based capital surcharge upon U.S. bank holding companies that are identified as global systemically important bank holding companies (GSIBs), including Citi. The GSIB surcharge augments the Capital Conservation Buffer and, if invoked, any Countercyclical Capital Buffer.

Under the Federal Reserve Board’s rule, identification of a GSIB is based on the Basel Committee on Banking Supervision’s (Basel Committee) GSIB methodology, which primarily looks to five equally weighted broad categories of systemic importance: (i) size, (ii) interconnectedness, (iii) cross-jurisdictional activity, (iv) substitutability and (v) complexity. With the exception of size, each of the other categories is composed of multiple indicators, also of equal weight, and amounting to 12 indicators in total.

A U.S. bank holding company that is designated a GSIB is required, on an annual basis, to calculate a surcharge using two methods and is subject to the higher of the resulting two surcharges. The first method (“method 1”) is based on the Basel Committee’s GSIB methodology described above. Under the second method (“method 2”), the substitutability category is replaced with a quantitative measure intended to assess a GSIB’s reliance on short-term wholesale funding. In addition, method 1 incorporates relative measures of systemic importance across certain global banking organizations and a year-end spot foreign exchange rate, whereas method 2 uses fixed measures of systemic importance and application of an average foreign exchange rate over a three-year period. The GSIB surcharges calculated under both method 1 and method 2 are based on measures of systemic importance from the year immediately preceding that in which the GSIB surcharge calculations are being performed (e.g., the method 1 and method 2 GSIB surcharges to be calculated by December 31, 2019 will be based on 2018 systemic indicator data). Generally, Citi’s surcharge determined under method 2 will result in a higher surcharge than its surcharge determined under method 1.

Should a GSIB’s systemic importance change year-over-year such that it becomes subject to a higher surcharge, the higher surcharge would not become effective for a full year (e.g., a higher surcharge calculated by December 31, 2019 would not become effective until January 1, 2021). However, if a GSIB’s systemic importance changes such that the GSIB would be subject to a lower surcharge, the GSIB would be subject to the lower surcharge beginning with the next calendar year (e.g., a lower surcharge calculated by December 31, 2019 would become effective January 1, 2020).

The following table sets forth Citi’s GSIB surcharge as determined under method 1 and method 2 for 2018 and 2017:

	2018	2017
Method 1	2.0%	2.0%
Method 2	3.0	3.0

Citi’s GSIB surcharge effective for both 2018 and 2017 was 3.0%, as derived under the higher method 2 result. Citi’s GSIB surcharge effective for 2019 will remain unchanged at 3.0%, as derived under the higher method 2 result. Citi expects that its method 2 GSIB surcharge will continue to remain higher than its method 1 GSIB surcharge and, as such, Citi’s GSIB surcharge effective for 2020 will not exceed 3.0%, and Citi’s GSIB surcharge effective for 2021 is not expected to exceed 3.0%.

Transition Provisions

Generally, the U.S. Basel III rules contain several differing, largely multi-year transition provisions, with various “phase-ins” and “phase-outs.” Moreover, the GSIB surcharge, Capital Conservation Buffer, and any Countercyclical Capital Buffer (currently 0%) commenced phase-in on January 1, 2016, becoming fully effective on January 1, 2019. However, with the exception of the non-grandfathered trust preferred securities, which do not fully phase-out of Tier 2 Capital until January 1, 2022, and the capital buffers and GSIB surcharge, which do not fully phase-in until January 1, 2019, all other transition provisions have occurred and were entirely reflected in Citi’s regulatory capital ratios beginning January 1, 2018. Accordingly, commencing with 2018, Citi is presenting a single set of regulatory capital components and ratios, reflecting current regulatory capital standards in effect throughout 2018. Citi previously disclosed its Basel III risk-based capital and leverage ratios and related components reflecting Basel III transition

arrangements with respect to regulatory capital adjustments and deductions, as well as full implementation, in Citi's 2017 Annual Report on Form 10-K; however, beginning January 1, 2018, that distinction is no longer relevant.
The following chart sets forth the transitional progression from January 1, 2017 to full implementation by January 1, 2019 of the regulatory capital components comprising the effective minimum risk-based capital ratios.

Basel III Transition Arrangements: Minimum Risk-Based Capital Ratios

For additional information regarding the transition arrangements under the U.S. Basel III rules, including Citigroup's and Citibank's capital resources reflecting Basel III transition arrangements as of December 31, 2017, see "Capital Resources—Current Regulatory Capital Standards" in Citigroup's 2017 Annual Report on Form 10-K.

Tier 1 Leverage Ratio
Under the U.S. Basel III rules, Citi is also required to maintain a minimum Tier 1 Leverage ratio of 4.0%. The Tier 1 Leverage ratio, a non-risk-based measure of capital adequacy, is defined as Tier 1 Capital as a percentage of quarterly adjusted average total assets less amounts deducted from Tier 1 Capital.

Supplementary Leverage Ratio
Citi is also required to calculate a Supplementary Leverage ratio, which differs from the Tier 1 Leverage ratio by also including certain off-balance sheet exposures within the denominator of the ratio (Total Leverage Exposure). The Supplementary Leverage ratio represents end of period Tier 1 Capital to Total Leverage Exposure, with the latter defined as the sum of the daily average of on-balance sheet assets for the quarter and the average of certain off-balance sheet exposures calculated as of the last day of each month in the quarter, less applicable Tier 1 Capital deductions. Effective January 1,
2018, Advanced Approaches banking organizations are required to maintain a stated minimum Supplementary Leverage ratio of 3.0%.
Further, U.S. GSIBs, including Citi, are subject to enhanced Supplementary Leverage ratio standards. The enhanced Supplementary Leverage ratio standards establish a 2.0% leverage buffer in addition to the stated 3.0% minimum Supplementary Leverage ratio requirement, for a total effective minimum Supplementary Leverage ratio requirement of 5.0%. Effective January 1, 2018, if a U.S. GSIB fails to exceed the 2.0% buffer, it will be subject to increasingly onerous restrictions (depending upon the extent of the shortfall) regarding capital distributions and discretionary executive bonus payments.

Prompt Corrective Action Framework

In general, the Prompt Corrective Action (PCA) regulations direct the U.S. banking agencies to enforce increasingly strict limitations on the activities of insured depository institutions that fail to meet certain regulatory capital thresholds. The PCA framework contains five categories of capital adequacy as measured by risk-based capital and leverage ratios: (i) "well capitalized," (ii) "adequately capitalized," (iii) undercapitalized," (iv) "significantly undercapitalized," and (v) "critically undercapitalized."

Accordingly, an insured depository institution, such as Citibank, must maintain minimum Common Equity Tier 1 Capital, Tier 1 Capital, Total Capital, and Tier 1 Leverage ratios of 6.5%, 8.0%, 10.0% and 5.0%, respectively, to be considered "well capitalized." Additionally, insured depository institution subsidiaries of U.S. GSIBs, including Citibank, must maintain a minimum Supplementary Leverage ratio of 6.0%, effective January 1, 2018, to be considered "well capitalized."

Stress Testing Component of Capital Planning

Citi is subject to an annual assessment by the Federal Reserve Board as to whether Citigroup has effective capital planning processes as well as sufficient regulatory capital to absorb losses during stressful economic and financial conditions, while also meeting obligations to creditors and counterparties and continuing to serve as a credit intermediary. This annual assessment includes two related programs:

- The Comprehensive Capital Analysis and Review (CCAR) evaluates Citi's capital adequacy, capital adequacy process, and its planned capital distributions, such as dividend payments and common stock repurchases. As part of CCAR, the Federal Reserve Board assesses whether Citi has sufficient capital to continue operations throughout times of economic and financial market stress and whether Citi has robust, forward-looking capital planning processes that account for its unique risks. The Federal Reserve Board may object to Citi's annual capital plan based on either quantitative or qualitative grounds. If the Federal Reserve Board objects to Citi's annual capital plan, Citi may not undertake any capital distribution unless the Federal Reserve Board indicates in writing that it does not object to the distribution.
- Dodd-Frank Act Stress Testing (DFAST) is a forward-looking quantitative evaluation of the impact of stressful economic and financial market conditions on Citi's regulatory capital. This program serves to inform the Federal Reserve Board and the general public as to how Citi's regulatory capital ratios might change using a hypothetical set of adverse economic conditions as designed by the Federal Reserve Board. In addition to the annual supervisory stress test conducted by the Federal Reserve Board, Citi is required to conduct annual company-run stress tests under the same adverse economic conditions designed by the Federal Reserve Board, as well as conduct a mid-cycle stress test under company-developed scenarios.

Both CCAR and DFAST include an estimate of projected revenues, losses, reserves, pro forma regulatory capital ratios, and any other additional capital measures deemed relevant by Citi. Projections are required over a nine-quarter planning horizon under three supervisory scenarios (baseline, adverse and severely adverse conditions). All risk-based capital ratios reflect application of the Standardized Approach framework under the U.S. Basel III rules. Moreover, the Federal Reserve Board has deferred the use of the Advanced Approaches framework indefinitely.

For additional information regarding CCAR, see "Risk Factors—Strategic Risks" below. For additional information on potential changes to the stress testing component of capital planning and assessment process applicable to Citi, see "Regulatory Capital Standards Developments" below.

In addition, Citibank is required to conduct the annual Dodd-Frank Act Stress Test. The annual stress test consists of a forward-looking quantitative evaluation of the impact of stressful economic and financial market conditions under several scenarios on Citibank's regulatory capital. This program serves to inform the Office of the Comptroller of the Currency as to how Citibank's regulatory capital ratios might change during a hypothetical set of adverse economic conditions and to ultimately evaluate the reliability of Citibank's capital planning process.

Citigroup's Capital Resources

Citi is required to maintain stated minimum Common Equity Tier 1 Capital, Tier 1 Capital and Total Capital ratios of 4.5%, 6.0% and 8.0%, respectively.

Citi’s effective minimum Common Equity Tier 1 Capital, Tier 1 Capital and Total Capital ratios during 2018, inclusive of the 75% phase-in of both the 2.5% Capital Conservation Buffer and the 3.0% GSIB surcharge (all of which is to be composed of Common Equity Tier 1 Capital), are 8.625%, 10.125% and 12.125%, respectively. Citi’s effective minimum Common Equity Tier 1 Capital, Tier 1 Capital and Total Capital ratios during 2017, inclusive of the 50% phase-in of both the 2.5% Capital Conservation Buffer and the 3.0% GSIB surcharge (all of which is to be composed of Common Equity Tier 1 Capital), were 7.25%, 8.75% and 10.75%, respectively.

Citi’s effective minimum Common Equity Tier 1 Capital, Tier 1 Capital and Total Capital ratio requirements during 2019, inclusive of the 2.5% Capital Conservation Buffer and the Countercyclical Capital Buffer at its current level of 0%, as well as a 3.0% GSIB surcharge, will be 10.0%, 11.5% and 13.5%, respectively.

Furthermore, to be “well capitalized” under current federal bank regulatory agency definitions, a bank holding company must have a Tier 1 Capital ratio of at least 6.0%, a Total Capital ratio of at least 10.0%, and not be subject to a Federal Reserve Board directive to maintain higher capital levels.

Under the U.S. Basel III rules, Citi must comply with a 4.0% minimum Tier 1 Leverage ratio requirement. Effective January 1, 2018, Citi must also comply with an effective 5.0% minimum Supplementary Leverage ratio requirement.

The following tables set forth the capital tiers, total risk-weighted assets and underlying risk components, risk-based capital ratios, quarterly adjusted average total assets, Total Leverage Exposure and leverage ratios for Citi as of December 31, 2018 and 2017.

Citigroup Capital Components and Ratios

In millions of dollars, except ratios	December 31, 2018 Advanced Approaches	December 31, 2018 Standardized Approach	December 31, 2017 Advanced Approaches	December 31, 2017 Standardized Approach
Common Equity Tier 1 Capital	$139,252	$139,252	$142,822	$142,822
Tier 1 Capital	158,122	158,122	162,377	162,377
Total Capital (Tier 1 Capital + Tier 2 Capital)	183,144	195,440	187,877	199,989
Total Risk-Weighted Assets	1,131,933	1,174,448	1,152,644	1,155,099
Credit Risk	$758,887	$1,109,007	$767,102	$1,089,372
Market Risk	63,987	65,441	65,003	65,727
Operational Risk	309,059	—	320,539	—
Common Equity Tier 1 Capital ratio(1)(2)	12.30 %	11.86 %	12.39 %	12.36 %
Tier 1 Capital ratio(1)(2)	13.97	13.46	14.09	14.06
Total Capital ratio(1)(2)	16.18	16.64	16.30	17.31

In millions of dollars, except ratios	December 31, 2018	December 31, 2017
Quarterly Adjusted Average Total Assets(3)	$1,896,959	$1,868,326
Total Leverage Exposure(4)	2,465,641	2,432,491
Tier 1 Leverage ratio(2)	8.34 %	8.69 %
Supplementary Leverage ratio(2)	6.41	6.68

(1) As of December 31, 2018 and 2017, Citi's reportable Common Equity Tier 1 Capital and Tier 1 Capital ratios were the lower derived under the Basel III Standardized Approach, whereas the reportable Total Capital ratio was the lower derived under the Basel III Advanced Approaches framework.
(2) Citi's risk-based capital and leverage ratios and related components as of December 31, 2017 are non-GAAP financial measures, which reflect full implementation of regulatory capital adjustments and deductions prior to the effective date of January 1, 2018. Citi believes these ratios and the related components provide useful information to investors and others by measuring Citi's progress in prior periods against currently effective regulatory capital standards.
(3) Tier 1 Leverage ratio denominator.
(4) Supplementary Leverage ratio denominator.

Common Equity Tier 1 Capital Ratio

Citi's Common Equity Tier 1 Capital ratio was 11.9% at December 31, 2018, compared to 11.7% at September 30, 2018 and 12.4% at December 31, 2017. The quarter-over-quarter increase was primarily due to net income of $4.3 billion as well as decreases in risk-weighted assets, partially offset by the return of $5.8 billion of capital to common shareholders. Citi's Common Equity Tier 1 Capital ratio declined from year-end 2017 primarily due to a reduction in Common Equity Tier 1 Capital resulting from the return of $18.4 billion capital to common shareholders, an increase in risk-weighted assets, and adverse net movements in AOCI, partially offset by net income of $18.0 billion in 2018.

Components of Citigroup Capital

In millions of dollars	December 31, 2018	December 31, 2017
Common Equity Tier 1 Capital		
Citigroup common stockholders' equity[1]	$ 177,928	$ 181,671
Add: Qualifying noncontrolling interests	147	153
Regulatory Capital Adjustments and Deductions:		
Less: Accumulated net unrealized losses on cash flow hedges, net of tax[2]	(728)	(698)
Less: Cumulative unrealized net gain (loss) related to changes in fair value of financial liabilities attributable to own creditworthiness, net of tax[3]	580	(721)
Less: Intangible assets:		
Goodwill, net of related DTLs[4]	21,778	22,052
Identifiable intangible assets other than MSRs, net of related DTLs	4,402	4,401
Less: Defined benefit pension plan net assets	806	896
Less: DTAs arising from net operating loss, foreign tax credit and general business credit carry-forwards[5]	11,985	13,072
Total Common Equity Tier 1 Capital (Standardized Approach and Advanced Approaches)	$ 139,252	$ 142,822
Additional Tier 1 Capital		
Qualifying noncumulative perpetual preferred stock[1]	$ 18,292	$ 19,069
Qualifying trust preferred securities[6]	1,384	1,377
Qualifying noncontrolling interests	55	61
Regulatory Capital Deductions:		
Less: Permitted ownership interests in covered funds[7]	806	900
Less: Minimum regulatory capital requirements of insurance underwriting subsidiaries[8]	55	52
Total Additional Tier 1 Capital (Standardized Approach and Advanced Approaches)	$ 18,870	$ 19,555
Total Tier 1 Capital (Common Equity Tier 1 Capital + Additional Tier 1 Capital) (Standardized Approach and Advanced Approaches)	$ 158,122	$ 162,377
Tier 2 Capital		
Qualifying subordinated debt	$ 23,324	$ 23,673
Qualifying trust preferred securities[9]	321	329
Qualifying noncontrolling interests	47	50
Eligible allowance for credit losses[10]	13,681	13,612
Regulatory Capital Deduction:		
Less: Minimum regulatory capital requirements of insurance underwriting subsidiaries[8]	55	52
Total Tier 2 Capital (Standardized Approach)	$ 37,318	$ 37,612
Total Capital (Tier 1 Capital + Tier 2 Capital) (Standardized Approach)	$ 195,440	$ 199,989
Adjustment for excess of eligible credit reserves over expected credit losses[10]	$ (12,296)	$ (12,112)
Total Tier 2 Capital (Advanced Approaches)	$ 25,022	$ 25,500
Total Capital (Tier 1 Capital + Tier 2 Capital) (Advanced Approaches)	$ 183,144	$ 187,877

(1) Issuance costs of $168 million and $184 million related to noncumulative perpetual preferred stock outstanding at December 31, 2018 and 2017, respectively, are excluded from common stockholders' equity and netted against such preferred stock in accordance with Federal Reserve Board regulatory reporting requirements, which differ from those under U.S. GAAP.

(2) Common Equity Tier 1 Capital is adjusted for accumulated net unrealized gains (losses) on cash flow hedges included in AOCI that relate to the hedging of items not recognized at fair value on the balance sheet.

(3) The cumulative impact of changes in Citigroup's own creditworthiness in valuing liabilities for which the fair value option has been elected, and own-credit valuation adjustments on derivatives, are excluded from Common Equity Tier 1 Capital, in accordance with the U.S. Basel III rules.

(4) Includes goodwill "embedded" in the valuation of significant common stock investments in unconsolidated financial institutions.

Footnotes continue on the following page.

(5) Of Citi's $22.9 billion of net DTAs at December 31, 2018, $11.9 billion was includable in Common Equity Tier 1 Capital pursuant to the U.S. Basel III rules, while $11.0 billion was excluded. Excluded from Citi's Common Equity Tier 1 Capital as of December 31, 2018 was $12.0 billion of net DTAs arising from net operating loss, foreign tax credit and general business credit carry-forwards, which was reduced by $1.0 billion of net DTLs primarily associated with goodwill and certain other intangible assets. Separately, under the U.S. Basel III rules, goodwill and these other intangible assets are deducted net of associated DTLs in arriving at Common Equity Tier 1 Capital. DTAs arising from net operating loss, foreign tax credit and general business credit carry-forwards are required to be entirely deducted from Common Equity Tier 1 Capital under the U.S. Basel III rules. Commencing on December 31, 2017, Citi's DTAs arising from temporary differences were less than the 10% limitation under the U.S. Basel III rules and therefore not subject to deduction from Common Equity Tier 1 Capital, but are subject to risk-weighting at 250%.

(6) Represents Citigroup Capital XIII trust preferred securities, which are permanently grandfathered as Tier 1 Capital under the U.S. Basel III rules.

(7) Banking entities are required to be in compliance with the Volcker Rule of the Dodd-Frank Act which prohibits conducting certain proprietary investment activities and limits their ownership of, and relationships with, covered funds. Accordingly, Citi is required by the Volcker Rule to deduct from Tier 1 Capital all permitted ownership interests in covered funds.

(8) 50% of the minimum regulatory capital requirements of insurance underwriting subsidiaries must be deducted from each of Tier 1 Capital and Tier 2 Capital.

(9) Represents the amount of non-grandfathered trust preferred securities eligible for inclusion in Tier 2 Capital under the U.S. Basel III rules, which will be fully phased-out of Tier 2 Capital by January 1, 2022.

(10) Under the Standardized Approach, the allowance for credit losses is eligible for inclusion in Tier 2 Capital up to 1.25% of credit risk-weighted assets, with any excess allowance for credit losses being deducted in arriving at credit risk-weighted assets, which differs from the Advanced Approaches framework, in which eligible credit reserves that exceed expected credit losses are eligible for inclusion in Tier 2 Capital to the extent the excess reserves do not exceed 0.6% of credit risk-weighted assets. The total amount of eligible credit reserves in excess of expected credit losses that were eligible for inclusion in Tier 2 Capital, subject to limitation, under the Advanced Approaches framework was $1.4 billion and $1.5 billion at December 31, 2018 and 2017, respectively.

Citigroup Capital Rollforward

In millions of dollars	Three Months Ended December 31, 2018	Twelve Months Ended December 31, 2018
Common Equity Tier 1 Capital, beginning of period	$140,428	$142,822
Net income	4,313	18,045
Common and preferred stock dividends declared	(1,402)	(5,039)
Net increase in treasury stock	(4,692)	(14,061)
Net change in common stock and additional paid-in capital	81	(102)
Net increase in foreign currency translation adjustment net of hedges, net of tax	(394)	(2,362)
Net change in unrealized gains (losses) on debt securities AFS, net of tax	1,072	(1,092)
Net increase in defined benefit plans liability adjustment, net of tax	(489)	(74)
Net change in adjustment related to changes in fair value of financial liabilities attributable to own creditworthiness, net of tax	(129)	(188)
Net decrease in ASC 815—Excluded component of Fair Value Hedges	(35)	(57)
Net decrease in goodwill, net of related DTLs	113	274
Net increase in identifiable intangible assets other than MSRs, net of related DTLs	(98)	(1)
Net decrease in defined benefit pension plan net assets	125	90
Net decrease in DTAs arising from net operating loss, foreign tax credit and general business credit carry-forwards	360	1,087
Other	(1)	(90)
Net decrease in Common Equity Tier 1 Capital	$(1,176)	$(3,570)
Common Equity Tier 1 Capital, end of period (Standardized Approach and Advanced Approaches)	$139,252	$139,252
Additional Tier 1 Capital, beginning of period	$19,449	$19,555
Net decrease in qualifying perpetual preferred stock	(559)	(777)
Net increase in qualifying trust preferred securities	2	7
Net change in permitted ownership interests in covered funds	(11)	94
Other	(11)	(9)
Net decrease in Additional Tier 1 Capital	$(579)	$(685)
Additional Tier 1 Capital, end of period (Standardized Approach and Advanced Approaches)	$18,870	$18,870
Tier 1 Capital, end of period (Standardized Approach and Advanced Approaches)	$158,122	$158,122
Tier 2 Capital, beginning of period (Standardized Approach)	$36,931	$37,612
Net change in qualifying subordinated debt	376	(349)
Net increase in eligible allowance for credit losses	25	69
Other	(14)	(14)
Net change in Tier 2 Capital (Standardized Approach)	$387	$(294)
Tier 2 Capital, end of period (Standardized Approach)	$37,318	$37,318
Total Capital, end of period (Standardized Approach)	$195,440	$195,440
Tier 2 Capital, beginning of period (Advanced Approaches)	$24,746	$25,500
Net change in qualifying subordinated debt	376	(349)
Net decrease in excess of eligible credit reserves over expected credit losses	(86)	(115)
Other	(14)	(14)
Net change in Tier 2 Capital (Advanced Approaches)	$276	$(478)
Tier 2 Capital, end of period (Advanced Approaches)	$25,022	$25,022
Total Capital, end of period (Advanced Approaches)	$183,144	$183,144

Citigroup Risk-Weighted Assets Rollforward (Basel III Standardized Approach)

In millions of dollars	Three Months Ended December 31, 2018	Twelve Months Ended December 31, 2018
Total Risk-Weighted Assets, beginning of period	$1,196,923	$1,155,099
Changes in Credit Risk-Weighted Assets		
Net increase in general credit risk exposures(1)	135	2,850
Net increase in repo-style transactions(2)	1,449	7,070
Net increase in securitization exposures(3)	2,300	2,068
Net change in equity exposures	(1,484)	1,195
Net change in over-the-counter (OTC) derivatives(4)	(10,849)	7,364
Net change in other exposures(5)	(535)	1,464
Net decrease in off-balance sheet exposures(6)	(8,878)	(2,376)
Net change in Credit Risk-Weighted Assets	$(17,862)	$19,635
Changes in Market Risk-Weighted Assets		
Net change in risk levels(7)	$(4,219)	$7,383
Net decrease due to model and methodology updates(8)	(394)	(7,669)
Net decrease in Market Risk-Weighted Assets	$(4,613)	$(286)
Total Risk-Weighted Assets, end of period	$1,174,448	$1,174,448

(1) General credit risk exposures include cash and balances due from depository institutions, securities, and loans and leases. General credit risk exposures increased during the 12 months ended December 31, 2018 mainly driven by growth in corporate loans.

(2) Repo-style transactions include repurchase and reverse repurchase transactions as well as securities borrowing and securities lending transactions.

(3) Securitization exposures increased during the three and 12 months ended December 31, 2018 due to increased exposures from new deals.

(4) OTC derivatives decreased during the three months ended December 31, 2018 due to a decrease in notional amounts for bilateral trades. OTC derivatives increased during the 12 months ended December 31, 2018, primarily due to notional increases.

(5) Other exposures include cleared transactions, unsettled transactions, and other assets. Other exposures increased during the 12 months ended December 31, 2018 primarily due to increases in various other assets subject to risk-weighting at 100% and additional DTAs arising from temporary differences, which are subject to risk-weighting at 250%.

(6) Off-balance sheet exposures decreased during the three and 12 months ended December 31, 2018, primarily due to a reduction in loan commitments.

(7) Risk levels decreased during the three months ended December 31, 2018 primarily due to a decrease in positions subject to incremental risk charges. Risk levels increased during the 12 months ended December 31, 2018 primarily due to changes in exposure levels subject to Value at Risk and Stressed Value at Risk.

(8) Risk-weighted assets decreased during the 12 months ended December 31, 2018 primarily due to changes in model inputs regarding volatility and the correlation between market risk factors, as well as methodology changes for standard specific risk charges.

Citigroup Risk-Weighted Assets Rollforward (Basel III Advanced Approaches)

In millions of dollars	Three Months Ended December 31, 2018	Twelve Months Ended December 31, 2018
Total Risk-Weighted Assets, beginning of period	$1,155,188	$1,152,644
Changes in Credit Risk-Weighted Assets		
Net change in retail exposures[1]	2,320	(11,898)
Net decrease in wholesale exposures[2]	(6,392)	(635)
Net increase in repo-style transactions[3]	3,334	4,728
Net increase in securitization exposures[4]	2,118	2,505
Net change in equity exposures	(1,412)	1,466
Net decrease in over-the-counter (OTC) derivatives[5]	(8,817)	(7,063)
Net change in derivatives CVA	(465)	1,318
Net change in other exposures[6]	(1,141)	1,904
Net decrease in supervisory 6% multiplier[7]	(600)	(540)
Net decrease in Credit Risk-Weighted Assets	$(11,055)	$(8,215)
Changes in Market Risk-Weighted Assets		
Net change in risk levels[8]	$(4,266)	$6,653
Net decrease due to model and methodology updates[9]	(394)	(7,669)
Net decrease in Market Risk-Weighted Assets	$(4,660)	$(1,016)
Net decrease in Operational Risk-Weighted Assets[10]	$(7,540)	$(11,480)
Total Risk-Weighted Assets, end of period	$1,131,933	$1,131,933

(1) Retail exposures increased during the three months ended December 31, 2018, primarily due to seasonal spending for qualifying revolving (cards) exposures. Retail exposures decreased during the 12 months ended December 31, 2018, primarily due to residential mortgage loan sales and repayments.

(2) Wholesale exposures decreased during the three months ended December 31, 2018, primarily due to decreases in loan commitments.

(3) Repo-style transactions include repurchase and reverse repurchase transactions as well as securities borrowing and securities lending transactions.

(4) Securitization exposures increased during the three and 12 months ended December 31, 2018, due to increased exposures from new deals.

(5) OTC derivatives decreased during the three and 12 months ended December 31, 2018, primarily due to decreases in potential future exposure and fair value.

(6) Other exposures include cleared transactions, unsettled transactions, assets other than those reportable in specific exposure categories and non-material portfolios.

(7) Supervisory 6% multiplier does not apply to derivatives CVA.

(8) Risk levels decreased during the three months ended December 31, 2018, primarily due to a decrease in positions subject to incremental risk charges. Risk levels increased during the 12 months ended December 31, 2018 primarily due to changes in exposure levels subject to Value at Risk and Stressed Value at Risk.

(9) Risk-weighted assets decreased during the 12 months ended December 31, 2018 primarily due to changes in model inputs regarding volatility and the correlation between market risk factors, as well as methodology changes for standard specific risk charges.

(10) Operational risk-weighted assets decreased during the three months and 12 months ended December 31, 2018 primarily due to changes in operational loss severity and frequency.

Total risk-weighted assets under the Basel III Standardized Approach increased from year-end 2017 due to higher credit risk-weighted assets, slightly offset by a decrease in market risk-weighted assets. The increase in credit risk-weighted assets was primarily due to changes in OTC derivative trade activity, repo-style transactions, growth in corporate loans, securitization exposures and other exposures, partially offset by a decrease in loan commitments. Total risk-weighted assets under the Basel III Advanced Approaches decreased from year-end 2017 driven by lower operational and credit, as well as market risk-weighted assets. The decrease in operational risk-weighted assets was primarily due to changes in operational loss severity and frequency. The decrease in credit risk-weighted assets was primarily due to a decline in retail exposures driven by a reduction in residential mortgage loan sales and repayments, and changes in OTC derivative trade activity, partially offset by increases in repo-style transactions, securitization exposures and other exposures.

Market risk-weighted assets decreased under both the Basel III Standardized Approach and Basel III Advanced Approaches primarily due to changes in model inputs regarding volatility and the correlation between market risk factors, as well as methodology changes for standard specific risk charges, partially offset by increases in positions subject to Value at Risk and Stressed Value at Risk.

Supplementary Leverage Ratio

Citigroup's Supplementary Leverage ratio was 6.4% for the fourth quarter of 2018, compared to 6.5% for the third quarter of 2018 and 6.7% for the fourth quarter of 2017. The decline in the ratio quarter-over-quarter was principally driven by a reduction in Tier 1 Capital resulting from the return of $5.8 billion of capital to common shareholders, partially offset by net income of $4.3 billion. The decline in the ratio from the fourth quarter of 2017 was largely attributable to a reduction in Tier 1 Capital resulting from the return of $18.4 billion of capital to common shareholders, adverse net movements in AOCI, as well as an increase in Total Leverage Exposure primarily due to growth in average on-balance sheet assets, partially offset by net income of $18.0 billion.

The following table sets forth Citi's Supplementary Leverage ratio and related components as of December 31, 2018 and 2017.

Citigroup Basel III Supplementary Leverage Ratio and Related Components

In millions of dollars, except ratios	December 31, 2018	December 31, 2017
Tier 1 Capital	$158,122	$162,377
Total Leverage Exposure (TLE)		
On-balance sheet assets(1)	$1,936,791	$1,909,699
Certain off-balance sheet exposures:(2)		
Potential future exposure on derivative contracts	187,130	191,555
Effective notional of sold credit derivatives, net(3)	49,402	59,207
Counterparty credit risk for repo-style transactions(4)	23,715	27,005
Unconditionally cancelable commitments	69,630	67,644
Other off-balance sheet exposures	238,805	218,754
Total of certain off-balance sheet exposures	$568,682	$564,165
Less: Tier 1 Capital deductions	39,832	41,373
Total Leverage Exposure	$2,465,641	$2,432,491
Supplementary Leverage ratio	6.41 %	6.68 %

(1) Represents the daily average of on-balance sheet assets for the quarter.

(2) Represents the average of certain off-balance sheet exposures calculated as of the last day of each month in the quarter.

(3) Under the U.S. Basel III rules, banking organizations are required to include in TLE the effective notional amount of sold credit derivatives, with netting of exposures permitted if certain conditions are met.

(4) Repo-style transactions include repurchase or reverse repurchase transactions and securities borrowing or securities lending transactions.

Capital Resources of Citigroup's Subsidiary U.S.
Depository Institutions

Citigroup's subsidiary U.S. depository institutions are also subject to regulatory capital standards issued by their respective primary federal bank regulatory agencies, which are similar to the standards of the Federal Reserve Board. During 2018, Citi's primary subsidiary U.S. depository institution, Citibank, N.A. (Citibank), is subject to effective minimum Common Equity Tier 1 Capital, Tier 1 Capital and Total Capital ratios, inclusive of the 75% phase-in of the 2.5% Capital Conservation Buffer, of 6.375%, 7.875% and 9.875%, respectively. Citibank's effective minimum Common Equity Tier 1 Capital, Tier 1 Capital and Total Capital ratios during

2017, inclusive of the 50% phase-in of the 2.5% Capital Conservation Buffer, were 5.75%, 7.25% and 9.25%, respectively. Citibank is required to maintain stated minimum Common Equity Tier 1 Capital, Tier 1 Capital and Total Capital ratios of 4.5%, 6.0% and 8.0%, respectively.

The following tables set forth the capital tiers, total risk-weighted assets and underlying risk components, risk-based capital ratios, quarterly adjusted average total assets, Total Leverage Exposure and leverage ratios for Citibank, Citi's primary subsidiary U.S. depository institution, as of December 31, 2018 and 2017.

Citibank Capital Components and Ratios

In millions of dollars, except ratios	December 31, 2018 Advanced Approaches	December 31, 2018 Standardized Approach	December 31, 2017 Advanced Approaches	December 31, 2017 Standardized Approach
Common Equity Tier 1 Capital	$129,217	$129,217	$122,848	$122,848
Tier 1 Capital	131,341	131,341	124,952	124,952
Total Capital (Tier 1 Capital + Tier 2 Capital)(1)	144,485	155,280	138,008	148,946
Total Risk-Weighted Assets	927,931	1,030,514	965,435	1,024,502
Credit Risk	$656,664	$991,999	$674,659	$980,324
Market Risk	38,144	38,515	43,300	44,178
Operational Risk	233,123	—	247,476	—
Common Equity Tier 1 Capital ratio(2)(3)(4)	13.93 %	12.54 %	12.72 %	11.99 %
Tier 1 Capital ratio(2)(3)(4)	14.15	12.75	12.94	12.20
Total Capital ratio(2)(3)(4)	15.57	15.07	14.29	14.54

In millions of dollars, except ratios	December 31, 2018	December 31, 2017
Quarterly Adjusted Average Total Assets(5)	$1,399,029	$1,401,187
Total Leverage Exposure(6)	1,914,817	1,900,641
Tier 1 Leverage ratio(2)(4)	9.39 %	8.92 %
Supplementary Leverage ratio(2)(4)	6.86	6.57

(1) Under the Advanced Approaches framework eligible credit reserves that exceed expected credit losses are eligible for inclusion in Tier 2 Capital to the extent the excess reserves do not exceed 0.6% of credit risk-weighted assets, which differs from the Standardized Approach in which the allowance for credit losses is eligible for inclusion in Tier 2 Capital up to 1.25% of credit risk-weighted assets, with any excess allowance for credit losses being deducted in arriving at credit risk-weighted assets.

(2) Citibank's risk-based capital and leverage ratios and related components as of December 31, 2017 are non-GAAP financial measures, which reflect full implementation of regulatory capital adjustments and deductions prior to the effective date of January 1, 2018. Citi believes these ratios and the related components provide useful information to investors and others by measuring Citi's progress in prior periods against currently effective regulatory capital standards.

(3) As of December 31, 2018, Citibank's reportable Common Equity Tier 1 Capital, Tier 1 Capital and Total Capital ratios were the lower derived under the Basel III Standardized Approach. As of December 31, 2017, Citibank's

reportable Common Equity Tier 1 Capital and Tier 1 Capital ratios were the lower derived under the Basel III Standardized Approach, whereas the reportable Total Capital ratio was the lower derived under the Basel III Advanced Approaches framework.

(4) Citibank must maintain minimum Common Equity Tier 1 Capital, Tier 1 Capital, Total Capital and Tier 1 Leverage ratios of 6.5%, 8.0%, 10.0% and 5.0%, respectively, to be considered "well capitalized" under the revised Prompt Corrective Action (PCA) regulations applicable to insured depository institutions as established by the U.S. Basel III rules. Effective January 1, 2018, Citibank must also maintain a minimum Supplementary Leverage ratio of 6.0% to be considered "well capitalized."

(5) Tier 1 Leverage ratio denominator.

(6) Supplementary Leverage ratio denominator.

Impact of Changes on Citigroup and Citibank Capital Ratios

The following tables present the estimated sensitivity of Citigroup's and Citibank's capital ratios to changes of $100 million in Common Equity Tier 1 Capital, Tier 1 Capital and Total Capital (numerator), and changes of $1 billion in Advanced Approaches and Standardized Approach risk-weighted assets and quarterly adjusted average total assets, as well as Total Leverage Exposure (denominator), as of December 31, 2018. The information below is provided for the purpose of analyzing the impact that a change in Citigroup's

or Citibank's financial position or results of operations could have on these ratios. These sensitivities only consider a single change to either a component of regulatory capital, risk-weighted assets, quarterly adjusted average total assets or Total Leverage Exposure. Accordingly, an event that affects more than one factor may have a larger basis point impact than is reflected in these tables.

Impact of Changes on Citigroup and Citibank Risk-Based Capital Ratios

	Common Equity Tier 1 Capital ratio		Tier 1 Capital ratio		Total Capital ratio	
In basis points	Impact of $100 million change in Common Equity Tier 1 Capital	Impact of $1 billion change in risk-weighted assets	Impact of $100 million change in Tier 1 Capital	Impact of $1 billion change in risk-weighted assets	Impact of $100 million change in Total Capital	Impact of $1 billion change in risk-weighted assets
Citigroup						
Advanced Approaches	0.9	1.1	0.9	1.2	0.9	1.4
Standardized Approach	0.9	1.0	0.9	1.1	0.9	1.4
Citibank						
Advanced Approaches	1.1	1.5	1.1	1.5	1.1	1.7
Standardized Approach	1.0	1.2	1.0	1.2	1.0	1.5

Impact of Changes on Citigroup and Citibank Leverage Ratios

	Tier 1 Leverage ratio		Supplementary Leverage ratio	
In basis points	Impact of $100 million change in Tier 1 Capital	Impact of $1 billion change in quarterly adjusted average total assets	Impact of $100 million change in Tier 1 Capital	Impact of $1 billion change in Total Leverage Exposure
Citigroup	0.5	0.4	0.4	0.3
Citibank	0.7	0.7	0.5	0.4

Citigroup Broker-Dealer Subsidiaries

At December 31, 2018, Citigroup Global Markets Inc., a U.S. broker-dealer registered with the SEC that is an indirect wholly owned subsidiary of Citigroup, had net capital, computed in accordance with the SEC's net capital rule, of $8.2 billion, which exceeded the minimum requirement by $5.6 billion.

Moreover, Citigroup Global Markets Limited, a broker-dealer registered with the United Kingdom's Prudential Regulation Authority (PRA) that is also an indirect wholly owned subsidiary of Citigroup, had total capital of $20.9 billion at December 31, 2018, which exceeded the PRA's minimum regulatory capital requirements.

In addition, certain of Citi's other broker-dealer
subsidiaries are subject to regulation in the countries in which they do business, including requirements to maintain specified levels of net capital or its equivalent. Citigroup's other broker-dealer subsidiaries were in compliance with their capital requirements at December 31, 2018.

Regulatory Capital Standards Developments

The U.S. banking agencies and the Basel Committee issued numerous proposed and final rules on a variety of topics in 2018, as well as early 2019. In the U.S., the most significant proposals would introduce stress buffer requirements, as well as a new methodology for calculating risk-weighted assets for derivative contracts. The Basel Committee, among other things, finalized revisions to the GSIB framework as well as the minimum capital requirements for market risk.

U.S. Banking Agencies

Regulatory Capital Treatment—Implementation and Transition of the Current Expected Credit Losses (CECL) Methodology

In February 2019, the U.S. banking agencies issued a final rule that provides banking organizations an optional phase-in over a three-year period of the "Day One" adverse regulatory capital effects resulting from adoption of the CECL methodology.

The rule is in recognition of the issuance by the Financial Accounting Standards Board of ASU No. 2016-13, "Financial Instruments—Credit Losses," which will replace the current incurred loss methodology for recognizing credit losses with the CECL methodology. The ASU will be effective for Citi as of January 1, 2020, and will generally result in the earlier recognition of the provision for credit losses and related allowance for credit losses than current practice. For additional information regarding the CECL methodology, see "Future Application of Accounting Standards" below.

Citi and Citibank plan to elect the transition provisions provided by the rule, and will phase-in the "Day One" regulatory capital effects resulting from adoption of the CECL methodology over the three-year period beginning January 1, 2020.

Separately, in December 2018, the Federal Reserve Board issued a statement that it plans to maintain its current framework for calculating allowances on loans in the supervisory stress test for the 2020 and 2021 supervisory stress test cycles, and to evaluate appropriate future enhancements to this framework as best practices for implementing CECL are developed. However, banking organizations are required to incorporate CECL into their stress testing methodologies, data, and disclosure beginning in the cycle coinciding with their first full year of CECL adoption (2020 for Citi).

Stress Buffer Requirements

In April 2018, the Federal Reserve Board issued a proposal that is designed to more closely integrate the results of the quantitative assessment in CCAR with firms' ongoing minimum capital requirements under the U.S. Basel III rules. Specifically, the proposed rule would replace the existing Capital Conservation Buffer, currently fixed at 2.5% under the U.S. Basel III rules, with (i) a variable buffer known as the Stress Capital Buffer (as described below), plus (ii) for U.S. GSIBs, the GSIB's then-current GSIB surcharge, plus (iii) the Countercyclical Capital Buffer, if any. These three

components would constitute the new Capital Conservation Buffer.

The Stress Capital Buffer (SCB) would be equal to the maximum decline in a bank holding company's Common Equity Tier 1 Capital ratio under the severely adverse scenario of the supervisory stress test, plus planned common stock dividends for each of the fourth through seventh quarters of the planning horizon (expressed as a percentage of risk-weighted assets)—the so-called "dividend add-on." The SCB would be subject to a floor of 2.5%.

In addition to the SCB, the proposed rule would establish a new Stress Leverage Buffer requirement above the stated minimum Tier 1 Leverage ratio requirement. The Stress Leverage Buffer would be equal to the maximum decline in a bank holding company's Tier 1 Leverage ratio under the severely adverse scenario of the supervisory stress test, plus planned common stock dividends for each of the fourth through seventh quarters of the planning horizon (expressed as a percentage of quarterly adjusted average total assets).

Finally, the proposed rule would also modify certain assumptions currently required in supervisory stress tests, including continued capital distributions during the nine-quarter capital planning horizon and balance sheet growth assumptions.

Under the timeline for stress testing and CCAR cycles included within the proposed rule, the Federal Reserve Board would generally release its calculation of each bank holding company's SCB and Stress Leverage Buffer by June 30 of each year.

A final rule has not yet been issued. In late 2018, senior staff at the Federal Reserve Board indicated publicly that the proposal would not take effect until 2020 at the earliest. It was also noted that the Federal Reserve Board plans to re-propose certain elements of the proposal to better balance the need to preserve the dynamism of stress testing while reducing unnecessary volatility. The potential re-proposal may also address certain other elements of the original proposal, such as the relative timing between stress testing results and the submission of a firm's capital plan, the consequences of breaching a buffer, the role and calibration of the dividend add-on, and the necessity of the Stress Leverage Buffer.

Enhanced Supplementary Leverage Ratio and Total Loss-Absorbing Capacity (TLAC) Requirements

In April 2018, the Federal Reserve Board and the Office of the Comptroller of the Currency (OCC) jointly issued a proposal that would modify the enhanced Supplementary Leverage ratio standards applicable to U.S. GSIBs and their Federal Reserve Board or OCC-regulated insured depository institution subsidiaries.

The proposed rule would replace the currently fixed 2.0% leverage buffer requirement with a variable leverage buffer requirement equal to 50% of the U.S. GSIB's currently applicable GSIB surcharge. Similarly, for the regulated insured depository institution subsidiaries of U.S. GSIBs, such as Citibank, the proposed rule would replace the currently fixed 6.0% threshold at which these subsidiaries are considered to be "well capitalized" under the PCA framework with a threshold set at the stated minimum requirement of

3.0% plus 50% of the GSIB surcharge applicable to the U.S. GSIB of which it is a subsidiary.

The proposed rule would also make corresponding modifications to certain of the Federal Reserve Board's TLAC requirements applicable to U.S. GSIBs. Accordingly, under the proposed rule, each U.S. GSIB's fixed 2.0% leverage-based TLAC buffer would be replaced with a buffer equal to 50% of the GSIB surcharge, and the leverage component of each U.S. GSIB's Long-Term Debt (LTD) requirement would be revised to equal Total Leverage Exposure multiplied by 2.5% plus 50% of the U.S. GSIB's applicable GSIB surcharge. For additional information about TLAC, see "Managing Global Risk—Liquidity Risk—Long-Term Debt—Total Loss-Absorbing Capacity (TLAC)" below.

If adopted as proposed, and assuming that Citi maintains a method 2 GSIB surcharge of 3.0%, Citi's effective minimum Supplementary Leverage ratio requirement would be reduced to 4.5%, compared to the current 5.0%. Citibank's effective minimum Supplementary Leverage ratio to be determined "well capitalized" under the PCA framework would similarly be reduced to 4.5%, compared to the current 6.0%. Citi's leverage-based TLAC buffer would decrease from 2.0% to 1.5%, which would reduce Citi's effective minimum leverage-based TLAC requirement from 9.5% to 9.0%. Additionally, the leverage component of Citi's long-term debt requirement would decrease from 4.5% to 4.0%.

The Economic Growth, Regulatory Relief, and Consumer Protection Act, which was signed into law in 2018, directs the U.S. banking agencies to amend the U.S. Basel III rules to exclude certain custody-related deposits from the definition of Total Leverage Exposure for custody banks. The U.S. banking agencies have not yet issued a notice of proposed rulemaking in response to this particular provision of the Act, and it is currently unclear how this may impact or interact with their proposed rulemaking from April 2018.

Standardized Approach for Counterparty Credit Risk

In December 2018, the U.S. banking agencies issued a proposal to introduce the Standardized Approach for Counterparty Credit Risk (SA-CCR) in the U.S. SA-CCR would replace the Current Exposure Method (CEM), which is the current methodology used to calculate risk-weighted assets for all derivative contracts under the Standardized Approach, as well as risk-weighted assets for derivative contracts under the Advanced Approaches in cases where internal models are not used. Additionally, SA-CCR would replace CEM in numerous other instances throughout the regulatory framework, including but not limited to the Supplementary Leverage Ratio, single counterparty credit limits, and legal lending limits.

Under SA-CCR, a banking organization would calculate the exposure amount of its derivative contracts at the netting set level. Multiple derivative contracts would generally be considered to be under the same netting set so long as each derivative contract is subject to the same qualifying master netting agreement. SA-CCR also introduces the concept of hedging sets, which would allow a banking organization to fully or partially net derivative contracts within the same netting set that share similar risk factors. Moreover, SA-CCR

incorporates updated supervisory factors and maturity factors to calculate the potential future exposure of a derivative contract, and provides for improved recognition of collateral. Under the proposal, the exposure amount of a netting set would be equal to an alpha factor of 1.4 multiplied by the sum of the replacement cost and potential future exposure of the netting set.

The effective date of the proposed rule is July 1, 2020; however, early adoption would be permitted. If adopted as proposed, Citi's risk-weighted assets related to derivative contracts under the Standardized Approach are likely to increase. The ultimate impact on Citi, however, will depend upon the specific provisions of any final rule.

Stress Testing Requirements

The U.S. banking agencies have recently issued a number of proposals that would modify company-run stress testing requirements to conform with the Economic Growth, Regulatory Relief, and Consumer Protection Act. In October 2018, the Federal Reserve Board released a proposal that would eliminate the mid-cycle stress test requirement for all bank holding companies, including Citi, effective in the 2020 cycle (the proposal would maintain the requirement to conduct an annual company-run stress test). In January 2019, the Federal Reserve Board released a further proposal that would eliminate the hypothetical adverse scenario from company-run stress tests for bank holding companies, including Citi. Similarly, the Federal Reserve Board would no longer include an adverse scenario in its supervisory stress tests. (The Office of the Comptroller of the Currency and the Federal Deposit Insurance Corporation released similar proposals in December 2018.) Company-run stress tests and supervisory stress tests would continue to include a severely adverse scenario. The proposals did not specify a proposed effective date for the elimination of the adverse scenario.

Basel Committee

Revised Assessment Framework for Global Systemically Important Banks

In July 2018, the Basel Committee issued a final standard which revised its framework for assessing the global systemic importance of banks, beginning with the 2021 assessment. (For a description of the Basel Committee's GSIB methodology, so-called "method 1" under the U.S. Basel III rules, see "Current Regulatory Capital Standards—GSIB Surcharge" above.)

The final standard introduces a trading volume indicator within the substitutability/financial institution infrastructure category, accompanied by an equivalent reduction in the current weighting of the existing underwriting indicator. Among other revisions, the standard also expands the scope of consolidation to include exposures of insurance subsidiaries within the size, interconnectedness, and complexity categories.

If the Federal Reserve Board were to adopt the Basel Committee's revisions with respect to the U.S. GSIB framework, Citi's estimated method 1 GSIB surcharge would remain unchanged at 2.0%.

The Basel Committee indicated in the standard that it plans to complete another review of the GSIB framework by 2021, at which time it will consider alternative methodologies for the substitutability category, including the removal of the existing cap. Citi's estimated method 1 GSIB surcharge may increase in the future, if the Federal Reserve Board were to adopt alternative methodologies for the substitutability category.

Revisions to the Minimum Capital Requirements for Market Risk

In January 2019, the Basel Committee issued a final standard that revises the market risk capital framework—the so-called Fundamental Review of the Trading Book, or FRTB. The final rule revises the assessment process under the Advanced Approaches to determine whether a bank's internal risk management models appropriately reflect the risks of individual trading desks, and clarifies the requirements for identification of risk factors that are eligible for internal modeling. In addition, the risk weights for general interest rate risk and foreign exchange risk under the Standardized Approach have been recalibrated.

If the U.S. banking agencies were to adopt the Basel Committee's revised market risk framework unchanged, Citi believes its market risk-weighted assets could increase significantly. The ultimate impact on Citi, however, will depend upon the specific provisions of any final rule.

Leverage Ratio Treatment of Client Cleared Derivatives

In October 2018, the Basel Committee issued a consultative document seeking views as to whether a targeted and limited revision of the leverage ratio exposure measure was warranted with regard to the treatment of client cleared derivatives. In the U.S., the Basel Committee's leverage ratio framework and leverage ratio exposure measure are most closely aligned with the Supplementary Leverage Ratio and Total Leverage Exposure, respectively. Under the Basel Committee's leverage ratio framework, the leverage ratio exposure measure is generally not adjusted for physical or financial collateral, guarantees or other credit risk mitigation techniques, including initial margin received from clients. However, the Basel Committee consultative document proposes two alternative treatments for client cleared derivatives that would reduce the leverage ratio exposure measure, to varying degrees, in recognition of the beneficial effects of margin requirements and overcollateralization, as applicable.

One of the options under consideration would allow amounts of cash and non-cash initial margin that are received from the client to offset the potential future exposure of derivatives centrally cleared on the client's behalf. Another option would amend the currently specified treatment of client cleared derivatives to align it with the measurement as determined per the Basel Committee's standardized approach for measuring counterparty credit risk exposures, as used for risk-based capital requirements. This option would permit both cash and non-cash forms of initial margin and variation margin received from the client to offset replacement cost and potential future exposure for client cleared derivatives only.

If the U.S. agencies were to amend the Supplementary Leverage Ratio requirements in a manner similar to either of the options under consideration by the Basel Committee, Citi's Supplementary Leverage Ratio would likely benefit modestly. However, the impact from and timing of any actions undertaken by the Basel Committee or the U.S. banking agencies in this regard remains uncertain.

Tangible Common Equity, Book Value Per Share, Tangible Book Value Per Share and Returns on Equity
Tangible common equity (TCE), as defined by Citi, represents common stockholders' equity less goodwill and identifiable intangible assets (other than MSRs). Other companies may calculate TCE in a different manner. TCE, tangible book value (TBV) per share and return on average TCE are non-GAAP financial measures. Citi believes the presentation of TCE, TBV per share and return on average TCE provides alternate measures of capital strength and performance that are commonly used by investors and industry analysts.

In millions of dollars or shares, except per share amounts	December 31, 2018	December 31, 2017
Total Citigroup stockholders' equity	$ 196,220	$ 200,740
Less: Preferred stock	18,460	19,253
Common stockholders' equity	$ 177,760	$ 181,487
Less:		
Goodwill	22,046	22,256
Identifiable intangible assets (other than MSRs)	4,636	4,588
Goodwill and identifiable intangible assets (other than MSRs) related to assets held-for-sale (HFS)	—	32
Tangible common equity (TCE)	$ 151,078	$ 154,611
Common shares outstanding (CSO)	2,368.5	2,569.9
Book value per share (common equity/CSO)	$ 75.05	$ 70.62
Tangible book value per share (TCE/CSO)	63.79	60.16
In millions of dollars	Year ended December 31, 2018	Year ended December 31, 2017(1)
Net income less preferred dividends	$ 16,872	$ 14,583
Average common stockholders' equity	$ 179,497	$ 207,747
Average TCE	$ 153,343	$ 180,458
Return on average common stockholders' equity	9.4 %	7.0 %
Return on average TCE (ROTCE)(2)	11.0	8.1

(1) Year ended December 31, 2017 excludes the one-time impact of Tax Reform. For a reconciliation of these measures, see "Significant Accounting Policies and Significant Estimates—Income Taxes" below.
(2) ROTCE represents net income available to common shareholders as a percentage of average TCE.

RISK FACTORS

The following discussion sets forth what management currently believes could be the most significant risks and uncertainties that could impact Citi's businesses, results of operations and financial condition. Other risks and uncertainties, including those not currently known to Citi or its management, could also negatively impact Citi's businesses, results of operations and financial condition. Thus, the following should not be considered a complete discussion of all of the risks and uncertainties Citi may face.

STRATEGIC RISKS

Citi's Ability to Return Capital to Common Shareholders Consistent with Its Capital Planning Efforts and Targets Substantially Depends on the CCAR Process and the Results of Regulatory Stress Tests.

Citi's ability to return capital to its common shareholders consistent with its capital planning efforts and targets, whether through its common stock dividend or through a share repurchase program, substantially depends, among other things, on regulatory approval, including through the CCAR process required by the Federal Reserve Board (FRB) and the supervisory stress tests required under the Dodd-Frank Act. The ability to return capital also depends on Citi's results of operations and effectiveness in managing its level of risk-weighted assets and GSIB surcharge. Citi's ability to accurately predict, interpret or explain to stakeholders the outcome of the CCAR process, and thus to address any market or investor perceptions, may be limited as the FRB's assessment of Citi's capital adequacy is conducted using the FRB's proprietary stress test models, as well as a number of qualitative factors, including a detailed assessment of Citi's "capital adequacy process," as defined by the FRB. For additional information on Citi's return of capital to common shareholders in 2018 as well as the CCAR process, supervisory stress test requirements and GSIB surcharge, see "Capital Resources—Overview" and "Capital Resources—Current Regulatory Capital Standards—Stress Testin Component of Capital Planning" above.

The FRB has stated that it expects leading capital adequacy practices will continue to evolve and will likely be determined by the FRB each year as a result of its cross-firm review of capital plan submissions. Similarly, the FRB has indicated that, as part of its stated goal to continually evolve its annual stress testing requirements, several parameters of the annual stress testing process may continue to be altered, including the severity of the stress test scenario, the FRB modeling of Citi's balance sheet and the addition of components deemed important by the FRB. Additionally, in April 2018, the FRB proposed integration of the annual stress testing requirements with ongoing regulatory capital requirements. Proposed changes to the stress testing regime include, among others, introduction of a firm-specific "stress capital buffer" (SCB), which would be equal to the maximum decline in a firm's Common Equity Tier 1 Capital ratio under a severely adverse scenario over a nine-quarter CCAR measurement period, subject to a minimum requirement of 2.5%. The FRB proposed that the SCB would replace the capital conservation buffer in the firm's ongoing regulatory capital requirements for Standardized Approach capital ratios. The SCB would be calculated by the FRB using its proprietary data and modeling of each firm's results. Accordingly, a firm's SCB would change annually based on the supervisory stress test results, thus potentially resulting in year-to-year volatility in the calculation of the SCB. For additional information on the FRB's proposal, including calculation of the SCB, see "Capital Resources—Regulatory Capital Standards Developments" above.

Although various uncertainties exist regarding the extent of, and the ultimate impact to Citi from, these changes to the FRB's stress testing and CCAR regimes, these changes would likely increase the level of capital Citi is required or elects to hold, including as part of Citi's estimated management buffer, thus potentially impacting the extent to which Citi is able to return capital to shareholders.

Citi, Its Management and Its Businesses Must Continually Review, Analyze and Successfully Adapt to Ongoing Regulatory and Other Uncertainties and Changes in the U.S. and Globally.

Despite the adoption of final regulations in numerous areas impacting Citi and its businesses over the past several years, Citi, its management and its businesses continually face ongoing regulatory uncertainties and changes, both in the U.S. and globally. While the areas of ongoing regulatory uncertainties and changes facing Citi are too numerous to list completely, various examples include, but are not limited to (i) uncertainties and potential fiscal, monetary and regulatory changes arising from the U.S. Presidential administration and Congress; (ii) potential changes to various aspects of the regulatory capital framework applicable to Citi (see the CCAR risk factor and “Capital Resources—Regulatory Capital Standards Developments” above); and (iii) the terms of and other uncertainties resulting from the U.K.’s potential exit from the European Union (EU) (see the macroeconomic challenges and uncertainties risk factor below).

Ongoing regulatory uncertainties and changes make Citi’s and its management’s long-term business, balance sheet and budget planning difficult or subject to change. For example, the U.S. Presidential administration has implemented and continues to discuss various changes to certain regulatory requirements, which would require ongoing assessment by management as to the impact to Citi, its businesses and business planning. Business planning is required to be based on possible or proposed rules or outcomes, which can change dramatically upon finalization, or upon implementation or interpretive guidance from numerous regulatory bodies worldwide, and such guidance can change.

Moreover, U.S. and international regulatory initiatives have not always been undertaken or implemented on a coordinated basis, and areas of divergence have developed and continue to develop with respect to the scope, interpretation, timing, structure or approach, leading to inconsistent or even conflicting regulations, including within a single jurisdiction. For example, in 2016, the European Commission proposed to introduce a new requirement for major banking groups headquartered outside the EU (which would include Citi) to establish an intermediate EU holding company where the foreign bank has two or more institutions (broadly meaning banks, broker-dealers and similar financial firms) established in the EU. While the proposal mirrors an existing U.S. requirement for non-U.S. banking organizations to form U.S. intermediate holding companies, if adopted, it could lead to additional complexity with respect to Citi's resolution planning, capital and liquidity allocation and efficiency in various jurisdictions. Regulatory changes have also significantly increased Citi's compliance risks and costs (see the implementation and interpretation of regulatory changes risk factor below).

Citi's Ability to Utilize Its DTAs, and Thus Reduce the Negative Impact of the DTAs on Citi's Regulatory Capital, Will Be Driven by Its Ability to Generate U.S. Taxable Income and by the Provisions of and Guidance Issued in Connection with Tax Reform.

At December 31, 2018, Citi's net DTAs were $22.9 billion, net of a valuation allowance of $9.3 billion, of which $11.0 billion was excluded from Citi's Common Equity Tier 1 Capital under the U.S. Basel III rules (for additional information, see "Capital Resources—Components of Citigroup Capital" above). Of the net DTAs at December 31, 2018, $6.8 billion related to foreign tax credit carry-forwards (FTCs), net of a valuation allowance. The carry-forward utilization period for FTCs is 10 years and represents the most time-sensitive component of Citi's DTAs. The FTC carry-forwards at December 31, 2018 expire over the period of 2019-2028. Citi must utilize any FTCs generated in the then-current year tax return prior to utilizing any carry-forward FTCs.

The accounting treatment for realization of DTAs, including FTCs, is complex and requires significant judgment and estimates regarding future taxable earnings in the jurisdictions in which the DTAs arise and available tax planning strategies. Citi's ability to utilize its DTAs, including the FTC components, will be dependent upon Citi's ability to generate U.S. taxable income in the relevant tax carry-forward periods. Failure to realize any portion of the net DTAs would also have a corresponding negative impact on Citi's net income and financial returns.

The U.S. Department of the Treasury (U.S. Treasury) issued proposed regulations in November 2018 regarding the required allocation of existing FTC carry-forwards to the appropriate FTC baskets as redefined by Tax Reform and the allocation of the overall domestic loss (ODL) to these FTC baskets. An ODL allows a company to recharacterize domestic income as income from sources outside the U.S., which enables a taxpayer to use FTC carry-forwards and FTCs generated in future years, assuming the generation of sufficient U.S. taxed income. If the final regulations issued by the U.S. Treasury differ from the proposed regulations, the valuation allowance against Citi's FTC carry-forwards would increase or decrease, depending upon the content of the final regulations. Citi's net income would change by a corresponding amount. However, a change in recognized FTC

carry-forwards would not impact Citi's regulatory capital, given that such amounts are already fully disallowed.

Citi does not expect to be subject to the Base Erosion Anti-Abuse Tax (BEAT) added by Tax Reform. However, any final BEAT regulations could affect Citi's decisions as to how to structure its non-U.S. operations, possibly in a less cost-efficient manner. Further, if BEAT were to be applicable to Citi in any given year, it could have a significantly adverse effect on both Citi's net income and regulatory capital.

For additional information on the impact of Tax Reform and on Citi's DTAs, including the FTCs, see "Significant Accounting Policies and Significant Estimates—Income Taxes" below and Notes 1 and 9 to the Consolidated Financial Statements.

Citi's Interpretation or Application of the Complex Tax Laws to Which It Is Subject Could Differ from Those of the Relevant Governmental Authorities, Which Could Result in the Payment of Additional Taxes, Penalties or Interest.

Citi is subject to the various tax laws of the U.S. and its states and municipalities, as well as the numerous non-U.S. jurisdictions in which it operates. These tax laws are inherently complex and Citi must make judgments and interpretations about the application of these laws, including Tax Reform as mentioned above, to its entities, operations and businesses. Citi's interpretations and application of the tax laws, including with respect to Tax Reform, withholding tax obligations and stamp and other transactional taxes, could differ from that of the relevant governmental taxing authority, which could result in the payment of additional taxes, penalties or interest, which could be material.

Citi’s Continued Investments and Efficiency Initiatives May Not Be as Successful as It Projects or Expects.
Citi continues to leverage its scale and make incremental investments to deepen client relationships, increase revenue and lower expenses. For example, Citi continues to make investments to enhance its digital capabilities across the franchise, including digital platforms and mobile and cloud architecture. Citi also has been investing in higher return businesses, such as the U.S. cards and wealth management businesses in Global Consumer Banking (GCB) as well as equities and other businesses in Institutional Clients Group (ICG). Citi also continues to execute on its investment of more than $1 billion in Citibanamex through 2020. Further, Citi has been pursuing efficiency savings through various technology and digital initiatives, location strategy and organizational simplification, which are intended to self-fund Citi’s incremental investment initiatives as well as offset growth-related expenses.
Citi’s investments and efficiency initiatives are being undertaken as part of its overall strategy to meet operational and financial objectives and targets, including operating efficiency and revenue and earnings growth expectations. There is no guarantee that these or other initiatives Citi may pursue will be as productive or effective as Citi expects, or at all. Citi’s investment and efficiency initiatives may continue to evolve as its business strategies and the market environment change, which could make the initiatives more costly and

more challenging to implement, and limit their effectiveness. Moreover, Citi's ability to achieve expected returns on its investments and costs savings depends, in part, on factors that it cannot control, such as macroeconomic conditions, customer, client and competitor actions and ongoing regulatory changes, among others.

A Deterioration in or Failure to Maintain Citi's Co-Branding or Private Label Credit Card Relationships, Including as a Result of any Bankruptcy or Liquidation, Could Have a Negative Impact on Citi's Results of Operations or Financial Condition.

Citi has co-branding and private label relationships through its Citi-branded cards and Citi retail services credit card businesses with various retailers and merchants globally in the ordinary course of business whereby Citi issues credit cards to customers of the retailers or merchants. Citi's co-branding and private label agreements provide for shared economics between the parties and generally have a fixed term. The five largest relationships, including Sears, constituted an aggregate of approximately 11% of Citi's revenues in 2018.

These relationships could be negatively impacted by, among other things, external factors outside the control of either party to the relationship, such as the general economic environment, declining sales and revenues or other operational difficulties of the retailer or merchant, termination due to a contractual breach by Citi or by the retailer or merchant, or other factors, including bankruptcies, liquidations, restructurings, consolidations or other similar events. Over the last several years, a number of U.S. retailers have continued to experience declining sales, which has resulted in significant numbers of store closures and, in a number of cases, bankruptcies, as retailers attempt to cut costs and reorganize. For example, as previously disclosed, Sears filed for Chapter 11 bankruptcy protection in October 2018. On February 11, 2019, after bankruptcy court approval, ESL Investments purchased substantially all of Sears' assets on a going concern basis, including its credit card program agreement with Citi (for further information, including certain potential impacts to Citi retail services, see "Global Consumer Banking—North America GCB" above). In addition, as has been widely reported, competition among card issuers, including Citi, for these relationships is significant, and it has become increasingly difficult in recent years to maintain such relationships on the same terms or at all. While various mitigating factors could be available to Citi if any of these events were to occur-such as by replacing the retailer or merchant or offering other card products—such events, particularly bankruptcies or liquidations, could negatively impact the results of operations or financial condition of Citi-branded cards, Citi retail services or Citi as a whole, including as a result of loss of revenues, increased expenses, higher cost of credit, impairment of purchased credit card relationships and contract-related intangibles or other losses (for information on Citi's credit card related intangibles generally, see Note 16 to the Consolidated Financial Statements).

Macroeconomic and Geopolitical Challenges and Uncertainties Globally Could Have a Negative Impact on Citi's Businesses and Results of Operations.

Citi has experienced, and could experience in the future, negative impacts to its businesses and results of operations as a result of macroeconomic and geopolitical challenges, uncertainties and volatility. For example, changes in U.S. trade policies, which have resulted in retaliatory measures from other countries, could result in a reduction or realignment of trade flows among countries and negatively impact businesses, sectors and economic growth rates. Additional areas of uncertainty include, among others, geopolitical tensions and conflicts, natural disasters, election outcomes and other macroeconomic developments, such as those involving economic growth rates, consumer confidence and spending, employment rates and commodity prices.

Governmental fiscal and monetary actions, or expected actions, such as changes in interest rate policies and any balance sheet normalization program implemented by a central bank to reduce the size of its balance sheet could significantly impact interest rates, economic growth rates, the volatility of global financial markets, foreign exchange rates and capital flows among countries. For example, in 2017, the FRB began implementing a balance sheet normalization program to reduce the size of the central bank's balance sheet, although there are various uncertainties regarding the ultimate size of the balance sheet and its composition. Such actions could, among other things, result in higher interest rates. Although Citi estimates its overall net interest revenue would generally increase due to higher interest rates, higher rates could adversely affect Citi's funding costs, levels of deposits in its consumer and institutional businesses and certain business or product revenues.

As a result of the U.K.'s 2016 referendum on exiting the EU, numerous uncertainties have arisen regarding the U.K.'s potential exit from and future relationship with the EU. For example, the terms of a withdrawal continue to be negotiated within the U.K. and between the U.K. and the EU, and it is unclear whether the parties will be able to agree on terms prior to the currently scheduled exit on March 29, 2019. If no agreement is reached on terms of an exit, it could result in what is commonly referred to as a "cliff-edge" or "hard" exit scenario. A hard exit scenario would result in the U.K. and EU losing reciprocal financial services license-passporting rights and require the U.K. to deal with the EU as a third country regime, but without an equivalence regime or transition period in place. A hard exit scenario could cause severe disruptions in the movement of goods and services between the U.K. and EU countries and negatively impact financial markets and the U.K. and EU economies. Citi's business and operations could be impacted by these and other factors, including the preparedness and reaction of clients, counterparties and financial markets infrastructure. For information about Citi's actions to manage the U.K.'s potential exit from the EU, see "Managing Global Risk—Strategic Risk—Potential Exit of U.K. from EU" below. Further, the economic and fiscal situations of some EU countries have remained fragile, and concerns and uncertainties remain in Europe over the resulting effects of the U.K.'s potential exit from the EU.

These and other global macroeconomic and geopolitical challenges, uncertainties and volatilities have negatively impacted, and could continue to negatively impact, Citi's businesses, results of operations and financial condition, including its credit costs, revenues in its Markets and securities services and other businesses, and AOCI (which would in turn negatively impact Citi's book and tangible book value).

Citi's Presence in the Emerging Markets Subjects It to Various Risks as well as Increased Compliance and Regulatory Risks and Costs.

During 2018, emerging markets revenues accounted for approximately 37% of Citi's total revenues (Citi generally defines emerging markets as countries in Latin America, Asia (other than Japan, Australia and New Zealand), Central and Eastern Europe, the Middle East and Africa). Although Citi continues to pursue its target client strategy, Citi's presence in the emerging markets subjects it to a number of risks, including sovereign volatility, election outcomes, regulatory changes and political events, foreign exchange controls, limitations on foreign investment, sociopolitical instability (including from hyperinflation), fraud, nationalization or loss of licenses, business restrictions, sanctions or asset freezes, potential criminal charges, closure of branches or subsidiaries and confiscation of assets. For example, Citi operates in several countries that have, or have had in the past, strict foreign exchange controls, such as Argentina, that limit its ability to convert local currency into U.S. dollars and/or transfer funds outside of the country. In prior years, Citi has also discovered fraud in certain emerging markets in which it operates. Political turmoil and instability have occurred in certain regions and countries, including Asia, the Middle East and Latin America, which have required management time and attention in prior years (such as monitoring the impact of sanctions on certain emerging market economies as well as on Citi's businesses and results of operations in affected countries).

Citi's emerging markets presence also increases its compliance and regulatory risks and costs. For example, Citi's operations in emerging markets, including facilitating cross border transactions on behalf of its clients, subject it to higher compliance risks under U.S. regulations primarily focused on various aspects of global corporate activities, such as anti-money laundering regulations and the Foreign Corrupt Practices Act. These risks can be more acute in less-developed markets and thus require substantial investment in compliance infrastructure or could result in a reduction in certain of Citi's business activities. Any failure by Citi to comply with applicable U.S. regulations, as well as the regulations in the countries and markets in which it operates as a result of its global footprint, could result in fines, penalties, injunctions or other similar restrictions, any of which could negatively impact Citi's results of operations and reputation (see the implementation and interpretation of regulatory changes and legal and regulatory proceedings risk factors below).

Citi's Inability in Its Resolution Plan Submissions to Address Any Deficiencies Identified or Guidance Provided by the FRB and FDIC Could Subject Citi to More Stringent Capital, Leverage or Liquidity Requirements, or Restrictions on Its Growth, Activities or Operations, and Could Eventually Require Citi to Divest Assets or Operations.

Title I of the Dodd-Frank Act requires Citi to prepare and submit a plan to the FRB and the FDIC for the orderly resolution of Citigroup (the bank holding company) and its significant legal entities, under the U.S. Bankruptcy Code in the event of future material financial distress or failure. As previously announced, Citi's next resolution plan submission is due July 1, 2019. On December 20, 2018, the FRB and FDIC issued final guidance for the 2019 and subsequent resolution plan submissions for the eight U.S. GSIBs, including Citi. For additional information on Citi's resolution plan submissions, see "Managing Global Risk—Liquidity Risk" below.

Under Title I, if the FRB and the FDIC jointly determine that Citi's resolution plan is not "credible" (which, although not defined, is generally believed to mean the regulators do not believe the plan is feasible or would otherwise allow the regulators to resolve Citi in a way that protects systemically important functions without severe systemic disruption), or would not facilitate an orderly resolution of Citi under the U.S. Bankruptcy Code, and Citi fails to resubmit a resolution plan that remedies any identified deficiencies, Citi could be subjected to more stringent capital, leverage or liquidity requirements, or restrictions on its growth, activities or operations. If within two years from the imposition of any requirements or restrictions Citi has still not remediated any identified deficiencies, then Citi could eventually be required to divest certain assets or operations. Any such restrictions or actions would negatively impact Citi's reputation, market and investor perception, operations and strategy.

Citi’s Performance and the Performance of Its Individual Businesses Could Be Negatively Impacted if Citi Is Not Able to Effectively Compete for Highly Qualified Employees.

Citi’s performance and the performance of its individual businesses largely depends on the talents and efforts of its highly skilled employees. Specifically, Citi’s continued ability to compete in its businesses, to manage its businesses effectively and to continue to execute its overall global strategy depends on its ability to attract new employees and to retain and motivate its existing employees. If Citi is unable to continue to attract and retain the most highly qualified employees, Citi’s performance, including its competitive position, the successful execution of its overall strategy and its results of operations could be negatively impacted.

Citi’s ability to attract and retain employees depends on numerous factors, some of which are outside of its control. For example, the banking industry generally is subject to more comprehensive regulation of executive and employee compensation than other industries, including deferral and clawback requirements for incentive compensation. Citi often competes in the market for talent with entities that are not subject to such comprehensive regulatory requirements on the structure of incentive compensation, including, among others, technology companies. Other factors that could impact Citi's ability to attract and retain employees include its culture and the management and leadership of the Company as well as its individual businesses, presence in the particular market or region at issue and the professional opportunities it offers.

Financial Services Companies and Others as well as Emerging Technologies Pose Increasingly Competitive Challenges to Citi.
Citi operates in an increasingly competitive environment, which includes both financial and non-financial services firms, such as traditional banks, online banks, financial technology companies and others. These companies compete on the basis of, among other factors, size, quality and type of products and services offered, price, technology and reputation. Emerging technologies have the potential to intensify competition and accelerate disruption in the financial services industry. Citi competes with financial services companies in the U.S. and globally that continue to develop and introduce new products and services. In recent years, non-financial services firms, such as financial technology companies, have begun to offer services traditionally provided by financial institutions, such as Citi. These firms attempt to use technology and mobile platforms to enhance the ability of companies and individuals to borrow money, save and invest. To the extent Citi is not able to compete effectively with these and other firms, Citi could be placed at a competitive disadvantage, which could result in loss of customers and market share, and its businesses, results of operations and financial condition could suffer. For additional information on Citi's competitors, see the co-brand and private label cards risk factor above and "Supervision, Regulation and Other—Competition" below.

Uncertainties Regarding the Possible Discontinuance of the London Inter-Bank Offered Rate (LIBOR) or Any Other Interest Rate Benchmark Could Have Adverse Consequences for Market Participants, Including Citi.
In 2017, the U.K. Financial Conduct Authority (FCA) noted that market conditions raised serious questions about the future sustainability of LIBOR benchmarks. With the FCA securing voluntary panel bank support to sustain LIBOR only until 2021, the future of LIBOR beyond 2021 remains uncertain. In addition, following guidance provided by the Financial Stability Board (FSB), other regulators have suggested reforming or replacing other benchmark rates with alternative reference rates.
Given LIBOR's extensive use across financial markets, the transition away from LIBOR presents various risks and challenges to financial markets and institutions, including Citi. Citi's consumer and institutional businesses issue, trade, hold or otherwise use various products and securities that reference LIBOR, including, among others, mortgages and other consumer loans, commercial loans, corporate loans, various types of debt, derivatives and other securities. If not sufficiently planned for, the discontinuation of LIBOR or any other interest rate benchmark could result in increased financial, operational, legal, reputational or compliance risks. For example, a significant challenge will be the impact of LIBOR transition on contractual mechanics of floating rate

financial instruments and contracts that reference LIBOR and mature after 2021. Certain of these instruments and contracts do not provide for alternative reference rates. Even if the instruments and contracts transition to alternative reference rates, the new reference rates are likely to differ from the prior benchmark rates. While there are a number of international working groups focused on transition plans and fallback contract language that seek to address market disruption and value transfer, replacement of LIBOR or any other benchmark with a new benchmark rate could adversely impact the value of and return on existing instruments and contracts. Moreover, replacement of LIBOR or other benchmark rates could result in market dislocations and have other adverse consequences for market participants, including the potential for increased costs, including by requiring Citi to pay higher interest on its obligations, and litigation risks. For information about Citi's management of LIBOR transition risk, see "Managing Global Risk—Strategic Risk—LIBOR Transition Risk" below.

CREDIT RISKS

Credit Risk and Concentrations of Risk Can Increase the Potential for Citi to Incur Significant Losses.
Credit risk arises from Citi's lending and other businesses in both GCB and ICG. Citi has credit exposures to counterparties in the U.S. and various countries and jurisdictions globally, including end-of-period consumer loans of

$331 billion and end-of-period corporate loans of $354 billion at year-end 2018. A default by a borrower or counterparty, or a decline in the credit quality or value of any underlying collateral, exposes Citi to credit risk. Various macroeconomic, geopolitical and other factors, among other things, can increase Citi's credit risk and credit costs (for additional information, see co-branding and private label credit card and macroeconomic challenges and uncertainties risk factors above). While Citi provides reserves for probable losses for its credit exposures, such reserves are subject to judgments and estimates that could be incorrect or differ from actual future events (see incorrect assumptions or estimates risk factor below). For additional information on Citi's credit and country risk, see each respective business' results of operations above and "Managing Global Risk—Credit Risk" and "Managing Global Risk—Strategic Risk—Country Risk" below and Note 14 to the Consolidated Financial Statements.

Concentrations of risk, particularly credit and market risks, can also increase Citi's risk of significant losses. As of year-end 2018, Citi's most significant concentration of credit risk was with the U.S. government and its agencies, which primarily results from trading assets and investments issued by the U.S. government and its agencies (for additional information, including concentrations of credit risk to other public sector entities, see Note 23 to the Consolidated Financial Statements). Citi also routinely executes a high volume of securities, trading, derivative and foreign exchange transactions with non-U.S. sovereigns and with counterparties in the financial services industry, including banks, insurance companies, investment banks, governments, central banks and other financial institutions. A rapid deterioration of a large counterparty or within a sector or country where Citi has large exposures or unexpected market dislocations could cause Citi to incur significant losses.

LIQUIDITY RISKS

The Maintenance of Adequate Liquidity and Funding Depends on Numerous Factors, Including Those Outside of Citi's Control, Such as Market Disruptions and Increases in Citi's Credit Spreads.
As a global financial institution, adequate liquidity and sources of funding are essential to Citi's businesses. Citi's liquidity and sources of funding can be significantly and negatively impacted by factors it cannot control, such as general disruptions in the financial markets, governmental fiscal and monetary policies, regulatory changes or negative investor perceptions of Citi's creditworthiness, unexpected increases in cash or collateral requirements and the inability to monetize available liquidity resources. For example, Citi competes with other banks and financial institutions for deposits, which represent Citi's most stable and lowest cost of long-term funding. The competitive environment has increased for retail banking deposits, including as online banks and other competitors have increased rates paid for deposits. More recently, as interest rates have increased, a growing number of customers have transferred deposits to other products, including investments and interest bearing accounts, and/or other financial institutions. This, along with slower industry growth in deposits, has resulted in a more challenging environment for deposits. In addition, as interest rates continue to rise, financial institutions, such as Citi, may have to raise the rates paid for deposits, thus increasing the cost of funds and affecting net interest income and margin.
Moreover, Citi's costs to obtain and access secured funding and long-term unsecured funding are directly related to its credit spreads. Changes in credit spreads constantly occur and are market driven, including both external market factors and factors specific to Citi, and can be highly volatile. For additional information on Citi's primary sources of funding, see "Liquidity Risk" below.
In addition, Citi's ability to obtain funding may be impaired if other market participants are seeking to access the markets at the same time, or if market appetite is reduced, as is likely to occur in a liquidity or other market crisis. A sudden drop in market liquidity could also cause a temporary or lengthier dislocation of underwriting and capital markets activity. In addition, clearing organizations, central banks, clients and financial institutions with which Citi interacts may exercise the right to require additional collateral based on these market perceptions or market conditions, which could further impair Citi's access to and cost of funding.
As a holding company, Citi relies on interest, dividends, distributions and other payments from its subsidiaries to fund dividends as well as to satisfy its debt and other obligations. Several of Citi's U.S. and non-U.S. subsidiaries are or may be subject to capital adequacy or other regulatory or contractual restrictions on their ability to provide such payments, including any local regulatory stress test requirements. Limitations on the payments that Citi receives from its subsidiaries could also impact its liquidity.

The Credit Rating Agencies Continuously Review the Credit Ratings of Citi and Certain of Its Subsidiaries, and Ratings Downgrades Could Have a Negative Impact on Citi's Funding and Liquidity Due to Reduced Funding Capacity and Increased Funding Costs, Including Derivatives Triggers That Could Require Cash Obligations or Collateral Requirements.
The credit rating agencies, such as Fitch, Moody's and S&P, continuously evaluate Citi and certain of its subsidiaries, and their ratings of Citi and its more significant subsidiaries' long-term/senior debt and short-term/commercial paper, as applicable, are based on a number of factors, including standalone financial strength, as well as factors not entirely within the control of Citi and its subsidiaries, such as the agencies' proprietary rating methodologies and assumptions, and conditions affecting the financial services industry and markets generally.
Citi and its subsidiaries may not be able to maintain their current respective ratings. Ratings downgrades could negatively impact Citi's ability to access the capital markets and other sources of funds as well as the costs of those funds, and its ability to maintain certain deposits. A ratings downgrade could also have a negative impact on Citi's funding and liquidity due to reduced funding capacity, as well as the impact of derivative triggers, which could require Citi to meet cash obligations and collateral requirements. In addition, a ratings downgrade could also have a negative impact on other funding sources, such as secured financing and other margined transactions for which there may be no

explicit triggers, as well as on contractual provisions and other credit requirements of Citi's counterparties and clients, which may contain minimum ratings thresholds in order for Citi to hold third-party funds.

Moreover, credit ratings downgrades can have impacts that may not be currently known to Citi or are not possible to quantify. For example, some entities may have ratings limitations as to their permissible counterparties, of which Citi may or may not be aware. Further, certain of Citi's corporate customers and trading counterparties, among other clients, could re-evaluate their business relationships with Citi and limit the trading of certain contracts or market instruments with Citi in response to ratings downgrades. Changes in customer and counterparty behavior could impact not only Citi's funding and liquidity but also the results of operations of certain Citi businesses. For additional information on the potential impact of a reduction in Citi's or Citibank's credit ratings, see "Managing Global Risk—Liquidity Risk" below.

OPERATIONAL RISKS

A Disruption of Citi's Operational Systems Could Negatively Impact Citi's Reputation, Customers, Clients, Businesses or Results of Operations and Financial Condition.

A significant portion of Citi's operations relies heavily on the secure processing, storage and transmission of confidential and other information as well as the monitoring of a large number of complex transactions on a minute-by-minute basis. For example, through its GCB and treasury and trade solutions and securities services businesses in ICG, Citi obtains and stores an extensive amount of personal and client-specific information for its retail, corporate and governmental customers and clients and must accurately record and reflect their extensive account transactions.

With the evolving proliferation of new technologies and the increasing use of the Internet, mobile devices and cloud technologies to conduct financial transactions, large global financial institutions such as Citi have been, and will continue to be, subject to an increasing risk of operational disruption or cyber or information security incidents from these activities (for additional information on cybersecurity risk, see the discussion below). These incidents are unpredictable and can arise from numerous sources, not all of which are in Citi's control, including, among others, human error, fraud or malice on the part of employees, accidental technological failure, electrical or telecommunication outages, failures of computer servers or other similar damage to Citi's property or assets. These issues can also arise as a result of failures by third parties with which Citi does business, such as failures by Internet, mobile technology and cloud service providers or other vendors to adequately safeguard their systems and prevent system disruptions or cyber attacks.

Such events could cause interruptions or malfunctions in the operations of Citi (such as the temporary loss of availability of Citi's online banking system or mobile banking platform), as well as the operations of its clients, customers or other third parties. Given Citi's global footprint and the high volume of transactions processed by Citi, certain errors or actions may be repeated or compounded before they are discovered and rectified, which would further increase these costs and consequences. Any such events could also result in financial losses as well as misappropriation, corruption or loss of confidential and other information or assets, which could negatively impact Citi's reputation, customers, clients, businesses or results of operations and financial condition, perhaps significantly.

Citi and Third Parties' Computer Systems and Networks Have Been, and Will Continue to Be, Susceptible to an Increasing Risk of Continually Evolving, Sophisticated Cybersecurity Activities That Could Result in the Theft, Loss, Misuse or Disclosure of Confidential Client or Customer Information, Damage to Citi's Reputation, Additional Costs to Citi, Regulatory Penalties, Legal Exposure and Financial Losses.

Citi's computer systems, software and networks are subject to ongoing cyber incidents such as unauthorized access, loss or destruction of data (including confidential client information),

account takeovers, unavailability of service, computer viruses or other malicious code, cyber attacks and other similar events. These threats can arise from external parties, including cyber criminals, cyber terrorists, hacktivists and nation state actors, as well as insiders who knowingly or unknowingly engage in or enable malicious cyber activities.

Third parties with which Citi does business, as well as retailers and other third parties with which Citi's customers do business, may also be sources of cybersecurity risks, particularly where activities of customers are beyond Citi's security and control systems. For example, Citi outsources certain functions, such as processing customer credit card transactions, uploading content on customer-facing websites, and developing software for new products and services. These relationships allow for the storage and processing of customer information by third-party hosting of or access to Citi websites, which could result in compromise or the potential to introduce vulnerable or malicious code, resulting in security breaches impacting Citi customers. Furthermore, because financial institutions are becoming increasingly interconnected with central agents, exchanges and clearing houses, including as a result of the derivatives reforms over the last few years, Citi has increased exposure to cyber attacks through third parties.

Citi has been subject to intentional cyber incidents from external sources over the last several years, including (i) denial of service attacks, which attempted to interrupt service to clients and customers, (ii) data breaches, which obtained unauthorized access to customer account data and (iii) malicious software attacks on client systems, which attempted to allow unauthorized entrance to Citi's systems under the guise of a client and the extraction of client data. While Citi's monitoring and protection services were able to detect and respond to the incidents targeting its systems before they became significant, they still resulted in limited losses in some instances as well as increases in expenditures to monitor against the threat of similar future cyber incidents. There can be no assurance that such cyber incidents will not occur again, and they could occur more frequently and on a more significant scale.

Further, although Citi devotes significant resources to implement, maintain, monitor and regularly upgrade its systems and networks with measures such as intrusion detection and prevention and firewalls to safeguard critical business applications, there is no guarantee that these measures or any other measures can provide absolute security. Because the methods used to cause cyber attacks change frequently or, in some cases, are not recognized until launched or even later, Citi may be unable to implement effective preventive measures or proactively address these methods until they are discovered. In addition, given the evolving nature of cyber threat actors and the frequency and sophistication of cyber activities they carry out, the determination of the severity and potential impact of a cyber incident may not occur for a substantial period until after the incident has been discovered. Also, while Citi engages in certain actions to reduce the exposure resulting from outsourcing, such as performing security control assessments of third-party vendors and limiting third-party access to the least privileged level necessary to perform job functions, these actions cannot prevent all third-party related cyber attacks or data breaches.

Cyber incidents can result in the disclosure of personal, confidential or proprietary customer or client information, damage to Citi's reputation with its clients and the market, customer dissatisfaction and additional costs, including credit costs, to Citi, such as repairing systems, replacing customer payment cards or adding new personnel or protection technologies. Regulatory penalties, loss of revenues, exposure to litigation and other financial losses, including loss of funds, to both Citi and its clients and customers and disruption to Citi's operational systems could also result from cyber incidents (for additional information on the potential impact of operational disruptions, see the operational systems risk factor above). Moreover, the increasing risk of cyber incidents has resulted in increased legislative and regulatory scrutiny of firms' cybersecurity protection services and calls for additional laws and regulations to further enhance protection of consumers' personal data.

While Citi maintains insurance coverage that may, subject to policy terms and conditions including significant self-insured deductibles, cover certain aspects of cyber risks, such insurance coverage may be insufficient to cover all losses.

For additional information about Citi's management of cybersecurity risk, see "Managing Global Risk—Operational Risk—Cybersecurity Risk" below.

Incorrect Assumptions or Estimates in Citi's Financial Statements Could Cause Significant Unexpected Losses in the Future, and Changes to Financial Accounting and Reporting Standards or Interpretations Could Have a Material Impact on How Citi Records and Reports Its Financial Condition and Results of Operations.

U.S. GAAP requires Citi to use certain assumptions and estimates in preparing its financial statements, including reserves related to litigation and regulatory exposures, valuation of DTAs, the estimate of the allowance for credit losses and the fair values of certain assets and liabilities, among other items. If Citi's assumptions or estimates underlying its financial statements are incorrect or differ from actual events, Citi could experience unexpected losses, some of which could be significant.

Periodically, the Financial Accounting Standards Board (FASB) issues financial accounting and reporting standards that may govern key aspects of Citi's financial statements or interpretations thereof when those standards become effective, including those areas where Citi is required to make assumptions or estimates. For example, the FASB's new accounting standard on credit losses (CECL), which will become effective for Citi on January 1, 2020, will require earlier recognition of credit losses on loans and held-to-maturity securities and other financial assets. The CECL methodology requires that lifetime "expected credit losses" be recorded at the time the financial asset is originated or acquired. The expected credit losses are adjusted each period for changes in expected lifetime credit losses. The CECL methodology replaces the multiple existing impairment

models under U.S. GAAP that generally require that a loss be "incurred" before it is recognized. For additional information on this and other accounting standards, including the expected impacts on Citi's results of operations and financial condition, see "Future Application of Accounting Standards" below.

Changes to financial accounting or reporting standards or interpretations, whether promulgated or required by the FASB or other regulators, could present operational challenges and could require Citi to change certain of the assumptions or estimates it previously used in preparing its financial statements, which could negatively impact how it records and reports its financial condition and results of operations generally and/or with respect to particular businesses. For additional information on the key areas for which assumptions and estimates are used in preparing Citi's financial statements, see "Significant Accounting Policies and Significant Estimates" below and Notes 1 and 27 to the Consolidated Financial Statements.

Citi May Incur Significant Losses and Its Regulatory Capital and Capital Ratios Could Be Negatively Impacted if Its Risk Management Processes, Strategies or Models Are Deficient or Ineffective.

Citi utilizes a broad and diversified set of risk management and mitigation processes and strategies, including the use of risk models in analyzing and monitoring the various risks Citi assumes in conducting its activities. For example, Citi uses models as part of its comprehensive stress testing initiatives across Citi. Citi also relies on data to aggregate, assess and manage various risk exposures. Management of these risks is made even more challenging within a global financial institution such as Citi, particularly given the complex, diverse and rapidly changing financial markets and conditions in which Citi operates as well as that losses can occur from untimely, inaccurate or incomplete processes caused by unintentional human error.

These processes, strategies and models are inherently limited because they involve techniques, including the use of historical data in many circumstances, assumptions and judgments that cannot anticipate every economic and financial outcome in the markets in which Citi operates, nor can they anticipate the specifics and timing of such outcomes. Citi could incur significant losses, and its regulatory capital and capital ratios could be negatively impacted, if Citi’s risk management processes, including its ability to manage and aggregate data in a timely and accurate manner, strategies or models are deficient or ineffective. Such deficiencies or ineffectiveness could also result in inaccurate financial, regulatory or risk reporting.

Moreover, Citi’s Basel III regulatory capital models, including its credit, market and operational risk models, currently remain subject to ongoing regulatory review and approval, which may result in refinements, modifications or enhancements (required or otherwise) to these models. Modifications or requirements resulting from these ongoing reviews, as well as any future changes or guidance provided by the U.S. banking agencies regarding the regulatory capital framework applicable to Citi, have resulted in, and could continue to result in, significant changes to Citi’s risk-weighted assets. These changes can negatively impact Citi's capital ratios and its ability to achieve its regulatory capital requirements as it projects or as required.

COMPLIANCE RISKS

Ongoing Implementation and Interpretation of Regulatory Changes and Requirements in the U.S. and Globally Have Increased Citi's Compliance Risks and Costs.

As referenced above, over the past several years, Citi has been required to implement a significant number of regulatory changes across all of its businesses and functions, and these changes continue. In some cases, Citi's implementation of a regulatory requirement is occurring simultaneously with changing or conflicting regulatory guidance, legal challenges or legislative action to modify or repeal existing rules or enact new rules. Moreover, in many cases, these are entirely new regulatory requirements or regimes, resulting in much uncertainty regarding regulatory expectations as to what is definitely required in order to be in compliance. Accompanying this compliance uncertainty is heightened regulatory scrutiny and expectations in the U.S. and globally for the financial services industry with respect to governance and risk management practices, including its compliance and regulatory risks (for a discussion of heightened regulatory expectations on "conduct risk" at, and the overall "culture" of, financial institutions such as Citi, see the legal and regulatory proceedings risk factor below). A failure to resolve any identified deficiencies could result in increased regulatory oversight and restrictions. All of these factors have resulted in increased compliance risks and costs for Citi.

Examples of regulatory changes that have resulted in increased compliance risks and costs include (i) a proliferation of laws relating to the limitation of cross-border data movement and/or collection and use of customer information, including data localization and protection and privacy laws, which also can conflict with or increase compliance complexity with respect to other laws, including anti-money laundering laws; and (ii) the FRB's "total loss absorbing capacity" (TLAC) requirements, including, among other things, consequences of a breach of the clean holding company requirements, given there are no cure periods for the requirements.

Extensive compliance requirements can result in increased reputational and legal risks, as failure to comply with regulations and requirements, or failure to comply as expected, can result in enforcement and/or regulatory proceedings (for additional discussion, see the legal and regulatory proceedings risk factor below). Additionally, increased and ongoing compliance requirements and uncertainties have resulted in higher costs for Citi. For example, Citi employed roughly 30,000 risk, regulatory and compliance staff as of year-end 2018, out of a total employee population of 204,000, compared to approximately 14,000 as of year-end 2008 with a total employee population of 323,000. These higher regulatory and compliance costs can impede Citi's ongoing, business-as-usual cost reduction efforts, and can also require management to reallocate resources, including

potentially away from ongoing business investment initiatives, as discussed above.

Citi Is Subject to Extensive Legal and Regulatory Proceedings, Investigations and Inquiries That Could Result in Significant Penalties and Other Negative Impacts on Citi, Its Businesses and Results of Operations.

At any given time, Citi is defending a significant number of legal and regulatory proceedings and is subject to numerous governmental and regulatory examinations, investigations and other inquiries. The global judicial, regulatory and political environment has generally been unfavorable for large financial institutions. The complexity of the federal and state regulatory and enforcement regimes in the U.S., coupled with the global scope of Citi's operations, also means that a single event or issue may give rise to a large number of overlapping investigations and regulatory proceedings, either by multiple federal and state agencies in the U.S. or by multiple regulators and other governmental entities in different jurisdictions, as well as multiple civil litigation claims in multiple jurisdictions. Moreover, U.S. and non-U.S. regulators have been increasingly focused on "conduct risk," a term used to describe the risks associated with behavior by employees and agents, including third-party vendors utilized by Citi, that could harm clients, customers, investors or the markets, such as improperly creating, selling, marketing or managing products and services or improper incentive compensation programs with respect thereto, failures to safeguard a party's personal information, or failures to identify and manage conflicts of interest. In addition to increasing Citi's compliance and reputational risks, this focus on conduct risk could lead to more regulatory or other enforcement proceedings and civil litigation, including for practices, which historically were acceptable but now receive greater scrutiny. Further, while Citi takes numerous steps to prevent and detect conduct by employees and agents that could potentially harm clients, customers, investors or the markets, such behavior may not always be deterred or prevented. Banking regulators have also focused on the overall culture of financial services firms, including Citi. In addition to regulatory restrictions or structural changes that could result from perceived deficiencies in Citi’s culture, such focus could also lead to additional regulatory proceedings.

In addition, the severity of the remedies sought in legal and regulatory proceedings to which Citi is subject has remained elevated. U.S. and certain international governmental entities have increasingly brought criminal actions against, or have sought criminal convictions from, financial institutions, and criminal prosecutors in the U.S. have increasingly sought and obtained criminal guilty pleas or deferred prosecution agreements against corporate entities and other criminal sanctions from those institutions. These types of actions by U.S. and international governmental entities may, in the future, have significant collateral consequences for a financial institution, including loss of customers and business, and the inability to offer certain products or services and/or operate certain businesses. Citi may be required to accept or be subject to similar types of criminal remedies, consent orders, sanctions, substantial fines and penalties, remediation and other financial costs or other requirements in the future, including for matters or practices not yet known to Citi, any of which could materially and negatively affect Citi's businesses, business practices, financial condition or results of operations, require material changes in Citi's operations or cause Citi reputational harm.

Further, many large claims—both private civil and regulatory—asserted against Citi are highly complex, slow to develop and may involve novel or untested legal theories. The outcome of such proceedings is difficult to predict or estimate until late in the proceedings. Although Citi establishes accruals for its legal and regulatory matters according to accounting requirements, Citi's estimates of, and changes to, these accruals involve significant judgment and may be subject to significant uncertainty, and the amount of loss ultimately incurred in relation to those matters may be substantially higher than the amounts accrued. In addition, certain settlements are subject to court approval and may not be approved.

For additional information relating to Citi's legal and regulatory proceedings and matters, including Citi's policies on establishing legal accruals, see Note 27 to the Consolidated Financial Statements.

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(1) For additional information regarding certain credit risk, market risk and other quantitative and qualitative information, refer to Citi's Pillar 3 Basel III Advanced Approaches Disclosures, as required by the rules of the

Federal Reserve Board, on Citi’s Investor Relations website.

(2) See “Long-Term Debt—Resolution Plan” below for a description of the consequences to unsecured debt holders in the event of Citi’s bankruptcy.

MANAGING GLOBAL RISK

Overview

For Citi, effective risk management is of primary importance to its overall operations. Accordingly, Citi's risk management process has been designed to monitor, evaluate and manage the principal risks it assumes in conducting its activities. Specifically, the activities that Citi engages in, and the risks those activities generate, must be consistent with Citi's mission and value proposition, the key principles that guide it, and Citi's risk appetite.

Risk management must be built on a foundation of ethical culture. Under Citi's mission and value proposition, which was developed by Citi's senior leadership and distributed throughout the Company, Citi strives to serve its clients as a trusted partner by responsibly providing financial services that enable growth and economic progress while earning and maintaining the public's trust by constantly adhering to the highest ethical standards. As such, Citi asks all employees to ensure that their decisions pass three tests: they are in our clients' interests, create economic value and are always systemically responsible. Additionally, Citi evaluates employees' performance against behavioral expectations set out in Citi's leadership standards, which were designed in part to effectuate Citi's mission and value proposition. Other culture-related efforts in connection with conduct risk, ethics and leadership, escalation and treating customers fairly help Citi to execute its mission and value proposition.

Citi's Company-wide risk governance framework consists of the policies, standards, procedures and processes through which Citi identifies, assesses, measures, manages, monitors, reports and controls risks across the Company. It also emphasizes Citi's risk culture and lays out standards, procedures and programs that are designed and undertaken to enhance the Company's risk culture, embed this culture deeply within the organization, and give employees tools to make sound and ethical risk decisions and to escalate issues appropriately. The risk governance framework has been developed in alignment with the expectations of the Office of the Comptroller of the Currency (OCC) Heightened Standards. It is also aligned with the relevant components of the Basel Committee on Banking Supervision's corporate governance principles for banks and relevant components of the Federal Reserve's Enhanced Prudential Standards for Bank Holding Companies and Foreign Banking Organizations.

Four key principles—common purpose, responsible finance, ingenuity and leadership—guide Citi as it performs its mission. Citi's risk appetite, which is approved by the Citigroup Board of Directors, specifies the aggregate levels and types of risk the Board and management are willing to assume to achieve Citi's strategic objectives and business plan, consistent with applicable capital, liquidity and other regulatory requirements.

Citi selectively takes risks in support of its underlying business strategy, while striving to ensure it operates within its mission and value proposition and risk appetite.

Citi's risks are generally categorized and summarized as follows:

- Credit risk is the risk of loss resulting from the decline in credit quality (or downgrade risk) or failure of a borrower, counterparty, third party or issuer to honor its financial or contractual obligations.
- Liquidity risk is the risk that the Company will not be able to meet efficiently both expected and unexpected current and future cash flow and collateral needs without adversely affecting either daily operations or financial conditions of the Company. The risk may be exacerbated by the inability of the Company to access funding sources or monetize assets and the composition of liability funding and liquid assets.
- Market risk is the risk of loss arising from changes in the value of Citi's assets and liabilities resulting from changes in market variables, such as interest rates, exchange rates or credit spreads. Losses can be exacerbated by the presence of basis or correlation risks.
- Operational risk is the risk of loss resulting from inadequate or failed internal processes, systems or human factors, or from external events. It includes risk of failing to comply with applicable laws and regulations, but excludes strategic risk (see below). It also includes the reputation and franchise risk associated with business practices or market conduct in which Citi is involved, as well as compliance, conduct and legal risks. Operational risk is inherent in Citi's global business activities, as well as related support, and can result in losses arising from events related to fraud, theft and unauthorized activity; employment practices and workplace environment; clients, products and business practices; physical assets and infrastructure, and execution, delivery and process management.

Compliance risk is the risk to current or projected financial condition and resilience arising from violations of laws or regulations, or from nonconformance with prescribed practices, internal policies and procedures, or ethical standards. This risk exposes a bank to fines, civil money penalties, payment of damages and the voiding of contracts.

- Compliance risk is not limited to risk from failure to comply with consumer protection laws; it encompasses the risk of noncompliance with all laws and regulations, as well as prudent ethical standards and contractual obligations. It also includes the exposure to litigation (known as legal risk) from all aspects of banking, traditional and nontraditional. Compliance risk spans across all risk types outlined in the risk governance framework.
- Reputational risk is the risk to current or anticipated earnings, capital, or franchise or enterprise value and resilience arising from negative public opinion.
- Strategic risk is the risk to current or anticipated earnings, capital, or franchise or enterprise value arising from poor, but authorized business decisions (in compliance with regulations, policies and procedures), an inability to adapt to changes in the operating environment or other external factors that may impair the ability to carry out a business strategy. Strategic risk also includes:

- Country risk, which is the risk that an event in a country (precipitated by developments within or external to a country) will impair the value of Citi's franchise or will adversely affect the ability of obligors within that country to honor their obligations. Country risk events may include sovereign defaults, banking crises, currency crises, currency convertibility and/or transferability restrictions or political events.

Citi manages its risks through each of its three lines of defense: (i) business management, (ii) independent control functions and (iii) internal audit. The three lines of defense collaborate with each other in structured forums and processes to bring various perspectives together and to lead the organization toward outcomes that are in clients' interests, create economic value and are systemically responsible.

First Line of Defense: Business Management
Each of Citi's businesses owns its risks and is responsible for identifying, assessing and managing its risks. Each business is also responsible for establishing and operating controls to mitigate key risks, assessing internal controls and promoting a culture of compliance and control. In doing so, a business is required to maintain appropriate staffing and implement appropriate procedures to fulfill its risk governance responsibilities.
The CEOs of each region and business report to the Citigroup CEO. The Head of Enterprise Infrastructure, Operations and Technology (EIO&T), who is considered part of the first line of defense, also reports to the Citigroup CEO.
Businesses at Citi organize and chair committees and councils that cover risk considerations with participation from independent control functions, including committees or councils that are designed to consider matters related to capital, assets and liabilities, business practices, business risks and controls, mergers and acquisitions, the Community Reinvestment Act and fair lending and incentives.

Second Line of Defense: Independent Control Functions
Citi's independent control functions, including Risk, Independent Compliance Risk Management, Human Resources, Legal and Finance, set standards by which Citi and its businesses manage and oversee risks, including compliance with applicable laws, regulatory requirements, policies and other relevant standards of conduct. Additionally, among other responsibilities, the independent control functions provide advice and training to Citi's businesses and establish tools, methodologies, processes and oversight for controls used by the businesses to foster a culture of compliance and control.

Risk
The Risk organization is designed to act as an independent partner of the business to manage market, credit and operational risk in a manner consistent with Citi's risk appetite. Risk establishes policies and guidelines for risk assessments and risk management and contributes to controls and tools to manage, measure and mitigate risks taken by the Company.
There is an independent Chief Risk Officer for each of Citi's consumer, commercial and corporate lending businesses

within ICG and GCB (Business CROs). Each of these Business CROs reports directly to Citi's Chief Risk Officer. The Business CROs are the focal point for most day-to-day risk decisions, such as setting risk limits and approving transactions within the businesses. In addition there are Regional and Legal Entity Chief Risk Officers. There are independent Chief Risk Officers for Asia, EMEA and Latin America, including Mexico (Regional CROs). Each of these Regional CROs reports directly to Citi's Chief Risk Officer. The Regional CROs are accountable for overseeing the management of all risks in their geographic areas and across businesses, and are the primary risk contacts for the Regional Chief Executive Officers and local regulators. Legal Entity Chief Risk Officers are responsible for identifying and managing risks in Citibank as well as other specific legal entities.
The Citi Chief Risk Officer reports to the Citigroup CEO and the Risk Management Committee of the Citigroup Board of Directors. The Chief Risk Officer has regular and unrestricted access to the Risk Management Committee of the Board and also to the Citigroup Board of Directors to address risks and issues identified through Risk's activities.

Independent Compliance Risk Management

The Independent Compliance Risk Management (ICRM) organization is designed to protect Citi by overseeing senior management, the businesses and other control functions in managing compliance risk, as well as promoting business conduct and activity that is consistent with Citi's mission and value proposition. Citi's objective is to embed an enterprise-wide compliance risk management framework and culture that identifies, measures, monitors, mitigates and controls compliance risk across the three lines of defense. For further information on Citi's compliance risk framework, see "Compliance Risk" below.

The Chief Compliance Officer reports to the Citigroup CEO and has regular and unrestricted access to the committees of the Citigroup Board of Directors, including the Audit Committee and the Ethics and Culture Committee.

Human Resources

The Human Resources (HR) organization provides personnel support and governance in connection with, among other things: recognizing and rewarding employees who demonstrate Citi's values and excel in their roles and responsibilities; setting ethical and performance-related expectations and developing and promoting employees who meet those expectations, and searching for, assessing and hiring staff who exemplify Citi's leadership standards, which outline Citi's expectations of its employees' behavior. Through these activities, HR serves primarily as an independent control function advising business management, escalating identified risks and establishing policies or processes to manage risk. For select activities HR also acts in a first line capacity and is subject to appropriate review and challenge by second line functions.

The Head of Human Resources reports to the Citigroup CEO and interacts regularly with the Personnel and Compensation Committee of the Citigroup Board of Directors.

Legal

The Legal organization is involved in a number of activities designed to promote the appropriate management of Citi's exposure to legal risk, which includes the risk of loss, whether financial or reputational, due to legal or regulatory actions, proceedings or investigations, or uncertainty in the applicability or interpretation of contracts, laws or regulations. Activities designed to promote appropriate management of legal risk include, among others: promoting and supporting Citigroup's governance processes; advising business management, other independent control functions, the Citigroup Board of Directors and committees of the Board regarding analysis of laws and regulations, regulatory matters, disclosure matters, and potential risks and exposures on key litigation and transactional matters, among other things; advising other independent control functions in their efforts to ensure compliance with applicable laws and regulations as well as internal standards of conduct; serving on key management committees; reporting and escalating key legal issues to senior management or other independent control functions; participating in internal investigations and overseeing regulatory investigations, and advising businesses on a day-to-day basis on legal, regulatory and contractual matters.

The General Counsel reports to the Citigroup CEO and is responsible to the full Citigroup Board. In addition to having regular and unrestricted access to the full Citigroup Board of Directors, the General Counsel or his/her delegates regularly attend meetings of the Risk Management Committee, Audit Committee, Personnel and Compensation Committee, Ethics and Culture Committee, Operations and Technology Committee, and Nomination, Governance and Public Affairs Committee, as well as other ad hoc committees of the Citigroup Board of Directors.

Finance

The Finance organization is primarily composed of the following disciplines: treasury, controllers, tax and financial planning and analysis, capital planning/recovery and resolution planning, corporate M&A and investor relations. These disciplines partner with the businesses, providing key data and consultation to facilitate sound decisions in support of the businesses' objectives. Through these activities, Finance serves primarily as an independent control function advising business management, escalating identified risks and establishing policies or processes to manage risk. For select activities Finance also acts in a first line capacity and is subject to appropriate review and challenge by second line functions.

Through the treasury discipline, Finance has overall responsibility for managing Citi's balance sheet and accordingly partners with the businesses to manage Citi's liquidity and interest rate risk (price risk for non-trading portfolios). Treasury works with the businesses to establish balance sheet targets and limits, as well as sets policies on funding costs charged for business assets based on their liquidity and duration.

Principally through the controllers discipline, Finance is responsible for establishing a strong control environment over Citi's financial reporting processes consistent with the 2013 Committee of Sponsoring Organizations of the Treadway Commission, or COSO, Internal Control-Integrated Framework.

Finance is led by Citi's Chief Financial Officer (CFO), who reports directly to the Citigroup CEO. The CFO chairs or co-chairs several management committees that serve as key governance and oversight forums for business activities. In addition, the CFO has regular and unrestricted access to the full Citigroup Board of Directors as well as to the Audit Committee of the Board of Directors.

Third Line of Defense: Internal Audit

Citi's Internal Audit function independently reviews activities of the first two lines of defense based on a risk-based audit plan and methodology approved by the Audit Committee of the Citigroup Board of Directors. Internal Audit also provides independent assurance to the Citigroup Board of Directors, the Audit Committee of the Board, senior management and regulators regarding the effectiveness of Citi's governance and controls designed to mitigate Citi's exposure to risks and to enhance Citi's culture of compliance and control.

The Chief Auditor reports functionally to the Chairman of the Citigroup Audit Committee and administratively to the CEO of Citigroup. Internal Audit's responsibilities are carried out independently under the oversight of the Audit Committee. Internal Audit's employees accordingly report to the Chief Auditor and do not have reporting lines to front-line units or senior management. Internal Audit’s staff members are not permitted to provide internal-audit services for a business line or function in which they had business line or function responsibilities within the previous 12 months.

Three Lines of Defense

Citigroup Board of Directors and Committees of the Board

Citigroup's Board of Directors oversees Citi's risk-taking activities and holds management accountable for adhering to the risk governance framework. To do so, directors review reports prepared by the businesses, Risk, Independent Compliance Risk Management, Internal Audit and others, and exercise sound independent judgment to question, probe and challenge recommendations and decisions made by management.

The standing committees of the Citigroup Board of Directors are the Executive Committee, Risk Management Committee, Audit Committee, Personnel and Compensation Committee, Ethics and Culture Committee, Operations and Technology Committee and Nomination, Governance and Public Affairs Committee. In addition to the standing committees, the Board creates ad hoc committees from time to time in response to regulatory, legal or other requirements.

CREDIT RISK

Overview

Credit risk is the risk of loss resulting from the decline in credit quality or the failure of a borrower, counterparty, third party or issuer to honor its financial or contractual obligations. Credit risk arises in many of Citigroup's business activities, including:

- consumer, commercial and corporate lending;
- capital markets derivative transactions;
- structured finance; and
- securities financing transactions (repurchase and reverse repurchase agreements, securities loaned and borrowed).

Credit risk also arises from settlement and clearing activities, when Citi transfers an asset in advance of receiving its counter-value or advances funds to settle a transaction on behalf of a client. Concentration risk, within credit risk, is the risk associated with having credit exposure concentrated within a specific client, industry, region or other category.

Credit risk is one of the most significant risks Citi faces as an institution. For additional information, see "Risk Factors—Credit Risk" above. As a result, Citi has a well-established framework in place for managing credit risk across all businesses. This includes a defined risk appetite, credit limits and credit policies, both at the business level as well as at the Company-wide level. Citi's credit risk management also includes processes and policies with respect to problem recognition, including "watch lists," portfolio reviews, stress tests, updated risk ratings and classification triggers.

With respect to Citi's settlement and clearing activities, intraday client usage of lines is monitored against limits, as well as against usage patterns. To the extent a problem develops, Citi typically moves the client to a secured (collateralized) operating model. Generally, Citi's intraday settlement and clearing lines are uncommitted and cancelable at any time.

To manage concentration of risk within credit risk, Citi has in place a correlation framework consisting of industry limits, an idiosyncratic framework consisting of single name concentrations for each business and across Citigroup and a specialized framework consisting of product limits.

Credit exposures are generally reported in notional terms for accrual loans, reflecting the value at which the loans as well as loan and other off-balance sheet commitments are carried on the Consolidated Balance Sheet. Credit exposure arising from capital markets activities is generally expressed as the current mark-to-market, net of margin, reflecting the net value owed to Citi by a given counterparty.

The credit risk associated with these credit exposures is a function of the idiosyncratic creditworthiness of the obligor, as well as the terms and conditions of the specific obligation. Citi assesses the credit risk associated with its credit exposures on a regular basis through its loan loss reserve process (see "Significant Accounting Policies and Significant Estimates—Allowance for Credit Losses" below and Notes 1 and 15 to the Consolidated Financial Statements), as well as through regular stress testing at the company, business, geography and product

levels. These stress-testing processes typically estimate potential incremental credit costs that would occur as a result of either downgrades in the credit quality or defaults of the obligors or counterparties.

For additional information on Citi's credit risk management, see Note 14 to the Consolidated Financial Statements.

Consumer Credit

Citi provides traditional retail banking, including commercial banking, and credit card products in 19 countries and jurisdictions through North America GCB, Latin America GCB and Asia GCB. The retail banking products include consumer mortgages, home equity, personal and commercial loans and lines of credit and similar related products with a focus on lending to prime customers. Citi uses its risk appetite framework to define its lending parameters. In addition, Citi uses proprietary scoring models for new customer approvals.

As stated in “Global Consumer Banking” above, GCB’s overall strategy is to leverage Citi’s global footprint and be the pre-eminent bank for the affluent and emerging affluent consumers in large urban centers. In credit cards and in certain retail markets (including commercial banking), Citi serves customers in a somewhat broader set of segments and geographies. GCB’s commercial banking business primarily focuses on small to mid-size businesses and also serves larger middle market companies in certain regions.

Consumer Credit Portfolio

The following table shows Citi’s quarterly end-of-period consumer loans:[1]

In billions of dollars	4Q’17	1Q’18	2Q’18	3Q’18	4Q’18
Retail banking:					
Mortgages	$81.7	$82.1	$80.5	$80.9	$80.6
Commercial banking	36.3	36.8	36.5	37.2	36.3
Personal and other	27.9	28.5	28.1	28.7	28.8
Total retail banking	$145.9	$147.4	$145.1	$146.8	$145.7
Cards:					
Citi-branded cards	$115.7	$110.6	$112.3	$112.8	$116.8
Citi retail services	49.2	46.0	48.6	49.4	52.7
Total cards	$164.9	$156.6	$160.9	$162.2	$169.5
Total GCB	$310.8	$304.0	$306.0	$309.0	$315.2
GCB regional distribution:					
North America	63%	61%	63%	62%	64%
Latin America	8	9	8	9	8
Asia[2]	29	30	29	29	28
Total GCB	100%	100%	100%	100%	100%
Corporate/Other[3]	$22.9	$21.1	$17.6	$16.5	$15.3
Total consumer loans	$333.7	$325.1	$323.6	$325.5	$330.5

(1) End-of-period loans include interest and fees on credit cards.
(2) Asia includes loans and leases in certain EMEA countries for all periods presented.
(3) Primarily consists of legacy North America consumer mortgages.

For information on changes to Citi’s end-of-period consumer loans, see “Liquidity Risk—Loans” below.

Overall Consumer Credit Trends
The following charts show the quarterly trends in delinquencies and net credit losses across both retail banking, including commercial banking, and cards for total GCB and by region.

Global Consumer Banking
North America GCB

North America GCB provides mortgages, home equity loans, personal loans and commercial banking products through Citi's retail banking network and card products through Citi-branded cards and Citi retail services businesses. The retail bank is concentrated in six major metropolitan cities in the United States (for additional information on the U.S. retail bank, see "North America GCB" above).
As of December 31, 2018, 72% of North America GCB consumer loans consisted of Citi-branded and Citi retail services cards, which generally drives the overall credit performance of North America GCB (for additional information on North America GCB's cards portfolios, including delinquency and net credit loss rates, see "Credit Card Trends" below).
As shown in the chart above, the 90+ days past due delinquency rate increased quarter-over-quarter in North America GCB, primarily due to seasonality in both cards portfolios, while the quarter-over-quarter increase in the net credit loss rate was primarily driven by seasonality in Citi retail services. The year-over-year delinquency and net credit loss rates increased, driven by seasoning in both cards portfolios as well as an increase in net flow rates in later delinquency buckets in Citi retail services.

Latin America GCB

Latin America GCB operates in Mexico through Citibanamex, one of Mexico's largest banks, and provides credit cards, consumer mortgages, personal loans and commercial banking products. Latin America GCB serves a more mass market segment in Mexico and focuses on developing multi-product relationships with customers.
As shown in the chart above, the quarter-over-quarter 90+ days past due delinquency rate increased in Latin America GCB, mostly driven by seasonality in the cards portfolio. The quarter-over-quarter net credit loss rate decreased, primarily reflecting the absence of an episodic charge-off in the commercial portfolio in the prior quarter. The year-over-year delinquency and net credit loss rates increased, driven primarily by seasoning of the cards portfolio.

Asia[(1)] GCB

Asia includes GCB activities in certain EMEA countries for all periods presented.

Asia GCB operates in 17 countries in Asia and EMEA and provides credit cards, consumer mortgages, personal loans and commercial banking products.
As shown in the chart above, the 90+ days past due delinquency rate was largely stable in Asia GCB quarter-over-quarter and year-over-year. The net credit loss rate increased quarter-over-quarter and year-over-year, primarily driven by an episodic charge-off in the commercial portfolio in the fourth quarter of 2018. Overall, the strong credit profiles in Asia GCB's target customer segments have resulted in stable portfolio credit quality.
For additional information on cost of credit, loan delinquency and other information for Citi's consumer loan portfolios, see each respective business's results of operations above and Note 14 to the Consolidated Financial Statements.

Credit Card Trends
The following charts show the quarterly trends in delinquencies and net credit losses for total GCB cards, North America Citi-branded cards and Citi retail services portfolios as well as for Citi's Latin America and Asia Citi-branded cards portfolios.

Global Cards

North America Citi-Branded Cards

North America GCB's Citi-branded cards portfolio issues proprietary and co-branded cards. As shown in the chart above, the 90+ days past due delinquency rate in Citi-branded cards increased quarter-over-quarter due to seasonality, and was relatively stable year-over-year. The net credit loss rate was relatively stable quarter-over-quarter, while the net credit loss rate increased year-over-year due to seasoning of the portfolio as well as the impact of higher asset sales in the prior year.

North America Citi Retail Services

Citi retail services partners directly with more than 20 retailers and dealers to offer private label and co-branded consumer and commercial cards. Citi retail services' target market is focused on select industry segments such as home improvement, specialty retail, consumer electronics and fuel. Citi retail services continually evaluates opportunities to add partners within target industries that have strong loyalty, lending or payment programs and growth potential.
As shown in the chart above, Citi retail services' 90+ days past due delinquency and net credit loss rates increased quarter-over-quarter, driven by seasonality as well as the business beginning to incur losses in a recently acquired portfolio. The year-over-year increase in the delinquency rate was primarily driven by seasoning and an increase in net flow rates in later delinquency buckets. On this basis, the net credit loss rate modestly decreased, as the impact of the recently acquired portfolios was partially offset by seasoning as well as an increase in net flow rates in later delinquency buckets.

Latin America Citi-Branded Cards
Latin America GCB issues proprietary and co-branded cards. As shown in the chart above, the quarter-over-quarter 90+ days past due delinquency rate increased, primarily driven by seasonality, while the net credit loss rate decreased also driven by seasonality. Year-over-year the delinquency and net credit loss rates increased primarily due to seasoning of the portfolio.

Asia Citi-Branded Cards[1]

(1) Asia includes loans and leases in certain EMEA countries for all periods presented.

Asia GCB issues proprietary and co-branded cards. As shown in the chart above, the 90+ days past due delinquency rate remained broadly stable quarter-over-quarter and year-over-year, driven by the mature and well-diversified cards portfolios. The net credit loss rate decreased quarter-over-quarter, as the prior quarter reflected a higher rate due to the conversion of an acquired portfolio in Australia, while the net credit loss rate was broadly stable year-over-year.
For additional information on cost of credit, delinquency and other information for Citi's cards portfolios, see each respective business's results of operations above and Note 14 to the Consolidated Financial Statements.

North America Cards FICO Distribution
The following tables show the current FICO score distributions for Citi's North America Citi-branded cards and Citi retail services portfolios based on end-of-period receivables. FICO scores are updated monthly for substantially all of the portfolio and on a quarterly basis for the remaining portfolio.

Citi-Branded

FICO distribution	Dec 31, 2018	Sept. 30, 2018	Dec 31, 2017
> 760	43 %	42 %	42 %
680–760	40	41	41
< 680	17	17	17
Total	100 %	100 %	100 %

Citi Retail Services

FICO distribution	Dec 31, 2018	Sept. 30, 2018	Dec 31, 2017
> 760	25 %	24 %	24 %
680–760	42	43	43
< 680	33	33	33
Total	100 %	100 %	100 %

Both the Citi-branded cards' and Citi retail services' cards FICO distributions remained stable as of year-end 2018.
For additional information on FICO scores, see Note 14 to the Consolidated Financial Statements.

Additional Consumer Credit Details

Consumer Loan Delinquency Amounts and Ratios

	EOP loans[1]	90+ days past due[2]			30–89 days past due[2]		
	December 31,	December 31,			December 31,		
In millions of dollars, except EOP loan amounts in billions	2018	2018	2017	2016	2018	2017	2016
Global Consumer Banking[3][4]							
Total	$ 315.2	$2,619	$2,478	$2,293	$2,902	$2,762	$2,540
Ratio		0.83 %	0.80 %	0.79 %	0.92 %	0.89 %	0.87 %
Retail banking							
Total	$ 145.7	$485	$515	$474	$790	$822	$726
Ratio		0.33 %	0.35 %	0.35 %	0.54 %	0.57 %	0.54 %
North America	56.8	180	199	181	282	306	214
Ratio		0.32 %	0.36 %	0.33 %	0.50 %	0.55 %	0.39 %
Latin America	19.7	127	130	136	201	195	185
Ratio		0.64 %	0.65 %	0.76 %	1.02 %	0.98 %	1.03 %
Asia[5]	69.2	178	186	157	307	321	327
Ratio		0.26 %	0.27 %	0.25 %	0.44 %	0.46 %	0.52 %
Cards							
Total	$ 169.5	$2,134	$1,963	$1,819	$2,112	$1,940	$1,814
Ratio		1.26 %	1.19 %	1.17 %	1.25 %	1.18 %	1.17 %
North America—Citi-branded	91.8	812	768	748	755	698	688
Ratio		0.88 %	0.85 %	0.87 %	0.82 %	0.77 %	0.80 %
North America—Citi retail services	52.7	952	845	761	932	830	777
Ratio		1.81 %	1.72 %	1.61 %	1.77 %	1.69 %	1.64 %
Latin America	5.7	171	151	130	170	153	125
Ratio		3.00 %	2.80 %	2.71 %	2.98 %	2.83 %	2.60 %
Asia[5]	19.3	199	199	180	255	259	224
Ratio		1.03 %	1.01 %	1.03 %	1.32 %	1.31 %	1.28 %
Corporate/Other—Consumer[6]							
Total	$ 15.3	$382	$557	$834	$362	$542	$735
Ratio		2.62 %	2.57 %	2.62 %	2.48 %	2.50 %	2.31 %
International	—	—	43	94	—	40	49
Ratio		— %	2.69 %	3.92 %	— %	2.50 %	2.04 %
North America	15.3	382	514	740	362	502	686
Ratio		2.62 %	2.56 %	2.52 %	2.48 %	2.50 %	2.33 %
Total Citigroup	$ 330.5	$3,001	$3,035	$3,127	$3,264	$3,304	$3,275
Ratio		0.91 %	0.91 %	0.97 %	0.99 %	1.00 %	1.01 %

(1) End-of-period (EOP) loans include interest and fees on credit cards.

(2) The ratios of 90+ days past due and 30–89 days past due are calculated based on EOP loans, net of unearned income.

(3) The 90+ days past due balances for North America—Citi-branded and North America—Citi retail services are generally still accruing interest. Citigroup's policy is generally to accrue interest on credit card loans until 180 days past due, unless notification of bankruptcy filing has been received earlier.

(4) The loans 90+ days past due and 30–89 days past due and related ratios for North America GCB exclude U.S. mortgage loans that are guaranteed by U.S. government-sponsored agencies since the potential loss predominantly resides within the U.S. agencies. The amounts excluded for loans 90+ days past due and (EOP loans) were $201

million ($0.6 billion), $298 million ($0.7 billion) and $327 million ($0.7 billion) at December 31, 2018, 2017 and 2016, respectively. The amounts excluded for loans 30–89 days past due (EOP loans have the same adjustment as above) were $78 million, $88 million and $70 million at December 31, 2018, 2017 and 2016, respectively.

(5) Asia includes delinquencies and loans in certain EMEA countries for all periods presented.

(6) The loans 90+ days and 30–89 days past due and related ratios exclude U.S. mortgage loans that are guaranteed by U.S. government-sponsored agencies since the potential loss predominantly resides within the U.S. agencies. The amounts excluded for loans 90+ days past due and (EOP loans) were $0.3 billion ($.07 billion), $0.6 billion ($1.1 billion) and $0.9 billion ($1.4 billion) at December 31, 2018, 2017 and 2016, respectively. The amounts excluded for loans 30–89 days past due and (EOP loans have the same adjustment as above) were $0.1 billion, $0.1 billion and $0.2 billion at December 31, 2018, 2017 and 2016, respectively.

Consumer Loan Net Credit Losses and Ratios

	Average loans[1]	Net credit losses[2][3]		
In millions of dollars, except average loan amounts in billions	2018	2018	2017	2016
Global Consumer Banking				
Total	$ 306.2	$6,920	$6,562	$5,610
Ratio		2.26 %	2.21 %	2.01 %
Retail banking				
Total	$ 146.0	$949	$1,023	$1,007
Ratio		0.65 %	0.72 %	0.72 %
North America	56.0	$138	$194	$205
Ratio		0.25 %	0.35 %	0.38 %
Latin America	20.3	$567	$584	$541
Ratio		2.79 %	2.92 %	2.85 %
Asia[4]	69.7	$244	$245	$261
Ratio		0.35 %	0.37 %	0.39 %
Cards				
Total	$ 160.2	$5,971	$5,539	$4,603
Ratio		3.72 %	3.60 %	3.30 %
North America—Citi-branded	87.5	$2,602	$2,447	$1,909
Ratio		2.97 %	2.90 %	2.61 %
North America—Retail services	48.3	$2,357	$2,155	$1,805
Ratio		4.88 %	4.73 %	4.12 %
Latin America	5.5	$586	$533	$499
Ratio		10.65 %	10.06 %	9.78 %
Asia[4]	18.9	$426	$404	$390
Ratio		2.25 %	2.17 %	2.24 %
Corporate/Other—Consumer[3]				
Total	$ 18.7	$24	$156	$438
Ratio		0.14 %	0.57 %	1.06 %
International	0.7	$42	$82	$269
Ratio		6.00 %	4.32 %	5.17 %
North America	18.0	$(18)	$74	$169
Ratio		NM	0.29 %	0.47 %
Other[5]	—	$—	$(21)	$—
Total Citigroup	$ 324.9	$6,944	$6,697	$6,048
Ratio		2.14 %	2.07 %	1.88 %

(1) Average loans include interest and fees on credit cards.

(2) The ratios of net credit losses are calculated based on average loans, net of unearned income.

(3) As a result of Citigroup's entry into agreements in 2016 to sell its Argentina and Brazil consumer banking businesses, these businesses were classified as HFS at the end of the fourth quarter of 2016. Loans HFS are excluded from this table as they are recorded in Other assets. In addition, as a result of HFS accounting treatment, approximately $128 million and $42 million of net credit losses (NCLs) were recorded as a reduction in revenue (Other revenue) during 2017 and 2016, respectively. Accordingly, these NCLs are not included in this table. The sales of the Argentina and Brazil consumer banking businesses were completed in 2017.

(4) Asia includes average loans and NCLs in certain EMEA countries for all periods presented.

(5) 2017 NCLs reflected a recovery related to legacy assets.

NM Not meaningful

Loan Maturities and Fixed/Variable Pricing
U.S. Consumer Mortgages

In millions of dollars at year-end 2018	Due within 1 year	Greater than 1 year but within 5 years	Greater than 5 years	Total
U.S. consumer mortgage loan portfolio				
Residential first mortgages	$ 74	$ 509	$ 47,897	$ 48,480
Home equity loans	36	584	11,027	11,647
Total	$ 110	$ 1,093	$ 58,924	$ 60,127
Fixed/variable pricing of U.S. consumer mortgage loans with maturities due after one year				
Loans at fixed interest rates		$ 934	$ 37,503	
Loans at floating or adjustable interest rates		159	21,421	
Total		$ 1,093	$ 58,924	

Corporate Credit

Consistent with its overall strategy, Citi's corporate clients are typically large, multinational corporations that value the depth and breadth of Citi's global network. Citi aims to establish relationships with these clients that encompass multiple products, consistent with client needs, including cash management and trade services, foreign exchange, lending, capital markets and M&A advisory.

Corporate Credit Portfolio

The following table presents Citi's corporate credit portfolio within ICG (excluding private bank), before consideration of collateral or hedges, by remaining tenor for the periods indicated:

In billions of dollars	At December 31, 2018 Due within 1 year	Greater than 1 year but within 5 years	Greater than 5 years	Total exposure	At September 30, 2018 Due within 1 year	Greater than 1 year but within 5 years	Greater than 5 years	Total exposure	At December 31, 2017 Due within 1 year	Greater than 1 year but within 5 years	Greater than 5 years	Total exposure
Direct outstandings (on-balance sheet)(1)	$128	$ 110	$ 20	$ 258	$131	$ 103	$ 20	$ 254	$127	$ 96	$ 22	$ 245
Unfunded lending commitments (off-balance sheet)(2)	106	245	19	370	115	253	25	393	111	222	20	353
Total exposure	$234	$ 355	$ 39	$ 628	$246	$ 356	$ 45	$ 647	$238	$ 318	$ 42	$ 598

(1) Includes drawn loans, overdrafts, bankers' acceptances and leases.
(2) Includes unused commitments to lend, letters of credit and financial guarantees.

Portfolio Mix—Geography, Counterparty and Industry

Citi's corporate credit portfolio is diverse across geography and counterparty. The following table shows the percentage of this portfolio by region based on Citi's internal management geography:

	December 31, 2018		September 30, 2018		December 31, 2017	
North America	55	%	55	%	54	%
EMEA	27		27		27	
Asia	11		11		12	
Latin America	7		7		7	
Total	100	%	100	%	100	%

The maintenance of accurate and consistent risk ratings across the corporate credit portfolio facilitates the comparison of credit exposure across all lines of business, geographic regions and products. Counterparty risk ratings reflect an estimated probability of default for a counterparty and are derived primarily through the use of validated statistical models, scorecard models and external agency ratings (under defined circumstances), in combination with consideration of factors specific to the obligor or market, such as management experience, competitive position, regulatory environment and commodity prices. Facility risk ratings are assigned that reflect the probability of default of the obligor and factors that affect the loss-given-default of the facility, such as support or collateral. Internal obligor ratings that generally correspond to

BBB and above are considered investment grade, while those below are considered non-investment grade.

Citigroup has also incorporated environmental factors such as climate risk assessment and reporting criteria for certain obligors, as necessary. Factors evaluated include consideration of climate risk to an obligor's business and physical

assets and, when relevant, consideration of cost-effective options to reduce greenhouse gas emissions.
The following table presents the corporate credit portfolio by facility risk rating as a percentage of the total corporate credit portfolio:

	Total exposure		
	December 31, 2018	September 30, 2018	December 31, 2017
AAA/AA/A	49 %	48 %	49 %
BBB	34	34	34
BB/B	16	17	16
CCC or below	1	1	1
Total	100 %	100 %	100 %

Note: Total exposure includes direct outstandings and unfunded lending commitments.

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Citi's corporate credit portfolio is also diversified by industry. The following table shows the allocation of Citi's total corporate credit portfolio by industry:

	Total exposure					
	December 31, 2018		September 30, 2018		December 31, 2017	
Transportation and industrial	21	%	21	%	22	%
Consumer retail and health	16		16		16	
Technology, media and telecom	13		14		12	
Power, chemicals, metals and mining	10		11		10	
Banks/broker-dealers/finance companies	8		8		8	
Real estate	8		8		8	
Energy and commodities	8		8		8	
Public sector	5		5		5	
Insurance and special purpose entities	4		4		5	
Hedge funds	4		4		4	
Other industries	3		1		2	
Total	100	%	100	%	100	%

Credit Risk Mitigation

As part of its overall risk management activities, Citigroup uses credit derivatives and other risk mitigants to hedge portions of the credit risk in its corporate credit portfolio, in addition to outright asset sales. The results of the mark-to-market and any realized gains or losses on credit derivatives are reflected primarily in Other revenue in the Consolidated Statement of Income.

At December 31, 2018, September 30, 2018 and December 31, 2017, $30.8 billion, $26.9 billion and $16.3 billion, respectively, of the corporate credit portfolio was economically hedged. Citigroup's expected loss model used in the calculation of its loan loss reserve does not include the favorable impact of credit derivatives and other mitigants that are marked to market. In addition, the reported amounts of direct outstandings and unfunded lending commitments in the tables above do not reflect the impact of these hedging transactions. The credit protection was economically hedging underlying corporate credit portfolio exposures with the following risk rating distribution:

Rating of Hedged Exposure

	December 31, 2018		September 30, 2018		December 31, 2017	
AAA/AA/A	35	%	34	%	23	%
BBB	50		47		43	
BB/B	14		17		31	
CCC or below	1		2		3	
Total	100	%	100	%	100	%

The credit protection was economically hedging underlying corporate credit portfolio exposures with the following industry distribution:

Industry of Hedged Exposure

	December 31, 2018		September 30, 2018		December 31, 2017	
Transportation and industrial	23	%	25	%	27	%
Technology, media and telecom	17		15		12	
Consumer retail and health	16		14		10	
Power, chemicals, metals and mining	15		14		14	
Energy and commodities	11		11		15	
Insurance and special purpose entities	6		4		2	
Banks/broker-dealers/finance companies	4		5		6	
Public sector	3		7		12	
Real estate	4		4		1	
Other industries	1		1		1	
Total	100	%	100	%	100	%

Loan Maturities and Fixed/Variable Pricing of Corporate Loans

In millions of dollars at December 31, 2018	Due within 1 year	Over 1 year but within 5 years	Over 5 years	Total
Corporate loans				
In U.S. offices				
Commercial and industrial loans	$19,935	$20,599	$11,529	$52,063
Financial institutions	18,550	19,169	10,728	48,447
Mortgage and real estate	19,193	19,832	11,099	50,124
Installment, revolving credit and other	12,730	13,155	7,362	33,247
Lease financing	546	566	317	1,429
In offices outside the U.S.	109,497	51,280	8,444	169,221
Total corporate loans	$180,451	$124,601	$49,479	$354,531
Fixed/variable pricing of corporate loans with maturities due after one year(1)				
Loans at fixed interest rates		$23,779	$16,595	
Loans at floating or adjustable interest rates		100,822	32,884	
Total		$124,601	$49,479	

(1) Based on contractual terms. Repricing characteristics may effectively be modified from time to time using derivative contracts. See Note 22 to the Consolidated Financial Statements.

Additional Consumer and Corporate Credit Details

Loans Outstanding

In millions of dollars	December 31, 2018	2017	2016	2015	2014
Consumer loans					
In U.S. offices					
Mortgage and real estate[1]	$60,127	$65,467	$72,957	$80,281	$96,533
Installment, revolving credit and other	3,398	3,398	3,395	3,480	14,450
Cards	143,788	139,006	132,654	112,800	112,982
Commercial and industrial	8,256	7,840	7,159	6,407	5,895
Total	$215,569	$215,711	$216,165	$202,968	$229,860
In offices outside the U.S.					
Mortgage and real estate[1]	$43,379	$44,081	$42,803	$47,062	$54,462
Installment, revolving credit and other	27,609	26,556	24,887	29,480	31,128
Cards	25,400	26,257	23,783	27,342	32,032
Commercial and industrial	17,773	20,238	16,568	17,410	18,294
Lease financing	49	76	81	362	546
Total	$114,210	$117,208	$108,122	$121,656	$136,462
Total consumer loans	$329,779	$332,919	$324,287	$324,624	$366,322
Unearned income[2]	708	737	776	830	(679)
Consumer loans, net of unearned income	$330,487	$333,656	$325,063	$325,454	$365,643
Corporate loans					
In U.S. offices					
Commercial and industrial	$52,063	$51,319	$49,586	$46,011	$39,542
Financial institutions	48,447	39,128	35,517	36,425	36,324
Mortgage and real estate[1]	50,124	44,683	38,691	32,623	27,959
Installment, revolving credit and other	33,247	33,181	34,501	33,423	29,246
Lease financing	1,429	1,470	1,518	1,780	1,758
Total	$185,310	$169,781	$159,813	$150,262	$134,829
In offices outside the U.S.					
Commercial and industrial	$94,701	$93,750	$81,882	$82,689	$83,506
Financial institutions	36,837	35,273	26,886	28,704	33,269
Mortgage and real estate[1]	7,376	7,309	5,363	5,106	6,031
Installment, revolving credit and other	25,684	22,638	19,965	20,853	19,259
Lease financing	103	190	251	303	419
Governments and official institutions	4,520	5,200	5,850	4,911	2,236
Total	$169,221	$164,360	$140,197	$142,566	$144,720
Total corporate loans	$354,531	$334,141	$300,010	$292,828	$279,549
Unearned income[3]	(822)	(763)	(704)	(665)	(557)
Corporate loans, net of unearned income	$353,709	$333,378	$299,306	$292,163	$278,992
Total loans—net of unearned income	$684,196	$667,034	$624,369	$617,617	$644,635
Allowance for loan losses—on drawn exposures	(12,315)	(12,355)	(12,060)	(12,626)	(15,994)
Total loans—net of unearned income and allowance for credit losses	$671,881	$654,679	$612,309	$604,991	$628,641
Allowance for loan losses as a percentage of total loans—net of unearned income[4]	1.81%	1.86%	1.94%	2.06%	2.50%

Allowance for consumer loan losses as a percentage of total consumer loans—net of unearned income(4)	3.01	%	2.96	%	2.88	%	3.02	%	3.71	%
Allowance for corporate loan losses as a percentage of total corporate loans—net of unearned income(4)	0.67	%	0.76	%	0.91	%	0.97	%	0.90	%

(1) Loans secured primarily by real estate.

(2) Unearned income on consumer loans primarily represents unamortized origination fees, costs, premiums and discounts. Prior to December 31, 2015, these items were more than offset by prepaid interest on loans outstanding issued by OneMain Financial. The sale of OneMain Financial was completed in 2015.

(3) Unearned income on corporate loans primarily represents interest received in advance, but not yet earned on loans originated on a discount basis.

(4) All periods exclude loans that are carried at fair value.

Details of Credit Loss Experience					
In millions of dollars	2018	2017	2016	2015	2014
Allowance for loan losses at beginning of period	$12,355	$12,060	$12,626	$15,994	$19,648
Provision for loan losses					
Consumer	$7,288	$7,363	$6,321	$6,228	$6,699
Corporate	66	140	428	880	129
Total	$7,354	$7,503	$6,749	$7,108	$6,828
Gross credit losses					
Consumer					
In U.S. offices	$5,989	$5,736	$4,970	$5,500	$6,780
In offices outside the U.S.	2,405	2,447	2,672	3,192	3,874
Corporate					
Commercial and industrial, and other					
In U.S. offices	103	151	274	112	66
In offices outside the U.S.	154	331	256	182	310
Loans to financial institutions					
In U.S. offices	3	3	5	—	2
In offices outside the U.S.	7	1	5	4	13
Mortgage and real estate					
In U.S offices	2	2	34	8	8
In offices outside the U.S.	2	2	6	43	55
Total	$8,665	$8,673	$8,222	$9,041	$11,108
Credit recoveries[1]					
Consumer					
In U.S. offices	$922	$903	$980	$975	$1,122
In offices outside the U.S.	528	583	614	659	853
Corporate					
Commercial and industrial, and other					
In U.S. offices	37	20	23	22	64
In offices outside the U.S.	52	86	41	67	84
Loans to financial institutions					
In U.S. offices	—	1	1	7	1
In offices outside the U.S.	3	1	1	2	11
Mortgage and real estate					
In U.S. offices	6	2	1	7	—
In offices outside the U.S.	4	1	—	—	—
Total	$1,552	$1,597	$1,661	$1,739	$2,135
Net credit losses					
In U.S. offices	$5,132	$4,966	$4,278	$4,609	$5,669
In offices outside the U.S.	1,981	2,110	2,283	2,693	3,304
Total	$7,113	$7,076	$6,561	$7,302	$8,973
Other—net[2][3][4][5][6][7][8]	$(281)	$(132)	$(754)	$(3,174)	$(1,509)
Allowance for loan losses at end of period	$12,315	$12,355	$12,060	$12,626	$15,994
Allowance for loan losses as a percentage of total loans[9]	1.81%	1.86%	1.94%	2.06%	2.50%
Allowance for unfunded lending commitments[8][10]	$1,367	$1,258	$1,418	$1,402	$1,063
Total allowance for loan losses and unfunded lending commitments	$13,682	$13,613	$13,478	$14,028	$17,057

Net consumer credit losses	$6,944	$6,697	$6,048	$7,058	$8,679
As a percentage of average consumer loans	2.14 %	2.07 %	1.88 %	2.08 %	2.31 %
Net corporate credit losses	$169	$379	$513	$244	$294

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As a percentage of average corporate loans	0.05 %	0.12 %	0.17 %	0.08 %	0.10 %
Allowance by type(11)					
Consumer	$9,950	$9,869	$9,358	$9,835	$13,547
Corporate	2,365	2,486	2,702	2,791	2,447
Total Citigroup	$12,315	$12,355	$12,060	$12,626	$15,994

(1) Recoveries have been reduced by certain collection costs that are incurred only if collection efforts are successful.

(2) Includes all adjustments to the allowance for credit losses, such as changes in the allowance from acquisitions, dispositions, securitizations, FX translation, purchase accounting adjustments, etc.

(3) 2018 includes reductions of approximately $201 million related to the sale or transfer to HFS of various loan portfolios, which includes approximately $91 million related to the transfer of various real estate loan portfolios to HFS. Additionally, 2018 includes a reduction of approximately $60 million related to FX translation.

(4) 2017 includes reductions of approximately $261 million related to the sale or transfer to HFS of various loan portfolios, which includes approximately $106 million related to the transfer of various real estate loan portfolios to HFS. Additionally, 2017 includes an increase of approximately $115 million related to FX translation.

(5) 2016 includes reductions of approximately $574 million related to the sale or transfer to HFS of various loan portfolios, which includes approximately $106 million related to the transfer of various real estate loan portfolios to HFS. Additionally, 2016 includes a reduction of approximately $199 million related to FX translation.

(6) 2015 includes reductions of approximately $2.4 billion related to the sale or transfer to HFS of various loan portfolios, which includes approximately $1.5 billion related to the transfer of various real estate loan portfolios to HFS. Additionally, 2015 includes a reduction of approximately $474 million related to FX translation.

(7) 2014 includes reductions of approximately $1.1 billion related to the sale or transfer to HFS of various loan portfolios, which includes approximately $411 million related to the transfer of various real estate loan portfolios to HFS, approximately $204 million related to the transfer to HFS of a business in Greece, approximately $177 million related to the transfer to HFS of a business in Spain, approximately $29 million related to the transfer to HFS of a business in Honduras, and approximately $108 million related to the transfer to HFS of various EMEA loan portfolios. Additionally, 2014 includes a reduction of approximately $463 million related to FX translation.

(8) 2015 includes a reclassification of $271 million of Allowance for loan losses to allowance for unfunded lending commitments, included in the Other line item. This reclassification reflects the re-attribution of $271 million in the allowance for credit losses between the funded and unfunded portions of the corporate credit portfolios and does not reflect a change in the underlying credit performance of these portfolios.

(9) December 31, 2018, December 31, 2017, December 31, 2016, December 31, 2015 and December 31, 2014 exclude $3.2 billion, $4.4 billion, $3.5 billion, $5.0 billion and $5.9 billion, respectively, of loans which are carried at fair value.

(10) Represents additional credit reserves recorded as Other liabilities on the Consolidated Balance Sheet.

(11) Allowance for loan losses represents management's best estimate of probable losses inherent in the portfolio, as well as probable losses related to large individually evaluated impaired loans and troubled debt restructurings. See "Significant Accounting Policies and Significant Estimates" and Note 1 to the Consolidated Financial Statements below. Attribution of the allowance is made for analytical purposes only and the entire allowance is available to absorb probable credit losses inherent in the overall portfolio.

Allowance for Loan Losses

The following tables detail information on Citi's allowance for loan losses, loans and coverage ratios:

In billions of dollars	December 31, 2018 Allowance for loan losses	Loans, net of unearned income	Allowance as a percentage of loans[1]	
North America cards[2]	$6.5	$ 144.6	4.5	%
North America mortgages[3]	0.4	58.9	0.7	
North America other	0.3	13.2	2.3	
International cards	1.4	24.9	5.6	
International other[4]	1.3	88.9	1.5	
Total consumer	$9.9	$ 330.5	3.0	%
Total corporate	2.4	353.7	0.7	
Total Citigroup	$12.3	$ 684.2	1.8	%

(1) Allowance as a percentage of loans excludes loans that are carried at fair value.

(2) Includes both Citi-branded cards and Citi retail services. The $6.5 billion of loan loss reserves represented approximately 16 months of coincident net credit loss coverage.

(3) Of the $0.4 billion, nearly all of it was allocated to North America mortgages in Corporate/Other, including $0.1 billion and $0.3 billion determined in accordance with ASC 450-20 and ASC 310-10-35 (troubled debt restructurings), respectively. Of the $58.9 billion in loans, approximately $56.3 billion and $2.5 billion of the loans were evaluated in accordance with ASC 450-20 and ASC 310-10-35 (troubled debt restructurings), respectively. For additional information, see Note 15 to the Consolidated Financial Statements.

(4) Includes mortgages and other retail loans.

In billions of dollars	December 31, 2017 Allowance for loan losses	Loans, net of unearned income	Allowance as a percentage of loans[1]	
North America cards[2]	$6.1	$ 139.7	4.4	%
North America mortgages[3]	0.7	64.2	1.1	
North America other	0.3	13.0	2.3	
International cards	1.3	25.7	5.1	
International other[4]	1.5	91.1	1.6	
Total consumer	$9.9	$ 333.7	3.0	%
Total corporate	2.5	333.3	0.8	
Total Citigroup	$12.4	$ 667.0	1.9	%

(1) Allowance as a percentage of loans excludes loans that are carried at fair value.

(2) Includes both Citi-branded cards and Citi retail services. The $6.1 billion of loan loss reserves represented approximately 16 months of coincident net credit loss coverage.

(3) Of the $0.7 billion, approximately $0.6 billion was allocated to North America mortgages in Corporate/Other. Of the $0.7 billion, approximately $0.2 billion and $0.5 billion were determined in accordance with ASC 450-20 and ASC 310-10-35 (troubled debt restructurings), respectively. Of the $64.2 billion in loans, approximately $60.4 billion and $3.7 billion of the loans were evaluated in accordance with ASC 450-20 and ASC 310-10-35 (troubled debt restructurings), respectively. For additional information, see Note 15 to the Consolidated Financial Statements.

(4) Includes mortgages and other retail loans.

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Non-Accrual Loans and Assets and Renegotiated Loans

There is a certain amount of overlap among non-accrual loans and assets and renegotiated loans. The following summary provides a general description of each category.

Non-Accrual Loans and Assets:

- Corporate and consumer (including commercial banking) non-accrual status is based on the determination that payment of interest or principal is doubtful.
- A corporate loan may be classified as non-accrual and still be performing under the terms of the loan structure. Non-accrual loans may still be current on interest payments. Approximately 55%, 57% and 74% of Citi's corporate non-accrual loans were performing at December 31, 2018, September 30, 2018 and December 31, 2017, respectively.
- Consumer non-accrual status is generally based on aging, i.e., the borrower has fallen behind on payments.
- Consumer mortgage loans, other than Federal Housing Administration (FHA) insured loans, are classified as non-accrual within 60 days of notification that the borrower has filed for bankruptcy. In addition, home equity loans are classified as non-accrual if the related residential first mortgage loan is 90 days or more past due.
- North America Citi-branded cards and Citi retail services are not included because, under industry standards, credit card loans accrue interest until such loans are charged off, which typically occurs at 180 days of contractual delinquency.

Renegotiated Loans:

- Includes both corporate and consumer loans whose terms have been modified in a troubled debt restructuring (TDR).
- Includes both accrual and non-accrual TDRs.

Non-Accrual Loans

The table below summarizes Citigroup's non-accrual loans as of the periods indicated. Non-accrual loans may still be current on interest payments. In situations where Citi reasonably expects that only a portion of the principal owed will ultimately be collected, all payments received are reflected as a reduction of principal and not as interest income. For all other non-accrual loans, cash interest receipts are generally recorded as revenue.

	December 31,				
In millions of dollars	2018	2017	2016	2015	2014
Corporate non-accrual loans(1)(2)					
North America	$483	$784	$984	$818	$321
EMEA	375	849	904	347	285
Latin America	230	280	379	303	417
Asia	223	29	154	128	179
Total corporate non-accrual loans	$1,311	$1,942	$2,421	$1,596	$1,202
Consumer non-accrual loans(1)(3)					
North America	$1,241	$1,650	$2,160	$2,515	$4,411
Latin America	715	756	711	874	1,188
Asia(4)	270	284	287	269	306
Total consumer non-accrual loans	$2,226	$2,690	$3,158	$3,658	$5,905
Total non-accrual loans	$3,537	$4,632	$5,579	$5,254	$7,107

(1) Excludes purchased distressed loans, as they are generally accreting interest. The carrying value of these loans was $128 million at December 31, 2018, $167 million at December 31, 2017, $187 million at December 31, 2016, $250 million at December 31, 2015 and $421 million at December 31, 2014.

(2) The 2016 increase in corporate non-accrual loans was primarily related to Citi's North America and EMEA energy and energy-related corporate credit exposure.

(3) The 2015 decline in consumer non-accrual loans includes the impact related to the transfer of approximately $8 billion of mortgage loans to Loans HFS (included within Other assets).

(4) Asia includes balances in certain EMEA countries for all periods presented.

The changes in Citigroup's non-accrual loans were as follows:

	Year ended December 31, 2018			Year ended December 31, 2017		
In millions of dollars	Corporate	Consumer	Total	Corporate	Consumer	Total
Non-accrual loans at beginning of period	$1,942	$ 2,690	$4,632	$2,421	$ 3,158	$5,579
Additions	2,108	3,148	5,256	1,347	3,508	4,855
Sales and transfers to HFS	(119)	(268)	(387)	(134)	(379)	(513)
Returned to performing	(127)	(629)	(756)	(47)	(634)	(681)
Paydowns/settlements	(2,282)	(1,052)	(3,334)	(1,400)	(1,163)	(2,563)
Charge-offs	(196)	(1,634)	(1,830)	(144)	(1,869)	(2,013)
Other	(15)	(29)	(44)	(101)	69	(32)
Ending balance	$1,311	$ 2,226	$3,537	$1,942	$ 2,690	$4,632

Non-Accrual Assets

The table below summarizes Citigroup's other real estate owned (OREO) assets as of the periods indicated. This represents the carrying value of all real estate property acquired by foreclosure or other legal proceedings when Citi has taken possession of the collateral:

	December 31,				
In millions of dollars	2018	2017	2016	2015	2014
OREO[1]					
North America	$64	$89	$161	$166	$196
EMEA	1	2	—	1	7
Latin America	12	35	18	38	47
Asia	22	18	7	4	10
Total OREO	$99	$144	$186	$209	$260
Non-accrual assets					
Corporate non-accrual loans	$1,311	$1,942	$2,421	$1,596	$1,202
Consumer non-accrual loans[2]	2,226	2,690	3,158	3,658	5,905
Non-accrual loans (NAL)	$3,537	$4,632	$5,579	$5,254	$7,107
OREO	$99	$144	$186	$209	$260
Non-accrual assets (NAA)	$3,636	$4,776	$5,765	$5,463	$7,367
NAL as a percentage of total loans	0.52 %	0.69 %	0.89 %	0.85 %	1.10 %
NAA as a percentage of total assets	0.19	0.26	0.32	0.32	0.40
Allowance for loan losses as a percentage of NAL[3]	348	267	216	240	225

(1) Reflects a decrease of $130 million related to the adoption of ASU 2014-14 in 2014, which requires certain government guaranteed mortgage loans to be recognized as separate other receivables upon foreclosure. Prior periods have not been restated.

(2) The 2015 decline in consumer non-accrual loans includes the impact related to the transfer of approximately $8 billion of mortgage loans to Loans HFS (included within Other assets).

(3) The allowance for loan losses includes the allowance for Citi's credit card portfolios and purchased distressed loans, while the non-accrual loans exclude credit card balances (with the exception of certain international portfolios) and purchased distressed loans as these continue to accrue interest until charge-off.

Renegotiated Loans

The following table presents Citi's loans modified in TDRs:

In millions of dollars	Dec. 31, 2018	Dec. 31, 2017
Corporate renegotiated loans[1]		
In U.S. offices		
Commercial and industrial[2]	$188	$225
Mortgage and real estate	111	90
Financial institutions	16	33
Other	2	45
Total	$317	$393
In offices outside the U.S.		
Commercial and industrial[2]	$226	$392
Mortgage and real estate	12	11
Financial institutions	9	15
Other	—	7
Total	$247	$425
Total corporate renegotiated loans	$564	$818
Consumer renegotiated loans[3][4][5]		
In U.S. offices		
Mortgage and real estate[6]	$2,520	$3,709
Cards	1,338	1,246
Installment and other	86	169
Total	$3,944	$5,124
In offices outside the U.S.		
Mortgage and real estate	$311	$345
Cards	480	541
Installment and other	415	427
Total	$1,206	$1,313
Total consumer renegotiated loans	$5,150	$6,437

(1) Includes $466 million and $715 million of non-accrual loans included in the non-accrual loans table above at December 31, 2018 and 2017, respectively. The remaining loans are accruing interest.

(2) In addition to modifications reflected as TDRs at December 31, 2018 and 2017, Citi also modified $0 million and $51 million in offices in the U.S., and $2 million and $95 million in offices outside of the U.S., respectively, of commercial loans risk rated "Substandard Non-Performing" or worse (asset category defined by banking regulators). These modifications were not considered TDRs because the modifications did not involve a concession.

(3) Includes $1,015 million and $1,376 million of non-accrual loans included in the non-accrual loans table above at December 31, 2018 and 2017, respectively. The remaining loans are accruing interest.

(4) Includes $17 million and $26 million of commercial real estate loans at December 31, 2018 and 2017, respectively.

(5) Includes $101 million and $165 million of other commercial loans at December 31, 2018 and 2017, respectively.

(6) Reduction in 2018 includes $919 million related to TDRs sold or transferred to HFS.

Forgone Interest Revenue on Loans[1]

In millions of dollars	In U.S. offices	In non-U.S. offices	2018 total
Interest revenue that would have been accrued at original contractual rates[2]	$ 683	$ 458	$1,141
Amount recognized as interest revenue[2]	217	128	345
Forgone interest revenue	$ 466	$ 330	$796

(1) Relates to corporate non-accrual loans, renegotiated loans and consumer loans on which accrual of interest has been suspended.

(2) Interest revenue in offices outside the U.S. may reflect prevailing local interest rates, including the effects of inflation and monetary correction in certain countries.

LIQUIDITY RISK

Overview

Adequate and diverse sources of funding and liquidity are essential to Citi's businesses. Funding and liquidity risks arise from several factors, many of which are mostly or entirely outside Citi's control, such as disruptions in the financial markets, changes in key funding sources, credit spreads, changes in Citi's credit ratings and geopolitical and macroeconomic conditions. For additional information, see "Risk Factors" above.

Citi's funding and liquidity objectives are aimed at (i) funding its existing asset base, (ii) growing its core businesses, (iii) maintaining sufficient liquidity, structured appropriately, so that Citi can operate under a variety of adverse circumstances, including potential Company-specific and/or market liquidity events in varying durations and severity, and (iv) satisfying regulatory requirements, including, among other things, those related to resolution planning (for additional information, see "Resolution Plan" and "Total Loss-Absorbing Capacity (TLAC)" below). Citigroup's primary liquidity objectives are established by entity, and in aggregate, across two major categories:

- Citibank (including Citibank Europe plc, Citibank Singapore Ltd. and Citibank (Hong Kong) Ltd.); and
- the non-bank and other, which includes the parent holding company (Citigroup), Citi's primary intermediate holding company (Citicorp LLC), Citi's broker-dealer subsidiaries (including Citigroup Global Markets Inc., Citigroup Global Markets Ltd. and Citigroup Global Markets Japan Inc.) and other bank and non-bank subsidiaries that are consolidated into Citigroup (including Citibanamex).

At an aggregate level, Citigroup's goal is to maintain sufficient funding in amount and tenor to fully fund customer assets and to provide an appropriate amount of cash and high-quality liquid assets (as discussed below), even in times of stress. The liquidity risk management framework provides that in addition to the aggregate requirements, certain entities be self-sufficient or net providers of liquidity, including in conditions established under their designated stress tests.

Citi's primary sources of funding include (i) deposits via Citi's bank subsidiaries, which are Citi's most stable and lowest cost source of long-term funding, (ii) long-term debt (primarily senior and subordinated debt) primarily issued at the parent and certain bank subsidiaries, and (iii) stockholders' equity. These sources may be supplemented by short-term borrowings, primarily in the form of secured funding transactions.

As referenced above, Citi works to ensure that the tenor of these funding sources is sufficiently long in relation to the tenor of its asset base. The goal of Citi's asset/liability management is to ensure that there is excess liquidity and tenor in the liability structure relative to the liquidity profile of the assets. This reduces the risk that liabilities will become due before asset maturities or monetizations through sale. This excess liquidity is held primarily in the form of high-quality liquid assets (HQLA), as set forth in the table below.

Citi's Treasurer has overall responsibility for management of Citi's HQLA. Citi's liquidity is managed via a centralized treasury model by Corporate Treasury, in conjunction with regional and in-country treasurers. Pursuant to this approach, Citi's HQLA are managed with emphasis on asset-liability management and entity-level liquidity adequacy throughout Citi.

Citi's Chief Risk Officer is responsible for the overall liquidity risk profile of Citi. The Chief Risk Officer and Citi's CFO co-chair Citi's Asset Liability Management Committee (ALCO), which includes Citi's Treasurer and other senior executives. ALCO sets the strategy of the liquidity portfolio and monitors its performance. Significant changes to portfolio asset allocations need to be approved by ALCO.

Liquidity Monitoring and Measurement

Stress Testing

Liquidity stress testing is performed for each of Citi's major entities, operating subsidiaries and/or countries. Stress testing and scenario analyses are intended to quantify the potential impact of an adverse liquidity event on the balance sheet and liquidity position, and to identify viable funding alternatives that can be utilized. These scenarios include assumptions about significant changes in key funding sources, market triggers (such as credit ratings), potential uses of funding and geopolitical and macroeconomic conditions. These conditions include expected and stressed market conditions as well as Company-specific events.

Liquidity stress tests are performed to ascertain potential mismatches between liquidity sources and uses over a variety of time horizons and over different stressed conditions. Liquidity limits are set accordingly. To monitor the liquidity of an entity, these stress tests and potential mismatches are calculated with varying frequencies, with several tests performed daily.

Given the range of potential stresses, Citi maintains contingency funding plans on a consolidated basis and for individual entities. These plans specify a wide range of readily available actions for a variety of adverse market conditions or idiosyncratic stresses.

High-Quality Liquid Assets (HQLA)

In billions of dollars	Citibank			Non-bank and Other			Total		
	Dec. 31, 2018	Sept. 30, 2018	Dec. 31, 2017	Dec. 31, 2018	Sept. 30, 2018	Dec. 31, 2017	Dec. 31, 2018	Sept. 30, 2018	Dec. 31, 2017
Available cash	$97.1	$105.1	$94.3	$27.6	$35.1	$30.9	$124.7	$140.2	$125.2
U.S. sovereign	103.2	102.2	113.2	24.0	29.7	27.9	127.2	131.9	141.1
U.S. agency/agency MBS	60.0	56.4	80.8	5.8	6.5	0.5	65.8	62.9	81.3
Foreign government debt(1)	76.8	74.9	80.5	6.3	9.6	16.4	83.2	84.5	96.9
Other investment grade	1.5	0.2	0.7	1.3	1.1	1.2	2.8	1.3	1.9
Total HQLA (AVG)	$338.6	$338.8	$369.5	$65.1	$82.0	$76.9	$403.7	$420.8	$446.4

Note: The amounts set forth in the table above are presented on an average basis. For securities, the amounts represent the liquidity value that potentially could be realized and, therefore, exclude any securities that are encumbered and incorporate any haircuts that would be required for securities financing transactions.

(1) Foreign government debt includes securities issued or guaranteed by foreign sovereigns, agencies and multilateral development banks. Foreign government debt securities are held largely to support local liquidity requirements and Citi's local franchises and principally include government bonds from Hong Kong, Singapore, Korea, Taiwan, India, Mexico and Brazil.

The table above includes average amounts of HQLA held at Citigroup's operating entities that are eligible for inclusion in the calculation of Citigroup's consolidated LCR, pursuant to the U.S. LCR rules. These amounts include the HQLA needed to meet the minimum requirements at these entities and any amounts in excess of these minimums that are assumed to be transferable to Citigroup. While available liquidity resources at operating entities remained largely unchanged, the amount of HQLA included in the table above declined both year-over-year and quarter-over-quarter as less HQLA in the operating entities was eligible for inclusion in the consolidated metric. Quarter-over-quarter, the decline in HQLA was also driven by balance sheet optimization as Citi deployed cash to fund loan growth and reduce debt levels.

Citi's HQLA does not include Citi's available borrowing capacity from the Federal Home Loan Banks (FHLBs) of which Citi is a member, which was approximately $29 billion as of December 31, 2018 (unchanged from September 30, 2018 and compared to $10 billion as of December 31, 2017) and maintained by eligible collateral pledged to such banks. The HQLA also does not include Citi's borrowing capacity at the U.S. Federal Reserve Bank discount window or other central banks, which would be in addition to the resources noted above.

In general, Citi's liquidity is fungible across legal entities within its bank group. Citi's bank subsidiaries, including Citibank, can lend to the Citi parent and broker-dealer entities in accordance with Section 23A of the Federal Reserve Act. As of December 31, 2018, the capacity available for lending to these entities under Section 23A was approximately $15 billion, unchanged from both September 30, 2018 and December 31, 2017, subject to certain eligible non-cash collateral requirements.

Short-Term Liquidity Measurement: Liquidity Coverage Ratio (LCR)

In addition to internal liquidity stress metrics that Citi has developed for a 30-day stress scenario, Citi also monitors its liquidity by reference to the LCR, as calculated pursuant to the U.S. LCR rules.

Generally, the LCR is designed to ensure that banks maintain an adequate level of HQLA to meet liquidity needs under an acute 30-day stress scenario. The LCR is calculated by dividing HQLA by estimated net outflows over a stressed 30-day period, with the net outflows determined by applying prescribed outflow factors to various categories of liabilities, such as deposits, unsecured and secured wholesale borrowings, unused lending commitments and derivatives-related exposures, partially offset by inflows from assets maturing within 30 days. Banks are required to calculate an add-on to address potential maturity mismatches between contractual cash outflows and inflows within

the 30-day period in determining the total amount of net outflows. The minimum LCR requirement is 100%.
The table below details the components of Citi's LCR calculation and HQLA in excess of net outflows for the periods indicated:

In billions of dollars	Dec. 31, 2018	Sept. 30, 2018	Dec. 31, 2017
HQLA	$403.7	$420.8	$446.4
Net outflows	334.8	350.8	364.3
LCR	121 %	120 %	123 %
HQLA in excess of net outflows	$68.9	$70.0	$82.1

Note: The amounts are presented on an average basis.

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Citi's LCR decreased year-over-year, driven by a decline in average HQLA, partially offset by a decline in modeled net outflows. Quarter-over-quarter, Citi's LCR increased slightly, as a decline in modeled net outflows more than offset the decline in average HQLA (see "High-Quality Liquid Assets" above).

Long-Term Liquidity Measurement: Net Stable Funding Ratio (NSFR)
In 2016, the Federal Reserve Board, the FDIC and the OCC issued a proposed rule to implement the Basel III NSFR requirement.
The U.S.-proposed NSFR is largely consistent with the Basel Committee's final NSFR rules. In general, the NSFR assesses the availability of a bank's stable funding against a required level. A bank's available stable funding would include portions of equity, deposits and long-term debt, while its required stable funding would be based on the liquidity characteristics and encumbrance period of its assets, derivatives and commitments. Prescribed factors would be required to be applied to the various categories of asset and liabilities classes. The ratio of available stable funding to required stable funding would be required to be greater than 100%. While Citi believes that it is compliant with the proposed U.S. NSFR rules as of December 31, 2018, it will need to evaluate a final version of the rules, which are expected to be released in 2019. Citi expects that the NSFR final rules implementation period will be communicated along with the final version of the rules.

Loans
As part of its funding and liquidity objectives, Citi seeks to fund its existing asset base appropriately as well as maintain sufficient liquidity to grow its GCB and ICG businesses, including its loan portfolio. Citi maintains a diversified portfolio of loans to its consumer and institutional clients. The table below details the average loans, by business and/or segment, and the total end-of-period loans for each of the periods indicated:

In billions of dollars	Dec. 31, 2018	Sept. 30, 2018	Dec. 31, 2017
Global Consumer Banking			
North America	$195.7	$192.8	$189.7
Latin America	25.1	26.3	25.7
Asia[1]	87.6	87.7	87.9
Total	$308.4	$306.8	$303.3
Institutional Clients Group			
Corporate lending	$130.0	$130.9	$124.9
Treasury and trade solutions (TTS)	77.0	76.9	77.0
Private bank	94.7	92.8	85.9
Markets and securities services and other	49.3	45.6	40.4
Total	$351.0	$346.2	$328.2
Total Corporate/Other	$16.1	$17.3	$22.5
Total Citigroup loans (AVG)	$675.5	$670.3	$654.0
Total Citigroup loans (EOP)	$684.2	$674.9	$667.0

(1) Includes loans in certain EMEA countries for all periods presented.

Loans increased 3% year-over-year and 1% quarter-over-quarter in the fourth quarter, on both an end-of-period as well as on an average basis.
Excluding the impact of FX translation, average loans increased 4% year-over-year, driven by 6% aggregate across GCB and ICG. Within GCB, average loans grew 3%, with growth across all regions and businesses, with particular strength in North America GCB driven by Citi-branded cards and Citi retail services, including the impact of the L.L.Bean card portfolio acquisition.

Average ICG loans increased 8% year-over-year, with continued growth across businesses. Corporate lending and private bank loan growth remained strong on a year-over-year basis, with corporate lending unchanged quarter-over-quarter due to the episodic nature of repayments relative to originations. TTS loans grew year-over-year, however growth moderated to 2%, despite continued strong origination volumes, as Citi utilized its distribution capabilities to optimize the balance sheet and drive returns. Finally, strong year-over-year Markets and securities services loan growth was driven by Community Reinvestment Act lending activities as well as residential warehouse lending.

Average Corporate/Other loans continued to decline (down 32%), driven by the wind-down of legacy assets.

Deposits

The table below details the average deposits, by business and/or segment, and the total end-of-period deposits for each of the periods indicated:

In billions of dollars	Dec. 31, 2018	Sept. 30, 2018	Dec. 31, 2017
Global Consumer Banking			
North America	$180.6	$180.2	$182.7
Latin America	28.2	29.4	27.8
Asia(1)	97.7	97.6	96.0
Total	$306.5	$307.2	$306.5
Institutional Clients Group			
Treasury and trade solutions (TTS)	$470.8	$456.7	$444.5
Banking ex-TTS	128.4	124.6	126.9
Markets and securities services	86.7	86.7	82.9
Total	$685.9	$668.0	$654.4
Total Corporate/Other	$13.3	$10.6	$12.4
Total Citigroup deposits (AVG)	$1,005.7	$985.7	$973.3
Total Citigroup deposits (EOP)	$1,013.2	$1,005.2	$959.8

(1) Includes deposits in certain EMEA countries for all periods presented.

End-of-period deposits increased 6% year-over-year and 1% quarter-over-quarter. On an average basis, deposits increased 3% year-over-year and 2% quarter-over-quarter.

Excluding the impact of FX translation, average deposits increased 5% year-over-year. In GCB, deposits increased 1%, as strong growth in Asia GCB and Latin America GCB more than offset a 1% decline in North America GCB, as clients transferred cash into investment accounts.

In ICG, deposits increased 6%, primarily driven by continued high-quality deposit growth in TTS.

Long-Term Debt

Long-term debt (generally defined as debt with original maturities of one year or more) represents the most significant component of Citi’s funding for the parent entities and is a supplementary source of funding for the bank entities.

Long-term debt is an important funding source due in part to its multi-year contractual maturity structure. The weighted-average maturity of unsecured long-term debt issued by Citigroup and its affiliates (including Citibank) with a remaining life greater than one year was approximately 6.8 years as of December 31, 2018, a slight decline from 6.9 years as of September 30, 2018 and unchanged from the prior year.

Citi’s long-term debt outstanding at the parent company includes senior and subordinated debt and what Citi refers to as customer-related debt, consisting of structured notes, such as equity- and credit-linked notes, as well as non-structured notes. Citi’s issuance of customer-related debt is generally driven by customer demand and supplements benchmark debt issuance as a source of funding for Citi’s non-bank entities.

Citi’s long-term debt at the bank also includes benchmark senior debt, FHLB advances and securitizations.

Long-Term Debt Outstanding

The following table details Citi’s end-of-period total long-term debt outstanding for each of the dates indicated:

In billions of dollars	Dec. 31, 2018	Sept. 30, 2018	Dec. 31, 2017
Parent and other(1)			
Benchmark debt:			
Senior debt	$104.6	$107.2	$109.8

Subordinated debt	24.5	25.1	26.9
Trust preferred	1.7	1.7	1.7
Customer-related debt	37.1	35.4	30.7
Local country and other(2)	2.9	3.8	1.8
Total parent and other	$170.8	$173.2	$170.9
Bank			
FHLB borrowings	$10.5	$10.5	$19.3
Securitizations(3)	28.4	27.4	30.3
CBNA benchmark senior debt	18.8	21.0	12.5
Local country and other(2)	3.5	3.2	3.7
Total bank	$61.2	$62.1	$65.8
Total long-term debt	$232.0	$235.3	$236.7

Note: Amounts represent the current value of long-term debt on Citi's Consolidated Balance Sheet which, for certain debt instruments, includes consideration of fair value, hedging impacts and unamortized discounts and premiums.

(1) "Parent and other" includes long-term debt issued to third parties by the parent holding company (Citigroup) and Citi's non-bank subsidiaries (including broker-dealer subsidiaries) that are consolidated into Citigroup. As of December 31, 2018, "parent and other" included $27.0 billion of long-term debt issued by Citi's broker-dealer subsidiaries.

(2) Local country debt includes debt issued by Citi's affiliates in support of their local operations.

(3) Predominantly credit card securitizations, primarily backed by Citi-branded credit card receivables.

Citi's total long-term debt outstanding decreased both year-over-year and quarter-over-quarter. The decrease year-over-year was primarily driven by a decline in long-term debt at the bank, as declines in FHLB advances more than offset an increase in unsecured senior benchmark debt. At the parent, long-term debt remained largely unchanged year-over-year, as declines in unsecured benchmark debt were largely offset by increases in customer-related debt. Quarter-over-quarter, the decrease was driven primarily by declines in unsecured senior debt at the parent and the bank.

As part of its liability management, Citi has considered, and may continue to consider, opportunities to repurchase its long-term debt pursuant to open market purchases, tender offers or other means. Such repurchases help reduce Citi's overall funding costs. During 2018, Citi repurchased an aggregate of approximately $5.4 billion of its outstanding long-term debt, including early redemptions of FHLB advances.

Long-Term Debt Issuances and Maturities

The table below details Citi's long-term debt issuances and maturities (including repurchases and redemptions) during the periods presented:

	2018		2017		2016	
In billions of dollars	Maturities	Issuances	Maturities	Issuances	Maturities	Issuances
Parent and other						
Benchmark debt:						
Senior debt	$18.5	$ 14.8	$14.1	$ 21.6	$14.9	$ 26.0
Subordinated debt	2.9	0.6	1.6	1.3	3.2	4.0
Customer-related debt	6.6	16.9	7.6	12.3	10.2	10.5
Local country and other	1.2	2.3	1.2	0.1	2.1	2.2
Total parent and other	$29.2	$ 34.6	$24.5	$ 35.3	$30.4	$ 42.7
Bank						
FHLB borrowings	$15.8	$ 7.9	$7.8	$ 5.5	$10.5	$ 14.3
Securitizations	8.6	6.8	5.3	12.2	10.7	3.3
CBNA benchmark senior debt	2.3	8.5	—	12.6	—	—
Local country and other	2.2	2.9	3.4	2.4	3.9	3.4
Total bank	$28.9	$ 26.1	$16.5	$ 32.7	$25.1	$ 21.0
Total	$58.1	$ 60.7	$41.0	$ 68.0	$55.5	$ 63.7

The table below shows Citi's aggregate long-term debt maturities (including repurchases and redemptions) in 2018, as well as its aggregate expected annual long-term debt maturities as of December 31, 2018:

	Maturities							
In billions of dollars	2018	2019	2020	2021	2022	2023	Thereafter	Total
Parent and other								
Benchmark debt:								
Senior debt	$18.5	$14.1	$8.8	$14.1	$8.1	$12.5	$ 46.9	$104.6
Subordinated debt	2.9	—	—	—	0.7	1.1	22.6	24.5
Trust preferred	—	—	—	—	—	—	1.7	1.7
Customer-related debt	6.6	3.7	6.8	3.4	2.6	2.8	17.8	37.1
Local country and other	1.2	2.0	0.1	0.2	0.1	—	0.7	2.9
Total parent and other	$29.2	$19.8	$15.7	$17.7	$11.5	$16.4	$ 89.7	$170.8
Bank								
FHLB borrowings	$15.8	$5.6	$4.9	$—	$—	$—	$ —	$10.5
Securitizations	8.6	7.9	6.0	5.7	2.2	2.5	4.0	28.4
CBNA benchmark senior debt	2.3	4.7	8.7	5.0	—	—	0.3	18.8
Local country and other	2.2	0.6	2.0	0.2	0.4	0.1	0.4	3.5
Total bank	$28.9	$18.8	$21.6	$10.9	$2.6	$2.6	$ 4.7	$61.2
Total long-term debt	$58.1	$38.6	$37.3	$28.6	$14.1	$19.0	$ 94.4	$232.0

Resolution Plan
Citi is required under Title I of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank Act) and the rules promulgated by the FDIC and FRB to periodically submit a plan for Citi's rapid and orderly resolution under the U.S. Bankruptcy Code in the event of material financial distress or failure. For additional information on Citi's resolution plan submissions, see "Risk Factors—Strategic Risks" above. Citigroup's preferred resolution strategy is "single point of entry" under the U.S. Bankruptcy Code.
Under Citi's resolution plan, only Citigroup, the parent holding company, would enter into bankruptcy, while Citigroup's material legal entities (as defined in the public section of its 2017 resolution plan, which can be found on the FRB's and FDIC's websites) would remain operational and outside of any resolution or insolvency proceedings. Citigroup believes its resolution plan has been designed to minimize the risk of systemic impact to the U.S. and global financial systems, while maximizing the value of the bankruptcy estate for the benefit of Citigroup's creditors, including its unsecured long-term debt holders. In addition, in line with the Federal Reserve's final total loss-absorbing capacity (TLAC) rule, Citigroup believes it has developed the resolution plan so that Citigroup's shareholders and unsecured creditors—including its unsecured long-term debt holders—bear any losses resulting from Citigroup's bankruptcy. Accordingly, any value realized by holders of its unsecured long-term debt may not be sufficient to repay the amounts owed to such debt holders in the event of a bankruptcy or other resolution proceeding of Citigroup.
The FDIC has also indicated that it was developing a single point of entry strategy to implement its resolution authority under Title II of the Dodd-Frank Act.
In response to feedback received from the Federal Reserve and FDIC on Citigroup's 2015 resolution plan, Citigroup took the following actions in connection with its 2017 resolution plan submission:

(i) Citicorp LLC (Citicorp), an existing wholly owned subsidiary of Citigroup, was established as an intermediate holding company (an IHC) for certain of Citigroup's operating material legal entities;
(ii) Citigroup executed an inter-affiliate agreement with Citicorp, Citigroup's operating material legal entities and certain other affiliated entities pursuant to which Citicorp is required to provide liquidity and capital support to Citigroup's operating material legal entities in the event Citigroup were to enter bankruptcy proceedings (Citi Support Agreement);
(iii) pursuant to the Citi Support Agreement:

- Citigroup made an initial contribution of assets, including certain high-quality liquid assets and inter-affiliate loans (Contributable Assets), to Citicorp, and Citicorp became the business as usual funding vehicle for Citigroup's operating material legal entities;
- Citigroup will be obligated to continue to transfer Contributable Assets to Citicorp over time, subject

to certain amounts retained by Citigroup to, among other things, meet Citigroup's near-term cash needs;
- in the event of a Citigroup bankruptcy, Citigroup will be required to contribute most of its remaining assets to Citicorp; and

(iv) the obligations of both Citigroup and Citicorp under the Citi Support Agreement, as well as the Contributable Assets, are secured pursuant to a security agreement.

The Citi Support Agreement provides two mechanisms, besides Citicorp's issuing of dividends to Citigroup, pursuant to which Citicorp will be required to transfer cash to Citigroup during business as usual so that Citigroup can fund its debt service as well as other operating needs: (i) one or more funding notes issued by Citicorp to Citigroup and (ii) a committed line of credit under which Citicorp may make loans to Citigroup.

Total Loss-Absorbing Capacity (TLAC)
In 2016, the Federal Reserve Board imposed minimum external TLAC and long-term debt (LTD) requirements on U.S. global systemically important bank holding companies (GSIBs), including Citi, effective as of January 1, 2019.

As a result, U.S. GSIBs will be required to maintain minimum levels of TLAC and eligible LTD, each set by reference to the GSIB's consolidated risk-weighted assets (RWA) and total leverage exposure, as described further below. The intended purpose of the requirements is to facilitate the orderly resolution of U.S. GSIBs under the U.S. Bankruptcy Code and Title II of the Dodd-Frank Act. Citi believes it exceeded the minimum TLAC and LTD requirements as of December, 31, 2018. For additional information, see "Risk Factors—Compliance, Conduct and Legal Risks" above.

Minimum TLAC Requirements

The minimum TLAC requirement is the greater of (i) 18% of the GSIB's RWA plus the then-applicable RWA-based TLAC buffer (see below) and (ii) 7.5% of the GSIB's total leverage exposure plus a leveraged-based TLAC buffer of 2% (i.e., 9.5%).

The RWA-based TLAC buffer equals the 2.5% capital conservation buffer, plus any applicable countercyclical capital buffer (currently 0%), plus the GSIB's capital surcharge as determined under method 1 of the GSIB surcharge rule (2.0% for Citi for 2019). Accordingly, Citi estimates its total current minimum TLAC requirement is 22.5% of RWA for 2019.

Minimum Eligible LTD Requirements

The minimum LTD requirement is the greater of (i) 6% of the GSIB's RWA plus its capital surcharge as determined under method 2 of the GSIB surcharge rule (3.0% for Citi for 2019), for a total current requirement of 9% of RWA for Citi, and (ii) 4.5% of the GSIB's total leverage exposure.

For additional discussion of the method 1 and method 2 GSIB capital surcharge methodologies, see "Capital Resources—Current Regulatory Capital Standards" above.

Secured Funding Transactions and Short-Term Borrowings

Citi supplements its primary sources of funding with short-term borrowings. Short-term borrowings generally include (i) secured funding transactions (securities loaned or sold under agreements to repurchase, or repos) and (ii) to a lesser extent, short-term borrowings consisting of commercial paper and borrowings from the FHLB and other market participants (see Note 17 to the Consolidated Financial Statements for further information on Citigroup's and its affiliates' outstanding short-term borrowings).

Outside of secured funding transactions, Citi's short-term borrowings decreased both year-over-year (27% decrease) and quarter-over-quarter (4% decrease), driven primarily by Citi's continued efforts to optimize its funding profile.

Secured Funding

Secured funding is primarily accessed through Citi's broker-dealer subsidiaries to efficiently fund both (i) secured lending activity and (ii) a portion of the securities inventory held in the context of market making and customer activities. Citi also executes a smaller portion of its secured funding transactions through its bank entities, which is typically collateralized by foreign government debt securities. Generally, daily changes in the level of Citi's secured funding are primarily due to fluctuations in secured lending activity in the matched book (as described below) and securities inventory.

Secured funding of $178 billion as of December 31, 2018 increased 14% from the prior year and 1% from the prior quarter. Excluding the impact of FX translation, secured funding increased 17% from the prior year and 2% from the prior quarter, both driven by normal business activity. Average balances for secured funding were $177 billion for the quarter ended December 31, 2018.

The portion of secured funding in the broker-dealer subsidiaries that funds secured lending is commonly referred to as "matched book" activity. The majority of this activity is secured by high-quality liquid securities such as U.S. Treasury securities, U.S. agency securities and foreign government debt securities. Other secured funding is secured by less-liquid securities, including equity securities, corporate bonds and asset-backed securities. The tenor of Citi's matched book liabilities is generally equal to or longer than the tenor of the corresponding matched book assets.

The remainder of the secured funding activity in the broker-dealer subsidiaries serves to fund securities inventory held in the context of market making and customer activities. To maintain reliable funding under a wide range of market conditions, including under periods of stress, Citi manages these activities by taking into consideration the quality of the underlying collateral and stipulating financing tenor. The weighted average maturity of Citi's secured funding of less-liquid securities inventory was greater than 110 days as of December 31, 2018.

Citi manages the risks in its secured funding by conducting daily stress tests to account for changes in capacity, tenors, haircut, collateral profile and client actions. Additionally, Citi maintains counterparty diversification by establishing concentration triggers and assessing counterparty reliability and stability under stress. Citi generally sources secured funding from more than 150 counterparties.

Overall Short-Term Borrowings

The following table contains the year-end, average and maximum month-end amounts for the following respective short-term borrowings categories at the end of each of the three prior years:

	Federal funds purchased and securities sold under agreements to repurchase			Short-term borrowings[(1)] Commercial paper[(2)]			Other short-term borrowings[(3)]		
In billions of dollars	2018	2017	2016	2018	2017	2016	2018	2017	2016
Amounts outstanding at year end	$177.8	$156.3	$141.8	$13.2	$9.9	$10.0	$19.1	$34.5	$20.7
Average outstanding during the year[(4)(5)]	172.1	157.7	158.1	11.8	10.0	10.0	26.5	23.2	14.8
Maximum month-end outstanding	191.2	163.0	171.7	13.2	10.1	10.2	34.0	34.5	20.9
Weighted-average interest rate									
During the year[(4)(5)(6)]	2.84 %	1.69 %	1.21 %	2.19 %	1.27 %	0.80 %	4.17 %	2.81 %	2.32 %
At year end[(7)]				1.95	1.28	0.79	2.99	1.62	1.39

(1) Original maturities of less than one year.

(2) Substantially all commercial paper outstanding was issued by certain Citibank entities for the periods presented.

(3) Other short-term borrowings include borrowings from the FHLB and other market participants.

(4) Interest rates and amounts include the effects of risk management activities associated with the respective liability categories.

(5) Average volumes of securities sold under agreements to repurchase are reported net pursuant to ASC 210-20-45; average rates exclude the impact of ASC 210-20-45.

(6) Average rates reflect prevailing local interest rates, including inflationary effects and monetary correction in certain countries.

(7) Based on contractual rates at respective year ends; non-interest-bearing accounts are excluded from the weighted average interest rate calculated at year end.

Credit Ratings
Citigroup’s funding and liquidity, funding capacity, ability to access capital markets and other sources of funds, the cost of these funds and its ability to maintain certain deposits are partially dependent on its credit ratings.
The table below shows the ratings for Citigroup and Citibank as of December 31, 2018. While not included in the table below, the long- and short-term ratings of Citigroup Global Markets Holding Inc. (CGMHI) were BBB+/A-2 at Standard & Poor’s and A/F1 at Fitch as of December 31, 2018.

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	Citigroup Inc.			Citibank, N.A.		
Ratings as of December 31, 2018	Senior debt	Commercial paper	Outlook	Long-term	Short-term	Outlook
Fitch Ratings (Fitch)	A	F1	Stable	A+	F1	Stable
Moody’s Investors Service (Moody’s)	Baa1	P-2	Under review	A1	P-1	Under review
Standard & Poor’s (S&P)	BBB+	A-2	Stable	A+	A-1	Stable

Recent Credit Ratings Developments
On November 29, 2018, Moody's placed the long-term ratings of Citigroup and Citibank, N.A. on "Review for Possible Upgrade." Over the course of the review period, Moody’s will assess, among other things, Citi’s ability to achieve its medium-term efficiency and profitability targets while maintaining strong governance and risk controls.
On February 21, 2019, Moody’s upgraded the ratings for long-term debt, deposits and counterparty risk of Citigroup and certain of its subsidiaries, as well as the baseline credit assessment (BCA) of Citibank, N.A. In addition, Moody's affirmed all short-term ratings and assessments of Citigroup and those subsidiaries. The ratings outlook was changed to “Stable” from “Review for Possible Upgrade.”

Potential Impacts of Ratings Downgrades
Ratings downgrades by Moody’s, Fitch or S&P could negatively impact Citigroup’s and/or Citibank’s funding and liquidity due to reduced funding capacity, including derivative triggers, which could take the form of cash obligations and collateral requirements.
The following information is provided for the purpose of analyzing the potential funding and liquidity impact to Citigroup and Citibank of a hypothetical, simultaneous
ratings downgrade across all three major rating agencies. This analysis is subject to certain estimates, estimation methodologies, judgments and uncertainties. Uncertainties include potential ratings limitations that certain entities may have with respect to permissible counterparties, as well as general subjective counterparty behavior. For example, certain corporate customers and markets counterparties could re-evaluate their business relationships with Citi and limit transactions in certain contracts or market instruments with Citi. Changes in counterparty behavior could impact Citi’s funding and liquidity, as well as the results of operations of certain of its businesses. The actual impact to Citigroup or Citibank is unpredictable and may differ materially from the potential funding and liquidity impacts described below. For additional information on the impact of credit rating changes

on Citi and its applicable subsidiaries, see “Risk Factors—Liquidity Risks” above.

Citigroup Inc. and Citibank—Potential Derivative Triggers
As of December 31, 2018, Citi estimates that a hypothetical one-notch downgrade of the senior debt/long-term rating of Citigroup Inc. across all three major rating agencies could impact Citigroup’s funding and liquidity due to derivative triggers by approximately $0.2 billion, compared to $0.4 billion as of September 30, 2018. Other funding sources, such as secured financing transactions and other margin requirements, for which there are no explicit triggers, could also be adversely affected.
As of December 31, 2018, Citi estimates that a hypothetical one-notch downgrade of the senior debt/long-term rating of Citibank across all three major rating agencies could impact Citibank’s funding and liquidity by approximately $0.5

billion, compared to $1.2 billion as of September 30, 2018.
In total, Citi estimates that a one-notch downgrade of Citigroup and Citibank, across all three major rating agencies, could result in increased aggregate cash obligations and collateral requirements of approximately $0.7 billion, compared to $1.6 billion as of September 30, 2018 (see also Note 22 to the Consolidated Financial Statements). As detailed under "High-Quality Liquid Assets" above, the liquidity resources that are eligible for inclusion in the calculation of Citi's consolidated HQLA were approximately $339 billion for Citibank and $65 billion for Citi's non-bank and other entities, for a total of approximately $404 billion as of December 31, 2018. These liquidity resources are available in part as a contingency for the potential events described above.
In addition, a broad range of mitigating actions are currently included in Citigroup's and Citibank's contingency funding plans. For Citigroup, these mitigating factors include, but are not limited to, accessing surplus funding capacity from existing clients, tailoring levels of secured lending and adjusting the size of select trading books and collateralized borrowings from certain Citibank subsidiaries. Mitigating actions available to Citibank include, but are not limited to,

selling or financing highly liquid government securities, tailoring levels of secured lending, adjusting the size of select trading assets, reducing loan originations and renewals, raising additional deposits or borrowing from the FHLB or central banks. Citi believes these mitigating actions could substantially reduce the funding and liquidity risk, if any, of the potential downgrades described above.

Citibank—Additional Potential Impacts

In addition to the above derivative triggers, Citi believes that a potential downgrade of Citibank's senior debt/long-term rating across any of the three major rating agencies could also have an adverse impact on the commercial paper/short-term rating of Citibank. As of December 31, 2018, Citibank had liquidity commitments of approximately $13.2 billion to consolidated asset-backed commercial paper conduits, compared to $12.1 billion as of September 30, 2018 (as referenced in Note 21 to the Consolidated Financial Statements).

In addition to the above-referenced liquidity resources of certain Citibank entities, Citibank could reduce the funding and liquidity risk, if any, of the potential downgrades described above through mitigating actions, including repricing or reducing certain commitments to commercial paper conduits. In the event of the potential downgrades described above, Citi believes that certain corporate customers could re-evaluate their deposit relationships with Citibank. This re-evaluation could result in clients adjusting their discretionary deposit levels or changing their depository institution, which could potentially reduce certain deposit levels at Citibank. However, Citi could choose to adjust pricing, offer alternative deposit products to its existing customers or seek to attract deposits from new customers, in addition to the mitigating actions referenced above.

MARKET RISK

Overview

Market risk is the potential for losses arising from changes in the value of Citi's assets and liabilities resulting from changes in market variables such as interest rates, foreign exchange rates, equity prices, commodity prices and credit spreads, as well as their implied volatilities. Market risk emanates from both Citi's trading and non-trading portfolios. For additional information on market risk, see "Risk Factors" above.

Each business is required to establish, with approval from Citi's market risk management, a market risk limit framework for identified risk factors that clearly defines approved risk profiles and is within the parameters of Citi's overall risk appetite. These limits are monitored by the Risk organization, Citi's country and business Asset and Liability Committees and the Citigroup Asset and Liability Committee. In all cases, the businesses are ultimately responsible for the market risks taken and for remaining within their defined limits.

Market Risk of Non-Trading Portfolios

Market risk from non-trading portfolios stems from the potential impact of changes in interest rates and foreign exchange rates on Citi's net interest revenues, the changes in Accumulated other comprehensive income (loss) (AOCI) from its debt securities portfolios and capital invested in foreign currencies.

Net Interest Revenue at Risk

Net interest revenue, for interest rate exposure purposes, is the difference between the yield earned on the non-trading portfolio assets (including customer loans) and the rate paid on the liabilities (including customer deposits or company borrowings). Net interest revenue is affected by changes in the level of interest rates, as well as the amounts and mix of assets and liabilities, and the timing of contractual and assumed repricing of assets and liabilities to reflect market rates.

Citi's principal measure of risk to net interest revenue is interest rate exposure (IRE). IRE measures the change in expected net interest revenue in each currency resulting solely from unanticipated changes in forward interest rates. Citi's estimated IRE incorporates various assumptions including prepayment rates on loans, customer behavior and the impact of pricing decisions. For example, in rising interest rate scenarios, portions of the deposit portfolio may be assumed to experience rate increases that are less than the change in market interest rates. In declining interest rate scenarios, it is assumed that mortgage portfolios experience higher prepayment rates. IRE assumes that businesses and/or Citi Treasury make no additional changes in balances or positioning in response to the unanticipated rate changes.

In order to manage changes in interest rates effectively, Citi may modify pricing on new customer loans and deposits, purchase fixed-rate securities, issue debt that is either fixed or floating or enter into derivative transactions that have the opposite risk exposures. Citi regularly assesses the viability of these and other strategies to reduce its interest rate risks and

implements such strategies when it believes those actions are prudent.

Citi manages interest rate risk as a consolidated Company-wide position. Citi's client-facing businesses create interest rate sensitive positions, including loans and deposits, as part of their ongoing activities. Citi Treasury aggregates these risk positions and manages them centrally. Operating within established limits, Citi Treasury makes positioning decisions and uses tools, such as Citi's investment securities portfolio, company-issued debt and interest rate derivatives, to target the desired risk profile. Changes in Citi's interest rate risk position reflect the accumulated changes in all non-trading assets and liabilities, with potentially large and offsetting impacts, as well as in Citi Treasury's positioning decisions.

Citigroup employs additional measurements, including stress testing the impact of non-linear interest rate movements on the value of the balance sheet; the analysis of portfolio duration and volatility, particularly as they relate to mortgage loans and mortgage-backed securities, and the potential impact of the change in the spread between different market indices.

Interest Rate Risk of Investment Portfolios—Impact
on AOCI

Citi also measures the potential impacts of changes in interest rates on the value of its AOCI, which can in turn impact Citi's common equity and tangible common equity. This will impact Citi's Common Equity Tier 1 and other regulatory capital ratios. Citi's goal is to benefit from an increase in the market level of interest rates, while limiting the impact of changes in AOCI on its regulatory capital position.

AOCI at risk is managed as part of the Company-wide interest rate risk position. AOCI at risk considers potential changes in AOCI (and the corresponding impact on the Common Equity Tier 1 Capital ratio) relative to Citi's capital generation capacity.

The following table shows the estimated impact to Citi's net interest revenue, AOCI and the Common Equity Tier 1 Capital ratio, each assuming an unanticipated parallel instantaneous 100 bps increase in interest rates:

In millions of dollars, except as otherwise noted	Dec. 31, 2018	Sept. 30, 2018	Dec. 31, 2017
Estimated annualized impact to net interest revenue			
U.S. dollar(1)	$758	$879	$1,471
All other currencies	661	649	598
Total	$1,419	$1,528	$2,069
As a percentage of average interest-earning assets	0.08 %	0.09 %	0.12 %
Estimated initial impact to AOCI (after-tax)(2)(3)	$(3,920)	$(4,597)	$(4,853)
Estimated initial impact on Common Equity Tier 1 Capital ratio (bps)(3)	(28)	(31)	(35)

(1) Certain trading-oriented businesses within Citi have accrual-accounted positions that are excluded from the estimated impact to net interest revenue in the table, since these exposures are managed economically in combination with mark-to-market positions. The U.S. dollar interest rate exposure associated with these businesses was $(242) million for a 100 bps instantaneous increase in interest rates as of December 31, 2018.

(2) Includes the effect of changes in interest rates on AOCI related to investment securities, cash flow hedges and pension liability adjustments.

(3) Results as of December 31, 2017 reflect the impact of Tax Reform, including the lower expected effective tax rate and the impact to Citi's DTA position.

The 2018 decrease in the estimated impact to net interest revenue primarily reflected changes in Citi's balance sheet composition, including increased sensitivity in deposits combined with loan growth, and Citi Treasury positioning. The 2018 changes in the estimated impact to AOCI and the Common Equity Tier 1 Capital ratio primarily reflected the impact of the composition of Citi Treasury's investment and derivatives portfolio.

In the event of an unanticipated parallel instantaneous 100 bps increase in interest rates, Citi expects that the negative impact to AOCI would be offset in shareholders' equity

through the combination of expected incremental net interest revenue and the expected recovery of the impact on AOCI through accretion of Citi's investment portfolio over a period of time. As of December 31, 2018, Citi expects that the negative $3.9 billion impact to AOCI in such a scenario could potentially be offset over approximately 18 months.

The following table shows the estimated impact to Citi's net interest revenue, AOCI and the Common Equity Tier 1 Capital ratio under four different changes in interest rate scenarios for the U.S. dollar and Citi's other currencies.

In millions of dollars, except as otherwise noted	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Overnight rate change (bps)	100	100	—	—
10-year rate change (bps)	100	—	100	(100)
Estimated annualized impact to net interest revenue				
U.S. dollar	$758	$755	$40	$(52)
All other currencies	661	585	37	(36)
Total	$1,419	$1,340	$77	$(88)
Estimated initial impact to AOCI (after-tax)(1)	$(3,920)	$(2,405)	$(1,746)	$1,252
Estimated initial impact to Common Equity Tier 1 Capital ratio (bps)	(28)	(16)	(14)	9

Note: Each scenario assumes that the rate change will occur instantaneously. Changes in interest rates for maturities between the overnight rate and the 10-year rate are interpolated.

(1) Includes the effect of changes in interest rates on AOCI related to investment securities, cash flow hedges and pension liability adjustments.

As shown in the table above, the magnitude of the impact to Citi's net interest revenue and AOCI is greater under scenario 2 as compared to scenario 3. This is because the combination of changes to Citi's investment portfolio, partially offset by changes related to Citi's pension liabilities, results in a net position that is more sensitive to rates at shorter- and intermediate-term maturities.

Changes in Foreign Exchange Rates—Impacts on AOCI and Capital

As of December 31, 2018, Citi estimates that an unanticipated parallel instantaneous 5% appreciation of the U.S. dollar against all of the other currencies in which Citi has invested capital could reduce Citi's tangible common equity (TCE) by approximately $1.4 billion, or 1.0%, as a result of changes to Citi's foreign currency translation adjustment in AOCI, net of hedges. This impact would be primarily due to changes in the value of the Mexican peso, the Euro and the Australian dollar.

This impact is also before any mitigating actions Citi may take, including ongoing management of its foreign currency translation exposure. Specifically, as currency movements change the value of Citi's net investments in foreign currency-denominated capital, these movements also change the value of Citi's risk-weighted assets denominated in those currencies. This, coupled with Citi's foreign currency hedging strategies, such as foreign currency borrowings, foreign currency forwards and other currency hedging instruments, lessens the impact of foreign currency movements on Citi's Common Equity Tier 1 Capital ratio. Changes in these hedging strategies, as well as hedging costs, divestitures and tax impacts, can further affect the actual impact of changes in foreign exchange rates on Citi's capital as compared to an unanticipated parallel shock, as described above.

The effect of Citi's ongoing management strategies with respect to changes in foreign exchange rates and the impact of these changes on Citi's TCE and Common Equity Tier 1 Capital ratio are shown in the table below. For additional information on the changes in AOCI, see Note 19 to the Consolidated Financial Statements.

	For the quarter ended		
In millions of dollars, except as otherwise noted	Dec. 31, 2018	Sept. 30, 2018	Dec. 31, 2017
Change in FX spot rate[(1)]	(1.6)%	(0.2)%	(1.2)%
Change in TCE due to FX translation, net of hedges	$(491)	$(354)	$(498)
As a percentage of TCE	(0.3)%	(0.2)%	(0.3)%
Estimated impact to Common Equity Tier 1 Capital ratio (on a fully implemented basis) due to changes in FX translation, net of hedges (bps)	(1)	—	(5)

(1) FX spot rate change is a weighted average based upon Citi's quarterly average GAAP capital exposure to foreign countries.

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Interest Revenue/Expense and Net Interest Margin

In millions of dollars, except as otherwise noted	2018	2017	2016	Change 2018 vs. 2017	Change 2017 vs. 2016
Interest revenue[1]	$71,082	$62,075	$58,450	15 %	6 %
Interest expense[2]	24,266	16,518	12,512	47	32
Net interest revenue	$46,816	$45,557	$45,938	3 %	(1)%
Interest revenue—average rate	4.08 %	3.71 %	3.67 %	37 bps	4 bps
Interest expense—average rate	1.77	1.28	1.03	49 bps	25 bps
Net interest margin[3]	2.69	2.73	2.88	(4) bps	(15) bps
Interest rate benchmarks					
Two-year U.S. Treasury note—average rate	2.53 %	1.40 %	0.83 %	113 bps	57 bps
10-year U.S. Treasury note—average rate	2.91	2.33	1.83	58 bps	50 bps
10-year vs. two-year spread	38 bps	93 bps	100 bps		

Note: All interest expense amounts include FDIC insurance assessments, as well as similar deposit insurance assessments outside of the U.S. As of the fourth quarter of 2018, Citi's FDIC surcharge was eliminated (approximately $130 million per quarter).

(1) Net interest revenue includes the taxable equivalent adjustments related to the tax-exempt bond portfolio (based on the U.S. federal statutory tax rates of 21% in 2018 and 35% in 2017 and 2016) of $254 million, $496 million and $462 million for 2018, 2017 and 2016, respectively.

(2) Interest expense associated with certain hybrid financial instruments, which are classified as Long-term debt and accounted for at fair value, is reported together with any changes in fair value as part of Principal transactions in the Consolidated Statements of Income and is therefore not reflected in Interest expense in the table above.

(3) Citi's net interest margin (NIM) is calculated by dividing net interest revenue by average interest-earning assets.

Citi's net interest revenue in the fourth quarter of 2018 increased 5% to $11.9 billion ($12.0 billion on a taxable equivalent basis) versus the prior-year period. Excluding the impact of FX translation, net interest revenue increased 8%, or approximately $0.9 billion. This increase was primarily due to higher net interest revenue ($11.7 billion, up approximately 14% or $1.4 billion) from Citi's core accrual activities, which is mainly generated by its deposit and lending businesses. The increase in core accrual net interest revenue was partially offset by lower trading-related net interest revenue ($0.1 billion, down approximately 83% or $0.4 billion), largely due to higher wholesale funding costs, and lower net interest revenue associated with the wind-down of legacy assets in Corporate/Other ($0.1 billion, down approximately 45% or

$0.1 billion). The increase in core accrual net interest revenue was mainly driven by the deployment of cash into better yielding assets, including loans, an improved loan mix and higher interest rates, as well as the impact of elimination of the FDIC surcharge. As previously disclosed, in 2016, the FDIC commenced imposing a surcharge on depository institutions, including Citibank, to increase the deposit insurance fund reserve ratio until it reached 1.35%, which occurred as of the end of the third quarter of 2018.

Citi's net interest revenue for the full year increased 3% to $46.6 billion ($46.8 billion on a taxable equivalent basis) versus the prior year. Excluding the impact of FX translation, Citi's net interest revenue increased by approximately $2.0 billion, as higher core accrual net interest revenue (approximately $44.1 billion, up 10% or $4.1 billion) was offset by lower trading-related net interest revenue (approximately $1.0 billion, down 62% or $1.7 billion), largely driven by higher wholesale funding costs, and lower net interest revenue associated with legacy assets in Corporate/Other (approximately $0.8 billion, down 38% or $0.5 billion). The increase in core accrual net interest revenue was primarily due to loan growth, an improved loan mix, and higher interest rates.

Citi's NIM was 2.71% on a taxable equivalent basis in the fourth quarter of 2018, an increase of 1 basis point (bp) from the third quarter of 2018, driven primarily by the increase in core accrual net interest revenue, and the impact of the elimination of the FDIC surcharge, partially offset by lower trading-related NIM. Citi's core accrual NIM was 3.72%, an increase of 12 bps from the third quarter of 2018, primarily driven by the deployment of cash into better yielding assets, including loans, an improved loan mix and higher interest rates, as well as the impact of elimination of the FDIC surcharge. On a full-year basis, Citi's NIM was 2.69% on a taxable equivalent basis, compared to 2.73% in 2017, a decrease of 4 bps. Citi's full-year core accrual NIM was 3.61%, an increase of 13 bps from the prior year, primarily driven by loan growth, an improved loan mix and higher interest rates. (Citi's core accrual net interest revenue and core accrual NIM are non-GAAP financial measures. Citi believes the presentation of its net interest revenue and NIM on a core accrual basis provides a meaningful depiction for investors of the underlying fundamentals of its businesses).

Additional Interest Rate Details
Average Balances and Interest Rates—Assets[1][2][3]
Taxable Equivalent Basis

	Average volume			Interest revenue			% Average rate		
In millions of dollars, except rates	2018	2017	2016	2018	2017	2016	2018	2017	2016
Assets									
Deposits with banks[4]	$177,294	$169,385	$131,925	$2,203	$1,635	$971	1.24%	0.97%	0.74%
Federal funds sold and securities borrowed or purchased under agreements to resell[5]									
In U.S. offices	$149,879	$141,308	$147,940	$3,818	$1,922	$1,483	2.55%	1.36%	1.00%
In offices outside the U.S.[4]	117,695	106,606	85,142	1,674	1,327	1,060	1.42	1.24	1.24
Total	$267,574	$247,914	$233,082	$5,492	$3,249	$2,543	2.05%	1.31%	1.09%
Trading account assets[6][7]									
In U.S. offices	$94,065	$99,755	$105,774	$3,706	$3,531	$3,791	3.94%	3.54%	3.58%
In offices outside the U.S.[4]	115,601	104,197	98,832	2,615	2,117	2,095	2.26	2.03	2.12
Total	$209,666	$203,952	$204,606	$6,321	$5,648	$5,886	3.01%	2.77%	2.88%
Investments									
In U.S. offices									
Taxable	$228,686	$226,227	$225,764	$5,331	$4,450	$3,980	2.33%	1.97%	1.76%
Exempt from U.S. income tax	17,199	18,152	19,079	706	775	693	4.10	4.27	3.63
In offices outside the U.S.[4]	104,033	106,040	106,159	3,600	3,309	3,157	3.46	3.12	2.97
Total	$349,918	$350,419	$351,002	$9,637	$8,534	$7,830	2.75%	2.44%	2.23%
Loans (net of unearned income)[8]									
In U.S. offices	$385,350	$371,711	$360,751	$28,627	$25,944	$24,240	7.43%	6.98%	6.72%
In offices outside the U.S.[4]	285,505	267,774	262,715	17,129	15,904	15,951	6.00	5.94	6.07
Total	$670,855	$639,485	$623,466	$45,756	$41,848	$40,191	6.82%	6.54%	6.45%
Other interest-earning assets[9]	$67,269	$60,626	$50,003	$1,673	$1,161	$1,029	2.49%	1.92%	2.06%
Total interest-earning assets	$1,742,576	$1,671,781	$1,594,084	$71,082	$62,075	$58,450	4.08%	3.71%	3.67%
Non-interest-earning assets[6]	$177,654	$203,657	$214,641						
Total assets	$1,920,230	$1,875,438	$1,808,725						

(1) Net interest revenue includes the taxable equivalent adjustments related to the tax-exempt bond portfolio (based on the U.S. federal statutory tax rates of 21% in 2018 and 35% in 2017 and 2016) of $254 million, $496 million and $462 million for 2018, 2017 and 2016, respectively.
(2) Interest rates and amounts include the effects of risk management activities associated with the respective asset categories.
(3) Monthly or quarterly averages have been used by certain subsidiaries where daily averages are unavailable.
(4) Average rates reflect prevailing local interest rates, including inflationary effects and monetary corrections in certain countries.
(5) Average volumes of securities borrowed or purchased under agreements to resell are reported net pursuant to ASC 210-20-45. However, Interest revenue excludes the impact of ASC 210-20-45.
(6) The fair value carrying amounts of derivative contracts are reported net, pursuant to ASC 815-10-45, in Non-interest-earning assets and Other non-interest-bearing liabilities.
(7) Interest expense on Trading account liabilities of ICG is reported as a reduction of Interest revenue. Interest revenue and Interest expense on cash collateral positions are reported in interest on Trading account assets and Trading account liabilities, respectively.
(8) Includes cash-basis loans.
(9) Includes brokerage receivables.

Average Balances and Interest Rates—Liabilities and Equity, and Net Interest Revenue[1][2][3]
Taxable Equivalent Basis

	Average volume			Interest expense			% Average rate		
In millions of dollars, except rates	2018	2017	2016	2018	2017	2016	2018	2017	2016
Liabilities									
Deposits									
In U.S. offices[4]	$338,060	$313,094	$288,817	$4,500	$2,530	$1,630	1.33%	0.81%	0.56%
In offices outside the U.S.[5]	453,793	436,949	429,608	5,116	4,057	3,670	1.13	0.93	0.85
Total	$791,853	$750,043	$718,425	$9,616	$6,587	$5,300	1.21%	0.88%	0.74%
Federal funds purchased and securities loaned or sold under agreements to repurchase[6]									
In U.S. offices	$102,843	$96,258	$100,472	$3,320	$1,574	$1,024	3.23%	1.64%	1.02%
In offices outside the U.S.[5]	69,264	61,434	57,588	1,569	1,087	888	2.27	1.77	1.54
Total	$172,107	$157,692	$158,060	$4,889	$2,661	$1,912	2.84%	1.69%	1.21%
Trading account liabilities[7][8]									
In U.S. offices	$37,305	$33,399	$29,481	$612	$380	$242	1.64%	1.14%	0.82%
In offices outside the U.S.[5]	58,919	57,149	44,669	389	258	168	0.66	0.45	0.38
Total	$96,224	$90,548	$74,150	$1,001	$638	$410	1.04%	0.70%	0.55%
Short-term borrowings[9]									
In U.S. offices	$85,009	$74,825	$61,015	$1,885	$684	$203	2.22%	0.91%	0.33%
In offices outside the U.S.[5]	23,402	22,837	19,184	324	375	274	1.38	1.64	1.43
Total	$108,411	$97,662	$80,199	$2,209	$1,059	$477	2.04%	1.08%	0.59%
Long-term debt[10]									
In U.S. offices	$197,933	$192,079	$175,342	$6,386	$5,382	$4,180	3.23%	2.80%	2.38%
In offices outside the U.S.[5]	4,895	4,615	6,426	165	191	233	3.37	4.14	3.63
Total	$202,828	$196,694	$181,768	$6,551	$5,573	$4,413	3.23%	2.83%	2.43%
Total interest-bearing liabilities	$1,371,423	$1,292,639	$1,212,602	$24,266	$16,518	$12,512	1.77%	1.28%	1.03%
Demand deposits in U.S. offices	$33,398	$37,824	$38,120						
Other non-interest-bearing liabilities[7]	315,862	316,129	328,538						
Total liabilities	$1,720,683	$1,646,592	$1,579,260						
Citigroup stockholders' equity	$198,681	$227,849	$228,346						
Noncontrolling interests	866	997	1,119						
Total equity	$199,547	$228,846	$229,465						
Total liabilities and stockholders' equity	$1,920,230	$1,875,438	$1,808,725						
Net interest revenue as a percentage of average interest-earning assets[11]									
In U.S. offices	$992,543	$970,439	$944,891	$28,157	$27,551	$27,929	2.84%	2.84%	2.96%
In offices outside the U.S.[5]	750,033	701,342	649,193	18,659	18,006	18,009	2.49	2.57	2.77
Total	$1,742,576	$1,671,781	$1,594,084	$46,816	$45,557	$45,938	2.69%	2.73%	2.88%

(1) Net interest revenue includes the taxable equivalent adjustments related to the tax-exempt bond portfolio (based on the U.S. federal statutory tax rates of 21% in 2018 and 35% in 2017 and 2016) of $254 million, $496 million and $462 million for 2018, 2017 and 2016, respectively.

(2) Interest rates and amounts include the effects of risk management activities associated with the respective liability categories.

(3) Monthly or quarterly averages have been used by certain subsidiaries where daily averages are unavailable.

(4) Consists of other time deposits and savings deposits. Savings deposits are made up of insured money market accounts, NOW accounts and other savings deposits. The interest expense on savings deposits includes FDIC

deposit insurance assessments.

(5) Average rates reflect prevailing local interest rates, including inflationary effects and monetary corrections in certain countries.

(6) Average volumes of securities sold under agreements to repurchase are reported net pursuant to ASC 210-20-45. However, Interest expense excludes the impact of ASC 210-20-45.

(7) The fair value carrying amounts of derivative contracts are reported net, pursuant to ASC 815-10-45, in Non-interest-earning assets and Other non-interest-bearing liabilities.

(8) Interest expense on Trading account liabilities of ICG is reported as a reduction of Interest revenue. Interest revenue and Interest expense on cash collateral positions are reported in interest on Trading account assets and Trading account liabilities, respectively.
(9) Includes brokerage payables.
(10) Excludes hybrid financial instruments and beneficial interests in consolidated VIEs that are classified as Long-term debt, as the changes in fair value for these obligations are recorded in Principal transactions.
(11) Includes allocations for capital and funding costs based on the location of the asset.

Analysis of Changes in Interest Revenue(1)(2)(3)
Taxable Equivalent Basis

In millions of dollars	2018 vs. 2017 Increase (decrease) due to change in: Average volume	Average rate	Net change	2017 vs. 2016 Increase (decrease) due to change in: Average volume	Average rate	Net change
Deposits with banks(4)	$79	$489	$568	$317	$347	$664
Federal funds sold and securities borrowed or purchased under agreements to resell						
In U.S. offices	$123	$1,773	$1,896	$(69)	$508	$439
In offices outside the U.S.(4)	146	201	347	267	—	267
Total	$269	$1,974	$2,243	$198	$508	$706
Trading account assets(5)						
In U.S. offices	$(209)	$384	$175	$(214)	$(46)	$(260)
In offices outside the U.S.(4)	245	253	498	111	(89)	22
Total	$36	$637	$673	$(103)	$(135)	$(238)
Investments(1)						
In U.S. offices	$32	$780	$812	$(9)	$561	$552
In offices outside the U.S.(4)	(64)	355	291	(4)	156	152
Total	$(32)	$1,135	$1,103	$(13)	$717	$704
Loans (net of unearned income)(6)						
In U.S. offices	$974	$1,709	$2,683	$749	$955	$1,704
In offices outside the U.S.(4)	1,062	163	1,225	304	(351)	(47)
Total	$2,036	$1,872	$3,908	$1,053	$604	$1,657
Other interest-earning assets(7)	$137	$375	$512	$207	$(75)	$132
Total interest revenue	$2,525	$6,482	$9,007	$1,659	$1,966	$3,625

(1) The taxable equivalent adjustment is related to the tax-exempt bond portfolio based on the U.S. federal statutory tax rates of 21% in 2018 and 35% in 2017 and 2016, and is included in this presentation.
(2) Rate/volume variance is allocated based on the percentage relationship of changes in volume and changes in rate to the total net change.
(3) Detailed average volume, Interest revenue and Interest expense exclude Discontinued operations. See Note 2 to the Consolidated Financial Statements.
(4) Changes in average rates reflect changes in prevailing local interest rates, including inflationary effects and monetary corrections in certain countries.
(5) Interest expense on Trading account liabilities of ICG is reported as a reduction of Interest revenue. Interest revenue and Interest expense on cash collateral positions are reported in interest on Trading account assets and Trading account liabilities, respectively.
(6) Includes cash-basis loans.
(7) Includes brokerage receivables.

Analysis of Changes in Interest Expense and Net Interest Revenue[1][2][3]
Taxable Equivalent Basis

In millions of dollars	2018 vs. 2017 Increase (decrease) due to change in: Average volume	Average rate	Net change	2017 vs. 2016 Increase (decrease) due to change in: Average volume	Average rate	Net change
Deposits						
In U.S. offices	$216	$1,754	$1,970	$147	$753	$900
In offices outside the U.S.[4]	162	897	1,059	64	323	387
Total	$378	$2,651	$3,029	$211	$1,076	$1,287
Federal funds purchased and securities loaned or sold under agreements to repurchase						
In U.S. offices	$115	$1,631	$1,746	$(45)	$595	$550
In offices outside the U.S.[4]	151	331	482	62	137	199
Total	$266	$1,962	$2,228	$17	$732	$749
Trading account liabilities[5]						
In U.S. offices	$49	$183	$232	$35	$103	$138
In offices outside the U.S.[4]	8	123	131	52	38	90
Total	$57	$306	$363	$87	$141	$228
Short-term borrowings[6]						
In U.S. offices	$105	$1,096	$1,201	$55	$426	$481
In offices outside the U.S.[4]	9	(60)	(51)	57	44	101
Total	$114	$1,036	$1,150	$112	$470	$582
Long-term debt						
In U.S. offices	$168	$836	$1,004	$424	$778	$1,202
In offices outside the U.S.[4]	11	(37)	(26)	(72)	30	(42)
Total	$179	$799	$978	$352	$808	$1,160
Total interest expense	$994	$6,754	$7,748	$779	$3,227	$4,006
Net interest revenue	$1,531	$(272)	$1,259	$880	$(1,261)	$(381)

(1) The taxable equivalent adjustment is related to the tax-exempt bond portfolio based on the U.S. federal statutory tax rate of 21% in 2018 and 35% in 2017 and 2016, and is included in this presentation.
(2) Rate/volume variance is allocated based on the percentage relationship of changes in volume and changes in rate to the total net change.
(3) Detailed average volume, Interest revenue and Interest expense exclude Discontinued operations. See Note 2 to the Consolidated Financial Statements.
(4) Changes in average rates reflect changes in prevailing local interest rates, including inflationary effects and monetary corrections in certain countries.
(5) Interest expense on Trading account liabilities of ICG is reported as a reduction of Interest revenue. Interest revenue and Interest expense on cash collateral positions are reported in interest on Trading account assets and Trading account liabilities, respectively.
(6) Includes brokerage payables.

Market Risk of Trading Portfolios
Trading portfolios include positions resulting from market making activities, hedges of certain available-for-sale (AFS) debt securities, the CVA relating to derivative counterparties and all associated hedges, fair value option loans, hedges to the loan portfolio within capital markets origination within ICG.
The market risk of Citi's trading portfolios is monitored using a combination of quantitative and qualitative measures, including, but not limited to:

- factor sensitivities;
- value at risk (VAR); and
- stress testing.

Each trading portfolio across Citi's businesses has its own market risk limit framework encompassing these measures and other controls, including trading mandates, new product

approval, permitted product lists, and pre-trade approval for larger, more complex and less liquid transactions.
The following chart of total daily trading-related revenue (loss) captures trading volatility and shows the number of days in which revenues for Citi's trading businesses fell within particular ranges. Trading-related revenue includes trading, net interest and other revenue associated with Citi's trading businesses. It excludes DVA, FVA and CVA adjustments incurred due to changes in the credit quality of counterparties, as well as any associated hedges to that CVA. In addition, it excludes fees and other revenue associated with capital markets origination activities.
Trading-related revenues are driven by both customer flows and the changes in valuation of the trading inventory. As shown in the chart, positive trading-related revenue was achieved for 98.1% of the trading days in 2018.

Daily Trading-Related Revenue (Loss)[(1)]— Twelve Months ended December 31, 2018
In millions of dollars

(1) Reflects the effects of asymmetrical accounting for economic hedges of certain AFS debt securities. Specifically, the change in the fair value of hedging derivatives is included in Trading-related revenue, while the offsetting change in the fair value of hedged AFS debt securities is included in AOCI and not reflected above.

Factor Sensitivities
Factor sensitivities are expressed as the change in the value of a position for a defined change in a market risk factor, such as a change in the value of a U.S. Treasury bill for a one-basis-point change in interest rates. Citi's market risk management, within the Risk organization, works to ensure that factor sensitivities are calculated, monitored and limited for all material risks taken in the trading portfolios.

Value at Risk (VAR)
VAR estimates, at a 99% confidence level, the potential decline in the value of a position or a portfolio under normal market conditions assuming a one-day holding period. VAR statistics, which are based on historical data, can be materially different across firms due to differences in portfolio composition, differences in VAR methodologies and differences in model parameters. As a result, Citi believes VAR statistics can be used more effectively as indicators of trends in risk-taking within a firm, rather than as a basis for inferring differences in risk-taking across firms.
Citi uses a single, independently approved Monte Carlo simulation VAR model (see "VAR Model Review and Validation" below), which has been designed to capture material risk sensitivities (such as first- and second-order sensitivities of positions to changes in market prices) of various asset classes/risk types (such as interest rate, credit spread, foreign exchange, equity and commodity risks). Citi's VAR includes positions which are measured at fair value; it does not include investment securities classified as AFS or

HTM. For information on these securities, see Note 13 to the Consolidated Financial Statements.
Citi believes its VAR model is conservatively calibrated to incorporate fat-tail scaling and the greater of short-term (approximately the most recent month) and long-term (three years) market volatility. The Monte Carlo simulation involves approximately 450,000 market factors, making use of approximately 350,000 time series, with sensitivities updated daily, volatility parameters updated intra-month and correlation parameters updated monthly. The conservative features of the VAR calibration contribute an approximate 20% add-on to what would be a VAR estimated under the assumption of stable and perfectly, normally distributed markets.
As shown in the table below, Citi's average trading VAR modestly decreased in 2018 compared to the prior year, mainly due to a minor reduction in average credit spreads, partially offset by a minor increase in interest rate exposure within ICG. Additionally, among secondary factors with limited contribution to Citi's average VAR, equity risk increased mainly due to exposure changes in the Equities business, partially offset by a modest decrease in commodity exposures within ICG. The decrease in Citi's average trading and credit portfolio VAR from 2018 was in line with the decrease in average trading VAR, as the average incremental impact of the credit portfolio was unchanged.

Year-end and Average Trading VAR and Trading and Credit Portfolio VAR

In millions of dollars	December 31, 2018	2018 Average	December 31, 2017	2017 Average
Interest rate	$ 48	$ 60	$ 69	$ 58
Credit spread	55	47	54	48
Covariance adjustment(1)	(23)	(24)	(25)	(20)
Fully diversified interest rate and credit spread(2)	$ 80	$ 83	$ 98	$ 86
Foreign exchange	18	25	25	25
Equity	25	22	17	15
Commodity	23	19	17	22
Covariance adjustment(1)	(66)	(67)	(63)	(64)
Total trading VAR—all market risk factors, including general and specific risk (excluding credit portfolios)(2)	$ 80	$ 82	$ 94	$ 84
Specific risk-only component(3)	$ 4	$ 4	$ —	$ 1
Total trading VAR—general market risk factors only (excluding credit portfolios)	$ 76	$ 78	$ 94	$ 83
Incremental impact of the credit portfolio(4)	$ 18	$ 10	$ 11	$ 10

Total trading and credit portfolio VAR	$ 98	$ 92	$ 105	$ 94

(1) Covariance adjustment (also known as diversification benefit) equals the difference between the total VAR and the sum of the VARs tied to each individual risk type. The benefit reflects the fact that the risks within each and across risk types are not perfectly correlated and, consequently, the total VAR on a given day will be lower than the sum of the VARs relating to each individual risk type. The determination of the primary drivers of changes to the covariance adjustment is made by an examination of the impact of both model parameter and position changes.

(2) The total trading VAR includes mark-to-market and certain fair value option trading positions in ICG, with the exception of hedges to the loan portfolio, fair value option loans and all CVA exposures. Available-for-sale and accrual exposures are not included.

(3) The specific risk-only component represents the level of equity and fixed income issuer-specific risk embedded in VAR.

(4) The credit portfolio is composed of mark-to-market positions associated with non-trading business units, the CVA relating to derivative counterparties and all associated CVA hedges. FVA and DVA are not included. The credit portfolio also includes hedges to the loan portfolio, fair value option loans and hedges within capital markets origination in ICG.

The table below provides the range of market factor VARs associated with Citi's total trading VAR, inclusive of specific risk:

	2018		2017	
In millions of dollars	Low	High	Low	High
Interest rate	$34	$89	$29	$97
Credit spread	38	64	38	63
Fully diversified interest rate and credit spread	$59	$118	$59	$109
Foreign exchange	13	44	16	49
Equity	15	33	6	27
Commodity	13	27	13	31
Total trading	$56	$120	$58	$116
Total trading and credit portfolio	66	124	67	123

Note: No covariance adjustment can be inferred as the high and low for each market factor will be from different close-of-business dates.

The following table provides the VAR for ICG, excluding the CVA relating to derivative counterparties, hedges of CVA, fair value option loans and hedges to the loan portfolio:

In millions of dollars	Dec. 31, 2018
Total—all market risk factors, including general and specific risk	$ 79
Average—during year	$ 81
High—during year	120
Low—during year	55

VAR Model Review and Validation

Generally, Citi's VAR review and model validation process entails reviewing the model framework, major assumptions and implementation of the mathematical algorithm. In addition, as part of the model validation process, product specific back-testing on portfolios is periodically completed and reviewed with Citi's U.S. banking regulators. Furthermore, Regulatory VAR back-testing (as described below) is performed against buy-and-hold profit and loss on a monthly basis for multiple sub-portfolios across the organization (trading desk level, ICG business segment and Citigroup) and the results are shared with U.S. banking regulators.

Significant VAR model and assumption changes must be independently validated within Citi's risk management organization. This validation process includes a review by model validation group within Citi's Model Risk Management. In the event of significant model changes, parallel model runs are undertaken prior to implementation. In addition, significant model and assumption changes are subject to the periodic reviews and approval by Citi's U.S. banking regulators.

Citi uses the same independently validated VAR model for both Regulatory VAR and Risk Management VAR (i.e., total trading and total trading and credit portfolios VARs) and, as such, the model review and validation process for both purposes is as described above.

Regulatory VAR, which is calculated in accordance with Basel III, differs from Risk Management VAR due to the fact that certain positions included in Risk Management VAR are not eligible for market risk treatment in Regulatory VAR. The

composition of Risk Management VAR is discussed under "Value at Risk" above. The applicability of the VAR model for positions eligible for market risk treatment under U.S. regulatory capital rules is periodically reviewed and approved by Citi's U.S. banking regulators.

In accordance with Basel III, Regulatory VAR includes all trading book-covered positions and all foreign exchange and commodity exposures. Pursuant to Basel III, Regulatory VAR excludes positions that fail to meet the intent and ability to trade requirements and are therefore classified as non-trading book and categories of exposures that are specifically excluded as covered positions. Regulatory VAR excludes CVA on derivative instruments and DVA on Citi's own fair value option liabilities. CVA hedges are excluded from Regulatory VAR and included in credit risk-weighted assets as computed under the Advanced Approaches for determining risk-weighted assets.

Regulatory VAR Back-Testing

In accordance with Basel III, Citi is required to perform back-testing to evaluate the effectiveness of its Regulatory VAR model. Regulatory VAR back-testing is the process in which the daily one-day VAR, at a 99% confidence interval, is compared to the buy-and-hold profit and loss (i.e., the profit and loss impact if the portfolio is held constant at the end of the day and re-priced the following day). Buy-and-hold profit and loss represents the daily mark-to-market profit and loss attributable to price movements in covered positions from the close of the previous business day. Buy-and-hold profit and loss excludes realized trading revenue, net interest, fees and commissions, intra-day trading profit and loss and changes in reserves.

Based on a 99% confidence level, Citi would expect two to three days in any one year where buy-and-hold losses exceeded the Regulatory VAR. Given the conservative calibration of Citi's VAR model (as a result of taking the greater of short- and long-term volatilities and fat-tail scaling of volatilities), Citi would expect fewer exceptions under normal and stable market conditions. Periods of unstable market conditions could increase the number of back-testing exceptions.

The following graph shows the daily buy-and-hold profit and loss associated with Citi's covered positions compared to

Citi's one-day Regulatory VAR during 2018. As of December 31, 2018, there was one back-testing exception observed for Citi's Regulatory VAR for the prior 12 months, due to market moves triggered by political events in Italy.

The difference between the 49.8% of days with buy-and-hold gains for Regulatory VAR back-testing and the 98.1% of days with trading, net interest and other revenue associated with Citi's trading businesses, shown in the histogram of daily trading-related revenue below, reflects, among other things, that a significant portion of Citi's trading-related revenue is not generated from daily price movements on these positions and exposures, as well as differences in the portfolio composition of Regulatory VAR and Risk Management VAR.

Regulatory Trading VAR and Associated Buy-and-Hold Profit and Loss[(1)]—12 Months ended December 31, 2018
In millions of dollars

(1) Buy-and-hold profit and loss, as defined by the banking regulators under Basel III, represents the daily mark-to-market revenue movement attributable to the trading position from the close of the previous business day. Buy-and-hold profit and loss excludes realized trading revenue and net interest intra-day trading profit and loss on new and terminated trades, as well as changes in reserves. Therefore, it is not comparable to the trading-related revenue presented in the chart of daily trading-related revenue above.

Stress Testing

Citi performs market risk stress testing on a regular basis to estimate the impact of extreme market movements. It is performed on individual positions and trading portfolios, as well as in aggregate, inclusive of multiple trading portfolios. Citi's market risk management, after consultations with the businesses, develops both systemic and specific stress scenarios, reviews the output of periodic stress testing exercises, and uses the information to assess the ongoing appropriateness of exposure levels and limits. Citi uses two complementary approaches to market risk stress testing across all major risk factors (i.e., equity, foreign exchange, commodity, interest rate and credit spreads): top-down systemic stresses and bottom-up business-specific stresses. Systemic stresses are designed to quantify the potential impact of extreme market movements on an institution-wide basis, and are constructed using both historical periods of market stress and projections of adverse economic scenarios. Business-specific stresses are designed to probe the risks of particular portfolios and market segments, especially those risks that are not fully captured in VAR and systemic stresses.

The systemic stress scenarios and business-specific stress scenarios at Citi are used in several reports reviewed by senior management and also to calculate internal risk capital for trading market risk. In general, changes in market values are defined over a one-year horizon. For the most liquid positions and market factors, changes in market values are defined over a shorter two-month horizon. The limited set of positions and market factors whose market value changes are defined over a two-month horizon are those that in management's judgment have historically remained very liquid during financial crises, even as the trading liquidity of most other positions and market factors materially declined.

OPERATIONAL RISK

Overview

Operational risk is the risk of loss resulting from inadequate or failed internal processes, systems or human factors, or from external events. It includes risk of failing to comply with applicable laws and regulations, but excludes strategic risk. Operational risk includes the reputation and franchise risk associated with business practices or market conduct in which Citi is involved, as well as compliance, conduct and legal risks.

Operational risk is inherent in Citi's global business activities, as well as related support functions, and can result in losses arising from events associated with the following, among others:

- fraud, theft and unauthorized activity;
- employment practices and workplace environment;
- clients, products and business practices;
- physical assets and infrastructure; and
- execution, delivery and process management.

Citi manages operational risk consistent with the overall framework described in "Managing Global Risk—Overview" above. The Company's goal is to keep operational risk at appropriate levels relative to the characteristics of Citi's businesses, the markets in which it operates, its capital and liquidity and the competitive, economic and regulatory environment.

To anticipate, mitigate and control operational risk, Citi has established policies and a global framework for assessing, monitoring and communicating operational risks and the overall operating effectiveness of the internal control environment across Citigroup. As part of this framework, Citi has defined its operational risk appetite and has established a manager's control assessment (MCA) process (a process through which managers at Citi identify, monitor, measure, report on and manage risks and the related controls) to help managers self-assess significant operational risks and key controls and identify and address weaknesses in the design and/or operating effectiveness of internal controls that mitigate significant operational risks.

Each major business segment must implement an operational risk process consistent with the requirements of this framework. The process for operational risk management includes the following steps:

- identify and assess key operational risks;
- design controls to mitigate identified risks;
- establish key risk indicators;
- implement a process for early problem recognition and timely escalation;
- produce comprehensive operational risk reporting; and
- ensure that sufficient resources are available to actively improve the operational risk environment and mitigate emerging risks.

As new products and business activities are developed, processes are designed, modified or sourced through alternative means and operational risks are considered.

An Operational Risk Management Committee has been established to provide oversight for operational risk across Citigroup and to provide a forum to assess Citi's operational risk profile and ensure actions are taken so that Citi's operational risk exposure is actively managed consistent with Citi's risk appetite. The Committee seeks to ensure that these actions address the root causes that persistently lead to operational risk losses and create lasting solutions to minimize these losses. Members include Citi's Chief Risk Officer and Citi's Head of Operational Risk and senior members of their organizations. These members cover multiple dimensions of risk management and include business and regional Chief Risk Officers and senior operational risk managers.

In addition, risk management, including Operational Risk Management, works proactively with the businesses and other independent control functions to embed a strong operational risk management culture and framework across

Citi. Operational Risk Management engages with the businesses to ensure effective implementation of the Operational Risk Management framework by focusing on (i) identification, analysis and assessment of operational risks, (ii) effective challenge of key control issues and operational risks and (iii) anticipation and mitigation of operational risk events.

Information about the businesses' operational risk, historical operational risk losses and the control environment is reported by each major business segment and functional area. The information is summarized and reported to senior management, as well as to the Audit Committee of Citi's Board of Directors.

Operational risk is measured and assessed through risk capital. Projected operational risk losses under stress scenarios are also required as part of the Federal Reserve Board's CCAR process.

For additional information on Citi's operational risks, see "Risk Factors—Operational Risk" above.

Cybersecurity Risk

Cybersecurity risk is the business risk associated with the threat posed by a cyber attack, cyber breach or the failure to protect Citi's most vital business information assets or operations, resulting in a financial or reputational loss (for additional information, see the operational systems and cybersecurity risk factors in "Risk Factors—Operational Risks" above). With an evolving threat landscape, ever increasing sophistication of cybersecurity attacks and use of new technologies to conduct financial transactions, Citi and its clients, customers and third parties are and will continue to be at risk for cyber attacks and information security incidents. Citi recognizes the significance of these risks and, therefore, employs an intelligence-led strategy to prevent, detect, respond to, and recover from cyber attacks. Further, Citi actively participates in financial industry, government, and cross-sector knowledge sharing groups to enhance individual and collective cyber resilience.

Citi's technology and cybersecurity risk management program is built on three lines of defense. Citi's first line of defense includes its Information Protection Directorate and

Global Information Security group, which provides frontline business, operational and technical controls and capabilities to protect against cybersecurity risks, and to respond to cyber incidents and data breaches. Citi manages these threats through state-of-the-art Fusion Centers, which serve as central command for monitoring and coordinating responses to cyber threats. The enterprise information security team is responsible for infrastructure defense and security controls, performing vulnerability assessments and third-party information security assessments, employee awareness and training programs, and security incident management, in each case working in coordination with a network of information security officers that are embedded within the businesses and functions on a global basis.
Citi's Operational Risk Management-Technology and Cyber (ORM-T/C) and Independent Compliance Risk Management-Technology and Information Security (ICRM-T) groups serve as the second line of defense, and actively evaluate, anticipate and challenge Citi's risk mitigation practices and capabilities. Internal audit serves as the third line of defense and independently provides assurance on how effectively the organization as a whole manages cybersecurity risk. Citi's Information Security Risk Operating Committee (ISROC) has overall responsibility for information security across Citi, and facilitates communication, discussion, escalation and management of cyber risks across these functions.
Citi seeks to proactively identify and remediate technology and cybersecurity risks before they materialize as incidents that negatively affect business operations. Accordingly, the ORM-T/C team independently challenges and monitors capabilities in accordance with Citi's defined Technology and Cyber Risk Appetite statements. To address evolving cybersecurity risks and corresponding regulations, ORM-T/C also monitors cyber legal and regulatory requirements, defines and identifies emerging risks, executes strategic cyber threat assessments, performs new products and initiative reviews, performs data management risk oversight, and conducts cyber risk assurance reviews (inclusive of third-party assessments). In addition, ORM-T/C employs and develops tools and metrics that are both tailored to cybersecurity and technology, and aligned with Citi's overall operational risk management framework to effectively track, identify and manage risk.

COMPLIANCE RISK
Compliance risk is the risk to current or projected financial condition and resilience arising from violations of laws or regulations, or from nonconformance with prescribed practices, internal policies and procedures, or ethical standards. This risk exposes a bank to fines, civil money penalties, payment of damages, and the voiding of contracts. Compliance risk is not limited to risk from failure to comply with consumer protection laws; it encompasses the risk of noncompliance with all laws and regulations, as well as prudent ethical standards and contractual obligations. It also includes the exposure to litigation (known as legal risk) from all aspects of banking, traditional and nontraditional.

Compliance risk spans across all risk types in Citi's risk governance framework and the risk categories outlined in the Governance, Risk, Compliance (GRC) taxonomy. Citi seeks to operate with integrity, maintain strong ethical standards, and adhere to applicable policies, regulatory and legal requirements. Citi must maintain and execute a proactive Compliance Risk Management (CRM) Framework that is designed to change the way in which compliance risk is managed across Citi, with a view to fundamentally strengthen the compliance risk management culture across the lines of defense, taking into account Citi's risk governance framework and regulatory requirements. Independent Compliance Risk Management's (ICRM) primary objectives are to:

- Establish, manage and oversee the execution of the CRM Framework that facilitates enterprise-wide compliance with local, national or cross-border laws, rules or regulations, Citi's internal policies, standards and procedures and relevant standards of conduct;
- Support Citi's operations by assisting in the management of compliance risk across products, business lines, functions and geographies, supported by globally consistent systems and processes; and
- Drive and embed a risk culture of compliance, control and ethical conduct throughout Citi.

To anticipate, control and mitigate compliance risk, Citi has established the CRM Framework to achieve standardization and centralization of methodologies and processes, and to enable more consistent and comprehensive

execution of compliance risk management.
Citi has a commitment, as well as an obligation, to identify, assess, and mitigate compliance risks associated with its businesses and functions. ICRM is responsible for Citi's CRM Framework, while each business and global control functions are responsible for managing their compliance risks and ensure they are operating within the Compliance Risk Appetite.
Citi carries out its objectives and fulfills its responsibilities through the integrated CRM Framework, which is based upon four components: (i) governance and organization; (ii) compliance risk ethics and conduct risk; (iii) processes and activities; and (iv) resources and capabilities. To achieve this, Citi follows the following CRM Framework process steps:

- Identifying regulatory changes and performing the impact assessment, as well as capturing and monitoring adherence to existing regulatory requirements.
- Establishing, maintaining and adhering to policies, standards and procedures for the management of compliance risk, in accordance with policy governance requirements.
- Developing and providing training to support the effective execution of roles and responsibilities related to the identification, control, reporting and escalation of matters related to compliance risks.
- Self-assessment (e.g., Managers Control Assessment) of compliance risk.

- ICRM and other independent control functions are responsible for independently assessing the management of compliance risks.
- Independently testing and monitoring that Citi is operating within the Compliance Risk Appetite. Identifying instances of non-conformance with Laws, regulations, rules and breaches of internal policies.
- Escalating through the appropriate channels, which may include governance forums, the results of monitoring, testing, reporting or other oversight activities that may represent a violation of law, regulation, policy or other significant compliance risk and take reasonable action to see that the matter is appropriately identified, tracked and resolved, including through the issuance of corrective action plans against the first line of defense.

REPUTATIONAL RISK

Citi's reputation is a vital asset in building trust with its stakeholders and Citi is diligent in communicating its corporate values to its employees, customers and investors. To support this, Citi has defined a reputational risk appetite approach. Under this approach, each major business segment has implemented a risk appetite statement and related key indicators to monitor and address weaknesses that may result in significant reputational risks. The approach requires that each business segment or region escalate significant reputational risks that require review or mitigation through its business practice committee or equivalent.

The business practices committees are part of the governance infrastructure that Citi has in place to properly review business activities, sales practices, product design, perceived conflicts of interest and other potential franchise or reputational risks. These committees may also raise potential franchise, reputational or systemic risks for due consideration by the business practices committee at the corporate level. All of these committees, which are composed of Citi's most senior executives, provide the guidance necessary for Citi's business practices to meet the highest standards of professionalism, integrity and ethical behavior consistent with Citi's mission and value proposition.

Further, the responsibility for maintaining Citi's reputation is shared by all employees, who are guided by Citi's code of conduct. Employees are expected to exercise sound judgment and common sense in decision and action. They are also expected to promptly and appropriately escalate all issues that present potential franchise, reputational and/or systemic risk.

STRATEGIC RISK

Overview

Citi senior management, led by Citi's CEO, is responsible for the development and execution of the strategy of the Company. Significant strategic actions are reviewed and approved by, or notified to, the Citigroup and Citibank Boards of Directors, as appropriate. The Citigroup Board of Directors holds an annual strategic meeting and annual regional strategic meetings, and receives business presentations at its regular meetings, in order to monitor management's execution of

Citi's strategy. At the business level, business heads are accountable for the interpretation and execution of the Company-wide strategy, as it applies to their area, including decisions on new business and product entries.

The management of strategic risk rests upon the foundational elements that include an annual financial operating plan encompassing all businesses, products and geographies and defined financial and operating targets, derived from the operating plan, which can be monitored throughout the year in order to assess strategic and operating performance. Strategic risk is monitored through various mechanisms, including regular updates to senior management and the Board of Directors on performance against the operating plan, quarterly business reviews between the Citi CEO and business and regional CEOs in which the performance and risks of each major business and region are discussed, ongoing reporting to senior management and executive management scorecards.

Potential Exit of U.K. from EU

As a result of a 2016 U.K. referendum, Citi has reorganized certain U.K. and EU operations and implemented contingency plans to address the U.K.'s potential exit from the EU, regardless of outcome. In addition, Citi has established a formal program with senior level sponsorship and governance to deliver a coordinated response to the

U.K.'s potential exit.
Until negotiations are finalized and an agreement is ratified, Citi continues to plan for a "hard" exit scenario as of March 29, 2019. Citi's strategy focuses on providing continuity of services to its EU and U.K. clients with minimal disruption. Consequently, Citi has been migrating certain business activities to alternative legal entities and branches with appropriate regulatory permissions to carry out such activity and establishing required capabilities in the EU and U.K. Citi's plans for a U.K. exit from the EU are well progressed for implementation and primarily cover:

- enhancement of Citi's European bank in Ireland supported by its substantial European branch network to ensure business continuity for its EU clients;
- conversion of Citi's banking subsidiary in Germany into Citi's EU investment firm to support broker-dealer activities with EU clients;
- establishment of a new U.K. consumer bank to focus on servicing consumer business clients in the U.K.; and
- amendments to existing U.K. legal entities or branches, where required, to ensure continuity of services to U.K. and non-EU clients.

Citi continues to work closely with clients, regulators and other relevant stakeholders in execution of its plans to prepare for the U.K.'s potential exit from the EU. In addition, Citi continues to monitor macroeconomic scenarios and market events and has been undertaking stress testing to assess potential impacts on its businesses. For additional information, see "Risk Factors—Strategic Risk" above.

LIBOR Transition Risk

Citi recognizes that discontinuance of LIBOR, or any other IBOR-based rate, presents significant risks and challenges that could have an impact on its businesses globally (for information about the risks to Citi from discontinuation of LIBOR or any other benchmark, see “Risk Factors—Strategic Risk” above). Accordingly, in 2018, Citi established a LIBOR governance and implementation program that includes senior management involvement. Citi’s Asset and Liability Committee oversees the program, and includes reporting to the Citigroup Board of Directors. The program operates globally across Citi’s businesses and functions. In addition, Citi has developed an initial set of LIBOR transition action plans and associated roadmap under nine key workstreams: transition strategy and risk management; customer management; internal communications and training; financial exposures and risk management; regulatory and industry engagement; operations and technology; finance, tax and treasury; legal and contract management; and product management. Citi has also been participating in a number of working groups formed by global regulators, including the Alternative Reference Rates Committee convened by the Federal Reserve Board. These working groups have been established to promote and advance development of alternative reference rates and to identify and address potential challenges from any transition to such rates.

Country Risk

Top 25 Country Exposures

The following table presents Citi's top 25 exposures by country (excluding the U.S.) as of December 31, 2018. The total exposure as of December 31, 2018 to the top 25 countries disclosed below, in combination with the U.S., would represent approximately 96% of Citi's exposure to all countries.

For purposes of the table, loan amounts are reflected in the country where the loan is booked, which is generally based on the domicile of the borrower. For example, a loan to a Chinese subsidiary of a Switzerland-based corporation will generally be categorized as a loan in China. In addition, Citi has developed regional booking centers in certain countries,

most significantly in the United Kingdom (U.K.) and Ireland, in order to more efficiently serve its corporate customers. As an example, with respect to the U.K., only 27% of corporate loans presented in the table below are to U.K. domiciled entities (27% for unfunded commitments), with the balance of the loans predominately to European domiciled counterparties. Approximately 83% of the total U.K. funded loans and 91% of the total U.K. unfunded commitments were investment grade as of December 31, 2018. Trading account assets and investment securities are generally categorized based on the domicile of the issuer of the security of the underlying reference entity. For additional information on the assets included in the table, see the footnotes to the table below.

In billions of U.S. dollars	ICG loans[1]	GCB loans	Other funded[2]	Unfunded[3]	Net MTM on derivatives/repos[4]	Total hedges (on loans and CVA)	Investment securities[5]	Trading account assets[6]	Total as of 4Q18	Total as of 3Q18	Total as of 4Q17	Total as a % of Citi as of 4Q18
United Kingdom	$ 40.4	$ —	$ 4.7	$ 56.5	$ 12.8	$ (3.7)	$ 4.0	$ (3.1)	$ 111.6	$ 123.7	$ 113.2	6.9 %
Mexico	9.5	25.3	0.3	7.1	0.8	(0.6)	12.4	4.8	59.6	61.9	58.4	3.7
Hong Kong	16.5	12.6	0.8	8.4	2.4	(0.2)	7.1	0.5	48.1	45.9	42.2	3.0
Singapore	12.8	12.4	0.3	4.7	1.3	(0.2)	7.8	1.6	40.7	41.0	41.4	2.5
Korea	1.9	18.6	0.2	3.0	1.2	(0.5)	8.6	0.8	33.8	33.7	35.3	2.1
Ireland	13.7	—	1.4	17.8	0.4	—	—	0.4	33.7	31.1	31.9	2.1
India	4.4	7.0	0.6	4.9	2.4	(0.8)	9.7	2.0	30.2	27.2	30.3	1.9
Brazil	12.7	—	—	2.7	4.6	(1.0)	3.3	3.7	26.0	25.9	24.7	1.6
Australia	5.5	9.9	0.1	6.3	1.4	(0.4)	1.5	(0.8)	23.5	24.1	25.2	1.5
China	5.9	4.6	0.4	1.6	1.0	(0.5)	4.7	0.3	18.0	18.8	19.4	1.1
Japan	2.7	—	0.1	2.6	3.4	(1.3)	5.8	4.3	17.6	18.4	17.7	1.1
Taiwan	4.7	9.0	0.1	1.0	0.3	(0.1)	1.5	0.9	17.4	17.8	17.3	1.1
Germany	0.2	—	—	4.5	3.5	(3.6)	8.9	3.9	17.4	19.7	19.1	1.1
Canada	2.2	0.6	0.3	6.9	2.6	(0.3)	3.1	0.6	16.0	16.4	16.3	1.0
Poland	3.7	1.9	0.1	3.6	0.1	(0.1)	3.7	0.2	13.2	14.4	14.0	0.8
Jersey	6.9	—	0.3	3.2	—	—	—	—	10.4	10.3	4.8	0.6
Malaysia	1.8	4.7	0.3	1.2	0.1	(0.1)	1.6	0.4	10.0	9.6	10.0	0.6
United Arab Emirates	4.6	1.5	0.1	3.3	0.2	(0.1)	—	—	9.6	9.8	7.0	0.6
Thailand	0.8	2.6	0.1	1.5	0.1	—	1.7	0.6	7.4	7.2	7.4	0.5

Indonesia	2.5	1.0	—	1.5	—	(0.1	) 1.2	0.2	6.3	5.8	6.3	0.4
Philippines	0.7	1.3	0.1	0.4	0.9	(0.1	) 1.5	0.5	5.3	4.9	3.8	0.3
Luxembourg	0.1	—	—	—	0.4	(0.3	) 4.1	0.6	4.9	5.1	5.4	0.3
Russia	1.6	0.8	—	1.1	0.8	(0.1	) 0.6	(0.2	) 4.6	4.1	6.6	0.3
South Africa	1.7	—	—	1.2	0.2	(0.1	) 1.4	0.1	4.5	5.0	4.3	0.3
Italy	0.2	—	—	2.2	4.5	(4.4	) 0.1	1.1	3.7	3.7	3.8	0.2
											Total	35.6%

(1) ICG loans reflect funded corporate loans and private bank loans, net of unearned income. As of December 31, 2018, private bank loans in the table above totaled $24.6 billion, concentrated in Hong Kong ($7.3 billion), Singapore ($6.4 billion) and the U.K. ($5.9 billion).

(2) Other funded includes other direct exposure such as accounts receivable, loans HFS, other loans in Corporate/Other and investments accounted for under the equity method.

(3) Unfunded exposure includes unfunded corporate lending commitments, letters of credit and other contingencies.

(4) Net mark-to-market counterparty risk on OTC derivatives and securities lending/borrowing transactions (repos). Exposures are shown net of collateral and inclusive of CVA. Includes margin loans.
(5) Investment securities include securities available-for-sale, recorded at fair market value, and securities held-to-maturity, recorded at historical cost.
(6) Trading account assets are shown on a net basis and include issuer risk on cash products and derivative exposure where the underlying reference entity/issuer is located in that country.

Venezuela

Citi continues to monitor the political and economic environment and uncertainties in Venezuela. As of December 31, 2018, Citi's net investment in its on-shore Venezuelan operations was approximately $40 million. In addition, in early 2015, the Central Bank of Venezuela (BCV) sold gold held at the Bank of England to a Citi entity in the U.K., giving Citi ownership and full legal title to the gold for $1.6 billion. Simultaneously, the BCV entered into forward purchase agreements (collectively, the Agreements) with Citi, requiring the BCV to purchase the same quantity of gold from Citi on predetermined dates. The next such date will be in March 2019 at which time the BCV will be required to purchase a significant amount of gold from Citi under the terms of the Agreements. Citi believes it is protected against market and credit risk related to the Agreements. The Agreements were accounted for as a financing on Citi's books under ASC 470-40.

FFIEC—Cross-Border Claims on Third Parties and Local Country Assets

Citi's cross-border disclosures are based on the country exposure bank regulatory reporting guidelines of the Federal Financial Institutions Examination Council (FFIEC). The following summarizes some of the FFIEC key reporting guidelines:

- Amounts are based on the domicile of the ultimate obligor, counterparty, collateral (only including qualifying liquid collateral), issuer or guarantor, as applicable (e.g., a security recorded by a Citi U.S. entity but issued by the U.K. government is considered U.K. exposure; a loan recorded by a Citi Mexico entity to a customer domiciled in Mexico where the underlying collateral is held in Germany is considered German exposure).
- Amounts do not consider the benefit of collateral received for secured financing transactions (i.e., repurchase agreements, reverse repurchase agreements and securities loaned and borrowed) and are reported based on notional amounts.
- Netting of derivative receivables and payables, reported at fair value, is permitted, but only under a legally binding netting agreement with the same specific counterparty, and does not include the benefit of margin received or hedges.
- Credit default swaps (CDS) are included based on the gross notional amount sold and purchased and do not include any offsetting CDS on the same underlying entity.
- Loans are reported without the benefit of hedges.

Given the requirements noted above, Citi's FFIEC cross-border exposures and total outstandings tend to fluctuate, in some cases, significantly, from period to period. As an example, because total outstandings under FFIEC guidelines do not include the benefit of margin or hedges, market volatility in interest rates, foreign exchange rates and credit spreads may cause significant fluctuations in the level of total outstandings, all else being equal.

The tables below show each country whose total outstandings exceeded 0.75% of total Citigroup assets:

December 31, 2018

Cross-border claims on third parties and local country assets

In billions of U.S. dollars	Banks (a)	Public (a)	NBFIs[1] (a)	Other (corporate and households) (a)	Trading assets[2] (included in (a))	Short-term claims[2] (included in (a))	Total outstanding[3] (sum of (a))	Commitments and guarantees[4]	Credit derivatives purchased[5]	Credit derivatives sold[5]
United Kingdom	$14.6	$24.3	$35.7	$ 21.6	$ 12.3	$ 67.8	$ 96.2	$ 25.1	$ 74.3	$ 76.4
Cayman Islands	—	—	81.6	9.2	5.4	62.5	90.8	5.0	—	—
Japan	31.4	28.8	8.4	7.8	13.6	40.7	76.4	4.0	19.9	18.3
Mexico	2.4	24.0	7.4	35.8	6.0	29.1	69.6	20.2	7.3	7.6
Germany	6.3	46.4	7.5	7.6	6.6	50.4	67.8	10.7	51.3	50.2
France	12.4	8.5	30.7	5.6	9.1	49.5	57.2	30.7	59.9	58.5
Korea South	1.5	17.8	3.0	22.6	1.8	33.2	44.9	12.1	12.2	12.2
Singapore	1.4	22.5	4.4	13.4	1.7	31.5	41.7	11.4	1.9	1.9
India	3.3	12.7	3.3	15.3	4.3	22.5	34.6	9.7	2.5	2.0
Hong Kong	0.9	11.2	3.2	16.9	3.9	27.5	32.2	14.6	2.2	2.2
China	5.0	11.3	3.0	12.3	4.5	20.6	31.6	4.2	15.6	14.6
Australia	3.1	7.8	4.8	13.4	7.1	14.4	29.1	12.1	10.6	10.5
Brazil	3.8	10.4	1.4	10.9	5.0	16.8	26.5	2.6	8.4	8.1
Taiwan	0.7	7.4	3.2	12.6	1.6	18.7	23.9	13.0	0.1	0.1
Netherlands	6.8	9.0	3.2	4.7	3.7	14.7	23.7	8.6	28.4	28.3
Canada	3.2	4.0	9.9	5.2	2.8	15.5	22.3	13.8	5.3	6.2
Switzerland	1.4	13.9	1.1	3.6	1.6	5.1	20.0	6.0	19.7	19.6
Italy	3.4	11.0	0.8	1.6	7.9	10.5	16.8	2.5	51.3	51.5

December 31, 2017

Cross-border claims on third parties and local country assets

In billions of U.S. dollars	Banks (a)	Public (a)	NBFIs[1] (a)	Other (corporate and households) (a)	Trading assets[2] (included in (a))	Short-term claims[2] (included in (a))	Total outstanding[3] (sum of (a))	Commitments and guarantees[4]	Credit derivatives purchased[5]	Credit derivatives sold[5]
United Kingdom	$15.4	$23.0	$33.9	$ 19.7	$ 13.5	$ 62.7	$ 92.0	$ 31.3	$ 74.9	$ 77.1
Cayman Islands	—	—	62.9	8.5	4.3	45.3	71.4	4.4	—	—
Germany	7.1	38.3	8.9	11.7	10.2	45.5	66.0	12.4	54.6	54.1
Japan	25.4	26.4	5.4	8.5	13.3	49.6	65.7	6.3	22.9	22.3
Mexico	6.0	18.5	7.9	33.0	4.7	42.8	65.4	19.6	6.4	6.2
France	12.6	5.1	20.9	6.3	8.7	37.4	44.9	23.9	59.8	60.6
South Korea	2.8	15.8	1.9	24.4	1.4	38.5	44.9	17.3	14.4	12.4
Singapore	1.9	22.4	4.3	14.7	0.4	33.2	43.3	11.5	1.8	1.8
India	6.0	12.7	4.4	16.0	5.6	25.8	39.1	9.3	2.5	2.1
Australia	4.7	8.1	4.7	14.2	7.3	18.6	31.7	13.3	13.2	13.3
China	5.2	9.2	3.2	13.8	3.6	24.5	31.4	4.5	14.2	14.5
Hong Kong	0.7	9.8	3.0	15.8	5.0	23.6	29.3	13.5	2.5	2.3
Brazil	3.7	11.4	0.9	10.6	5.5	17.3	26.6	2.2	10.6	9.6
Netherlands	7.2	9.5	4.7	6.1	4.1	15.9	27.5	10.5	27.3	27.8
Taiwan	0.9	6.1	2.2	13.3	2.7	16.9	22.5	14.0	0.1	0.1
Canada	4.2	4.7	7.6	5.0	2.9	11.1	21.5	14.0	5.4	6.2

Switzerland	1.5	13.6	1.3	4.3	1.7	17.2	20.7	5.8	19.3	19.4
Italy	3.2	11.3	0.6	1.3	7.5	9.4	16.4	2.8	59.6	58.4

(1) Non-bank financial institutions.
(2) Included in total outstanding.
(3) Total outstanding includes cross-border claims on third parties, as well as local country assets. Cross-border claims on third parties include cross-border loans, securities, deposits with banks and other monetary assets, as well as net revaluation gains on foreign exchange and derivative products.
(4) Commitments (not included in total outstanding) include legally binding cross-border letters of credit and other commitments and contingencies as defined by the FFIEC guidelines. The FFIEC definition of commitments includes commitments to local residents to be funded with local currency liabilities originated within the country.
(5) Credit Default Swaps (CDS) are not included in total outstanding.

SIGNIFICANT ACCOUNTING POLICIES AND SIGNIFICANT ESTIMATES

This section contains a summary of Citi's most significant accounting policies and accounting standards that have been issued, but are not yet effective. Note 1 to the Consolidated Financial Statements contains a summary of Citigroup's significant accounting policies, including a discussion of recently adopted accounting pronouncements. These policies, as well as estimates made by management, are integral to the presentation of Citi's results of operations and financial condition. While all of these policies require a certain level of management judgment and estimates, this section highlights and discusses the significant accounting policies that require management to make highly difficult, complex or subjective judgments and estimates at times regarding matters that are inherently uncertain and susceptible to change (see also "Risk Factors—Operational Risks" above). Management has discussed each of these significant accounting policies, the related estimates and its judgments with the Audit Committee of the Citigroup Board of Directors.

Valuations of Financial Instruments

Citigroup holds debt and equity securities, derivatives, retained interests in securitizations, investments in private equity and other financial instruments. Substantially all of these assets and liabilities are reflected at fair value on Citi's Consolidated Balance Sheet.

Citi purchases securities under agreements to resell (reverse repos) and sells securities under agreements to repurchase (repos), a majority of which are carried at fair value. In addition, certain loans, short-term borrowings, long-term debt and deposits, as well as certain securities borrowed and loaned positions that are collateralized with cash, are carried at fair value. Citigroup holds its investments, trading assets and liabilities, and resale and repurchase agreements on the Consolidated Balance Sheet to meet customer needs and to manage liquidity needs, interest rate risks and private equity investing.

When available, Citi generally uses quoted market prices to determine fair value and classifies such items within Level 1 of the fair value hierarchy established under ASC 820-10, Fair Value Measurement. If quoted market prices are not available, fair value is based upon internally developed valuation models that use, where possible, current market-based or independently sourced market parameters, such as interest rates, currency rates and option volatilities. Such models are often based on a discounted cash flow analysis. In addition, items valued using such internally generated valuation techniques are classified according to the lowest level input or value driver that is significant to the valuation. Thus, an item may be classified under the fair value hierarchy as Level 3 even though there may be some significant inputs that are readily observable.

Citi is required to exercise subjective judgments relating to the applicability and functionality of internal valuation models, the significance of inputs or value drivers to the valuation of an instrument and the degree of illiquidity and subsequent lack of observability in certain markets. These judgments have the potential to impact the Company's financial performance for instruments where the changes in fair value are recognized in either the Consolidated Statement of Income or in AOCI.

Moreover, for certain investments, decreases in fair value are only recognized in earnings in the Consolidated Statement of Income if such decreases are judged to be an other-than-temporary impairment (OTTI). Adjudicating the temporary nature of fair value impairments is also inherently judgmental.

The fair value of financial instruments incorporates the effects of Citi's own credit risk and the market view of counterparty credit risk, the quantification of which is also complex and judgmental. For additional information on Citi's fair value analysis, see Notes 1, 6, 24 and 25 to the Consolidated Financial Statements.

Allowance for Credit Losses

Management provides reserves for an estimate of probable losses inherent in the funded loan portfolio and in unfunded loan commitments and standby letters of credit on the Consolidated Balance Sheet in the Allowance for loan losses and in Other liabilities, respectively.

Estimates of these probable losses are based upon (i) Citigroup's internal system of credit-risk ratings that are analogous to the risk ratings of the major credit rating agencies and (ii) historical default and loss data, including rating agency information regarding default rates from 1983 to 2017 and internal data dating to the early 1970s on severity of losses in the event of default. Adjustments may be made to this data, including (i) statistically calculated estimates to cover the historical fluctuation of the default rates over the credit cycle, the historical variability of loss severity among defaulted loans and the degree to which there are large obligor concentrations in the global portfolio and (ii) adjustments made for specifically known items, such as current environmental factors and credit trends.

In addition, representatives from both the risk management and finance staffs who cover business areas with delinquency-managed portfolios containing smaller balance homogeneous loans present their recommended reserve balances based upon leading credit indicators, including loan delinquencies and changes in portfolio size, as well as economic trends, including housing prices, unemployment and GDP. This methodology is applied separately for each individual product within each geographic region in which these portfolios exist.

This evaluation process is subject to numerous estimates and judgments. The frequency of default, risk ratings, loss recovery rates, the size and diversity of individual large credits and the ability of borrowers with foreign currency obligations to obtain the foreign currency necessary for orderly debt servicing, among other things, are all taken into account during this review. Changes in these estimates could have a direct impact on Citi's credit costs and the allowance in any period.

For a further description of the loan loss reserve and related accounts, see Notes 1 and 15 to the Consolidated Financial Statements.

Goodwill

Citi tests goodwill for impairment annually on July 1 (the annual test) and interim assessments between annual tests if an event occurs or circumstances change that would more-likely-than-not reduce the fair value of a reporting unit below its carrying amount, such as a significant adverse change in the business climate, a decision to sell or dispose of all or a significant portion of a reporting unit or a significant decline in Citi's stock price. During 2018, the annual test was performed, which resulted in no goodwill impairment as described in Note 16 to the Consolidated Financial Statements.

As of December 31, 2018, Citigroup's activities are conducted through the Global Consumer Banking and Institutional Clients Group business segments and Corporate/Other. Goodwill impairment testing is performed at the level below the business segment (referred to as a reporting unit).

Citi utilizes allocated equity as a proxy for the carrying value of its reporting units for purposes of goodwill impairment testing. The allocated equity in the reporting units is determined based on the capital the business would require if it were operating as a standalone entity, incorporating sufficient capital to be in compliance with both current and expected regulatory capital requirements, including capital for specifically identified goodwill and intangible assets. The capital allocated to the businesses is incorporated into the annual budget process, which is approved by Citi's Board of Directors.

Goodwill impairment testing involves management judgment, requiring an assessment of whether the carrying value of the reporting unit can be supported by the fair value of the reporting unit using widely accepted valuation techniques, such as the market approach (earnings multiples and/or transaction multiples) and/or the income approach (discounted cash flow (DCF) method). In applying these methodologies, Citi utilizes a number of factors, including actual operating results, future business plans, economic projections and market data.

Similar to 2017, Citigroup engaged an independent valuation specialist in 2018 to assist in Citi's valuation for all the reporting units with goodwill balances, employing both the market approach and the DCF method. The resulting fair values were relatively consistent and appropriate weighting was given to outputs from both methods.

The DCF method utilized at the time of each impairment test used discount rates that Citi believes adequately reflected the risk and uncertainty in the financial markets in the internally generated cash flow projections. The DCF method employs a capital asset pricing model in estimating the discount rate.

Since none of the Company's reporting units are publicly traded, individual reporting unit fair value determinations cannot be directly correlated to Citigroup's common stock price. The sum of the fair values of the

reporting units exceeded the overall market capitalization of Citi as of July 1, 2018. However, Citi believes that it is not meaningful to reconcile the sum of the fair values of the Company's reporting units to its market capitalization due to several factors. The market capitalization of Citigroup reflects the execution risk in a transaction involving Citigroup due to its size. However, the individual reporting units' fair values are not subject to the same level of execution risk nor a business model that is perceived to be as complex. In addition, the market capitalization of Citigroup does not include consideration of the individual reporting unit's control premium.

See Notes 1 and 16 to the Consolidated Financial Statements for additional information on goodwill, including the changes in the goodwill balance year-over-year and the reporting units' goodwill balances as of December 31, 2018.

Income Taxes

Overview

Citi is subject to the income tax laws of the U.S., its states and local municipalities and the non-U.S. jurisdictions in which Citi operates. These tax laws are complex and are subject to differing interpretations by the taxpayer and the relevant governmental taxing authorities. Disputes over interpretations of the tax laws may be subject to review and adjudication by the court systems of the various tax jurisdictions or may be settled with the taxing authority upon audit.

In establishing a provision for income tax expense, Citi must make judgments and interpretations about the application of these inherently complex tax laws. Citi must also make estimates about when in the future certain items will affect taxable income in the various tax jurisdictions, both domestic and foreign. Deferred taxes are recorded for the future consequences of events that have been recognized in the financial statements or tax returns, based upon enacted tax laws and rates. Deferred tax assets (DTAs) are recognized subject to management's judgment that realization is more-likely-than-not.

On December 22, 2017, the President signed the Tax Cuts and Jobs Act (Tax Reform), reflecting changes to U.S. corporate taxation, including a lower statutory tax rate of 21%, a quasi-territorial regime and a deemed repatriation of all accumulated earnings and profits of foreign subsidiaries. The new law was generally effective January 1, 2018.

Citi recorded a one-time, non-cash charge to continuing operations of $22.6 billion in the fourth quarter of 2017, composed of (i) a $12.4 billion remeasurement due to the reduction of the U.S. corporate tax rate and the change to a "quasi-territorial tax system," (ii) a $7.9 billion valuation allowance against Citi's FTC carry-forwards and its U.S. residual DTAs related to its non-U.S. branches and (iii) a $2.3 billion reduction in Citi's FTC carry-forwards related to the deemed repatriation of undistributed earnings of non-U.S. subsidiaries. Of this one-time charge, $16.4 billion was considered provisional pursuant to Staff Accounting Bulletin (SAB) 118.

Citi completed its accounting for Tax Reform under SAB 118 during the fourth quarter of 2018 and recorded a one-time, non-cash tax benefit of $94 million in Corporate/Other, related to amounts that were considered provisional pursuant to SAB 118.

The table below details the fourth quarter of 2018 changes to Citi's provisional impact from Tax Reform.

Provisional Impact of Tax Reform

In billions of dollars	Provisional amounts included in the 2017 Form 10-K	SAB 118 impact to fourth quarter of 2018 tax provision
Quasi-territorial tax system	$ 6.2	$ 0.2
Valuation allowance	7.9	(1.2)
Deemed repatriation	2.3	0.9
Total of provisional items	$ 16.4	$ (0.1)

Citi has an overall domestic loss (ODL) of approximately $47 billion. An ODL allows a company to recharacterize domestic income as income from sources outside the U.S., which enables a taxpayer to use FTC carry-forwards and FTCs generated in future years, assuming the generation of sufficient U.S. taxed income. The change in Tax Reform to allow a taxpayer to elect to recharacterize up to 100% of its domestic source income as non-U.S. source income (up from 50%) is not expected to materially impact the valuation allowance.

As a result of Tax Reform, beginning in 2018, Citi is taxed on income generated by its U.S. operations at a federal tax rate of 21%. The effect on its state tax rate is dependent upon how and when the individual states choose to or automatically adopt the various new provisions of the U.S. Internal Revenue Code.

Citi's non-U.S. branches and subsidiaries are subject to tax at their local tax rates. While non-U.S. branches continue to be subject to U.S. taxation, Citi expects no material residual U.S. tax on such earnings since its overall non-U.S. branch tax rate is in excess of 21%. With respect to non-U.S. subsidiaries, dividends from these subsidiaries will be excluded from U.S. taxation. While the majority of Citi's non-U.S. subsidiary earnings are classified as Global Intangible Low Taxed Income (GILTI), Citi similarly expects no material residual U.S. tax on such earnings based on its non-U.S. subsidiaries' local tax rates, which exceed, on average, the GILTI tax rate. Finally, Citi does not expect the Base Erosion Anti-Abuse Tax (BEAT) to affect its tax provision. For additional information on the BEAT, see "Risk Factors—Strategic Risks" above.

DTAs

At December 31, 2018, Citi had net DTAs of $22.9 billion. In the fourth quarter of 2018, Citi's DTAs decreased $0.1 billion, driven primarily by gains in AOCI. On a full-year basis, Citi's DTAs increased $0.4 billion from $22.5 billion at December 31, 2017. The increase in total DTAs year-over-year was primarily due to the accounting change for Intra-Entity Transfers of Assets under ASU 2016-16.

Citi's total valuation allowance at December 31, 2018 was $9.3 billion, a decrease of $0.1 billion from $9.4 billion at December 31, 2017. The decrease was driven by a reduction due to the SAB 118 adjustment, partially offset by the 2018 change in DTAs relating to Citi's non-U.S. branches.

Citi's valuation allowance of $6.0 billion against FTC carry-forwards increased by $0.3 billion in 2018. The increase primarily relates to its non-U.S. branches, partially offset by SAB 118 adjustments. Citi expects that the absolute amount will increase in future years as it generates additional FTCs relating to the higher overall local tax rate of its non-U.S. branches, reduced by the statutory expiration of FTC carry-forwards. With respect to the portion of the valuation allowance established on Citi's FTC carry-forwards that are available for use in the general basket, changes in the amount of earnings from sources outside the U.S. could alter the amount of valuation allowance that is eventually needed against such FTCs.

Recognized FTCs comprised approximately $6.8 billion of Citi’s DTAs as of December 31, 2018, compared to approximately $7.6 billion as of December 31, 2017. The decrease in FTCs year-over-year was primarily due to adjustments under SAB 118 and current-year usage. The FTC carry-forward periods represent the most time-sensitive component of Citi’s DTAs.

Citi believes the U.S. federal and New York State and City net operating loss carry-forward period of 20 years provides enough time to fully utilize the net DTAs pertaining to the existing net operating loss carry-forwards. This is due to Citi’s forecast of sufficient U.S. taxable income and the continued taxation of Citi’s non-U.S. income by New York State and City. Although realization is not assured, Citi believes that the realization of the recognized net DTAs of

$22.9 billion at December 31, 2018 is more-likely-than-not, based upon management's expectations as to future taxable income in the jurisdictions in which the DTAs arise, as well as available tax planning strategies (as defined in ASC Topic 740, Income Taxes). Citi has concluded that it has the necessary positive evidence to support the realization of its net DTAs after taking its valuation allowances into consideration.

For additional information on Citi's income taxes, including its income tax provision, tax assets and liabilities and a tabular summary of Citi's net DTAs balance as of December 31, 2018 (including the FTCs and applicable expiration dates of the FTCs), see Note 9 to the Consolidated Financial Statements. For additional discussion of the potential impact to Citi's DTAs that could arise from Tax Reform, see "Risk Factors—Strategic Risks" above.

2017 Impact of Tax Reform

The table below discloses the as-reported GAAP results for 2018 and 2017, as well as the 2017 adjusted results excluding the one-time 2017 impact of Tax Reform. The table below does not reflect any adjustment to 2018 results.

In millions of dollars, except per share amounts and as otherwise noted	2018 as reported[(1)]	2017 as reported	2017 one-time impact of Tax Reform	2017 adjusted results[(2)]	2018 increase (decrease) vs. 2017 ex-Tax Reform $ Change	% Change
Net income (loss)	$18,045	$(6,798)	$(22,594)	$15,796	$2,249	14 %
Diluted earnings per share:						
Income (loss) from continuing operations	6.69	(2.94)	(8.31)	5.37	1.32	25
Net income (loss)	6.68	(2.98)	(8.31)	5.33	1.35	25
Effective tax rate	22.8 %	129.1 %	(9,930) bps	29.8 %		(700) bps
Global Consumer Banking—Net income	$5,755	$3,869	$(750)	$4,619	$1,136	25 %
North America GCB—Net income	3,340	1,991	(750)	2,741	599	22
Institutional Clients Group—Net income	12,183	9,009	(2,000)	11,009	1,174	11
Corporate/Other—Net income (loss)	107	(19,676)	(19,844)	168	(61)	(36)
Performance and other metrics:						
Return on average assets	0.94 %	(0.36)%	(120) bps	0.84 %		10 bps
Return on average common stockholders' equity	9.4	(3.9)	(1,090)	7.0		240
Return on average total stockholders' equity	9.1	(3.0)	(1,000)	7.0		210
Return on average tangible common equity	11.0	(4.6)	(1,270)	8.1		290
Dividend payout ratio	23.1	(32.2)	(5,020)	18.0		510
Total payout ratio	109.1	(213.9)	(33,140)	117.5		840

(1) 2018 includes the one-time benefit of $94 million, due to the finalization of the provisional component of the impact based on Citi's analysis as well as additional guidance received from the U.S. Treasury Department related to Tax Reform, which impacted the tax line within Corporate/Other.
(2) 2017 excludes the one-time impact of Tax Reform.

Litigation Accruals

See the discussion in Note 27 to the Consolidated Financial Statements for information regarding Citi's policies on establishing accruals for litigation and regulatory contingencies.

FUTURE APPLICATION OF ACCOUNTING STANDARDS

Accounting for Financial Instruments—Credit Losses
In June 2016, the Financial Accounting Standards Board (FASB) issued ASU No. 2016-13, Financial Instruments—Credit Losses (Topic 326). The ASU introduces a new credit loss methodology, the Current Expected Credit Losses (CECL) methodology, which requires earlier recognition of credit losses, while also providing additional transparency about credit risk.
The CECL methodology utilizes a lifetime “expected credit loss” measurement objective for the recognition of credit losses for loans, held-to-maturity debt securities and other receivables measured at amortized cost at the time the financial asset is originated or acquired. The allowance for credit losses is adjusted each period for changes in expected lifetime credit losses. This methodology replaces the multiple existing impairment methods in current GAAP, which generally require that a loss be incurred before it is recognized. Within the life cycle of a loan or other financial asset, the ASU will generally result in the earlier recognition of the provision for credit losses and the related allowance for credit losses than current practice. For available-for-sale debt securities that Citi intends to hold and where fair value is less than cost, credit-related impairment, if any, will be recognized through an allowance for credit losses and adjusted each period for changes in credit risk.
The CECL methodology represents a significant change from existing GAAP and may result in material changes to the Company’s accounting for financial instruments. The Company is evaluating the effect that ASU 2016-13 will have on its Consolidated Financial Statements and related disclosures. The impact of the ASU will depend upon the state of the economy, forecasted macroeconomic conditions and Citi’s portfolios at the date of adoption. Based on a preliminary analysis performed in the fourth quarter of 2018 and forecasts of macroeconomic conditions and exposures at that time, the overall impact was estimated to be an approximate 10% to 20% increase in expected credit loss reserves. The ASU will be effective for Citi as of January 1, 2020. This increase would be reflected as a decrease to opening Retained earnings, net of income taxes, at January 1, 2020.
Implementation efforts are underway, including model development, fulfillment of additional data needs for new disclosures and reporting requirements, and drafting of accounting policies. Substantial progress has been made in model development. Model validations and user acceptance testing commenced in the first quarter of 2019, with parallel runs to begin in the third quarter of 2019. The Company intends to utilize a single macroeconomic scenario in estimating expected credit losses. Reasonable and supportable forecast periods and methods to revert to historical averages to arrive at lifetime expected credit losses vary by product.
For additional information on regulatory capital treatment, see “Capital Resources—Regulatory Capital Treatment—Implementation and Transition of the Current Expected Credit Losses (CECL) Methodology” above.

Lease Accounting
In February 2016, the FASB issued ASU No. 2016-02, Leases (Topic 842), which is intended to increase transparency and comparability of accounting for lease transactions. The ASU will require lessees to recognize leases on the balance sheet as right-of-use assets and lease liabilities and will require both quantitative and qualitative disclosures regarding key information about leasing arrangements. Lessor accounting is largely unchanged. On January 1, 2019, the Company adopted the guidance prospectively with a cumulative adjustment to Retained earnings. At adoption, Citi recognized a lease liability and a corresponding right-of-use asset, related to its future minimum lease commitments of approximately $4.4 billion. Additionally, the Company recorded a $155 million increase in Retained earnings due to the cumulative effect of recognizing previously deferred gains on sale/leaseback transactions.

Subsequent Measurement of Goodwill
In January 2017, the FASB issued ASU No. 2017-04, Intangibles—Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment. The ASU simplifies the subsequent measurement of goodwill impairment by eliminating the requirement to calculate the implied fair value of goodwill (i.e., the current Step 2 of the goodwill impairment test) to measure a goodwill impairment charge. Under the ASU, the impairment test is the comparison of the fair value of a reporting unit with its carrying amount (the current Step 1), with the impairment charge being the

deficit in fair value but not exceeding the total amount of goodwill allocated to that reporting unit. The simplified one-step impairment test applies to all reporting units (including those with zero or negative carrying amounts).
The ASU will be effective for Citi as of January 1, 2020. The impact of the ASU will depend upon the performance of Citi's reporting units and the market conditions impacting the fair value of each reporting unit going forward.

See Note 1 to the Consolidated Financial Statements for a discussion of "Accounting Changes."

DISCLOSURE CONTROLS AND PROCEDURES

Citi's disclosure controls and procedures are designed to ensure that information required to be disclosed under the Securities Exchange Act of 1934, as amended, is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, including without limitation that information required to be disclosed by Citi in its SEC filings is accumulated and communicated to management, including the Chief Executive Officer (CEO) and Chief Financial Officer (CFO), as appropriate, to allow for timely decisions regarding required disclosure.

Citi's Disclosure Committee assists the CEO and CFO in their responsibilities to design, establish, maintain and evaluate the effectiveness of Citi's disclosure controls and procedures. The Disclosure Committee is responsible for, among other things, the oversight, maintenance and implementation of the disclosure controls and procedures, subject to the supervision and oversight of the CEO and CFO.

Citi's management, with the participation of its CEO and CFO, has evaluated the effectiveness of Citigroup's disclosure controls and procedures (as defined in Rule 13a-15(e) under the Securities Exchange Act of 1934) as of December 31, 2018 and, based on that evaluation, the CEO and CFO have concluded that at that date Citigroup's disclosure controls and procedures were effective.

MANAGEMENT'S ANNUAL REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Citi's management is responsible for establishing and maintaining adequate internal control over financial reporting. Citi's internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of its financial reporting and the preparation of financial statements for external reporting purposes in accordance with U.S. generally accepted accounting principles. Citi'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 Citi's assets, (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 Citi's receipts and expenditures are made only in accordance with authorizations of Citi's management and directors and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of Citi's assets that could have a material effect on its financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect all 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. In addition, given Citi's large size, complex operations and global footprint, lapses or deficiencies in internal controls may occur from time to time.

Citi's management assessed the effectiveness of Citigroup's internal control over financial reporting as of December 31, 2018 based on the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in Internal Control-Integrated Framework (2013). Based on this assessment, management believes that, as of December 31, 2018, Citi's internal control over financial reporting was effective. In addition, there were no changes in Citi's internal control over financial reporting during the fiscal quarter ended December 31, 2018 that materially affected, or are reasonably likely to materially affect, Citi's internal control over financial reporting.

The effectiveness of Citi's internal control over financial reporting as of December 31, 2018 has been audited by KPMG LLP, Citi's independent registered public accounting firm, as stated in their report below, which expressed an unqualified opinion on the effectiveness of Citi's internal control over financial reporting as of December 31, 2018.

FORWARD-LOOKING STATEMENTS

Certain statements in this Form 10-K, including but not limited to statements included within the Management's Discussion and Analysis of Financial Condition and Results of Operations, are "forward-looking statements" within the meaning of the rules and regulations of the U.S. Securities and Exchange Commission (SEC). In addition, Citigroup also may make forward-looking statements in its other documents filed or furnished with the SEC and its management may make forward-looking statements orally to analysts, investors, representatives of the media and others.
Generally, forward-looking statements are not based on historical facts, but instead represent Citigroup's and its management's beliefs regarding future events. Such statements may be identified by words such as believe, expect, anticipate, intend, estimate, may increase, may fluctuate, target, illustrate, and similar expressions or future or conditional verbs such as will, should, would and could.
Such statements are based on management's current expectations and are subject to risks, uncertainties and changes in circumstances. Actual results and capital and other financial conditions may differ materially from those included in these statements due to a variety of factors, including, without limitation, (i) the precautionary statements included within each individual business's discussion and analysis of its results of operations and (ii) the factors listed and described under "Risk Factors" above.
Any forward-looking statements made by or on behalf of Citigroup speak only as to the date they are made and Citi does not undertake to update forward-looking statements to reflect the impact of circumstances or events that arise after the date the forward-looking statements were made.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM—
INTERNAL CONTROL OVER FINANCIAL REPORTING

The Board of Directors and Stockholders
Citigroup Inc.:

Opinion on Internal Control Over Financial Reporting
We have audited Citigroup Inc. and subsidiaries' (the "Company") 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. 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 Committee of Sponsoring Organizations of the Treadway Commission.
We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated balance sheet of the Company as of December 31, 2018 and 2017, the related consolidated statements of income, comprehensive income, stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2018, and the related notes (collectively, the "consolidated financial statements"), and our report dated February 22, 2019 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion
The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying management's annual report on internal control over financial reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the 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 audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. 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 audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

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 (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) 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 (3) 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/ KPMG LLP
New York, New York
February 22, 2019

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM— CONSOLIDATED FINANCIAL STATEMENTS

The Board of Directors and Stockholders
Citigroup Inc.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheet of Citigroup Inc. and subsidiaries (the “Company”) as of December 31, 2018 and 2017, and the related consolidated statements of income, comprehensive income, changes in stockholders’ equity and cash flows for each of the years in the three-year period ended December 31, 2018, and the related notes (collectively, the “consolidated financial statements”). In our opinion, the consolidated financial statements 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 years in the three-year period ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (“PCAOB”), 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, and our report dated February 22, 2019 expressed an unqualified opinion on the effectiveness of the Company’s internal control over financial reporting.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the 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 audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits 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 supporting 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. We believe that our audits provide a reasonable basis for our opinion.

/s/ KPMG LLP

We have served as the Company’s auditor since 1969.

New York, New York
February 22, 2019

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CONSOLIDATED STATEMENT OF INCOME Citigroup Inc. and Subsidiaries

	Years ended December 31,		
In millions of dollars, except per share amounts	2018	2017	2016
Revenues[1]			
Interest revenue	$70,828	$61,579	$57,988
Interest expense	24,266	16,518	12,512
Net interest revenue	$46,562	$45,061	$45,476
Commissions and fees	$11,857	$12,707	$11,678
Principal transactions	9,062	9,475	7,857
Administration and other fiduciary fees	3,580	3,584	3,294
Realized gains on sales of investments, net	421	778	949
Impairment losses on investments			
Gross impairment losses	(132)	(63)	(620)
Net impairment losses recognized in earnings	$(132)	$(63)	$(620)
Other revenue	$1,504	$902	$2,163
Total non-interest revenues	$26,292	$27,383	$25,321
Total revenues, net of interest expense	$72,854	$72,444	$70,797
Provisions for credit losses and for benefits and claims			
Provision for loan losses	$7,354	$7,503	$6,749
Policyholder benefits and claims	101	109	204
Provision (release) for unfunded lending commitments	113	(161)	29
Total provisions for credit losses and for benefits and claims	$7,568	$7,451	$6,982
Operating expenses[1]			
Compensation and benefits	$21,154	$21,181	$20,970
Premises and equipment	2,324	2,453	2,542
Technology/communication	7,193	6,909	6,701
Advertising and marketing	1,545	1,608	1,632
Other operating	9,625	10,081	10,493
Total operating expenses	$41,841	$42,232	$42,338
Income from continuing operations before income taxes	$23,445	$22,761	$21,477
Provision for income taxes	5,357	29,388	6,444
Income (loss) from continuing operations	$18,088	$(6,627)	$15,033
Discontinued operations			
Loss from discontinued operations	$(26)	$(104)	$(80)
Provision (benefit) for income taxes	(18)	7	(22)
Loss from discontinued operations, net of taxes	$(8)	$(111)	$(58)
Net income (loss) before attribution of noncontrolling interests	$18,080	$(6,738)	$14,975
Noncontrolling interests	35	60	63
Citigroup's net income (loss)	$18,045	$(6,798)	$14,912
Basic earnings per share[2]			
Income (loss) from continuing operations	$6.69	$(2.94)	$4.74
Loss from discontinued operations, net of taxes	—	(0.04)	(0.02)
Net income (loss)	$6.69	$(2.98)	$4.72
Weighted average common shares outstanding (in millions)	2,493.3	2,698.5	2,888.1

CONSOLIDATED STATEMENT OF INCOME (Continued) Citigroup Inc. and Subsidiaries

In millions of dollars, except per share amounts	Years ended December 31, 2018	2017	2016
Diluted earnings per share[2]			
Income (loss) from continuing operations	$6.69	$(2.94)	$4.74
Income (loss) from discontinued operations, net of taxes	—	(0.04)	(0.02)
Net income (loss)	$6.68	$(2.98)	$4.72
Adjusted weighted average common shares outstanding (in millions)	2,494.8	2,698.5	2,888.3

(1) Certain prior-period revenue and expense lines and totals were reclassified to conform to the current period's presentation. See Notes 1 and 3 to the Consolidated Financial Statements.

(2) Due to rounding, earnings per share on continuing operations and discontinued operations may not sum to earnings per share on net income.

The Notes to the Consolidated Financial Statements are an integral part of these Consolidated Financial Statements.

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME Citigroup Inc. and Subsidiaries

In millions of dollars	Years ended December 31, 2018	2017	2016
Citigroup's net income (loss)	$18,045	$(6,798)	$14,912
Add: Citigroup's other comprehensive income (loss)			
Net change in unrealized gains and losses on investment securities, net of taxes[1][4]	$(1,089)	$(863)	$108
Net change in debt valuation adjustment (DVA), net of taxes[1]	1,113	(569)	(337)
Net change in cash flow hedges, net of taxes	(30)	(138)	57
Benefit plans liability adjustment, net of taxes[2]	(74)	(1,019)	(48)
Net change in foreign currency translation adjustment, net of taxes and hedges	(2,362)	(202)	(2,802)
Net change in excluded component of fair value hedges, net of taxes	(57)	—	—
Citigroup's total other comprehensive income (loss)[3]	$(2,499)	$(2,791)	$(3,022)
Citigroup's total comprehensive income (loss)	$15,546	$(9,589)	$11,890
Add: Other comprehensive income (loss) attributable to noncontrolling interests	$(43)	$114	$(56)
Add: Net income attributable to noncontrolling interests	35	60	63
Total comprehensive income (loss)	$15,538	$(9,415)	$11,897

(1) See Note 1 to the Consolidated Financial Statements.

(2) See Note 8 to the Consolidated Financial Statements.

(3) Includes the impact of ASU 2018-02, adopted in 2017. See Note 1 to the Consolidated Financial Statements.

(4) For the year ended December 31, 2018, amount represents the net change in unrealized gains and losses on available-for-sale (AFS) debt securities. Effective January 1, 2018, the AFS category is eliminated for equity securities under ASU 2016-01.

The Notes to the Consolidated Financial Statements are an integral part of these Consolidated Financial Statements.

CONSOLIDATED BALANCE SHEET Citigroup Inc. and Subsidiaries

	December 31,	
In millions of dollars	2018	2017
Assets		
Cash and due from banks (including segregated cash and other deposits)	$23,645	$23,775
Deposits with banks	164,460	156,741
Federal funds sold and securities borrowed and purchased under agreements to resell (including $147,701 and $132,949 as of December 31, 2018 and 2017, respectively, at fair value)	270,684	232,478
Brokerage receivables	35,450	38,384
Trading account assets (including $112,932 and $99,460 pledged to creditors at December 31, 2018 and 2017, respectively)	256,117	252,790
Investments:		
Available-for-sale debt securities (including $9,289 and $9,493 pledged to creditors as of December 31, 2018 and 2017, respectively)	288,038	290,725
Held-to-maturity debt securities (including $971 and $435 pledged to creditors as of December 31, 2018 and 2017, respectively)	63,357	53,320
Equity securities (including $1,109 and $1,395 at fair value as of December 31, 2018 and 2017, respectively, of which $189 was available for sale as of December 31, 2017)	7,212	8,245
Total investments	$358,607	$352,290
Loans:		
Consumer (including $20 and $25 as of December 31, 2018 and 2017, respectively, at fair value)	330,487	333,656
Corporate (including $3,203 and $4,349 as of December 31, 2018 and 2017, respectively, at fair value)	353,709	333,378
Loans, net of unearned income	$684,196	$667,034
Allowance for loan losses	(12,315)	(12,355)
Total loans, net	$671,881	$654,679
Goodwill	22,046	22,256
Intangible assets (including MSRs of $584 and $558 as of December 31, 2018 and 2017, respectively, at fair value)	5,220	5,146
Other assets (including $20,788 and $18,559 as of December 31, 2018 and 2017, respectively, at fair value)	109,273	103,926
Total assets	$1,917,383	$1,842,465

The following table presents certain assets of consolidated variable interest entities (VIEs), which are included in the Consolidated Balance Sheet above. The assets in the table below include those assets that can only be used to settle obligations of consolidated VIEs, presented on the following page, and are in excess of those obligations. Additionally, the assets in the table below include third-party assets of consolidated VIEs only and exclude intercompany balances that eliminate in consolidation.

	December 31,	
In millions of dollars	2018	2017
Assets of consolidated VIEs to be used to settle obligations of consolidated VIEs		
Cash and due from banks	$270	$52
Trading account assets	917	1,129
Investments	1,796	2,498
Loans, net of unearned income		
Consumer	49,403	54,656
Corporate	19,259	19,835

Loans, net of unearned income	$68,662	$74,491
Allowance for loan losses	(1,852)	(1,930)
Total loans, net	$66,810	$72,561
Other assets	151	154
Total assets of consolidated VIEs to be used to settle obligations of consolidated VIEs	$69,944	$76,394

Statement continues on the next page.

CONSOLIDATED BALANCE SHEET (Continued) Citigroup Inc. and Subsidiaries

In millions of dollars, except shares and per share amounts	December 31, 2018	2017
Liabilities		
Non-interest-bearing deposits in U.S. offices	$105,836	$126,880
Interest-bearing deposits in U.S. offices (including $717 and $303 as of December 31, 2018 and 2017, respectively, at fair value)	361,573	318,613
Non-interest-bearing deposits in offices outside the U.S.	80,648	87,440
Interest-bearing deposits in offices outside the U.S. (including $758 and $1,162 as of December 31, 2018 and 2017, respectively, at fair value)	465,113	426,889
Total deposits	$1,013,170	$959,822
Federal funds purchased and securities loaned and sold under agreements to repurchase (including $44,510 and $40,638 as of December 31, 2018 and 2017, respectively, at fair value)	177,768	156,277
Brokerage payables	64,571	61,342
Trading account liabilities	144,305	125,170
Short-term borrowings (including $4,483 and $4,627 as of December 31, 2018 and 2017, respectively, at fair value)	32,346	44,452
Long-term debt (including $38,229 and $31,392 as of December 31, 2018 and 2017, respectively, at fair value)	231,999	236,709
Other liabilities (including $15,906 and $13,961 as of December 31, 2018 and 2017, respectively, at fair value)	56,150	57,021
Total liabilities	$1,720,309	$1,640,793
Stockholders' equity		
Preferred stock ($1.00 par value; authorized shares: 30 million), issued shares: 738,400 as of December 31, 2018 and 770,120 as of December 31, 2017, at aggregate liquidation value	$18,460	$19,253
Common stock ($0.01 par value; authorized shares: 6 billion), issued shares: 3,099,567,177 as of December 31, 2018 and 3,099,523,273 as of December 31, 2017	31	31
Additional paid-in capital	107,922	108,008
Retained earnings	151,347	138,425
Treasury stock, at cost: 731,099,833 shares as of December 31, 2018 and 529,614,728 shares as of December 31, 2017	(44,370)	(30,309)
Accumulated other comprehensive income (loss) (AOCI)	(37,170)	(34,668)
Total Citigroup stockholders' equity	$196,220	$200,740
Noncontrolling interest	854	932
Total equity	$197,074	$201,672
Total liabilities and equity	$1,917,383	$1,842,465

The following table presents certain liabilities of consolidated VIEs, which are included in the Consolidated Balance Sheet above. The liabilities in the table below include third-party liabilities of consolidated VIEs only and exclude intercompany balances that eliminate in consolidation. The liabilities also exclude amounts where creditors or beneficial interest holders have recourse to the general credit of Citigroup.

In millions of dollars	December 31, 2018	2017

Liabilities of consolidated VIEs for which creditors or beneficial interest holders do not have recourse to the general credit of Citigroup		
Short-term borrowings	$13,134	$10,142
Long-term debt	28,514	30,492
Other liabilities	697	611
Total liabilities of consolidated VIEs for which creditors or beneficial interest holders do not have recourse to the general credit of Citigroup	$42,345	$41,245

The Notes to the Consolidated Financial Statements are an integral part of these Consolidated Financial Statements.

CONSOLIDATED STATEMENT OF CHANGES IN STOCKHOLDERS' EQUITY Citigroup Inc. and Subsidiaries

	Years ended December 31,					
	Amounts			Shares		
In millions of dollars, except shares in thousands	2018	2017	2016	2018	2017	2016
Preferred stock at aggregate liquidation value						
Balance, beginning of year	$19,253	$19,253	$16,718	770	770	669
Issuance of preferred stock	—	—	2,535	—	—	101
Redemption of preferred stock	(793)	—	—	(32)	—	—
Balance, end of period	$18,460	$19,253	$19,253	738	770	770
Common stock and additional paid-in capital						
Balance, beginning of year	$108,039	$108,073	$108,319	3,099,523	3,099,482	3,099,482
Employee benefit plans	(94)	(27)	(251)	44	41	—
Preferred stock issuance expense	—	—	(37)	—	—	—
Other	8	(7)	42	—	—	—
Balance, end of period	$107,953	$108,039	$108,073	3,099,567	3,099,523	3,099,482
Retained earnings						
Balance, beginning of year	$138,425	$146,477	$133,841			
Adjustment to opening balance, net of taxes[1]	(84)	(660)	15			
Adjusted balance, beginning of period	$138,341	$145,817	$133,856			
Citigroup's net income (loss)	18,045	(6,798)	14,912			
Common dividends[2]	(3,865)	(2,595)	(1,214)			
Preferred dividends	(1,174)	(1,213)	(1,077)			
Impact of Tax Reform related to AOCI reclassification[3]	—	3,304	—			
Other[4]	—	(90)	—			
Balance, end of period	$151,347	$138,425	$146,477			
Treasury stock, at cost						
Balance, beginning of year	$(30,309)	$(16,302)	$(7,677)	(529,615)	(327,090)	(146,203)
Employee benefit plans[5]	484	531	826	10,557	11,651	14,256
Treasury stock acquired[6]	(14,545)	(14,538)	(9,451)	(212,042)	(214,176)	(195,143)
Balance, end of period	$(44,370)	$(30,309)	$(16,302)	(731,100)	(529,615)	(327,090)
Citigroup's accumulated other comprehensive income (loss)						
Balance, beginning of year	$(34,668)	$(32,381)	$(29,344)			
Adjustment to opening balance, net of taxes[1]	(3)	504	(15)			
Adjusted balance, beginning of period	$(34,671)	$(31,877)	$(29,359)			
Citigroup's total other comprehensive income (loss)[3]	(2,499)	(2,791)	(3,022)			
Balance, end of period	$(37,170)	$(34,668)	$(32,381)			
Total Citigroup common stockholders' equity	$177,760	$181,487	$205,867	2,368,467	2,569,908	2,772,392
Total Citigroup stockholders' equity	$196,220	$200,740	$225,120			
Noncontrolling interests						
Balance, beginning of year	$932	$1,023	$1,235			
Transactions between noncontrolling-interest shareholders and the related consolidated subsidiary	—	(28)	(11)			
Transactions between Citigroup and the noncontrolling-interest shareholders	(50)	(121)	(130)			
Net income attributable to noncontrolling-interest shareholders	35	60	63			
	(38)	(44)	(42)			

Dividends paid to noncontrolling-interest shareholders			
Other comprehensive income (loss) attributable to noncontrolling-interest shareholders	(43)	114	(56)
Other	18	(72)	(36)
Net change in noncontrolling interests	$(78)	$(91)	$(212)
Balance, end of period	$854	$932	$1,023
Total equity	$197,074	$201,672	$226,143

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(1) See Note 1 to the Consolidated Financial Statements for additional details.
(2) Common dividends declared were $0.32 per share in the first and second quarters and $0.45 per share in the third and fourth quarters of 2018; $0.16 per share in the first and second quarters and $0.32 per share in the third and fourth quarters of 2017; and $0.05 in the first and second quarters and $0.16 per share in the third and fourth quarters of 2016.
(3) Includes the impact of ASU 2018-02, which transferred those amounts from AOCI to Retained earnings. See Notes 1 and 19 to the Consolidated Financial Statements.
(4) Includes the impact of ASU No. 2016-09, Compensation—Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting. See Note 1 to the Consolidated Financial Statements.
(5) Includes treasury stock related to (i) certain activity on employee stock option program exercises, where the employee delivers existing shares to cover the option exercise, or (ii) under Citi's employee-restricted or deferred-stock programs, where shares are withheld to satisfy tax requirements.
(6) For 2018, 2017, and 2016, primarily consists of open market purchases under Citi's Board of Directors-approved common stock repurchase program.

The Notes to the Consolidated Financial Statements are an integral part of these Consolidated Financial Statements.

CONSOLIDATED STATEMENT OF CASH FLOWS Citigroup Inc. and Subsidiaries

	Years ended December 31,		
In millions of dollars	2018	2017	2016
Cash flows from operating activities of continuing operations			
Net income (loss) before attribution of noncontrolling interests	$18,080	$(6,738)	$14,975
Net income attributable to noncontrolling interests	35	60	63
Citigroup's net income (loss)	$18,045	$(6,798)	$14,912
Loss from discontinued operations, net of taxes	(8)	(111)	(58)
Income (loss) from continuing operations—excluding noncontrolling interests	$18,053	$(6,687)	$14,970
Adjustments to reconcile net income to net cash provided by operating activities of continuing operations			
Net gains on significant disposals[1]	(247)	(602)	(404)
Depreciation and amortization	3,754	3,659	3,720
Deferred tax provision[2]	(51)	24,877	1,459
Provision for loan losses	7,354	7,503	6,749
Realized gains from sales of investments	(421)	(778)	(948)
Net impairment losses on investments, goodwill and intangible assets	132	91	621
Change in trading account assets	(3,469)	(7,038)	(3,092)
Change in trading account liabilities	19,135	(15,375)	21,409
Change in brokerage receivables, net of brokerage payables	6,163	(5,307)	2,226
Change in loans HFS	770	247	6,603
Change in other assets	(5,791)	(3,364)	(6,676)
Change in other liabilities	(871)	(3,044)	96
Other, net	(7,559)	(2,956)	7,000
Total adjustments	$18,899	$(2,087)	$38,763
Net cash provided by (used in) operating activities of continuing operations	$36,952	$(8,774)	$53,733
Cash flows from investing activities of continuing operations			
Change in federal funds sold and securities borrowed or purchased under agreements to resell	$(38,206)	$4,335	$(17,138)
Change in loans	(29,002)	(58,062)	(39,761)
Proceeds from sales and securitizations of loans	4,549	8,365	18,140
Purchases of investments	(186,987)	(185,740)	(211,402)
Proceeds from sales of investments[3]	61,491	107,368	132,183
Proceeds from maturities of investments	118,104	84,369	65,525
Proceeds from significant disposals[1]	314	3,411	265
Capital expenditures on premises and equipment and capitalized software	(3,774)	(3,361)	(2,756)
Proceeds from sales of premises and equipment, subsidiaries and affiliates and repossessed assets	212	377	667
Other, net	181	187	142
Net cash used in investing activities of continuing operations	$(73,118)	$(38,751)	$(54,135)
Cash flows from financing activities of continuing operations			
Dividends paid	$(5,020)	$(3,797)	$(2,287)
Issuance (redemption) of preferred stock	(793)	—	2,498
Treasury stock acquired	(14,433)	(14,541)	(9,290)
Stock tendered for payment of withholding taxes	(482)	(405)	(316)
Change in federal funds purchased and securities loaned or sold under agreements to repurchase	21,491	14,456	(4,675)
Issuance of long-term debt	60,655	67,960	63,806
Payments and redemptions of long-term debt	(58,132)	(40,986)	(55,460)
Change in deposits	53,348	30,416	24,394

Change in short-term borrowings	(12,106)	13,751	9,622

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CONSOLIDATED STATEMENT OF CASH FLOWS (Continued)

Citigroup Inc. and Subsidiaries

	Years ended December 31,		
In millions of dollars	2018	2017	2016
Net cash provided by financing activities of continuing operations	$44,528	$66,854	$28,292
Effect of exchange rate changes on cash and cash equivalents	$(773)	$693	$(493)
Change in cash, due from banks and deposits with banks[4]	$7,589	$20,022	$27,397
Cash, due from banks and deposits with banks at beginning of period[4]	180,516	160,494	133,097
Cash, due from banks and deposits with banks at end of period[4]	$188,105	$180,516	$160,494
Cash and due from banks	$23,645	$23,775	$23,043
Deposits with banks	$164,460	$156,741	$137,451
Cash, due from banks and deposits with banks at end of period	$188,105	$180,516	$160,494
Supplemental disclosure of cash flow information for continuing operations			
Cash paid during the year for income taxes	$4,313	$2,083	$4,359
Cash paid during the year for interest	22,963	15,675	12,067
Non-cash investing activities			
Transfers to loans HFS from loans	$4,200	$5,900	$13,900
Transfers to OREO and other repossessed assets	151	113	165

(1) See Note 2 to the Consolidated Financial Statements for further information on significant disposals.

(2) Includes the full impact of the $22.6 billion non-cash charge related to the Tax Cuts and Jobs Act (Tax Reform) in 2017. See Notes 1 and 9 to the Consolidated Financial Statements for further information.

(3) Proceeds for 2016 include approximately $3.3 billion from the sale of Citi's investment in China Guangfa Bank.

(4) Includes the impact of ASU 2016-18, Restricted Cash. See Notes 1 and 26 to the Consolidated Financial Statements.

The Notes to the Consolidated Financial Statements are an integral part of these Consolidated Financial Statements.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Throughout these Notes, “Citigroup,” “Citi” and the “Company” refer to Citigroup Inc. and its consolidated subsidiaries. Certain reclassifications have been made to the prior periods’ financial statements and Notes to conform to the current period’s presentation.

Principles of Consolidation
The Consolidated Financial Statements include the accounts of Citigroup and its subsidiaries prepared in accordance with U.S. generally accepted accounting principles (GAAP). The Company consolidates subsidiaries in which it holds, directly or indirectly, more than 50% of the voting rights or where it exercises control. Entities where the Company holds 20% to 50% of the voting rights and/or has the ability to exercise significant influence, other than investments of designated venture capital subsidiaries or investments accounted for at fair value under the fair value option, are accounted for under the equity method, and the pro rata share of their income (loss) is included in Other revenue. Income from investments in less-than-20%-owned companies is recognized when dividends are received. As discussed in more detail in Note 21 to the Consolidated Financial Statements, Citigroup also consolidates entities deemed to be variable interest entities when Citigroup is determined to be the primary beneficiary. Gains and losses on the disposition of branches, subsidiaries, affiliates, buildings and other investments are included in Other revenue.

Citibank
Citibank, N.A. (Citibank) is a commercial bank and wholly owned subsidiary of Citigroup. Citibank’s principal offerings include consumer finance, mortgage lending and retail banking (including commercial banking) products and services; investment banking, cash management and trade finance; and private banking products and services.

Variable Interest Entities (VIEs)
An entity is a variable interest entity (VIE) if it meets either of the criteria outlined in Accounting Standards Codification (ASC) Topic 810, Consolidation, which are (i) the entity has equity that is insufficient to permit the entity to finance its activities without additional subordinated financial support from other parties, or (ii) the entity has equity investors that cannot make significant decisions about the entity’s operations or that do not absorb their proportionate share of the entity’s expected losses or expected returns.
The Company consolidates a VIE when it has both the power to direct the activities that most significantly impact the VIE’s economic performance and a right to receive benefits or the obligation to absorb losses of the entity that could be potentially significant to the VIE (that is, Citi is the primary beneficiary). In addition to variable interests held in consolidated VIEs, the Company has variable interests in other VIEs that are not consolidated because the Company is not the primary beneficiary.
All unconsolidated VIEs are monitored by the Company to assess whether any events have occurred to cause its primary beneficiary status to change.
All entities not deemed to be VIEs with which the Company has involvement are evaluated for consolidation under other subtopics of ASC 810. See Note 21 to the Consolidated Financial Statements for more detailed information.

Foreign Currency Translation
Assets and liabilities of Citi’s foreign operations are translated from their respective functional currencies into U.S. dollars using period-end spot foreign exchange rates. The effects of those translation adjustments are reported in Accumulated other comprehensive income (loss), a component of stockholders’ equity, net of any related hedge and tax effects, until realized upon sale or substantial liquidation of the foreign operation, at which point such amounts related to the foreign entity are reclassified into earnings. Revenues and expenses of Citi’s foreign operations are translated monthly from their respective functional currencies into U.S. dollars at amounts that approximate weighted average exchange rates.

For transactions that are denominated in a currency other than the functional currency, including transactions denominated in the local currencies of foreign operations that use the U.S. dollar as their functional currency, the effects of changes in exchange rates are primarily included in Principal transactions, along with the related effects of any economic hedges. Instruments used to hedge foreign currency exposures include foreign currency forward, option and swap contracts and, in certain instances, designated issues of non-U.S. dollar debt. Foreign operations in countries with highly inflationary economies designate the U.S. dollar as their functional currency, with the effects of changes in exchange rates primarily included in Other revenue.

Investment Securities

Investments include fixed income and equity securities. Fixed income instruments include bonds, notes and redeemable preferred stocks, as well as certain loan-backed and structured securities that are subject to prepayment risk. Equity securities include common and nonredeemable preferred stock.

Fixed income securities are classified and accounted for as follows:

- Fixed income securities classified as “held-to-maturity” are securities that the Company has both the ability and the intent to hold until maturity and are carried at amortized cost. Interest income on such securities is included in Interest revenue.
- Fixed income securities classified as “available-for-sale” are carried at fair value with changes in fair value

reported in Accumulated other comprehensive income (loss), a component of stockholders' equity, net of applicable income taxes and hedges. Interest income on such securities is included in Interest revenue.

Prior to January 1, 2018, equity securities were classified and accounted for as follows:

- Marketable equity securities classified as "available-for-sale" were carried at fair value with changes in fair value reported in Accumulated other comprehensive income (loss), a component of stockholders' equity, net of applicable income taxes and hedges. Dividend income on such securities was included in Interest revenue.
- Certain investments in non-marketable equity securities and certain investments that would otherwise have been accounted for using the equity method were carried at fair value, since the Company elected to apply fair value accounting. Changes in fair value of such investments were recorded in earnings.
- Certain non-marketable equity securities were carried at cost.

As of January 1, 2018, equity securities are classified and accounted for as follows:

- Marketable equity securities are measured at fair value with changes in fair value recognized in earnings. The available-for-sale category was eliminated for equity securities.
- Non-marketable equity securities are measured at fair value with changes in fair value recognized in earnings unless (i) the measurement alternative is elected or (ii) the investment represents Federal Reserve Bank and Federal Home Loan Bank stock or certain exchange seats that continue to be carried at cost. Non-marketable equity securities under the measurement alternative are carried at cost plus or minus changes resulting from observed prices for orderly transactions for the identical or a similar investment of the same issuer.
- Certain investments that would otherwise have been accounted for using the equity method are carried at fair value with changes in fair value recognized in earnings, since the Company elected to apply fair value accounting.

For investments in fixed income securities classified as held-to-maturity or available-for-sale, the accrual of interest income is suspended for investments that are in default or for which it is likely that future interest payments will not be made as scheduled.
Investment securities not measured at fair value through earnings, such as securities held in HTM, AFS or under the new measurement alternative, are subject to evaluation for impairment as described in Note 13 to the Consolidated Financial Statements. Realized gains and losses on sales of investments are included in earnings, primarily on a specific identification basis.

The Company uses a number of valuation techniques for investments carried at fair value, which are described in Note 24 to the Consolidated Financial Statements.

Trading Account Assets and Liabilities
Trading account assets include debt and marketable equity securities, derivatives in a receivable position, residual interests in securitizations and physical commodities inventory. In addition, as described in Note 25 to the Consolidated Financial Statements, certain assets that Citigroup has elected to carry at fair value under the fair value option, such as loans and purchased guarantees, are also included in Trading account assets.
Trading account liabilities include securities sold, not yet purchased (short positions) and derivatives in a net payable position, as well as certain liabilities that Citigroup has elected to carry at fair value (as described in Note 25 to the Consolidated Financial Statements).
Other than physical commodities inventory, all trading account assets and liabilities are carried at fair value. Revenues generated from trading assets and trading liabilities are generally reported in Principal transactions and include realized gains and losses as well as unrealized gains and losses resulting from changes in the fair value of such instruments. Interest income on trading assets is recorded in Interest revenue reduced by interest expense on trading liabilities.

Physical commodities inventory is carried at the lower of cost or market with related losses reported in Principal transactions. Realized gains and losses on sales of commodities inventory are included in Principal transactions.
Investments in unallocated precious metals accounts (gold, silver, platinum and palladium) are accounted for as hybrid instruments containing a debt host contract and an embedded non-financial derivative instrument indexed to the price of the relevant precious metal. The embedded derivative instrument is separated from the debt host contract and accounted for at fair value. The debt host contract is carried at fair value under the fair value option, as described in Note 25 to the Consolidated Financial Statements.
Derivatives used for trading purposes include interest rate, currency, equity, credit and commodity swap agreements, options, caps and floors, warrants, and financial and commodity futures and forward contracts. Derivative asset and liability positions are presented net by counterparty on the Consolidated Balance Sheet when a valid master netting agreement exists and the other conditions set out in ASC Topic 210-20, Balance Sheet—Offsetting, are met. See Note 22 to the Consolidated Financial Statements.
The Company uses a number of techniques to determine the fair value of trading assets and liabilities, which are described in Note 24 to the Consolidated Financial Statements.

Securities Borrowed and Securities Loaned

Securities borrowing and lending transactions do not constitute a sale of the underlying securities for accounting purposes and are treated as collateralized financing transactions. Such transactions are recorded at the amount of proceeds advanced or received plus accrued interest. As described in Note 25 to the Consolidated Financial Statements, the Company has elected to apply fair value accounting to a number of securities borrowing and lending transactions. Fees paid or received for all securities lending and borrowing transactions are recorded in Interest expense or Interest revenue at the contractually specified rate.

The Company monitors the fair value of securities borrowed or loaned on a daily basis and obtains or posts additional collateral in order to maintain contractual margin protection.

As described in Note 24 to the Consolidated Financial Statements, the Company uses a discounted cash flow technique to determine the fair value of securities lending and borrowing transactions.

Repurchase and Resale Agreements

Securities sold under agreements to repurchase (repos) and securities purchased under agreements to resell (reverse repos) do not constitute a sale (or purchase) of the underlying securities for accounting purposes and are treated as collateralized financing transactions. As described in Note 25 to the Consolidated Financial Statements, the Company has elected to apply fair value accounting to the majority of such transactions, with changes in fair value reported in earnings. Any transactions for which fair value accounting has not been elected are recorded at the amount of cash advanced or received plus accrued interest. Irrespective of whether the Company has elected fair value accounting, interest paid or received on all repo and reverse repo transactions is recorded in Interest expense or Interest revenue at the contractually specified rate.

Where the conditions of ASC 210-20-45-11, Balance Sheet—Offsetting: Repurchase and Reverse Repurchase Agreements, are met, repos and reverse repos are presented net on the Consolidated Balance Sheet.

The Company’s policy is to take possession of securities purchased under reverse repurchase agreements. The Company monitors the fair value of securities subject to repurchase or resale on a daily basis and obtains or posts additional collateral in order to maintain contractual margin protection.

As described in Note 24 to the Consolidated Financial Statements, the Company uses a discounted cash flow technique to determine the fair value of repo and reverse repo transactions.

Loans

Loans are reported at their outstanding principal balances net of any unearned income and unamortized deferred fees and costs except that credit card receivable balances also include accrued interest and fees. Loan origination fees and certain direct origination costs are generally deferred and

recognized as adjustments to income over the lives of the related loans.

As described in Note 25 to the Consolidated Financial Statements, Citi has elected fair value accounting for certain loans. Such loans are carried at fair value with changes in fair value reported in earnings. Interest income on such loans is recorded in Interest revenue at the contractually specified rate.

Loans that are held-for-investment are classified as Loans, net of unearned income on the Consolidated Balance Sheet, and the related cash flows are included within the cash flows from investing activities category in the Consolidated Statement of Cash Flows on the line Change in loans. However, when the initial intent for holding a loan has changed from held-for-investment to HFS, the loan is reclassified to HFS, but the related cash flows continue to be reported in cash flows from investing activities in the Consolidated Statement of Cash Flows on the line Proceeds from sales and securitizations of loans.

Consumer Loans

Consumer loans represent loans and leases managed primarily by the Global Consumer Banking (GCB) businesses and Corporate/Other.

Consumer Non-accrual and Re-aging Policies

As a general rule, interest accrual ceases for installment and real estate (both open- and closed-end) loans when payments are 90 days contractually past due. For credit cards and other unsecured revolving loans, however, Citi generally accrues interest until payments are 180 days past due. As a result of OCC guidance, home equity loans in regulated bank entities are classified as non-accrual if the related residential first mortgage is 90 days or more past due. Also as a result of OCC guidance, mortgage loans in regulated bank entities are classified as non-accrual within 60 days of notification that the borrower has filed for bankruptcy, other than FHA-insured loans. Commercial banking loans are placed on a cash (non-accrual) basis when it is determined, based on actual experience and a forward-looking assessment of the collectability of the loan in full, that the payment of interest or principal is doubtful or when interest or principal is 90 days past due.

Loans that have been modified to grant a concession to a borrower in financial difficulty may not be accruing interest at the time of the modification. The policy for returning such modified loans to accrual status varies by product and/or region. In most cases, a minimum number of payments (ranging from one to six) is required, while in other cases the loan is never returned to accrual status. For regulated bank entities, such modified loans are returned to accrual status if a credit evaluation at the time of, or subsequent to, the modification indicates the borrower is able to meet the restructured terms, and the borrower is current and has demonstrated a reasonable period of sustained payment performance (minimum six months of consecutive payments).

For U.S. consumer loans, generally one of the conditions to qualify for modification is that a minimum number of payments (typically ranging from one to three) must be made. Upon modification, the loan is re-aged to current status. However, re-aging practices for certain open-ended consumer loans, such as credit cards, are governed by Federal Financial Institutions Examination Council (FFIEC) guidelines. For open-ended consumer loans subject to FFIEC guidelines, one of the conditions for the loan to be re-aged to current status is that at least three consecutive minimum monthly payments, or the equivalent amount, must be received. In addition, under FFIEC guidelines, the number of times that such a loan can be re-aged is subject to limitations (generally once in 12 months and twice in five years). Furthermore, Federal Housing Administration (FHA) and Department of Veterans Affairs (VA) loans may only be modified under those respective agencies' guidelines, and payments are not always required in order to re-age a modified loan to current.

Consumer Charge-Off Policies
Citi's charge-off policies follow the general guidelines below:

- Unsecured installment loans are charged off at 120 days contractually past due.
- Unsecured revolving loans and credit card loans are charged off at 180 days contractually past due.
- Loans secured with non-real estate collateral are written down to the estimated value of the collateral, less costs to sell, at 120 days contractually past due.
- Real estate-secured loans are written down to the estimated value of the property, less costs to sell, at 180 days contractually past due.
- Real estate-secured loans are charged off no later than 180 days contractually past due if a decision has been made not to foreclose on the loans.
- Unsecured loans in bankruptcy are charged off within 60 days of notification of filing by the bankruptcy court or in accordance with Citi's charge-off policy, whichever occurs earlier.
- Real estate-secured loans in bankruptcy, other than FHA-insured loans, are written down to the estimated value of the property, less costs to sell, within 60 days of notification that the borrower has filed for bankruptcy or in accordance with Citi's charge-off policy, whichever is earlier.
- Commercial banking loans are written down to the extent that principal is judged to be uncollectable.

Corporate Loans
Corporate loans represent loans and leases managed by Institutional Clients Group (ICG). Corporate loans are identified as impaired and placed on a cash (non-accrual) basis when it is determined, based on actual experience and a forward-looking assessment of the collectability of the loan in full, that the payment of interest or principal is doubtful or when interest or principal is 90 days past due, except when the loan is well collateralized and in the process of collection. Any interest accrued on impaired corporate loans and leases is reversed at 90 days past due and charged

against current earnings, and interest is thereafter included in earnings only to the extent actually received in cash. When there is doubt regarding the ultimate collectability of principal, all cash receipts are thereafter applied to reduce the recorded investment in the loan.
Impaired corporate loans and leases are written down to the extent that principal is deemed to be uncollectable. Impaired collateral-dependent loans and leases, where repayment is expected to be provided solely by the sale of the underlying collateral and there are no other available and reliable sources of repayment, are written down to the lower of carrying value or collateral value. Cash-basis loans are returned to accrual status when all contractual principal and interest amounts are reasonably assured of repayment and there is a sustained period of repayment performance in accordance with the contractual terms.

Loans Held-for-Sale
Corporate and consumer loans that have been identified for sale are classified as loans HFS and included in Other assets. The practice of Citi's U.S. prime mortgage business has been to sell substantially all of its conforming loans. As such, U.S. prime mortgage conforming loans are classified as HFS and the fair value option is elected at origination,

with changes in fair value recorded in Other revenue. With the exception of those loans for which the fair value option has been elected, HFS loans are accounted for at the lower of cost or market value, with any write-downs or subsequent recoveries charged to Other revenue. The related cash flows are classified in the Consolidated Statement of Cash Flows in the cash flows from operating activities category on the line Change in loans held-for-sale.

Allowance for Loan Losses

Allowance for loan losses represents management’s best estimate of probable losses inherent in the portfolio, including probable losses related to large individually evaluated impaired loans and troubled debt restructurings. Attribution of the allowance is made for analytical purposes only, and the entire allowance is available to absorb probable loan losses inherent in the overall portfolio. Additions to the allowance are made through the Provision for loan losses. Loan losses are deducted from the allowance and subsequent recoveries are added. Assets received in exchange for loan claims in a restructuring are initially recorded at fair value, with any gain or loss reflected as a recovery or charge-off in the provision.

Consumer Loans

For consumer loans, each portfolio of non-modified smaller-balance homogeneous loans is independently evaluated for impairment by product type (e.g., residential mortgage, credit card, etc.) in accordance with ASC 450, Contingencies. The allowance for loan losses attributed to these loans is established via a process that estimates the probable losses inherent in the specific portfolio. This process includes migration analysis, in which historical delinquency and credit loss experience is applied to the current aging of the portfolio, together with analyses that reflect current and anticipated economic conditions, including changes in housing prices and unemployment trends. Citi's allowance for loan losses under ASC 450 only considers contractual principal amounts due, except for credit card loans, where estimated loss amounts related to accrued interest receivable are also included.

Management also considers overall portfolio indicators, including historical credit losses, delinquent, non-performing and classified loans, trends in volumes and terms of loans, an evaluation of overall credit quality, the credit process, including lending policies and procedures, and economic, geographical, product and other environmental factors.

Separate valuation allowances are determined for impaired smaller-balance homogeneous loans whose terms have been modified in a troubled debt restructuring (TDR). Long-term modification programs, and short-term (less than 12 months) modifications that provide concessions (such as interest rate reductions) to borrowers in financial difficulty, are reported as TDRs. In addition, loan modifications that involve a trial period are reported as TDRs at the start of the trial period. The allowance for loan losses for TDRs is determined in accordance with ASC 310-10-35, Receivables—Subsequent Measurement, considering all available evidence, including, as appropriate, the present value of the expected future cash flows discounted at the loan's original contractual effective rate, the secondary market value of the loan and the fair value of collateral less disposal costs. These expected cash flows incorporate modification program default rate assumptions. The original contractual effective rate for credit card loans is the pre-modification rate, which may include interest rate increases under the original contractual agreement with the borrower.

Valuation allowances for commercial banking loans, which are classifiably managed consumer loans, are determined in the same manner as for corporate loans and are described in more detail in the following section. Generally, an asset-specific component is calculated under ASC 310-10-35 on an individual basis for larger-balance, non-homogeneous loans that are considered impaired, and the allowance for the remainder of the classifiably managed consumer loan portfolio is calculated under ASC 450 using a statistical methodology that may be supplemented by management adjustment.

Corporate Loans

In the corporate portfolios, the Allowance for loan losses includes an asset-specific component and a statistically based component. The asset-specific component is calculated under ASC 310-10-35 for larger-balance, non-homogeneous loans that are considered impaired. An asset-specific allowance is established when the discounted cash flows, collateral value (less disposal costs) or observable market price of the impaired loan are lower than its carrying value. This allowance considers the borrower's overall financial condition, resources and payment record, the prospects for support from any financially responsible guarantors (discussed further below) and, if appropriate, the realizable value of any collateral. The asset-specific component of the allowance for smaller-balance impaired

loans is calculated on a pool basis considering historical loss experience.

The allowance for the remainder of the loan portfolio is determined under ASC 450 using a statistical methodology, supplemented by management judgment. The statistical analysis considers the portfolio's size, remaining tenor and credit quality as measured by internal risk ratings assigned to individual credit facilities, which reflect probability of default and loss given default. The statistical analysis considers historical default rates and historical loss severity in the event of default, including historical average levels and historical variability. The result is an estimated range for inherent losses. The best estimate within the range is then determined by management's quantitative and qualitative assessment of current conditions, including general economic conditions, specific industry and geographic trends and internal factors including portfolio concentrations, trends in internal credit quality indicators and current and past underwriting standards.

For both the asset-specific and the statistically based components of the Allowance for loan losses, management may incorporate guarantor support. The financial wherewithal of the guarantor is evaluated, as applicable, based on net worth, cash flow statements and personal or company financial statements, which are updated and reviewed at least annually. Citi seeks performance on guarantee arrangements in the normal course of business. Seeking performance entails obtaining satisfactory cooperation from the guarantor or borrower in the specific situation. This regular cooperation is indicative of pursuit and successful enforcement of the guarantee; the exposure is reduced without the expense and burden of pursuing a legal remedy. A guarantor's reputation and willingness to work with Citigroup are evaluated based on the historical experience with the guarantor and the knowledge of the marketplace. In the rare event that the guarantor is unwilling or unable to perform or facilitate borrower cooperation, Citi pursues a legal remedy; however, enforcing a guarantee via legal action against the guarantor is not the primary means of resolving a troubled loan situation and rarely occurs. If Citi does not pursue a legal remedy, it is because Citi does not believe that the guarantor has the financial wherewithal to perform regardless of legal action or because there are legal limitations on simultaneously pursuing guarantors and foreclosure. A guarantor's reputation does not impact Citi's decision or ability to seek performance under the guarantee.

In cases where a guarantee is a factor in the assessment of loan losses, it is included via adjustment to the loan's internal risk rating, which in turn is the basis for the adjustment to the statistically based component of the Allowance for loan losses. To date, it is only in rare circumstances that an impaired commercial loan or commercial real estate loan is carried at a value in excess of the appraised value due to a guarantee.

When Citi's monitoring of the loan indicates that the guarantor's wherewithal to pay is uncertain or has deteriorated, there is either no change in the risk rating, because the guarantor's credit support was never initially factored in, or the risk rating is adjusted to reflect that uncertainty or deterioration. Accordingly, a guarantor's ultimate failure to perform or a lack of legal enforcement of the guarantee does not materially impact the allowance for loan losses, as there is typically no further significant adjustment of the loan's risk rating at that time. Where Citi is not seeking performance under the guarantee contract, it provides for loan losses as if the loans were non-performing and not guaranteed.

Reserve Estimates and Policies

Management provides reserves for an estimate of probable losses inherent in the funded loan portfolio on the Consolidated Balance Sheet in the form of an allowance for loan losses. These reserves are established in accordance with Citigroup's credit reserve policies, as approved by the Audit Committee of the Citigroup Board of Directors. Citi's Chief Risk Officer and Chief Financial Officer review the adequacy of the credit loss reserves each quarter with representatives from the risk management and finance staffs for each applicable business area. Applicable business areas include those having classifiably managed portfolios, where internal credit-risk ratings are assigned (primarily ICG and GCB) or modified consumer loans, where concessions were granted due to the borrowers' financial difficulties.

The aforementioned representatives for these business areas present recommended reserve balances for their funded and unfunded lending portfolios along with supporting quantitative and qualitative data discussed below:

Estimated probable losses for non-performing, non-homogeneous exposures within a business line's classifiably managed portfolio and impaired smaller-balance homogeneous loans whose terms have been modified due to the borrowers' financial difficulties, where it was determined that a concession was granted to the borrower. Consideration may be given to the following, as appropriate, when determining this estimate: (i) the present value of expected future cash flows discounted at the loan's original effective rate, (ii) the borrower's overall financial condition, resources and payment record and (iii) the prospects for support from financially responsible guarantors or the realizable value of any collateral. In the determination of the allowance for loan losses for TDRs, management considers a combination of historical re-default rates, the current economic environment and the nature of the modification program when forecasting expected cash flows. When impairment is measured based on the present value of expected future cash flows, the entire change in present value is recorded in Provision for loan losses.

Statistically calculated losses inherent in the classifiably managed portfolio for performing and de minimis non-performing exposures. The calculation is based on (i) Citi's internal system of credit-risk ratings, which are analogous to the risk ratings of the major rating agencies, and (ii) historical default and loss data, including rating agency information regarding default rates from 1983 to 2017 and internal data dating to the early 1970s on severity of losses in the event of default. Adjustments may be made to this

data. Such adjustments include (i) statistically calculated estimates to cover the historical fluctuation of the default rates over the credit cycle, the historical variability of loss severity among defaulted loans and the degree to which there are large obligor concentrations in the global portfolio and (ii) adjustments made for specific known items, such as current environmental factors and credit trends.

In addition, representatives from each of the risk management and finance staffs that cover business areas with delinquency-managed portfolios containing smaller-balance homogeneous loans present their recommended reserve balances based on leading credit indicators, including loan delinquencies and changes in portfolio size as well as economic trends, including current and future housing prices, unemployment, length of time in foreclosure, costs to sell and GDP. This methodology is applied separately for each individual product within each geographic region in which these portfolios exist.

This evaluation process is subject to numerous estimates and judgments. The frequency of default, risk ratings, loss recovery rates, the size and diversity of individual large credits and the ability of borrowers with foreign currency obligations to obtain the foreign currency necessary for orderly debt servicing, among other things, are all taken into account during this review. Changes in these estimates could have a direct impact on the credit costs in any period and could result in a change in the allowance.

Allowance for Unfunded Lending Commitments

A similar approach to the allowance for loan losses is used for calculating a reserve for the expected losses related to unfunded lending commitments and standby letters of credit. This reserve is classified on the balance sheet in Other liabilities. Changes to the allowance for unfunded lending commitments are recorded in Provision for unfunded lending commitments.

Mortgage Servicing Rights (MSRs)

Mortgage servicing rights (MSRs) are recognized as intangible assets when purchased or when the Company sells or securitizes loans acquired through purchase or origination and retains the right to service the loans. Mortgage servicing rights are accounted for at fair value, with changes in value recorded in Other revenue in the Company's Consolidated Statement of Income.

For additional information on the Company's MSRs, see Notes 16 and 21 to the Consolidated Financial Statements.

Goodwill

Goodwill represents the excess of acquisition cost over the fair value of net tangible and intangible assets acquired in a business combination. Goodwill is subject to annual impairment testing and between annual tests if an event occurs or circumstances change that would more-likely-than-not reduce the fair value of a reporting unit below its carrying amount.

Under ASC Topic 350, Intangibles—Goodwill and Other, the Company has an option to assess qualitative factors to determine if it is necessary to perform the goodwill impairment test. If, after assessing the totality of events or circumstances, the Company determines that it is not more-likely-than-not that the fair value of a reporting unit is less than its carrying amount, no further testing is necessary. If, however, the Company determines that it is more-likely-than-not that the fair value of a reporting unit is less than its carrying amount, then the Company must perform the first step of the two-step goodwill impairment test. The Company has an unconditional option to bypass the qualitative assessment for any reporting unit in any reporting period and proceed directly to the first step of the goodwill impairment test.

The first step requires a comparison of the fair value of the individual reporting unit to its carrying value, including goodwill. If the fair value of the reporting unit is in excess of the carrying value, the related goodwill is considered not impaired and no further analysis is necessary. If the carrying value of the reporting unit exceeds the fair value, this is an indication of potential impairment and the second step of testing is performed to measure the amount of impairment, if any, for that reporting unit.

If required, the second step involves calculating the implied fair value of goodwill for each of the affected reporting units. The implied fair value of goodwill is determined in the same manner as the amount of goodwill recognized in a business combination, which is the excess of the fair value of the reporting unit determined in step one over the fair value of the net assets and identifiable intangibles as if the reporting unit were being acquired. If the amount of the goodwill allocated to the reporting unit exceeds the implied fair value of the goodwill in the pro forma purchase price allocation, an impairment charge is recorded for the excess. A recognized impairment charge cannot exceed the amount of goodwill allocated to a reporting unit and cannot subsequently be reversed even if the fair value of the reporting unit recovers.

Upon any business disposition, goodwill is allocated to, and derecognized with, the disposed business based on the ratio of the fair value of the disposed business to the fair value of the reporting unit.

Additional information on Citi's goodwill impairment testing can be found in Note 16 to the Consolidated Financial Statements.

Intangible Assets

Intangible assets—including core deposit intangibles, present value of future profits, purchased credit card relationships, credit card contract related intangibles, other customer relationships and other intangible assets, but excluding MSRs—are amortized over their estimated useful lives. Intangible assets that are deemed to have indefinite useful lives, primarily trade names, are not amortized and are subject to annual impairment tests. An impairment exists if the carrying value of the indefinite-lived intangible asset exceeds its fair value. For other intangible assets subject to amortization, an impairment is recognized if the carrying amount is not recoverable and exceeds the fair value of the intangible asset.

Other Assets and Other Liabilities

Other assets include, among other items, loans HFS, deferred tax assets, equity method investments, interest and fees receivable, premises and equipment (including purchased and developed software), repossessed assets and other receivables. Other liabilities include, among other items, accrued expenses and other payables, deferred tax liabilities and reserves for legal claims, taxes, unfunded lending commitments, repositioning reserves and other matters.

Other Real Estate Owned and Repossessed Assets

Real estate or other assets received through foreclosure or repossession are generally reported in Other assets, net of a valuation allowance for selling costs and subsequent declines in fair value.

Securitizations

There are two key accounting determinations that must be made relating to securitizations. Citi first makes a determination as to whether the securitization entity must be consolidated. Second, it determines whether the transfer of financial assets to the entity is considered a sale under GAAP. If the securitization entity is a VIE, the Company consolidates the VIE if it is the primary beneficiary (as discussed in “Variable Interest Entities” above). For all other securitization entities determined not to be VIEs in which Citigroup participates, consolidation is based on which

party has voting control of the entity, giving consideration to removal and liquidation rights in certain partnership structures. Only securitization entities controlled by Citigroup are consolidated.
Interests in the securitized and sold assets may be retained in the form of subordinated or senior interest-only strips, subordinated tranches, spread accounts and servicing rights. In credit card securitizations, the Company retains a seller's interest in the credit card receivables transferred to the trusts, which is not in securitized form. In the case of consolidated securitization entities, including the credit card trusts, these retained interests are not reported on Citi's Consolidated Balance Sheet. The securitized loans remain on
the balance sheet. Substantially all of the consumer loans sold or securitized through non-consolidated trusts by Citigroup are U.S. prime residential mortgage loans. Retained interests in non-consolidated mortgage securitization trusts are classified as Trading account assets, except for MSRs, which are included in Intangible assets on Citigroup's Consolidated Balance Sheet.

Debt
Short-term borrowings and Long-term debt are accounted for at amortized cost, except where the Company has elected to report the debt instruments, including certain structured notes at fair value, or the debt is in a fair value hedging relationship.

Transfers of Financial Assets
For a transfer of financial assets to be considered a sale: (i) the assets must be legally isolated from the Company, even

in bankruptcy or other receivership, (ii) the purchaser must have the right to pledge or sell the assets transferred (or, if the purchaser is an entity whose sole purpose is to engage in securitization and asset-backed financing activities through the issuance of beneficial interests and that entity is constrained from pledging the assets it receives, each beneficial interest holder must have the right to sell or pledge their beneficial interests) and (iii) the Company may not have an option or obligation to reacquire the assets.

If these sale requirements are met, the assets are removed from the Company's Consolidated Balance Sheet. If the conditions for sale are not met, the transfer is considered to be a secured borrowing, the assets remain on the Consolidated Balance Sheet and the sale proceeds are recognized as the Company's liability. A legal opinion on a sale generally is obtained for complex transactions or where the Company has continuing involvement with assets transferred or with the securitization entity. For a transfer to be eligible for sale accounting, that opinion must state that the asset transfer would be considered a sale and that the assets transferred would not be consolidated with the Company's other assets in the event of the Company's insolvency.

For a transfer of a portion of a financial asset to be considered a sale, the portion transferred must meet the definition of a participating interest. A participating interest must represent a pro rata ownership in an entire financial asset; all cash flows must be divided proportionately, with the same priority of payment; no participating interest in the transferred asset may be subordinated to the interest of another participating interest holder, and no party may have the right to pledge or exchange the entire financial asset unless all participating interest holders agree. Otherwise, the transfer is accounted for as a secured borrowing.

See Note 21 to the Consolidated Financial Statements for further discussion.

Risk Management Activities—Derivatives Used for Hedging Purposes

The Company manages its exposures to market movements outside of its trading activities by modifying the asset and liability mix, either directly or through the use of derivative financial products, including interest rate swaps, futures, forwards and purchased options, as well as foreign-exchange contracts. These end-user derivatives are carried at fair value in Trading account assets and Trading account liabilities.

See Note 22 to the Consolidated Financial Statements for a further discussion of the Company's hedging and derivative activities.

Employee Benefits Expense

Employee benefits expense includes current service costs of pension and other postretirement benefit plans (which are accrued on a current basis), contributions and unrestricted awards under other employee plans, the amortization of restricted stock awards and costs of other employee benefits.

For its most significant pension and postretirement benefit plans (Significant Plans), Citigroup measures and discloses plan obligations, plan assets and periodic plan expense

quarterly, instead of annually. The effect of remeasuring the Significant Plan obligations and assets by updating plan actuarial assumptions on a quarterly basis is reflected in Accumulated other comprehensive income (loss) and periodic plan expense. All other plans (All Other Plans) are remeasured annually. See Note 8 to the Consolidated Financial Statements.

Stock-Based Compensation

The Company recognizes compensation expense related to stock and option awards over the requisite service period, generally based on the instruments' grant-date fair value, reduced by actual forfeitures as they occur. Compensation cost related to awards granted to employees who meet certain age plus years-of-service requirements (retirement-eligible employees) is accrued in the year prior to the grant date, in the same manner as the accrual for cash incentive compensation. Certain stock awards with performance conditions or certain clawback provisions are subject to variable accounting, pursuant to which the associated compensation expense fluctuates with changes in Citigroup's common stock price. See Note 7 to the Consolidated Financial Statements.

Income Taxes

The Company is subject to the income tax laws of the U.S. and its states and municipalities, as well as the non-U.S. jurisdictions in which it operates. These tax laws are complex and may be subject to different interpretations by the taxpayer and the relevant governmental taxing authorities. In establishing a provision for income tax expense, the Company must make judgments and interpretations about these tax laws. The Company must also make estimates about when in the future certain items will affect taxable income in the various tax jurisdictions, both domestic and foreign.

Disputes over interpretations of the tax laws may be subject to review and adjudication by the court systems of the various tax jurisdictions, or may be settled with the taxing authority upon examination or audit. The Company treats interest and penalties on income taxes as a component of Income tax expense.

Deferred taxes are recorded for the future consequences of events that have been recognized in financial statements or tax returns, based upon enacted tax laws and rates. Deferred tax assets are recognized subject to management’s judgment about whether realization is more-likely-than-not. ASC 740, Income Taxes, sets out a consistent framework to determine the appropriate level of tax reserves to maintain for uncertain tax positions. This interpretation uses a two-step approach wherein a tax benefit is recognized if a position is more-likely-than-not to be sustained. The amount of the benefit is then measured to be the highest tax benefit that is more than 50% likely to be realized. ASC 740 also sets out disclosure requirements to enhance transparency of an entity’s tax reserves.

See Note 9 to the Consolidated Financial Statements for a further description of the Company’s tax provision and related income tax assets and liabilities.

Commissions, Underwriting and Principal Transactions
Commissions and fees revenues are recognized in income when earned. Underwriting revenues are recognized in income typically at the closing of the transaction. Principal transactions revenues are recognized in income on a trade-date basis. See Note 5 to the Consolidated Financial Statements for a description of the Company's revenue recognition policies for Commissions and fees, and Note 6 to the Consolidated Financial Statements for details of Principal transactions revenue.

Earnings per Share
Earnings per share (EPS) is computed after deducting preferred stock dividends. The Company has granted restricted and deferred share awards with dividend rights that are considered to be participating securities, which are akin to a second class of common stock. Accordingly, a portion of Citigroup's earnings is allocated to those participating securities in the EPS calculation.
Basic earnings per share is computed by dividing income available to common stockholders after the allocation of dividends and undistributed earnings to the participating securities by the weighted average number of common shares outstanding for the period. Diluted earnings per share reflects the potential dilution that could occur if securities or other contracts to issue common stock were exercised. It is computed after giving consideration to the weighted average dilutive effect of the Company's stock options and warrants and convertible securities and after the allocation of earnings to the participating securities. Anti-dilutive options and warrants are disregarded in the EPS calculations.

Use of Estimates
Management must make estimates and assumptions that affect the Consolidated Financial Statements and the related Notes to the Consolidated Financial Statements. Such estimates are used in connection with certain fair value measurements. See Note 24 to the Consolidated Financial Statements for further discussions on estimates used in the determination of fair value. Moreover, estimates are significant in determining the amounts of other-than-temporary impairments, impairments of goodwill and other intangible assets, provisions for probable losses that may arise from credit-related exposures and probable and estimable losses related to litigation and regulatory proceedings, and income taxes. While management makes its best judgment, actual amounts or results could differ from those estimates.

Cash Flows
Cash equivalents are defined as those amounts included in Cash and due from banks and predominately all of Deposits with banks. Cash flows from risk management activities are classified in the same category as the related assets and liabilities.

Related Party Transactions
The Company has related party transactions with certain of its subsidiaries and affiliates. These transactions, which are primarily short-term in nature, include cash accounts, collateralized financing transactions, margin accounts, derivative transactions, charges for operational support and the borrowing and lending of funds, and are entered into in the ordinary course of business.

ACCOUNTING CHANGES

SEC Staff Accounting Bulletin 118
On December 22, 2017, the SEC issued Staff Accounting Bulletin (SAB) 118, which set forth the accounting for the changes in tax law caused by the enactment of the Tax Cuts and Jobs Act (Tax Reform). SAB 118 provided guidance where the accounting under ASC 740 was incomplete for certain income tax effects of Tax Reform, at the time of the issuance of an entity's financial statements for the period in which Tax Reform was enacted (provisional items). Citi disclosed several provisional items recorded as part of its $22.6 billion fourth quarter 2017 charge related to Tax Reform.

Citi completed its accounting for Tax Reform under SAB 118 during the fourth quarter of 2018 and recorded a one-time, non-cash tax benefit of $94 million in Corporate/Other related to amounts that were considered provisional pursuant to SAB 118. The adjustments related to the provisional amounts consisted of a $1.2 billion benefit relating to a reduction of the valuation allowance against Citi’s FTC carry-forwards and its U.S. residual DTAs related to its non-U.S. branches, offset by an additional $0.2 billion charge related to the impact of a change to a “quasi-territorial tax system” and an additional $0.9 billion charge related to the impact of deemed repatriation of undistributed earnings of non-U.S. subsidiaries.
Also, Citi has made a policy election to account for taxes on GILTI as incurred.

Revenue Recognition
In May 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2014-09, Revenue from Contracts with Customers (Revenue Recognition), which outlines a single comprehensive model for entities to use in accounting for revenue arising from contracts with customers. The core principle of the revenue model is that an entity recognizes revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The ASU defines the promised good or service as the performance obligation under the contract.
While the guidance replaces most existing revenue recognition guidance in GAAP, the ASU is not applicable to financial instruments and, therefore, does not impact a majority of the Company’s revenues, including net interest income, loan fees, gains on sales and mark-to-market accounting.

In accordance with the new revenue recognition standard, Citi has identified the specific performance obligation (promised services) associated with the contract with the customer and has determined when that specific performance obligation has been satisfied, which may be at a point in time or over time depending on how the performance obligation is defined. The contracts with customers also contain the transaction price, which consists of fixed consideration and/or consideration that may vary (variable consideration), and is defined as the amount of consideration an entity expects to be entitled to when or as the performance obligation is satisfied, excluding amounts collected on behalf of third parties (including transaction taxes). The amounts recognized at the point in time the performance obligation is satisfied may differ from the ultimate transaction price associated with that performance obligation when a portion of it is based on variable consideration. For example, some consideration is based on the client's month-end balance or market values which are unknown at the time the contract is executed. The remaining transaction price amount, if any, will be recognized as the variable consideration becomes determinable. In certain transactions, the performance obligation is considered satisfied at a point in time in the future. In this instance, Citi defers revenue on the balance sheet that will only be recognized upon completion of the performance obligation.

The new revenue recognition standard further clarified the guidance related to reporting revenue gross as principal versus net as an agent. In many cases, Citi outsources a component of its performance obligations to third parties. The Company has determined that it acts as principal in the majority of these transactions and therefore presents the amounts paid to these third parties gross within operating expenses.

The Company has retrospectively adopted this standard as of January 1, 2018 and as a result was required to report amounts paid to third parties where Citi is principal to the contract within Operating expenses. The adoption resulted in an increase in both revenue and expenses of approximately $1 billion for each of the years ended December 31, 2018 and 2017 with similar amounts for prior years. Prior to adoption, these expense amounts were reported as contra revenue primarily within Commissions and fees and Administration and other fiduciary fees revenues. Accordingly, prior periods have been reclassified to conform to the new presentation.

See Note 5 to the Consolidated Financial Statements for a description of the Company's revenue recognition policies for Commissions and fees and Administration and other fiduciary fees.

Income Tax Impact of Intra-Entity Transfers of Assets

In October 2016, the FASB issued ASU No. 2016-16, Income Taxes—Intra-Entity Transfers of Assets Other Than Inventory, which requires an entity to recognize the income tax consequences of an intra-entity transfer of an asset other than inventory when the transfer occurs. The ASU was effective January 1, 2018 and was adopted as of that date. The impact of this standard was an increase of DTAs by

approximately $300 million, a decrease of Retained earnings by approximately $80 million and a decrease of prepaid tax assets by approximately $380 million.

Clarifying the Definition of a Business

In January 2017, the FASB issued ASU No. 2017-01, Business Combinations (Topic 805): Clarifying the Definition of a Business. The definition of a business directly and indirectly affects many areas of accounting (e.g., acquisitions, disposals, goodwill and consolidation). The ASU narrows the definition of a business by introducing a quantitative screen as the first step, such that if substantially all of the fair value of the gross assets acquired is concentrated in a single identifiable asset or a group of similar identifiable assets, then the set of transferred assets and activities is not a business. If the set is not scoped out from the quantitative screen, the entity then evaluates whether the set meets the requirement that a business include, at a minimum, an input and a substantive process that together significantly contribute to the ability to create outputs.

Citi adopted the ASU upon its effective date on January 1, 2018, prospectively. The ongoing impact of the ASU will depend upon the acquisition and disposal activities of Citi. If fewer transactions qualify as a business, there could be less initial recognition of Goodwill, but also less goodwill allocated to disposals. There was no impact during 2018 from the adoption of this ASU.

Changes in Accounting for Pension and Postretirement (Benefit) Expense

In March 2017, the FASB issued ASU No. 2017-07, Compensation—Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost, which changes the income statement presentation of net benefit expense and requires restating the Company's financial statements for each of the earlier periods presented in Citi's annual and interim financial statements. The change in presentation was effective for annual and interim periods starting January 1, 2018. The ASU requires that only the service cost component of net benefit expense be included in Compensation and benefits on the income statement. The other components of net benefit expense are required to be presented outside of Compensation and benefits and are presented in Other operating expenses. Since both of these income statement line items are part of Operating expenses, total Operating expenses and Net income will not change. This change in presentation did not have a material effect on Compensation and benefits and Other operating expenses and is applied prospectively. The components of the net benefit expense are currently disclosed in Note 8 to the Consolidated Financial Statements.

The new standard also changes the components of net benefit expense that are eligible for capitalization when employee costs are capitalized in connection with various activities, such as internally developed software, construction-in-progress and loan origination costs. Prospectively from January 1, 2018, only the service cost component of net benefit expense may be capitalized. Existing capitalized balances are not affected. This change in amounts eligible for capitalization does not have a material effect on the Company's Consolidated Financial Statements and related disclosures.

Pension Accounting

In August 2018, the FASB issued ASU 2018-14, Defined Benefit Plans (Topic 715-20): Disclosure Framework - Changes to the Disclosure Requirements for Defined Benefit Plans. The amendments modify certain disclosure requirements for defined benefit plans and are effective January 1, 2021, with early adoption permitted. The Company adopted this ASU as of December 31, 2018 and the adoption of this standard did not have a material impact on the Company.

Hedging

In August 2017, the FASB issued ASU No. 2017-12, Targeted Improvements to Accounting for Hedging Activities, which better aligns an entity's risk management activities and financial reporting for hedging relationships through changes to the designation and measurement guidance for qualifying hedging relationships and the presentation of hedge results. The ASU requires the change in the fair value of the hedging instrument to be presented in the same income statement line as the hedged item and also requires expanded disclosures. Citi adopted this standard on January 1, 2018 and transferred approximately $4 billion of pre-payable mortgage-backed securities and municipal bonds from held-to-maturity (HTM) into available-for-sale (AFS) securities classification as permitted as a one-time transfer upon adoption of the standard, as these assets were deemed to be eligible to be hedged under the last-of-layer hedge strategy. The impact to opening Retained earnings was immaterial. See Note 19 to the Consolidated Financial Statements for more information.

Recognition and Measurement of Financial Assets and Financial Liabilities

In January 2016, the FASB issued ASU No. 2016-01, Financial Instruments—Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities, which addresses certain aspects of recognition, measurement, presentation and disclosure of financial instruments. In February 2018, the FASB issued ASU No. 2018-03, Technical Corrections and Improvements to Financial Instruments—Overall (Subtopic 825-10), to clarify certain provisions in ASU 2016-01.

The ASUs require entities to present separately in AOCI the portion of the total change in the fair value of a liability resulting from a change in the instrument-specific credit risk when the entity has elected to measure the liability at fair value in accordance with the fair value option for financial instruments. The ASUs also require equity investments (except those accounted for under the equity method of accounting or those that result in consolidation of the investee) to be measured at fair value with changes in fair value recognized in net income, thus eliminating the AFS

category for equity investments. However, Federal Reserve Bank and Federal Home Loan Bank stock, as well as certain exchange seats, will continue to be presented at cost. The ASUs also provide an instrument-by-instrument election to measure non-marketable equity investments using a measurement alternative. Under the measurement alternative, the investment is carried at cost plus or minus changes resulting from observable prices in orderly transactions for the identical or a similar investment of the same issuer. Equity securities under the measurement alternative are also assessed for impairment. Finally, the ASUs require that fair value disclosures for financial instruments not measured at fair value on the balance sheet be presented at their exit prices (e.g., held-for-investment loans).

Citi early adopted the provisions of ASU 2016-01
related to presentation of the change in fair value of liabilities for which the fair value option was elected, related to changes in Citigroup's own credit spreads in Accumulated other comprehensive income (loss) (AOCI) effective

January 1, 2016. Accordingly, these amounts have been reflected as a component of AOCI, whereas these amounts were previously recognized in Citigroup's revenues and net income. The impact of adopting this amendment resulted in a cumulative catch-up reclassification from Retained earnings to AOCI of an accumulated after-tax loss of approximately $15 million at January 1, 2016. Financial statements for periods prior to 2016 were not subject to restatement under the provisions of this ASU. For additional information, see Notes 19, 24 and 25 to the Consolidated Financial Statements.
Citi adopted the other provisions of ASU 2016-01 and ASU 2018-03 as of January 1, 2018. Accordingly, as of the first quarter of 2018, the changes to accounting for equity securities and fair value disclosures have been reflected in Citigroup's financial statements. The impact of adopting the change to AFS equity securities resulted in a cumulative catch-up reclassification from AOCI to Retained earnings of an accumulated after-tax gain of approximately $3 million at January 1, 2018. Citi elected the measurement alternative for all non-marketable equity investments that no longer qualify for cost measurement under the ASUs. This provision in the ASUs was adopted prospectively. Financial statements for periods prior to 2018 were not subject to restatement under the provisions of the ASUs. For additional information, see Notes 13, 19 and 24 to the Consolidated Financial Statements.

Statement of Cash Flows
In November 2016, the FASB issued ASU No. 2016-18, Restricted Cash, which requires that companies present cash, cash equivalents and amounts generally described as restricted cash or restricted cash equivalents (restricted cash) when reconciling beginning-of-period and end-of-period totals on the Statement of Cash Flows. In connection with the adoption of the ASU, Citigroup also changed its definition of cash and cash equivalents to include all of Cash and due from banks and predominately all of Deposits with banks. The Company has retrospectively adopted this ASU

as of January 1, 2018 and as a result Net cash provided by investing activities of continuing operations on the Statement of Cash Flows for the years ended December 31, 2017 and 2016 increased by $19.3 billion and $25.3 billion, respectively.
In August 2016, the FASB issued ASU No. 2016-15, Classification of Certain Cash Receipts and Cash Payments, which provides guidance on the classification and presentation of certain cash receipts and payments on the Statement of Cash Flows. The Company has retrospectively adopted this ASU as of January 1, 2018, which resulted in immaterial changes to Citi's Consolidated Statement of Cash Flows.

Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income
On February 14, 2018, the Financial Accounting Standards Board (FASB) issued ASU No. 2018-02, Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income. The ASU allows a reclassification from Accumulated other comprehensive income (loss) (AOCI) to Retained earnings for the deferred taxes previously recorded in AOCI that exceed the current federal tax rate of 21% resulting from the newly enacted corporate tax rate in Tax Reform and other stranded tax amounts related to the application of Tax Reform that Citi elects to reclassify. The ASU allows adjustments to reclassification amounts in subsequent periods as a result of changes to the amounts recorded under SAB 118. Citi elected to early adopt the ASU effective December 31, 2017, which affected only the period that the effects related to the one-time Tax Reform charge were recognized. In addition to the reclassification of deferred taxes recorded in AOCI that exceed the current federal tax rate, Citi also reclassified amounts recorded in AOCI related to the effects of the shift to a territorial system related to the application of Tax Reform using the portfolio method.
The effect of adopting the ASU resulted in an increase of $3.3 billion to Retained earnings at December 31, 2017 due to the reclassification of AOCI to Retained earnings.

Premium Amortization on Purchased Callable
Debt Securities
In March 2017, the FASB issued ASU No. 2017-08, Receivables—Nonrefundable Fees and Other Costs (Subtopic 310-20): Premium Amortization on Purchased Callable Debt Securities, which amends the amortization period for certain purchased callable debt securities held at a premium. The ASU requires entities to amortize premiums on debt securities by the first call date when the securities have fixed and determinable call dates and prices. The scope of the ASU includes all accounting premiums, such as purchase premiums and cumulative fair value hedge adjustments. The ASU does not change the accounting for discounts, which continue to be recognized over the contractual life of a security.
Citi early adopted the ASU in the second quarter of 2017, with an effective date of January 1, 2017. Adoption of the ASU is on a modified retrospective basis through a

cumulative effect adjustment to Retained earnings as of the beginning of the year of adoption. Adoption of the ASU primarily affected Citi's AFS and HTM portfolios of callable state and municipal debt securities. The ASU adoption resulted in a net reduction to total stockholders' equity of $156 million (after-tax), effective as of January 1, 2017. This amount is composed of a reduction of approximately $660 million to Retained earnings for the incremental amortization of purchase premiums and cumulative hedge adjustments generated under fair value hedges of these callable debt securities, offset by an increase to AOCI of $504 million related to the cumulative fair value hedge adjustments reclassified to Retained earnings for AFS debt securities.

Accounting for Stock-Based Compensation
In March 2016, the FASB issued ASU No. 2016-09, Compensation—Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting in order to simplify certain complex aspects of the accounting for income taxes and forfeitures related to employee stock-based compensation. The guidance became effective for Citi beginning on January 1, 2017. Under the new standard, excess tax benefits and deficiencies related to employee stock-based compensation are recognized directly within income tax expense or benefit in Citi's Consolidated Statement of Income, rather than within additional paid-in capital. The impact of this change was not material in the

first quarter of 2017 or each subsequent quarterly period of 2017 as the majority of employees' deferred stock-based compensation awards are granted within the first quarter of each year and, therefore, vest within the first quarter of each year, commensurate with vesting in equal annual installments. For additional information on these receivables and payables, see Note 7 to the Consolidated Financial Statements.
Additionally, as permitted under the new guidance, Citi made an accounting policy election to account for forfeitures of awards as they occur, which represents a change from the previous requirement to estimate forfeitures when recognizing compensation expense. This change resulted in a cumulative effect adjustment to Retained earnings that was not material at January 1, 2017.

Fair Value Measurement
In August 2018, the FASB issued ASU No. 2018-13, Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement. The amendments modify certain disclosure requirements for fair value measurements and are effective January 1, 2020, with early adoption permitted. The Company early adopted this ASU as of December 31, 2018 in its entirety. The adoption of this standard did not have a material impact on the Company.

2. DISCONTINUED OPERATIONS AND SIGNIFICANT DISPOSALS

Summary of Discontinued Operations

The Company's Discontinued operations consisted of residual activities related to the sales of the Brazil Credicard business in 2013, the Egg Banking plc Credit Card Business in 2011 and the German Retail Banking business in 2008. All Discontinued operations results are recorded within Corporate/Other.

The following summarizes financial information for all Discontinued operations:

In millions of dollars	2018	2017	2016
Total revenues, net of interest expense	$—	$—	$—
Loss from discontinued operations	$(26)	$(104)	$(80)
Provision (benefit) for income taxes	(18)	7	(22)
Loss from discontinued operations, net of taxes	$(8)	$(111)	$(58)

Cash flows from Discontinued operations were not material for all periods presented.

Significant Disposals

The transactions described below were identified as significant disposals during 2018, 2017 and 2016. The major classes of Assets and Liabilities derecognized from the Consolidated Balance Sheet at closing, and the income (loss) before taxes related to each business until the disposal date, are presented below.

Sale of Mexico Asset Management Business

On September 21, 2018, Citi completed the sale of its Mexico asset management business, which was part of Latin America GCB. As part of the sale, Citi derecognized total assets of $137 million, including goodwill of $32 million, which were classified as held-for-sale beginning in the fourth quarter of 2017, and total liabilities of $41 million. The transaction resulted in a pretax gain on sale of approximately $250 million (approximately $150 million after-tax) recorded in Other revenue in the third quarter of 2018. Further, Citi and the buyer entered into a 10-year services framework agreement, with Citi acting as the distributor in exchange for an ongoing fee.

Income before taxes, excluding the pretax gain on sale, for the divested business was as follows:

In millions of dollars	2018	2017	2016
Income before taxes	$123	$164	$155

Sale of Fixed Income Analytics and Index Business

On August 31, 2017, Citi completed the sale of a fixed income analytics business and a fixed income index business that were part of Markets and securities services within Institutional Clients Group (ICG). As part of the sale, Citi derecognized Total assets of $112 million, including goodwill of $72 million, while the derecognized liabilities were $18 million. The transaction resulted in a pretax gain on sale of approximately $580 million ($355 million after-tax) recorded in Other revenue in ICG during 2017.

Income before taxes excluding the pretax gain on sale for the divested businesses was immaterial for the periods presented.

Exit of U.S. Mortgage Service Operations

Citigroup executed agreements during the first quarter of 2017 to effectively exit its direct U.S. mortgage servicing operations by the end of 2018 to intensify focus on originations. The exit of the mortgage servicing operations included the sale of mortgage servicing rights and execution of a subservicing agreement for the remaining Citi-owned loans and certain other mortgage servicing rights. As part of this transaction, Citi has also transferred certain employees.

This transaction, which was part of Corporate/Other, resulted in a pretax loss of $331 million ($207 million after-tax) recorded in Other revenue during 2017. The loss on sale did not include certain other costs and charges related to the disposed operation recorded primarily in Operating expenses during 2017, resulting in a total pretax loss of $382 million. As part of the sale, Citi derecognized a total of $1,162 million of servicing-related assets, including $1,046 million of Mortgage servicing rights, related to approximately 750,000 Fannie Mae and Freddie Mac held loans with outstanding balances of approximately $93 billion. Excluding the loss on sale and the additional charges, income before taxes for the disposed operation was immaterial for the periods presented.

Sale of CitiFinancial Canada Consumer Finance Business

On March 31, 2017, Citi completed the sale of CitiFinancial Canada (CitiFinancial), which was part of Corporate/Other, and included 220 retail branches and approximately 1,400 employees. As part of the sale, Citi derecognized Total assets of approximately $1.9 billion, including $1.7 billion consumer loans (net of allowance), and Total liabilities of approximately $1.5 billion related to intercompany borrowings, which were settled at closing of the transaction. Separately, during 2017 and prior to closing of the transaction, CitiFinancial settled $0.4 billion of debt issued through loan securitizations. The sale of CitiFinancial generated a pretax gain on sale of approximately $350 million recorded in Other revenue ($178 million after-tax) during 2017.

Income before taxes, excluding the pretax gain on sale for the divested business, was as follows:

In millions of dollars	2018	2017	2016
Income before taxes	$ —	$ 41	$ 139

3. BUSINESS SEGMENTS

Citigroup's activities are conducted through the following business segments: Global Consumer Banking (GCB) and Institutional Clients Group (ICG). In addition, Corporate/Other includes activities not assigned to a specific business segment, as well as certain North America loan portfolios, discontinued operations and other legacy assets.

The business segments are determined based on products and services provided or type of customers served, of which those identified as non-core are recorded in Corporate/Other and are reflective of how management currently evaluates financial information to make business decisions.

GCB includes a global, full-service consumer franchise delivering a wide array of banking, including commercial banking, credit card lending and investment services through a network of local branches, offices and electronic delivery systems and consists of three GCB businesses: North America, Latin America and Asia (including consumer banking activities in certain EMEA countries).

ICG consists of Banking and Markets and securities services and provides corporate, institutional, public sector and high-net-worth clients in 98 countries and jurisdictions with a broad range of banking and financial products and services.

Corporate/Other includes certain unallocated costs of global functions, other corporate expenses and net treasury results, unallocated corporate expenses, offsets to certain line-

item reclassifications and eliminations, the results of certain North America legacy loan portfolios, discontinued operations and unallocated taxes.

The accounting policies of these reportable segments are the same as those disclosed in Note 1 to the Consolidated Financial Statements.

The prior-period balances reflect reclassifications to conform the presentation for all periods to the current period's presentation. Effective January 1, 2018, financial data was reclassified to reflect:

- the adoption of ASU No. 2014-09, Revenue Recognition, which occurred on January 1, 2018 on a retrospective basis. See "Accounting Changes" in Note 1 to the Consolidated Financial Statements;
- the re-attribution of certain costs between Corporate/Other and GCB and ICG; and
- certain other immaterial reclassifications.

Citi's consolidated net income (loss) reported in its 2017 Annual Report on Form 10-K remains unchanged for all periods presented as a result of the changes and reclassifications discussed above.

The following table presents certain information regarding the Company's continuing operations by segment:

	Revenues, net of interest expense(1)			Provision (benefits) for income taxes(2)			Income (loss) from continuing operations(2)(3)			Identifiable assets	
In millions of dollars, except identifiable assets in billions	2018	2017	2016	2018	2017	2016	2018	2017	2016	2018	2017
Global Consumer Banking	$33,777	$32,838	$31,624	$1,839	$3,316	$2,639	$5,762	$3,878	$4,931	$432	$428
Institutional Clients Group	36,994	36,474	33,940	3,631	7,008	4,260	12,200	9,066	9,525	1,394	1,336
Corporate/Other	2,083	3,132	5,233	(113)	19,064	(455)	126	(19,571)	577	91	78
Total	$72,854	$72,444	$70,797	$5,357	$29,388	$6,444	$18,088	$(6,627)	$15,033	$1,917	$1,842

(1) Includes total revenues, net of interest expense (excluding Corporate/Other), in North America of $33.4 billion, $34.2 billion and $32.6 billion; in EMEA of $11.8 billion, $10.9 billion and $10.0 billion; in Latin America of $10.3 billion, $9.6 billion and $9.1 billion; and in Asia of $15.3 billion, $14.6 billion and $13.9 billion in 2018, 2017 and 2016, respectively. These regional numbers exclude Corporate/Other, which largely operates within the U.S.

(2) Corporate/Other, GCB and ICG 2017 results include the one-time impact of Tax Reform.

(3) Includes pretax provisions for credit losses and for benefits and claims in the GCB results of $7.6 billion, $7.6 billion and $6.4 billion; in the ICG results of $184 million, ($15) million and $486 million; and in Corporate/Other results of ($202) million, ($175) million and $69 million in 2018, 2017 and 2016, respectively.

4. INTEREST REVENUE AND EXPENSE

Interest revenue and Interest expense consisted of the following:

In millions of dollars	2018		2017		2016	
Interest revenue						
Loan interest, including fees	$	45,682	$	41,736	$	40,125
Deposits with banks	2,203		1,635		971	
Federal funds sold and securities borrowed or purchased under agreements to resell	5,492		3,249		2,543	
Investments, including dividends	9,494		8,295		7,582	
Trading account assets(1)	6,284		5,501		5,738	
Other interest	1,673		1,163		1,029	
Total interest revenue	$	70,828	$	61,579	$	57,988
Interest expense						
Deposits(2)	$	9,616	$	6,587	$	5,300
Federal funds purchased and securities loaned or sold under agreements to repurchase	4,889		2,661		1,912	
Trading account liabilities(1)	1,001		638		410	
Short-term borrowings	2,209		1,059		477	
Long-term debt	6,551		5,573		4,413	
Total interest expense	$	24,266	$	16,518	$	12,512
Net interest revenue	$	46,562	$	45,061	$	45,476
Provision for loan losses	7,354		7,503		6,749	
Net interest revenue after provision for loan losses	$	39,208	$	37,558	$	38,727

(1) Interest expense on Trading account liabilities is reported as a reduction of interest revenue from Trading account assets.

(2) Includes deposit insurance fees and charges of $1,182 million, $1,249 million and $1,145 million for 2018, 2017 and 2016, respectively.

5. COMMISSIONS AND FEES; ADMINISTRATION AND OTHER FIDUCIARY FEES

The primary components of Commissions and fees revenue are investment banking fees, brokerage commissions, credit- and bank-card income and deposit-related fees.

Investment banking fees are substantially composed of underwriting and advisory revenues. Such fees are recognized at the point in time when Citigroup's performance under the terms of a contractual arrangement is completed, which is typically at the closing of a transaction. Reimbursed expenses related to these transactions are recorded as revenue and are included within investment banking fees. In certain instances for advisory contracts, Citi will receive amounts in advance of the deal's closing. In these instances, the amounts received will be recognized as a liability and not recognized in revenue until the transaction closes. The contract liability amount for the periods presented was negligible. Out-of-pocket expenses associated with underwriting activity are deferred and recognized at the time the related revenue is recognized, while out-of-pocket expenses associated with advisory arrangements are expensed as incurred. In general, expenses incurred related to investment banking transactions, whether consummated or not, are recorded in Other operating expenses. The Company has determined that it acts as principal in the majority of these transactions and therefore presents expenses gross within Other operating expenses.

Brokerage commissions primarily include commissions and fees from the following: executing transactions for clients on exchanges and over-the-counter markets; sales of mutual funds and other annuity products; and assisting clients in clearing transactions, providing brokerage services and other such activities. Brokerage commissions are recognized in Commissions and fees at the point in time the associated service is fulfilled, generally on the trade execution date. Gains or losses, if any, on these transactions are included in Principal transactions (see Note 6 to the Consolidated Financial Statements). Sales of certain investment products include a portion of variable consideration associated with the underlying product. In these instances, a portion of the revenue associated with the sale of the product is not recognized until the variable consideration becomes fixed. The Company recognized \$521 million, \$416 million and \$371 million of revenue related to such variable consideration for the years ended December 31, 2018, 2017 and 2016, respectively. These amounts primarily relate to performance obligations satisfied in prior periods.

Credit- and bank-card income is primarily composed of interchange fees, which are earned by card issuers based on purchase sales, and certain card fees, including annual fees. Costs related to customer reward programs and certain payments to partners (primarily based on program sales, profitability and customer acquisitions) are recorded as a reduction of credit- and bank-card income. Interchange revenues are recognized as earned on a daily basis when Citi's performance obligation to transmit funds to the payment networks has been satisfied. Annual card fees, net of origination costs, are deferred and amortized on a straight-line basis over a 12-month period. Costs related to card reward programs are recognized when the rewards are earned by the cardholders. Payments to partners are recognized when incurred.

Deposit-related fees consist of service charges on deposit accounts and fees earned from performing cash management activities and other deposit account services. Such fees are recognized in the period in which the related service is provided.

Transactional service fees primarily consist of fees charged for processing services such as cash management, global payments, clearing, international funds transfer and other trade services. Such fees are recognized as/when the associated service is satisfied, which normally occurs at the point in time the service is requested by the customer and provided by Citi.

Insurance distribution revenue consists of commissions earned from third-party insurance companies for marketing and selling insurance policies on behalf of such entities. Such commissions are recognized in Commissions and fees at the point in time the associated service is fulfilled, generally when the insurance policy is sold to the policyholder. Sales of certain insurance products include a portion of variable consideration associated with the underlying product. In these instances, a portion of the revenue associated with the sale of the policy is not recognized until the variable consideration becomes determinable. The Company recognized $386 million, $440 million and $479 million of revenue related to such variable consideration for the years ended December 31, 2018, 2017 and 2016, respectively. These amounts primarily relate to performance obligations in prior periods.

Insurance premiums consist of premium income from insurance policies that Citi has underwritten and sold to policyholders.

The following table presents Commissions and fees revenue:

	2018				2017				2016			
In millions of dollars	ICG	GCB	Corp/Other	Total	ICG	GCB	Corp/Other	Total	ICG	GCB	Corp/Other	Total
Investment banking	$3,568	$—	$ —	$3,568	$3,817	$—	$ —	$3,817	$3,000	$—	$ —	$3,000
Brokerage commissions	1,977	815	—	2,792	1,889	826	3	2,718	1,748	636	11	2,395
Credit- and bank-card income												
Interchange fees	1,072	8,117	11	9,200	950	7,526	99	8,575	837	6,189	164	7,190
Card-related loan fees	63	627	12	702	53	693	48	794	27	784	65	876
Card rewards and partner payments	(503)	(8,254)	(12)	(8,769)	(425)	(7,243)	(57)	(7,725)	(361)	(6,084)	(111)	(6,556)
Deposit-related fees(1)	949	654	1	1,604	947	726	14	1,687	818	721	19	1,558
Transactional service fees	718	98	4	820	738	91	49	878	700	84	136	920
Corporate finance(2)	729	5	—	734	761	5	—	766	741	4	—	745
Insurance distribution revenue(3)	14	565	11	590	12	562	68	642	10	584	90	684
Insurance premiums(3)	—	119	—	119	—	122	—	122	—	136	144	280
Loan servicing	156	122	37	315	146	101	95	342	147	127	77	351
Other	25	143	14	182	(38)	99	30	91	31	90	114	235
Total commissions and fees(4)	$8,768	$3,011	$ 78	$11,857	$8,850	$3,508	$ 349	$12,707	$7,698	$3,271	$ 709	$11,678

(1) Includes overdraft fees of $128 million, $135 million and $133 million for the years ended December 31, 2018, 2017 and 2016, respectively. Overdraft fees are accounted for under ASC 310.

(2) Consists primarily of fees earned from structuring and underwriting loan syndications or related financing activity. This activity is accounted for under ASC 310.

(3) Previously reported as insurance premiums in the Consolidated Statement of Income.

(4) Commissions and fees includes $(6,766) million, $(5,568) million and $(4,169) million not accounted for under ASC 606, Revenue from Contracts with Customers, for the years ended December 31, 2018, 2017 and 2016, respectively. Amounts reported in Commissions and fees accounted for under other guidance primarily include card-related loan fees, card reward programs and certain partner payments, corporate finance fees, insurance premiums and loan servicing fees.

Administration and Other Fiduciary Fees

Administration and other fiduciary fees are primarily composed of custody fees and fiduciary fees.

The custody product is composed of numerous services related to the administration, safekeeping and reporting for both U.S. and non-U.S. denominated securities. The services offered to clients include trade settlement, safekeeping, income collection, corporate action notification, record-keeping and reporting, tax reporting and cash management. These services are provided for a wide range of securities, including but not limited to equities, municipal and corporate bonds, mortgage- and asset-backed securities, money market instruments, U.S. Treasuries and agencies, derivative instruments, mutual funds, alternative investments and precious metals. Custody fees are recognized as or when the associated promised service is satisfied, which normally occurs at the point in time the service is requested by the customer and provided by Citi.

Fiduciary fees consist of trust services and investment management services. As an escrow agent, Citi receives, safe-keeps, services and manages clients' escrowed assets such as cash, securities, property (including intellectual property), contracts or other collateral. Citi performs its escrow agent duties by safekeeping the funds during the specified time period agreed upon by all parties and therefore earns its revenue evenly during the contract duration.

Investment management services consist of managing assets on behalf of Citi's retail and institutional clients. Revenue from these services primarily consists of asset-based fees for advisory accounts, which are based on the market value of the client's assets and recognized monthly, when the market value is fixed. In some instances, the Company contracts with third-party advisors and with third-party custodians. The Company has determined that it acts as principal in the majority of these transactions and therefore presents the amounts paid to third parties gross within Other operating expenses.

The following table presents Administration and other fiduciary fees:

	2018				2017				2016			
In millions of dollars	ICG	GCB	Corp/Other	Total	ICG	GCB	Corp/Other	Total	ICG	GCB	Corp/Other	Total
Custody fees	$1,494	$136	$ 65	$1,695	$1,505	$167	$ 56	$1,728	$1,353	$163	$ 48	$1,564
Fiduciary fees	645	597	43	1,285	593	575	91	1,259	554	539	50	1,143
Guarantee fees	536	57	7	600	535	54	8	597	523	54	10	587
Total administration and other fiduciary fees(1)	$2,675	$790	$ 115	$3,580	$2,633	$796	$ 155	$3,584	$2,430	$756	$ 108	$3,294

(1) Administration and other fiduciary fees includes $600 million, $597 million and $587 million for the years ended December 31, 2018, 2017 and 2016, respectively, that are not accounted for under ASC 606, Revenue from Contracts with Customers. These amounts include guarantee fees.

6. PRINCIPAL TRANSACTIONS

Citi's Principal transactions revenue consists of realized and unrealized gains and losses from trading activities. Trading activities include revenues from fixed income, equities, credit and commodities products and foreign exchange transactions that are managed on a portfolio basis characterized by primary risk. Not included in the table below is the impact of net interest revenue related to trading activities, which is an integral part of trading activities' profitability. For additional information regarding Principal transactions revenue, see

Note 4 to the Consolidated Financial Statements for information about net interest revenue related to trading activities. Principal transactions include CVA (credit valuation adjustments on derivatives) and FVA (funding valuation adjustments) on over-the-counter derivatives. These adjustments are discussed further in Note 24 to the Consolidated Financial Statements.

The following table presents Principal transactions revenue:

In millions of dollars	2018	2017	2016
Interest rate risks(1)	$5,186	$5,301	$4,229
Foreign exchange risks(2)	1,423	2,435	1,699
Equity risks(3)	1,346	525	330
Commodity and other risks(4)	662	425	899
Credit products and risks(5)	445	789	700
Total	$9,062	$9,475	$7,857

(1) Includes revenues from government securities and corporate debt, municipal securities, mortgage securities and other debt instruments. Also includes spot and forward trading of currencies and exchange-traded and over-the-counter (OTC) currency options, options on fixed income securities, interest rate swaps, currency swaps, swap options, caps and floors, financial futures, OTC options and forward contracts on fixed income securities.

(2) Includes revenues from foreign exchange spot, forward, option and swap contracts, as well as foreign currency translation (FX translation) gains and losses.

(3) Includes revenues from common, preferred and convertible preferred stock, convertible corporate debt, equity-linked notes and exchange-traded and OTC equity options and warrants.

(4) Primarily includes revenues from crude oil, refined oil products, natural gas and other commodities trades.

(5) Includes revenues from structured credit products.

7. INCENTIVE PLANS

Discretionary Annual Incentive Awards
Citigroup grants immediate cash bonus payments and various forms of immediate and deferred awards as part of its discretionary annual incentive award program involving a large segment of Citigroup's employees worldwide. Most of the shares of common stock issued by Citigroup as part of its equity compensation programs are to settle the vesting of the stock components of these awards.
Discretionary annual incentive awards are generally awarded in the first quarter of the year based on the previous year's performance. Awards valued at less than U.S. $100,000 (or the local currency equivalent) are generally paid entirely in the form of an immediate cash bonus. Pursuant to Citigroup policy and/or regulatory requirements, certain employees and officers are subject to mandatory deferrals of incentive pay and generally receive 25%–60% of their awards in a combination of restricted or deferred stock, deferred cash stock units or deferred cash. Discretionary annual incentive awards to many employees in the EU are subject to deferral requirements regardless of the total award value, with at least 50% of the immediate incentive delivered in the form of a stock payment award subject to a restriction on sale or transfer (generally, for 12 months).
Deferred annual incentive awards may be delivered in the form of one or more award types: a restricted or deferred stock award under Citi's Capital Accumulation Program (CAP), or a deferred cash stock unit award and/or a deferred cash award under Citi's Deferred Cash Award Plan. The applicable mix of awards may vary based on the employee's minimum deferral requirement and the country of employment.
Subject to certain exceptions (principally, for retirement-eligible employees), continuous employment within Citigroup is required to vest in CAP, deferred cash stock unit and deferred cash awards. Post employment vesting by retirement-eligible employees and participants who meet other conditions is generally conditioned upon their refraining from competition with Citigroup during the remaining vesting period, unless the employment relationship has been terminated by Citigroup under certain conditions.
Generally, the deferred awards vest in equal annual installments over three- or four-year periods. Vested CAP awards are delivered in shares of common stock. Deferred cash awards are payable in cash and, except as prohibited by applicable regulatory guidance, earn a fixed notional rate of interest that is paid only if and when the underlying principal award amount vests. Deferred cash stock unit awards are payable in cash at the vesting value of the underlying stock. Generally, in the EU, vested CAP shares are subject to a restriction on sale or transfer after vesting, and vested deferred cash awards and deferred cash stock units are subject to hold back (generally, for 12 months in each case).
Unvested CAP, deferred cash stock units and deferred cash awards are subject to one or more clawback provisions that apply in certain circumstances, including gross misconduct. CAP and deferred cash stock unit awards, made to certain employees, are subject to a formulaic performance-based vesting condition pursuant to which amounts otherwise

scheduled to vest will be reduced based on the amount of any pretax loss in the participant's business in the calendar year preceding the scheduled vesting date. A minimum reduction of 20% applies for the first dollar of loss for CAP and deferred cash stock unit awards.
In addition, deferred cash awards are subject to a discretionary performance-based vesting condition under which an amount otherwise scheduled to vest may be reduced in the event of a "material adverse outcome" for which a participant has "significant responsibility." These awards are also subject to an additional clawback provision pursuant to which unvested awards may be canceled if the employee engaged in misconduct or exercised materially imprudent judgment, or failed to supervise or escalate the behavior of other employees who did.

Sign-on and Long-Term Retention Awards
Stock awards and deferred cash awards may be made at various times during the year as sign-on awards to induce new hires to join Citi or to high-potential employees as long-term retention awards.
Vesting periods and other terms and conditions pertaining to these awards tend to vary by grant. Generally, recipients must remain employed through the vesting dates to vest in the awards, except in cases of death, disability or

involuntary termination other than for gross misconduct. These awards do not usually provide for post employment vesting by retirement-eligible participants.

Outstanding (Unvested) Stock Awards

A summary of the status of unvested stock awards granted as discretionary annual incentive or sign-on and long-term retention awards is presented below:

Unvested stock awards	Shares	Weighted-average grant date fair value per share
Unvested at December 31, 2017	36,931,040	$ 47.89
Granted[1]	12,896,599	73.87
Canceled	(1,315,456)	54.50
Vested[2]	(16,783,587)	49.54
Unvested at December 31, 2018	31,728,596	$ 57.30

(1) The weighted-average fair value of the shares granted during 2017 and 2016 was $59.12 and $37.35, respectively.
(2) The weighted-average fair value of the shares vesting during 2018 was approximately $77.65 per share.

Total unrecognized compensation cost related to unvested stock awards was $538 million at December 31, 2018. The cost is expected to be recognized over a weighted-average period of 1.7 years.

Performance Share Units

Certain executive officers were awarded a target number of performance share units (PSUs) each February from 2015 to 2018, for performance in the year prior to the award date. For grants prior to 2016, PSUs will be earned only to the extent that Citigroup attains specified performance goals relating to Citigroup's return on assets and relative total shareholder return against peers over the three-year period beginning with the year of award. The actual dollar amounts ultimately earned could vary from zero, if performance goals are not met, to as much as 150% of target, if performance goals are meaningfully exceeded.

The PSUs granted in February 2016 are earned over a three-year performance period based on Citigroup's relative total shareholder return as compared to peers. The actual dollar amounts ultimately earned could vary from zero, if performance goals are not met, to as much as 150% of target, if performance goals are meaningfully exceeded.

The PSUs granted in February 2017 are earned over a three-year performance period based half on return on tangible common equity performance in 2019, and the remaining half on cumulative earnings per share over 2017 to 2019.

The PSUs granted in February 2018 are earned over a three-year performance period based half on return on tangible common equity performance in 2020, and the remaining half on cumulative earnings per share over 2018 to 2020.

For the PSUs awarded in 2016, 2017 and 2018, if the total shareholder return is negative over the three-year performance period, executives may earn no more than 100% of the target PSUs, regardless of the extent to which Citi outperforms peer firms.

For all award years, the value of each PSU is equal to the value of one share of Citi common stock. Dividend equivalents will be accrued and paid on the number of earned PSUs after the end of the performance period.

PSUs are subject to variable accounting, pursuant to which the associated value of the award will fluctuate with changes in Citigroup's stock price and the attainment of the specified performance goals for each award, until the award is settled solely in cash after the end of the performance period. The value of the award, subject to the performance goals, is estimated using a simulation model that incorporates multiple valuation assumptions, including the probability of achieving the specified performance goals of each award. The risk-free rate used in the model is based on the applicable U.S. Treasury yield curve. Other significant assumptions for the awards are as follows:

Valuation assumptions	2018	2017	2016
Expected volatility	24.93 %	25.79 %	24.37 %
Expected dividend yield	1.75	1.30	0.40

A summary of the performance share unit activity for 2018 is presented below:

Performance share units	Units	Weighted-average grant date fair value per unit
Outstanding, beginning of period	1,786,726	$ 40.94
Granted[1]	495,099	83.24
Canceled	(25,160)	44.07
Payments	(488,304)	44.07
Outstanding, end of period	1,768,362	$ 51.88

(1) The weighted-average grant date fair value per unit awarded in 2017 and 2016 was $59.22 and $27.03, respectively.

PSUs granted in 2015 and 2017 were equitably adjusted after the enactment of Tax Reform, as required under the terms of those awards. The adjustments were intended to reproduce the expected value of the awards immediately prior to the passage of Tax Reform. The PSUs granted in 2016 were not impacted by Tax Reform.

Stock Option Programs
All outstanding stock options are fully vested, with the related expense recognized as a charge to income in prior periods. Generally, the stock options outstanding have a six-year term, with some stock options subject to various transfer restrictions.

The following table presents information with respect to stock option activity under Citigroup's stock option programs:

	2018			2017			2016		
	Options	Weighted-average exercise price	Intrinsic value per share	Options	Weighted-average exercise price	Intrinsic value per share	Options	Weighted-average exercise price	Intrinsic value per share
Outstanding, beginning of period	1,138,813	$ 161.96	$ —	1,527,396	$ 131.78	$ —	6,656,588	$ 67.92	$ —
Canceled	—	—	—	—	—	—	(25,334)	40.80	—
Expired	(376,588)	283.63	—	—	—	—	(2,613,909)	48.80	—
Exercised	—	—	—	(388,583)	43.35	15.67	(2,489,949)	49.10	6.60
Outstanding, end of period	762,225	$ 101.84	$ —	1,138,813	$ 161.96	$ —	1,527,396	$ 131.78	$ —
Exercisable, end of period	762,225			1,138,813			1,527,396		

The following table summarizes information about stock options outstanding under Citigroup's stock option programs at December 31, 2018:

	Options outstanding			Options exercisable	
Range of exercise prices	Number outstanding	Weighted-average contractual life remaining	Weighted-average exercise price	Number exercisable	Weighted-average exercise price
\$39.00–\$99.99	312,309	2.1 years	$ 43.56	312,309	$ 43.56
\$100.00–\$199.99	449,916	0.0 years	142.30	449,916	142.30
Total at December 31, 2018	762,225	0.9 years	$ 101.84	762,225	$ 101.84

Other Variable Incentive Compensation

Citigroup has various incentive plans globally that are used to motivate and reward performance primarily in the areas of sales, operational excellence and customer satisfaction. Participation in these plans is generally limited to employees who are not eligible for discretionary annual incentive awards. Other forms of variable compensation include monthly commissions paid to financial advisors and mortgage loan officers.

Summary

Except for awards subject to variable accounting, the total expense recognized for stock awards represents the grant date fair value of such awards, which is generally recognized as a charge to income ratably over the vesting period, other than for awards to retirement-eligible employees and immediately vested awards. Whenever awards are made or are expected to be made to retirement-eligible employees, the charge to income is accelerated based on when the applicable conditions to retirement eligibility were or will be met. If the employee is retirement eligible on the grant date, or the award is vested at the grant date, the entire expense is recognized in the year prior to grant.

Recipients of Citigroup stock awards generally do not have any stockholder rights until shares are delivered upon vesting or exercise, or after the expiration of applicable required holding periods. Recipients of restricted or deferred stock awards and deferred cash stock unit awards, however, may, except as prohibited by applicable regulatory guidance, be entitled to receive dividends or dividend-equivalent payments during the vesting period. Recipients of restricted stock awards generally are entitled to vote the shares in their

award during the vesting period. Once a stock award vests, the shares are freely transferable, unless they are subject to a restriction on sale or transfer for a specified period.

All equity awards granted since April 19, 2005 have been made pursuant to stockholder-approved stock incentive plans that are administered by the Personnel and Compensation Committee of the Citigroup Board of Directors, which is composed entirely of independent non-employee directors.

At December 31, 2018, approximately 42.4 million shares of Citigroup common stock were authorized and available for grant under Citigroup's 2014 Stock Incentive Plan, the only plan from which equity awards are currently granted. The 2014 Stock Incentive Plan and predecessor plans permit the use of treasury stock or newly issued shares in connection with awards granted under the plans. Treasury shares were used to settle vestings from 2016 to 2018, and for the first quarter of 2019, except where local laws favor newly issued shares. The use of treasury stock or newly issued shares to settle stock awards does not affect the compensation expense recorded in the Consolidated Statement of Income for equity awards.

Incentive Compensation Cost

The following table shows components of compensation expense, relating to certain of the incentive compensation programs described above:

In millions of dollars	2018	2017	2016
Charges for estimated awards to retirement-eligible employees	$669	$659	$555
Amortization of deferred cash awards, deferred cash stock units and performance stock units	202	354	336
Immediately vested stock award expense(1)	75	70	73
Amortization of restricted and deferred stock awards(2)	435	474	509
Other variable incentive compensation	640	694	710
Total	$2,021	$2,251	$2,183

(1) Represents expense for immediately vested stock awards that generally were stock payments in lieu of cash compensation. The expense is generally accrued as cash incentive compensation in the year prior to grant.

(2) All periods include amortization expense for all unvested awards to non-retirement-eligible employees.

8. RETIREMENT BENEFITS

Pension and Postretirement Plans

The Company has several non-contributory defined benefit pension plans covering certain U.S. employees and has various defined benefit pension and termination indemnity plans covering employees outside the U.S.

The U.S. qualified defined benefit plan was frozen effective January 1, 2008 for most employees. Accordingly, no additional compensation-based contributions have been credited to the cash balance portion of the plan for existing plan participants after 2007. However, certain employees covered under the prior final pay plan formula continue to accrue benefits. The Company also offers postretirement health care and life insurance benefits to certain eligible U.S. retired employees, as well as to certain eligible employees outside the U.S.

The Company also sponsors a number of non-contributory, nonqualified pension plans. These plans, which are unfunded, provide supplemental defined pension benefits to certain U.S.

employees. With the exception of certain employees covered under the prior final pay plan formula, the benefits under these plans were frozen in prior years.

The plan obligations, plan assets and periodic plan expense for the Company's most significant pension and postretirement benefit plans (Significant Plans) are measured and disclosed quarterly, instead of annually. The Significant Plans captured approximately 90% of the Company's global pension and postretirement plan obligations as of December 31, 2018. All other plans (All Other Plans) are measured annually with a December 31 measurement date.

Net (Benefit) Expense

The following table summarizes the components of net (benefit) expense recognized in the Consolidated Statement of Income for the Company's pension and postretirement plans, for Significant Plans and All Other Plans:

	Pension plans						Postretirement benefit plans					
	U.S. plans			Non-U.S. plans			U.S. plans			Non-U.S. plans		
In millions of dollars	2018	2017	2016	2018	2017	2016	2018	2017	2016	2018	2017	2016
Benefits earned during the year	$1	$3	$4	$146	$153	$154	$—	$—	$—	$9	$9	$10
Interest cost on benefit obligation	514	533	548	292	295	282	26	26	25	102	101	94
Expected return on plan assets	(844)	(865)	(886)	(291)	(299)	(287)	(14)	(6)	(9)	(88)	(89)	(86)
Amortization of unrecognized												
Prior service cost (benefit)	2	2	2	(4)	(3)	(1)	—	—	—	(10)	(10)	(10)
Net actuarial loss (gain)	165	173	169	53	61	69	(1)	—	(1)	29	35	30
Curtailment loss (gain)(1)	1	6	13	(1)	—	(2)	—	—	—	—	—	—
Settlement loss(1)	—	—	—	7	12	6	—	—	—	—	—	—
Total net (benefit) expense	$(161)	$(148)	$(150)	$202	$219	$221	$11	$20	$15	$42	$46	$38

(1) Losses and gains due to curtailment and settlement relate to repositioning and divestiture actions.

Contributions

The Company's funding practice for U.S. and non-U.S. pension and postretirement plans is generally to fund to minimum funding requirements in accordance with applicable local laws and regulations. The Company may increase its contributions above the minimum required contribution, if appropriate. In addition, management has the ability to change its funding practices. For the U.S. pension plans, there were no required minimum cash contributions for 2018 or 2017.

The following table summarizes the actual Company contributions for the years ended December 31, 2018 and 2017, as well as estimated expected Company contributions for 2019. Expected contributions are subject to change, since contribution decisions are affected by various factors, such as market performance, tax considerations and regulatory requirements.

	Pension plans(1)						Postretirement benefit plans(1)					
	U.S. plans(2)			Non-U.S. plans			U.S. plans			Non-U.S. plans		
In millions of dollars	2019	2018	2017	2019	2018	2017	2019	2018	2017	2019	2018	2017
Contributions made by the Company	$ —	$ —	$ 50	$ 97	$ 140	$ 90	$ —	$ 145	$ 140	$ 4	$ 3	$ 4
Benefits paid directly by the Company	57	55	55	47	42	45	6	5	36	6	6	5

(1) Amounts reported for 2019 are expected amounts.
(2) The U.S. pension plans include benefits paid directly by the Company for the nonqualified pension plans.

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Funded Status and Accumulated Other Comprehensive Income (AOCI)
The following tables summarize the funded status and amounts recognized in the Consolidated Balance Sheet for the Company's pension and postretirement plans:

	Pension plans				Postretirement benefit plans			
	U.S. plans		Non-U.S. plans		U.S. plans		Non-U.S. plans	
In millions of dollars	2018	2017	2018	2017	2018	2017	2018	2017
Change in projected benefit obligation								
Projected benefit obligation at beginning of year	$14,040	$14,000	$7,433	$6,522	$699	$686	$1,261	$1,141
Benefits earned during the year	1	3	146	153	—	—	9	9
Interest cost on benefit obligation	514	533	292	295	26	26	102	101
Plan amendments	—	—	7	4	—	—	—	—
Actuarial (gain) loss	(1,056)	536	(99)	127	(1)	43	(123)	19
Benefits paid, net of participants' contributions and government subsidy(1)	(845)	(769)	(293)	(278)	(62)	(56)	(68)	(64)
Divestitures	—	—	—	(29)	—	—	—	(4)
Settlement gain(2)	—	—	(121)	(192)	—	—	—	—
Curtailment loss (gain)(2)	1	6	(1)	(3)	—	—	—	—
Foreign exchange impact and other(3)	—	(269)	(215)	834	—	—	(22)	59
Projected benefit obligation at year end	$12,655	$14,040	$7,149	$7,433	$662	$699	$1,159	$1,261
Change in plan assets								
Plan assets at fair value at beginning of year	$12,725	$12,363	$7,128	$6,149	$262	$129	$1,119	$1,015
Actual return on plan assets	(445)	1,295	(11)	462	(5)	13	(26)	113
Company contributions	55	105						