UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549
FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2019

OR

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

For the transition period from to
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 Securities Exchange Act of 1934 formatted in Inline XBRL: 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 ☐ No ☒

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

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

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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	☒	**Accelerated filer**	☐	**Non-accelerated filer**	☐	**Smaller reporting company**	☐
						Emerging growth company	☐

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

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

The aggregate market value of Citigroup Inc. common stock held by non-affiliates of Citigroup Inc. on June 30, 2019 was approximately $158.0 billion.

Number of shares of Citigroup Inc. common stock outstanding on January 31, 2020: 2,106,486,793

Documents Incorporated by Reference: Portions of the registrant's proxy statement for the annual meeting of stockholders scheduled to be held on April 21, 2020 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" and "Proposal 1: Election of Directors" in the definitive Proxy Statement for Citigroup's Annual Meeting of Stockholders scheduled to be held on April 21, 2020, to be filed with the SEC (the Proxy Statement), incorporated herein by reference.

** See "Compensation Discussion and Analysis," "The Personnel and Compensation Committee Report," and "2019 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 2019 ANNUAL REPORT ON FORM 10-K

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, 2019, Citi had approximately 200,000 full-time employees, compared to approximately 204,000 full-time employees at December 31, 2018.

Citigroup currently operates, for management reporting purposes, via two primary business segments: *Global Consumer Banking (GCB)* and *Institutional Clients Group (ICG)*, 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" tab and selecting "SEC Filings," then "Citigroup Inc." The SEC's website also contains current reports on Form 8-K and other information regarding Citi at www.sec.gov.

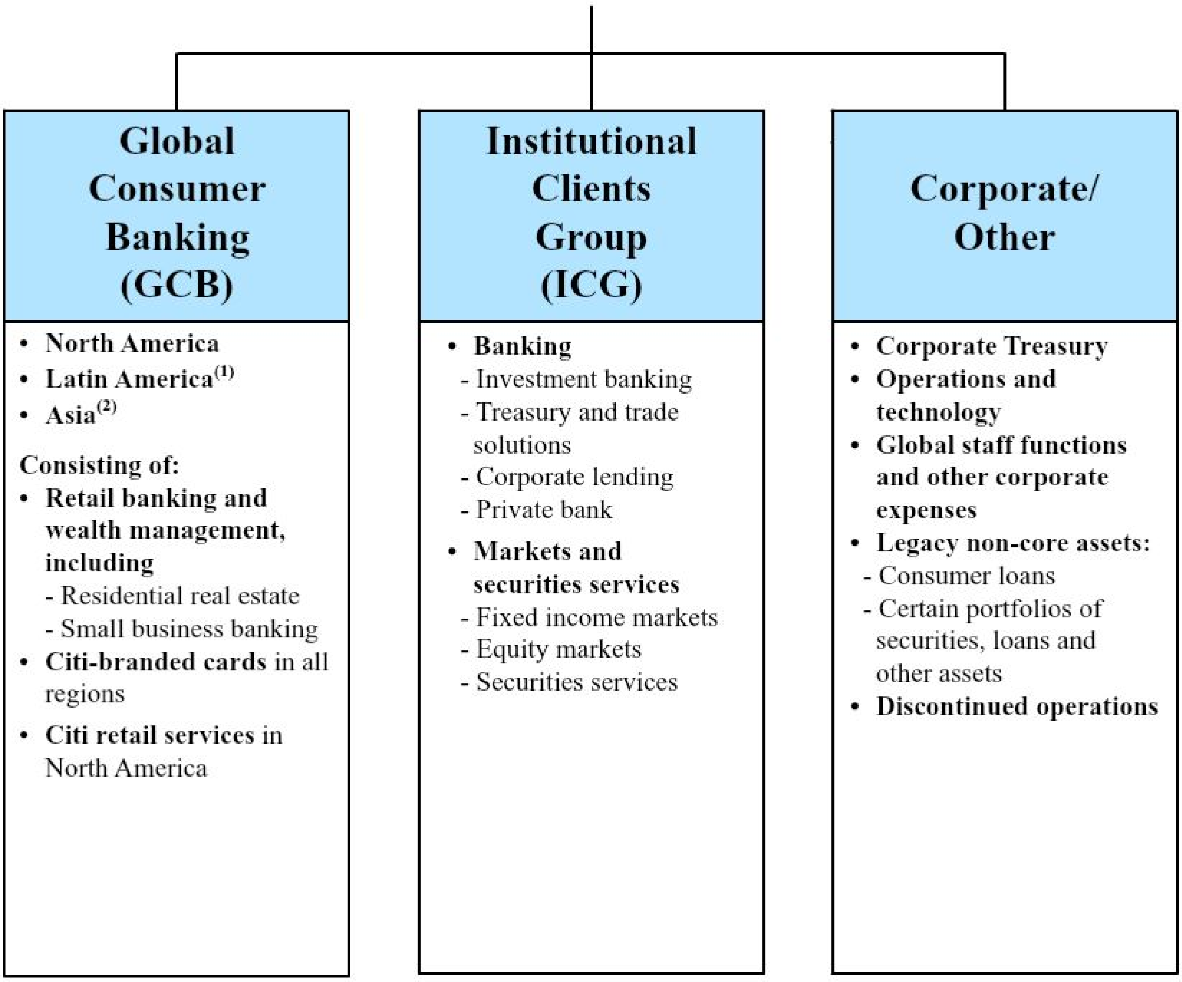
For a discussion of 2018 versus 2017 results of operations of *GCB* in *North America*, *Latin America* and *Asia*, *ICG* and *Corporate/Other*, see each respective business's results of operation in Citi's 2018 Annual Report on Form 10-K.

Certain reclassifications, including a realignment of certain businesses, have been made to the prior periods' financial statements and disclosures to conform to the current period's presentation. For additional information on certain recent 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.

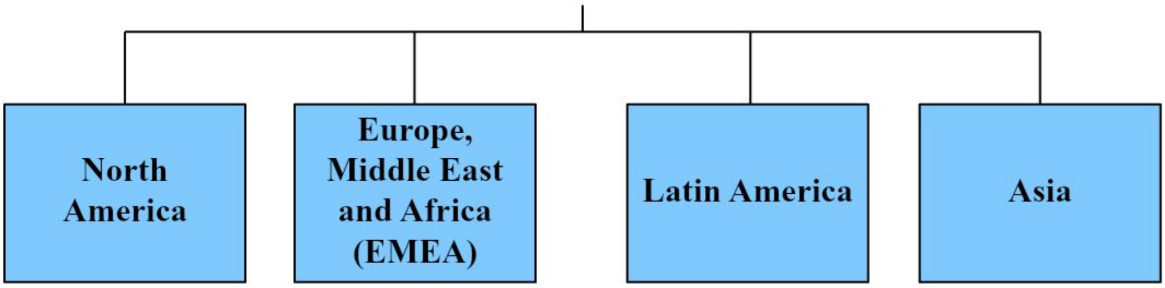
As described above, Citigroup is managed pursuant to two business segments: *Global Consumer Banking* and *Institutional Clients Group*, with the remaining operations in *Corporate/Other.*

CITIGROUP SEGMENTS



The following are the four regions in which Citigroup operates. The regional results are fully reflected in the segment results above.

CITIGROUP REGIONS[3]



(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.
Note: As of the fourth quarter of 2019, Citi's commercial banking businesses previously reported as part of *GCB* in *North America*, *Latin America* and *Asia*, including approximately \$28 billion in end-of-period loans and approximately \$37 billion in end-of-period deposits, are reported in *ICG* for all periods presented.

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

EXECUTIVE SUMMARY

As described further throughout this Executive Summary, Citi's 2019 results reflected steady progress toward improving its profitability and returns, despite an uncertain revenue environment, as strong client engagement drove balanced growth across businesses and geographies:

- Citi had solid underlying revenue growth in every region in *Global Consumer Banking* (*GCB)*, excluding the impact of foreign currency translation into U.S. dollars for reporting purposes (FX translation), as well as pretax gains on sale in 2018 of approximately $150 million on the Hilton portfolio in *North America GCB* and approximately $250 million on an asset management business in *Latin America GCB*.
- Citi had balanced performance across the *Institutional Clients Group (ICG)*, with solid results in fixed income markets, treasury and trade solutions, investment banking and the private bank, while equity markets revenues were negatively impacted by a challenging environment.
- Citi demonstrated strong expense discipline, resulting in expenses that were largely unchanged from the prior year, as well as positive operating leverage, even as Citi continued to make investments in the franchise. Citi's positive operating leverage and continued credit discipline resulted in an improvement in pretax earnings.
- Citi reported broad-based loan and deposit growth across *GCB* and *ICG*.
- Citi returned $22.3 billion of capital to its shareholders in the form of common stock repurchases and dividends; Citi repurchased approximately 264 million common shares, contributing to a 9% reduction in average outstanding common shares from the prior year.
- Despite continued progress in capital returns to shareholders, Citi's key regulatory capital metrics remained strong.

While global growth has continued and the underlying macroeconomic environment remains largely positive, economic forecasts for 2020 have been lowered and various economic, political and other risks and uncertainties could create a more volatile operating environment and impact Citi's businesses and future results. For a discussion of risks and uncertainties that could impact Citi's businesses, results of operations and financial condition during 2020, 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 2019 with a focus on further optimizing its performance to benefit shareholders, while remaining flexible and adapting to market and economic conditions as they develop.

2019 Results Summary

Citigroup

Citigroup reported net income of $19.4 billion, or $8.04 per share, compared to net income of $18.0 billion, or $6.68 per share, in the prior year. Net income increased 8%, primarily driven by a lower effective tax rate and higher revenues, partially offset by higher cost of credit, while expenses were largely unchanged. Earnings per share increased 20%, driven by higher net income and the 9% reduction in average shares outstanding due to the common stock repurchases. Results in 2019 included a net tax benefit of approximately $0.35 per share related to discrete tax items, including an approximate $0.6 billion benefit from reductions in Citi's valuation allowance related to its deferred tax assets, primarily recorded in *Corporate/Other* (see "Significant Accounting Policies and Significant Estimates—Income Taxes" below).

Citigroup revenues of $74.3 billion increased 2%, or 4% excluding the impact of FX translation and the gains on sale in the prior year (see "Executive Summary" above), reflecting higher revenues across *GCB* and *ICG*, partially offset by lower revenues in *Corporate/Other*.

Citigroup's end-of-period loans increased 2% to $699 billion. Excluding the impact of FX translation, Citigroup end-of-period loans also grew 2%, as 3% aggregate growth in *GCB* and *ICG* was partially offset by the continued wind-down of legacy assets in *Corporate/Other*. Citigroup's end-of-period deposits increased 6% to $1.1 trillion. Excluding the impact of FX translation, Citigroup's end-of-period deposits also grew 6%, primarily driven by 7% growth in *GCB* and 6% growth in *ICG*, excluding the impact of FX translation. (Citi's results of operations excluding the gains on sale as well as the impact of FX translation are non-GAAP financial measures. Citi believes the presentation of its results of operations excluding the impact of FX translation and gains on sale provides a meaningful depiction for investors of the underlying fundamentals of its businesses.)

Expenses

Citigroup operating expenses of $42.0 billion were largely unchanged, as efficiency savings and the wind-down of legacy assets offset volume-driven growth and continued investments in the franchise. Operating expenses in *GCB* and *Corporate/Other* were down 1% and 5%, respectively, while *ICG* operating expenses increased 2%.

Cost of Credit

Citi's total provisions for credit losses and for benefits and claims of $8.4 billion increased 11%. The increase was primarily driven by higher net credit losses in both Citi-branded cards and Citi retail services in *North America GCB*, as well as higher overall cost of credit in *ICG*.

Net credit losses of $7.8 billion increased 9%. Consumer net credit losses of $7.4 billion increased 7%, primarily reflecting volume growth and seasoning in the *North America* cards portfolios. Corporate net credit losses increased to $392 million from $205 million in the prior year, reflecting a normalization in credit trends.

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 (CET1) Capital ratio was 11.8% as of December 31, 2019, compared to 11.9% as of December 31, 2018, based on the Basel III Standardized Approach for determining risk-weighted assets. The decline in the ratio primarily reflected the return of capital to common shareholders, partially offset by net income and a reduction in risk-weighted assets. Citigroup's Supplementary Leverage ratio as of December 31, 2019 was 6.2%, compared to 6.4% as of December 31, 2018. For additional information on Citi's capital ratios and related components, see "Capital Resources" below.

Global Consumer Banking

GCB net income of $5.7 billion increased 7%. Excluding the impact of FX translation, net income increased 8%, driven by higher revenues, partially offset by higher cost of credit. *GCB* operating expenses of $17.6 billion decreased 1%. Excluding the impact of FX translation, expenses were largely unchanged, as efficiency savings offset continued investments in the franchise and volume-driven growth.

GCB revenues of $33.0 billion increased 2%. Excluding the impact of FX translation and the gains on sale in both *North America GCB* and *Latin America GCB* in the prior year, revenues increased 4%, driven by growth in all three regions. *North America GCB* revenues of $20.4 billion increased 3%, and 4% excluding the gain on sale in the prior year, primarily driven by growth in Citi-branded cards and Citi retail services, partially offset by lower retail banking revenues. In *North America GCB*, Citi-branded cards revenues of $9.2 billion increased 6%, and 8% excluding the gain on sale in the prior year, primarily reflecting volume growth and spread expansion. Citi retail services revenues of $6.7 billion increased 2%, primarily driven by organic loan growth and the full-year benefit of the L.L.Bean acquisition. Retail banking revenues of $4.5 billion decreased 2%, as the benefit of stronger deposit volumes was more than offset by lower deposit spreads.

North America GCB average deposits of $153 billion increased 3%, average retail banking loans of $49 billion increased 3% and assets under management of $72 billion grew 20% (including the benefit of market movements). Average Citi-branded card loans of $90 billion increased 3%, while Citi-branded card purchase sales of $368 billion increased 7%. Average Citi retail services loans of $50 billion increased 3%, while Citi retail services purchase sales of $88 billion increased 2%. For additional information on the results of operations of *North America GCB* in 2019, 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)), of $12.6 billion increased 1%. Excluding the impact of FX translation and the gain on sale in *Latin America GCB* in the prior year, international *GCB* revenues increased 4%. On this basis, *Latin America GCB* revenues increased 4%, primarily driven by an increase in cards revenues and improved deposit spreads. *Asia GCB* revenues increased 4%, primarily reflecting higher deposit, investment and cards revenues. For additional information on the results of operations of *Latin America GCB* and *Asia GCB* in 2019, including the impact of FX translation, see "*Global Consumer Banking—Latin America GCB*" and "*Global Consumer Banking—Asia GCB*" below.

Year-over-year, excluding the impact of FX translation, international *GCB* average deposits of $124 billion increased 5%, average retail banking loans of $71 billion increased 4%, assets under management of $104 billion increased 16% (including the benefit of market movements), average card loans of $25 billion increased 3% and card purchase sales of $108 billion increased 6%.

Institutional Clients Group

ICG net income of $12.9 billion increased 3%, primarily driven by higher revenues and a lower effective tax rate, partially offset by higher expenses and cost of credit. *ICG* operating expenses increased 2% to $22.2 billion, primarily driven by higher compensation costs, investments and volume-driven growth, partially offset by efficiency savings.

ICG revenues of $39.3 billion increased 3%, reflecting a 1% increase in *Banking* revenues and a 5% increase in *Markets and securities services* revenues. The increase in *Banking* revenues included the impact of $432 million of losses on loan hedges within corporate lending, compared to gains of $45 million in the prior year.

Banking revenues of $21.9 billion (excluding the impact of gains (losses) on loan hedges within corporate lending) increased 3%, driven by solid growth in treasury and trade solutions, investment banking and the private bank. Investment banking revenues of $5.2 billion increased 4%, as strength in debt underwriting was partially offset by lower revenues in both equity underwriting and advisory. Advisory revenues decreased 3% to $1.3 billion, equity underwriting revenues decreased 2% to $973 million and debt underwriting revenues increased 10% to $3.0 billion.

Treasury and trade solutions revenues of $10.3 billion increased 4%, and 6% excluding the impact of FX translation, reflecting strong client engagement and volume growth, partially offset by the impact of lower interest rates. Private bank revenues of $3.5 billion increased 2%, driven by higher lending and deposit volumes as well as higher investment activity, partially offset by spread compression. Corporate lending revenues declined 16% to $2.5 billion. Excluding the impact of gains (losses) on loan hedges, corporate lending revenues were largely unchanged, as growth in the commercial loan portfolio was offset by lower volumes in the rest of the portfolio.

Markets and securities services revenues of $17.8 billion increased 5%, including a pretax gain of approximately $350 million on Citi's investment in Tradeweb in the second quarter of 2019, recorded in fixed income markets. Fixed income markets revenues of $12.9 billion increased 10%, reflecting growth across rates and currencies as well as spread products, including the Tradeweb gain. Equity markets revenues of $2.9 billion decreased 15%, primarily driven by lower revenues across cash equities, derivatives and prime finance. Securities services revenues of $2.6 billion were largely unchanged, but increased 4% excluding the impact of FX translation, reflecting higher net interest revenue due to higher deposits and higher interest rates, particularly in emerging markets, as well as higher client volumes. For additional information on the results of operations of *ICG* in 2019, see "*Institutional Clients Group*" below.

Corporate/Other

Corporate/Other net income was $801 million, compared to $186 million in the prior year, primarily reflecting the benefit of discrete tax items. Operating expenses of $2.2 billion decreased 5%, as the continued wind-down of legacy assets more than offset higher infrastructure costs. *Corporate/Other* revenues of $2.0 billion decreased 8%, primarily driven by the continued wind-down of legacy assets, partially offset by gains on investments. For additional information on the results of operations of *Corporate/Other* in 2019, see "*Corporate/Other*" below.

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RESULTS OF OPERATIONS

SUMMARY OF SELECTED FINANCIAL DATA—PAGE 1

Citigroup Inc. and Consolidated Subsidiaries

In millions of dollars, except per share amounts	**2019**	2018	2017	2016	2015
Net interest revenue	**$ 47,347**	$ 46,562	$ 45,061	$ 45,476	$ 47,093
Non-interest revenue	**26,939**	26,292	27,383	25,321	30,184
Revenues, net of interest expense	**$ 74,286**	$ 72,854	$ 72,444	$ 70,797	$ 77,277
Operating expenses	**42,002**	41,841	42,232	42,338	44,538
Provisions for credit losses and for benefits and claims	**8,383**	7,568	7,451	6,982	7,913
Income from continuing operations before income taxes	**$ 23,901**	$ 23,445	$ 22,761	$ 21,477	$ 24,826
Income taxes[1]	**4,430**	5,357	29,388	6,444	7,440
Income (loss) from continuing operations	**$ 19,471**	$ 18,088	$ (6,627)	$ 15,033	$ 17,386
Income (loss) from discontinued operations, net of taxes	**(4)**	(8)	(111)	(58)	(54)
Net income (loss) before attribution of noncontrolling interests	**$ 19,467**	$ 18,080	$ (6,738)	$ 14,975	$ 17,332
Net income attributable to noncontrolling interests	**66**	35	60	63	90
Citigroup's net income (loss)[1]	**$ 19,401**	$ 18,045	$ (6,798)	$ 14,912	$ 17,242
Earnings per share					
Basic					
Income (loss) from continuing operations	**$ 8.08**	$ 6.69	$ (2.94)	$ 4.74	$ 5.43
Net income (loss)	**8.08**	6.69	(2.98)	4.72	5.41
Diluted					
Income (loss) from continuing operations	**$ 8.04**	$ 6.69	$ (2.94)	$ 4.74	$ 5.42
Net income (loss)	**8.04**	6.68	(2.98)	4.72	5.40
Dividends declared per common share	**1.92**	1.54	0.96	0.42	0.16
Common dividends	**$ 4,403**	$ 3,865	$ 2,595	$ 1,214	$ 484
Preferred dividends	**1,109**	1,174	1,213	1,077	769
Common share repurchases	**17,875**	14,545	14,538	9,451	5,452

Table continues on the next page, including footnotes.

SUMMARY OF SELECTED FINANCIAL DATA—PAGE 2

Citigroup Inc. and Consolidated Subsidiaries

In millions of dollars, except per share amounts, ratios and direct staff	**2019**	2018	2017	2016	2015
At December 31:					
Total assets	**$ 1,951,158**	$ 1,917,383	$ 1,842,465	$ 1,792,077	$ 1,731,210
Total deposits	**1,070,590**	1,013,170	959,822	929,406	907,887
Long-term debt	**248,760**	231,999	236,709	206,178	201,275
Citigroup common stockholders' equity(1)	**175,262**	177,760	181,487	205,867	205,139
Total Citigroup stockholders' equity(1)	**193,242**	196,220	200,740	225,120	221,857
Average assets	**1,978,805**	1,920,242	1,875,438	1,808,728	1,823,875
Direct staff *(in thousands)*	**200**	204	209	219	231
Performance metrics					
Return on average assets	**0.98%**	0.94%	(0.36)%	0.82%	0.95%
Return on average common stockholders' equity(1)(2)	**10.3**	9.4	(3.9)	6.6	8.1
Return on average total stockholders' equity(1)(2)	**9.9**	9.1	(3.0)	6.5	7.9
Return on tangible common equity (RoTCE)(1)(3)	**12.1**	11.0	8.1	7.6	9.3
Efficiency ratio (total operating expenses/total revenues)	**56.5**	57.4	58.3	59.8	57.6
Basel III ratios(1)(4)					
Common Equity Tier 1 Capital(5)	**11.81%**	11.86%	12.36 %	12.57%	12.07%
Tier 1 Capital(5)	**13.36**	13.46	14.06	14.24	13.49
Total Capital(5)	**15.97**	16.18	16.30	16.24	15.30
Supplementary Leverage ratio	**6.21**	6.41	6.68	7.22	7.08
Citigroup common stockholders' equity to assets(1)	**8.98%**	9.27%	9.85 %	11.49%	11.85%
Total Citigroup stockholders' equity to assets(1)	**9.90**	10.23	10.90	12.56	12.82
Dividend payout ratio(6)	**23.9**	23.1	NM	8.9	3.0
Total payout ratio(7)	**121.8**	109.1	NM	77.1	36.0
Book value per common share(1)	**$ 82.90**	$ 75.05	$ 70.62	$ 74.26	$ 69.46
Tangible book value (TBV) per share(1)(3)	**70.39**	63.79	60.16	64.57	60.61

(1) 2017 includes the one-time impact related to enactment of the Tax Cuts and Jobs Act (Tax Reform). 2019 and 2018 reflect the tax rate structure post Tax Reform. For additional information, see "Significant Accounting Policies and Significant Estimates—Income Taxes" below. RoTCE for 2017 excludes the one-time impact from Tax Reform.
(2) 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.
(3) For information on RoTCE and TBV, see "Capital Resources—Tangible Common Equity, Book Value Per Share, Tangible Book Value Per Share and Returns on Equity" below.
(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, 2019, 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 (*Net income*, less preferred dividends). See "Consolidated Statement of Changes in Stockholders' Equity," Note 10 to the Consolidated Financial Statements and "Equity Security Repurchases" below for the component details.
NM Not meaningful

SEGMENT AND BUSINESS—INCOME (LOSS) AND REVENUES

CITIGROUP INCOME

In millions of dollars	**2019**	2018	2017[1]	**% Change 2019 vs. 2018**	% Change 2018 vs. 2017
Income (loss) from continuing operations					
Global Consumer Banking					
North America	**$ 3,224**	$ 3,087	$ 1,829	**4 %**	69 %
Latin America	**901**	802	516	**12**	55
Asia[2]	**1,577**	1,420	1,197	**11**	19
Total	**$ 5,702**	$ 5,309	$ 3,542	**7 %**	50 %
Institutional Clients Group					
North America	**$ 3,511**	$ 3,675	$ 2,494	**(4)%**	47 %
EMEA	**3,867**	3,889	2,828	**(1)**	38
Latin America	**2,111**	2,013	1,637	**5**	23
Asia	**3,455**	2,997	2,416	**15**	24
Total	**$ 12,944**	$ 12,574	$ 9,375	**3 %**	34 %
Corporate/Other	**825**	205	(19,544)	**NM**	NM
Income (loss) from continuing operations	**$ 19,471**	$ 18,088	$ (6,627)	**8 %**	NM
Discontinued operations	**$ (4)**	$ (8)	$ (111)	**50 %**	93 %
Less: net income attributable to noncontrolling interests	**66**	35	60	**89**	(42)
Citigroup's net income (loss)	**$ 19,401**	$ 18,045	$ (6,798)	**8 %**	NM

(1) 2017 includes the one-time impact related to enactment of Tax Reform. For additional information, see "Significant Accounting Policies and Significant 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	**2019**	2018	2017	**% Change 2019 vs. 2018**	% Change 2018 vs. 2017
Global Consumer Banking					
North America	**$ 20,398**	$ 19,829	$ 19,570	**3 %**	1 %
Latin America	**5,238**	5,309	4,794	**(1)**	11
Asia[1]	**7,335**	7,201	7,081	**2**	2
Total	**$ 32,971**	$ 32,339	$ 31,445	**2 %**	3 %
Institutional Clients Group					
North America	**$ 13,459**	$ 13,522	$ 14,578	**— %**	(7)%
EMEA	**12,006**	11,770	10,878	**2**	8
Latin America	**5,166**	4,954	4,814	**4**	3
Asia	**8,670**	8,079	7,552	**7**	7
Total	**$ 39,301**	$ 38,325	$ 37,822	**3 %**	1 %
Corporate/Other	**2,014**	2,190	3,177	**(8)**	(31)
Total Citigroup net revenues	**$ 74,286**	$ 72,854	$ 72,444	**2 %**	1 %

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

SEGMENT BALANCE SHEET[1]—DECEMBER 31, 2019

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	$ 7,076	$ 69,363	$ 117,480	$ —	$ 193,919
Securities borrowed and purchased under agreements to resell	87	250,968	267	—	251,322
Trading account assets	1,168	265,260	9,712	—	276,140
Investments	1,150	126,481	240,932	—	368,563
Loans, net of unearned income and allowance for loan losses	290,270	387,036	9,394	—	686,700
Other assets	39,071	94,648	40,795	—	174,514
Net inter-segment liquid assets[4]	68,077	253,463	(321,540)	—	—
Total assets	$ 406,899	$ 1,447,219	$ 97,040	$ —	$ 1,951,158
Liabilities and equity					
Total deposits	$ 291,049	$ 767,666	$ 11,875	$ —	$ 1,070,590
Securities loaned and sold under agreements to repurchase	2,229	164,096	14	—	166,339
Trading account liabilities	549	118,788	557	—	119,894
Short-term borrowings	417	27,082	17,550	—	45,049
Long-term debt[3]	1,472	64,758	32,053	150,477	248,760
Other liabilities	20,847	71,215	14,518	—	106,580
Net inter-segment funding (lending)[3]	90,336	233,614	19,769	(343,719)	—
Total liabilities	$ 406,899	$ 1,447,219	$ 96,336	$ (193,242)	$ 1,757,212
Total stockholders' equity[5]	—	—	704	193,242	193,946
Total liabilities and equity	$ 406,899	$ 1,447,219	$ 97,040	$ —	$ 1,951,158

(1) The supplemental information presented in the table above reflects Citigroup's consolidated GAAP balance sheet by reporting segment. The respective segment information depicts the assets and liabilities managed by each segment.
(2) Consolidating eliminations for total Citigroup and Citigroup parent company assets and liabilities are recorded within *Corporate/Other.*
(3) Total stockholders' equity and the majority of long-term debt of Citigroup reside on the Citigroup parent company 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 liquid 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, Citi-branded cards and Citi retail services (for additional information on these businesses, see "Citigroup Segments" above). *GCB* is focused on its priority markets in the U.S., Mexico and *Asia* with 2,348 branches in 19 countries and jurisdictions as of December 31, 2019. At December 31, 2019, *GCB* had approximately $407 billion in assets and $291 billion in deposits.

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, Citi serves customers in a somewhat broader set of segments and geographies.

In millions of dollars, except as otherwise noted	**2019**	2018	2017	**% Change 2019 vs. 2018**	% Change 2018 vs. 2017
Net interest revenue	**$ 28,205**	$ 27,374	$ 26,277	**3 %**	4 %
Non-interest revenue	**4,766**	4,965	5,168	**(4)**	(4)
Total revenues, net of interest expense	**$ 32,971**	$ 32,339	$ 31,445	**2 %**	3 %
Total operating expenses	**$ 17,628**	$ 17,786	$ 17,229	**(1)%**	3 %
Net credit losses	**$ 7,382**	$ 6,884	$ 6,462	**7 %**	7 %
Credit reserve build	**439**	568	1,029	**(23)**	(45)
Provision for unfunded lending commitments	**1**	—	—	**100**	—
Provision for benefits and claims	**73**	103	116	**(29)**	(11)
Provisions for credit losses and for benefits and claims (LLR & PBC)	**$ 7,895**	$ 7,555	$ 7,607	**5 %**	(1)%
Income from continuing operations before taxes	**$ 7,448**	$ 6,998	$ 6,609	**6 %**	6 %
Income taxes	**1,746**	1,689	3,067	**3**	(45)
Income from continuing operations	**$ 5,702**	$ 5,309	$ 3,542	**7 %**	50 %
Noncontrolling interests	**6**	7	9	**(14)**	(22)
Net income	**$ 5,696**	$ 5,302	$ 3,533	**7 %**	50 %
Balance Sheet data and ratios *(in billions of dollars)*					
Total EOP assets	**$ 407**	$ 388	$ 389	**5 %**	— %
Average assets	**389**	378	380	**3**	(1)
Return on average assets	**1.46%**	1.40%	0.93%		
Efficiency ratio	**53**	55	55		
Average deposits	**$ 277**	$ 269	$ 267	**3**	1
Net credit losses as a percentage of average loans	**2.60%**	2.48%	2.39%		
Revenue by business					
Retail banking	**$ 12,549**	$ 12,627	$ 12,089	**(1)%**	4 %
Cards[(1)]	**20,422**	19,712	19,356	**4**	2
Total	**$ 32,971**	$ 32,339	$ 31,445	**2 %**	3 %
Income from continuing operations by business					
Retail banking	**$ 1,842**	$ 1,851	$ 1,320	**— %**	40 %
Cards[(1)]	**3,860**	3,458	2,222	**12**	56
Total	**$ 5,702**	$ 5,309	$ 3,542	**7 %**	50 %

Table continues on the next page, including footnotes.

Foreign currency (FX) translation impact					
Total revenue—as reported	**$**	**32,971**	$ 32,339	$ 31,445	**2 %**	3 %
Impact of FX translation[2]		**—**	(146)	(270)		
Total revenues—ex-FX[3]	**$**	**32,971**	$ 32,193	$ 31,175	**2 %**	3 %
Total operating expenses—as reported	**$**	**17,628**	$ 17,786	$ 17,229	**(1)%**	3 %
Impact of FX translation[2]		**—**	(100)	(154)		
Total operating expenses—ex-FX[3]	**$**	**17,628**	$ 17,686	$ 17,075	**— %**	4 %
Total provisions for LLR & PBC—as reported	**$**	**7,895**	$ 7,555	$ 7,607	**5 %**	(1)%
Impact of FX translation[2]		**—**	(24)	(53)		
Total provisions for LLR & PBC—ex-FX[3]	**$**	**7,895**	$ 7,531	$ 7,554	**5 %**	— %
Net income—as reported	**$**	**5,696**	$ 5,302	$ 3,533	**7 %**	50 %
Impact of FX translation[2]		**—**	(16)	(42)		
Net income—ex-FX[3]	**$**	**5,696**	$ 5,286	$ 3,491	**8 %**	51 %

(1) Includes both Citi-branded cards and Citi retail services.
(2) Reflects the impact of FX translation into U.S. dollars at the 2019 average exchange rates for all periods presented.
(3) Presentation of this metric excluding FX translation is a non-GAAP financial measure.
Note: For information on the impact of Citi's January 1, 2020 adoption of the new accounting standard on credit losses (CECL), see "Risk Factors—Operational Risks" below and Note 1 to the Consolidated Financial Statements.

NORTH AMERICA GCB

North America GCB provides traditional retail banking and Citi-branded and Citi retail services card products to retail and small business customers 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.

At December 31, 2019, *North America GCB* had 687 retail bank branches 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, 2019, *North America GCB* had approximately $50.3 billion in retail banking loans and $160.5 billion in deposits. In addition, *North America GCB* had approximately $149.2 billion in outstanding card loan balances.

In millions of dollars, except as otherwise noted	**2019**	2018	2017	**% Change 2019 vs. 2018**	% Change 2018 vs. 2017
Net interest revenue	**$ 19,869**	$ 19,006	$ 18,298	**5 %**	4 %
Non-interest revenue[(1)]	**529**	823	1,272	**(36)**	(35)
Total revenues, net of interest expense	**$ 20,398**	$ 19,829	$ 19,570	**3 %**	1 %
Total operating expenses	**$ 10,154**	$ 10,230	$ 9,867	**(1)%**	4 %
Net credit losses	**$ 5,583**	$ 5,085	$ 4,737	**10 %**	7 %
Credit reserve build	**469**	460	926	**2**	(50)
Provision for unfunded lending commitments	**1**	—	—	**100**	—
Provision for benefits and claims	**19**	22	33	**(14)**	(33)
Provisions for credit losses and for benefits and claims	**$ 6,072**	$ 5,567	$ 5,696	**9 %**	(2)%
Income from continuing operations before taxes	**$ 4,172**	$ 4,032	$ 4,007	**3 %**	1 %
Income taxes	**948**	945	2,178	**—**	(57)
Income from continuing operations	**$ 3,224**	$ 3,087	$ 1,829	**4 %**	69 %
Noncontrolling interests	**—**	—	(1)	**—**	100
Net income	**$ 3,224**	$ 3,087	$ 1,830	**4 %**	69 %
Balance Sheet data and ratios *(in billions of dollars)*					
Average assets	**$ 232**	$ 227	$ 232	**2 %**	(2)%
Return on average assets	**1.39%**	1.36%	0.79%		
Efficiency ratio	**50**	52	50		
Average deposits	**$ 152.8**	$ 148.0	$ 151.0	**3**	(2)
Net credit losses as a percentage of average loans	**2.97%**	2.78%	2.67%		
Revenue by business					
Retail banking	**$ 4,529**	$ 4,600	$ 4,565	**(2)%**	1 %
Citi-branded cards	**9,165**	8,628	8,578	**6**	1
Citi retail services	**6,704**	6,601	6,427	**2**	3
Total	**$ 20,398**	$ 19,829	$ 19,570	**3 %**	1 %
Income from continuing operations by business					
Retail banking	**$ 196**	$ 312	$ 251	**(37)%**	24 %
Citi-branded cards	**1,742**	1,581	1,009	**10**	57
Citi retail services	**1,286**	1,194	569	**8**	NM
Total	**$ 3,224**	$ 3,087	$ 1,829	**4 %**	69 %

(1) 2018 includes an approximate $150 million gain on the Hilton portfolio sale.
NM Not meaningful

2019 vs. 2018

Net income increased 4%, as higher revenues and lower expenses were partially offset by higher cost of credit.

Revenues increased 3%. Excluding the impact of the $150 million gain on the Hilton portfolio sale in the prior year, revenues increased 4%, reflecting higher revenues in Citi-branded cards and Citi retail services, partially offset by lower retail banking revenues.

Retail banking revenues decreased 2%, as the benefit of stronger deposit volumes was more than offset by lower deposit spreads. Average deposits increased 3%. Assets under management increased 20%, including the benefit of market movements. Citi expects that retail banking revenues will likely be impacted by the lower interest rate environment in the near term.

Cards revenues increased 4% (5% excluding the Hilton gain). In Citi-branded cards, revenues increased 6% (8% excluding the Hilton gain), primarily driven by volume growth and spread expansion. Average loans increased 3% and purchase sales increased 7%.

Citi retail services revenues increased 2%, primarily driven by organic loan growth and the full-year benefit of the L.L.Bean portfolio acquisition. Average loans increased 3% and purchase sales increased 2%.

Expenses decreased 1%, as efficiency savings more than offset ongoing investments and higher volume-related expenses.

Provisions increased 9%, primarily driven by higher net credit losses. Net credit losses increased 10%, driven by higher net credit losses in Citi-branded cards (up 10% to $2.9 billion) and Citi retail services (up 9% to $2.6 billion). The increase in net credit losses reflected volume growth and seasoning in both cards portfolios. The net loan loss reserve build increased 2%, reflecting volume growth and seasoning in both cards portfolios.

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

For information on the impact of Citi's January 1, 2020 adoption of the new accounting standard on credit losses (CECL), see "Risk Factors—Operational Risks" below and Note 1 to the Consolidated Financial Statements.

As previously disclosed, Sears has continued to close stores since it exited bankruptcy. Although Citi retail services will continue to be impacted from reduced new account acquisitions and lower purchase sales, Citi does not currently expect an immediate or ongoing material impact on its 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.

LATIN AMERICA GCB

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

At December 31, 2019, *Latin America GCB* had 1,419 retail branches in Mexico, with approximately $11.7 billion in retail banking loans and $23.8 billion in deposits. In addition, the business had approximately $6.0 billion in outstanding card loan balances.

In millions of dollars, except as otherwise noted	**2019**	2018	2017	**% Change 2019 vs. 2018**	% Change 2018 vs. 2017
Net interest revenue	**$ 3,639**	$ 3,681	$ 3,491	**(1)%**	5 %
Non-interest revenue[1]	**1,599**	1,628	1,303	**(2)**	25
Total revenues, net of interest expense	**$ 5,238**	$ 5,309	$ 4,794	**(1)%**	11 %
Total operating expenses	**$ 2,883**	$ 2,900	$ 2,721	**(1)%**	7 %
Net credit losses	**$ 1,109**	$ 1,131	$ 1,083	**(2)%**	4 %
Credit reserve build	**(38)**	84	113	**NM**	(26)
Provision for unfunded lending commitments	**—**	—	—	**—**	—
Provision for benefits and claims	**54**	81	83	**(33)**	(2)
Provisions for credit losses and for benefits and claims (LLR & PBC)	**$ 1,125**	$ 1,296	$ 1,279	**(13)%**	1 %
Income from continuing operations before taxes	**$ 1,230**	$ 1,113	$ 794	**11 %**	40 %
Income taxes	**329**	311	278	**6**	12
Income from continuing operations	**$ 901**	$ 802	$ 516	**12 %**	55 %
Noncontrolling interests	**—**	—	5	**—**	(100)
Net income	**$ 901**	$ 802	$ 511	**12 %**	57 %
Balance Sheet data and ratios *(in billions of dollars)*					
Average assets	**$ 35**	$ 33	$ 35	**6 %**	(6)%
Return on average assets	**2.57%**	2.43%	1.46%		
Efficiency ratio	**55**	55	57		
Average deposits	**$ 22.8**	$ 22.7	$ 21.8	**—**	4
Net credit losses as a percentage of average loans	**6.45%**	6.50%	6.08%		
Revenue by business					
Retail banking	**$ 3,585**	$ 3,744	$ 3,324	**(4)%**	13 %
Citi-branded cards	**1,653**	1,565	1,470	**6**	6
Total	**$ 5,238**	$ 5,309	$ 4,794	**(1)%**	11 %
Income from continuing operations by business					
Retail banking	**$ 600**	$ 596	$ 332	**1 %**	80 %
Citi-branded cards	**301**	206	184	**46**	12
Total	**$ 901**	$ 802	$ 516	**12 %**	55 %
FX translation impact					
Total revenues—as reported[1]	**$ 5,238**	$ 5,309	$ 4,794	**(1)%**	11 %
Impact of FX translation[2]	**—**	(23)	(117)		
Total revenues—ex-FX[3]	**$ 5,238**	$ 5,286	$ 4,677	**(1)%**	13 %
Total operating expenses—as reported	**$ 2,883**	$ 2,900	$ 2,721	**(1)%**	7 %
Impact of FX translation[2]	**—**	(13)	(59)		
Total operating expenses—ex-FX[3]	**$ 2,883**	$ 2,887	$ 2,662	**— %**	8 %
Provisions for LLR & PBC—as reported	**$ 1,125**	$ 1,296	$ 1,279	**(13)%**	1 %
Impact of FX translation[2]	**—**	(6)	(32)		
Provisions for LLR & PBC—ex-FX[3]	**$ 1,125**	$ 1,290	$ 1,247	**(13)%**	3 %
Net income—as reported	**$ 901**	$ 802	$ 511	**12 %**	57 %
Impact of FX translation[2]	**—**	(3)	(19)		
Net income—ex-FX[3]	**$ 901**	$ 799	$ 492	**13 %**	62 %

(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 2019 average exchange rates for all periods presented.
(3) Presentation of this metric excluding FX translation is a non-GAAP financial measure.

NM Not meaningful

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.

2019 vs. 2018

Net income increased 13%, primarily reflecting lower cost of credit, partially offset by lower revenues.

Revenues decreased 1%, including a gain on sale (approximately $250 million) of an asset management business in the prior year. Excluding the gain on sale, revenues increased 4%, reflecting higher revenues in both retail banking and cards.

Retail banking revenues decreased 4%. Excluding the gain on sale, retail banking revenues increased 3%, as improved deposit spreads were partially offset by lower average loans (down 3%), reflecting the ongoing slowdown in overall economic growth and industry volumes in Mexico. Assets under management increased 13%, including the benefit of market movements, while average deposits were largely unchanged, as clients transferred money to investments. Cards revenues increased 6%, primarily driven by continued volume growth, reflecting higher purchase sales (up 7%) and average loans (up 3%), as well as higher rates.

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

Provisions decreased 13%, primarily driven by a modest net loan loss reserve release (compared to a net loan loss reserve build in the prior year) and lower net credit losses, reflecting lower volumes in retail banking.

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

For information on the impact of Citi's January 1, 2020 adoption of the new accounting standard on credit losses (CECL), see "Risk Factors—Operational Risks" below and Note 1 to the Consolidated Financial Statements.

ASIA GCB

Asia GCB provides traditional retail banking and Citi-branded card products to retail and small business customers. During 2019, *Asia GCB*'s most significant revenues in *Asia* were from Hong Kong, Singapore, South Korea, Australia, India, Taiwan, Thailand, Philippines, Indonesia and Malaysia. Included within *Asia GCB*, traditional retail banking and Citi-branded card products are also provided to retail customers in certain *EMEA* countries, primarily Poland, Russia and the United Arab Emirates.

At December 31, 2019, on a combined basis, the businesses had 242 retail branches, approximately $62.8 billion in retail banking loans and $106.7 billion in deposits. In addition, the businesses had approximately $19.9 billion in outstanding card loan balances.

In millions of dollars, except as otherwise noted[1]	**2019**	2018	2017	**% Change 2019 vs. 2018**	% Change 2018 vs. 2017
Net interest revenue	**$ 4,697**	$ 4,687	$ 4,488	**— %**	4 %
Non-interest revenue	**2,638**	2,514	2,593	**5**	(3)
Total revenues, net of interest expense	**$ 7,335**	$ 7,201	$ 7,081	**2 %**	2 %
Total operating expenses	**$ 4,591**	$ 4,656	$ 4,641	**(1)%**	— %
Net credit losses	**$ 690**	$ 668	$ 642	**3 %**	4 %
Credit reserve build (release)	**8**	24	(10)	**(67)**	NM
Provision (release) for unfunded lending commitments	**—**	—	—	**—**	—
Provisions for credit losses	**$ 698**	$ 692	$ 632	**1 %**	9 %
Income from continuing operations before taxes	**$ 2,046**	$ 1,853	$ 1,808	**10 %**	2 %
Income taxes	**469**	433	611	**8**	(29)
Income from continuing operations	**$ 1,577**	$ 1,420	$ 1,197	**11 %**	19 %
Noncontrolling interests	**6**	7	5	**(14)**	40
Net income	**$ 1,571**	$ 1,413	$ 1,192	**11 %**	19 %
Balance Sheet data and ratios *(in billions of dollars)*					
Average assets	**$ 122**	$ 119	$ 114	**3 %**	4 %
Return on average assets	**1.29%**	1.19%	1.05%		
Efficiency ratio	**63**	65	66		
Average deposits	**$ 101.1**	$ 98.0	$ 94.6	**3**	4
Net credit losses as a percentage of average loans	**0.88%**	0.86%	0.85%		
Revenue by business					
Retail banking	**$ 4,435**	$ 4,283	$ 4,200	**4 %**	2 %
Citi-branded cards	**2,900**	2,918	2,881	**(1)**	1
Total	**$ 7,335**	$ 7,201	$ 7,081	**2 %**	2 %
Income from continuing operations by business					
Retail banking	**$ 1,046**	$ 943	$ 737	**11 %**	28 %
Citi-branded cards	**531**	477	460	**11**	4
Total	**$ 1,577**	$ 1,420	$ 1,197	**11 %**	19 %
FX translation impact					
Total revenues—as reported	**$ 7,335**	$ 7,201	$ 7,081	**2 %**	2 %
Impact of FX translation[2]	**—**	(123)	(153)		
Total revenues—ex-FX[3]	**$ 7,335**	$ 7,078	$ 6,928	**4 %**	2 %
Total operating expenses—as reported	**$ 4,591**	$ 4,656	$ 4,641	**(1)%**	— %
Impact of FX translation[2]	**—**	(87)	(95)		
Total operating expenses—ex-FX[3]	**$ 4,591**	$ 4,569	$ 4,546	**— %**	1 %
Provisions for credit losses—as reported	**$ 698**	$ 692	$ 632	**1 %**	9 %
Impact of FX translation[2]	**—**	(18)	(21)		
Provisions for credit losses—ex-FX[3]	**$ 698**	$ 674	$ 611	**4 %**	10 %
Net income—as reported	**$ 1,571**	$ 1,413	$ 1,192	**11 %**	19 %
Impact of FX translation[2]	**—**	(13)	(23)		
Net income—ex-FX[3]	**$ 1,571**	$ 1,400	$ 1,169	**12 %**	20 %

(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 2019 average exchange rates for all periods presented.
(3) Presentation of this metric excluding FX translation is a non-GAAP financial measure.
NM Not meaningful

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.

2019 vs. 2018

Net income increased 12%, primarily driven by higher revenues, partially offset by modestly higher cost of credit.

Revenues increased 4%, primarily driven by growth in retail banking.

Retail banking revenues increased 5%, primarily driven by higher investment revenues due to improved market sentiment and higher deposit revenues. Investment sales increased 8%, assets under management grew 17%, including the benefit of market movements, average deposits increased 6% and average loans increased 5%. Retail lending revenues declined 1%, as continued growth in personal loans was more than offset by lower mortgage revenues due to spread compression.

Cards revenues increased 1%, including a modest episodic gain in the current year, as continued growth in average loans (up 3%) and purchase sales (up 6%) was largely offset by spread compression.

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

Provisions increased 4%, as higher net credit losses reflecting volume growth and seasoning were partially offset by a lower net loan loss reserve build in the current year. Overall credit quality remained stable in the region.

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

For information on the impact of Citi's January 1, 2020 adoption of the new accounting standard on credit losses (CECL), see “Risk Factors—Operational Risks” below and Note 1 to the Consolidated Financial Statements.

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*. Mark-to-market gains and losses on certain credit derivatives (used to hedge the corporate loan portfolio) are also recorded in *Principal transactions*, (for additional information on *Principal transactions* revenue, see Note 6 to the Consolidated Financial Statements). *Other* primarily includes 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, 2019, *ICG* had approximately $1.4 trillion in assets and $768 billion in deposits, while two of its businesses—securities services and issuer services—managed approximately $20.3 trillion and $17.5 trillion in assets under custody as of December 31, 2019 and 2018, respectively.

In millions of dollars, except as otherwise noted	2019	2018	2017	% Change 2019 vs. 2018	% Change 2018 vs. 2017
Commissions and fees	$ 4,462	$ 4,651	$ 4,456	(4)%	4 %
Administration and other fiduciary fees	2,756	2,806	2,721	(2)	3
Investment banking	4,440	4,358	4,666	2	(7)
Principal transactions	8,562	8,742	7,527	(2)	16
Other(1)	1,829	941	1,711	94	(45)
Total non-interest revenue	$ 22,049	$ 21,498	$ 21,081	3 %	2 %
Net interest revenue (including dividends)	17,252	16,827	16,741	3	1
Total revenues, net of interest expense	$ 39,301	$ 38,325	$ 37,822	3 %	1 %
Total operating expenses	$ 22,224	$ 21,780	$ 21,187	2 %	3 %
Net credit losses	$ 394	$ 208	$ 465	89 %	(55)%
Credit reserve build (release)	71	(109)	(285)	NM	62
Provision (release) for unfunded lending commitments	98	116	(161)	(16)	NM
Provisions for credit losses	$ 563	$ 215	$ 19	NM	NM
Income from continuing operations before taxes	$ 16,514	$ 16,330	$ 16,616	1 %	(2)%
Income taxes	3,570	3,756	7,241	(5)	(48)
Income from continuing operations	$ 12,944	$ 12,574	$ 9,375	3 %	34 %
Noncontrolling interests	40	17	57	NM	(70)
Net income	$ 12,904	$ 12,557	$ 9,318	3 %	35 %
EOP assets *(in billions of dollars)*	$ 1,447	$ 1,438	$ 1,375	1 %	5 %
Average assets *(in billions of dollars)*	1,493	1,449	1,395	3	4
Return on average assets	0.86%	0.87%	0.67%		
Efficiency ratio	57	57	56		
Revenues by region					
North America	$ 13,459	$ 13,522	$ 14,578	— %	(7)%
EMEA	12,006	11,770	10,878	2	8
Latin America	5,166	4,954	4,814	4	3
Asia	8,670	8,079	7,552	7	7
Total	$ 39,301	$ 38,325	$ 37,822	3 %	1 %
Income from continuing operations by region					
North America	$ 3,511	$ 3,675	$ 2,494	(4)%	47 %
EMEA	3,867	3,889	2,828	(1)	38
Latin America	2,111	2,013	1,637	5	23
Asia	3,455	2,997	2,416	15	24
Total	$ 12,944	$ 12,574	$ 9,375	3 %	34 %
Average loans by region *(in billions of dollars)*					
North America	$ 188	$ 174	$ 159	8 %	9 %
EMEA	87	81	69	7	17
Latin America	40	42	42	(5)	—
Asia	73	77	72	(5)	7
Total	$ 388	$ 374	$ 342	4 %	9 %
EOP deposits by business *(in billions of dollars)*					
Treasury and trade solutions	$ 536	$ 509	$ 469	5 %	9 %
All other *ICG* businesses	232	218	208	6	5
Total	$ 768	$ 727	$ 677	6 %	7 %

(1) 2019 includes an approximate $350 million gain on Citi's investment in Tradeweb in the second quarter. 2017 includes the approximate $580 million gain on the sale of a fixed income analytics business.

NM Not meaningful

ICG Revenue Details

In millions of dollars	**2019**	2018	2017	**% Change 2019 vs. 2018**	% Change 2018 vs. 2017
Investment banking revenue details					
Advisory	**$ 1,259**	$ 1,301	$ 1,123	**(3)%**	16 %
Equity underwriting	**973**	991	1,121	**(2)**	(12)
Debt underwriting	**2,984**	2,719	3,126	**10**	(13)
Total investment banking	**$ 5,216**	$ 5,011	$ 5,370	**4 %**	(7)%
Treasury and trade solutions	**10,293**	9,914	9,279	**4**	7
Corporate lending—excluding gains (losses) on loan hedges[1]	**2,921**	2,913	2,623	**—**	11
Private bank	**3,458**	3,398	3,108	**2**	9
Total *Banking* revenues (ex-gains (losses) on loan hedges)	**$ 21,888**	$ 21,236	$ 20,380	**3 %**	4 %
Corporate lending—gains (losses) on loan hedges[1]	**$ (432)**	$ 45	$ (133)	**NM**	NM
Total *Banking* revenues (including gains (losses) on loan hedges), net of interest expense	**$ 21,456**	$ 21,281	$ 20,247	**1 %**	5 %
Fixed income markets[2]	**$ 12,884**	$ 11,661	$ 12,369	**10 %**	(6)%
Equity markets	**2,908**	3,427	2,879	**(15)**	19
Securities services	**2,631**	2,631	2,366	**—**	11
Other[3]	**(578)**	(675)	(39)	**14**	NM
Total *Markets and securities services* revenues, net of interest expense	**$ 17,845**	$ 17,044	$ 17,575	**5 %**	(3)%
Total revenues, net of interest expense	**$ 39,301**	$ 38,325	$ 37,822	**3 %**	1 %
Commissions and fees	**$ 782**	$ 705	$ 628	**11 %**	12 %
Principal transactions[4]	**7,661**	7,134	7,001	**7**	2
Other[2]	**1,117**	380	619	**NM**	(39)
Total non-interest revenue	**$ 9,560**	$ 8,219	$ 8,248	**16 %**	— %
Net interest revenue	**3,324**	3,442	4,121	**(3)**	(16)
Total fixed income markets[5]	**$ 12,884**	$ 11,661	$ 12,369	**10 %**	(6)%
Rates and currencies	**$ 9,225**	$ 8,486	$ 8,901	**9 %**	(5)%
Spread products/other fixed income	**3,659**	3,175	3,468	**15**	(8)
Total fixed income markets	**$ 12,884**	$ 11,661	$ 12,369	**10 %**	(6)%
Commissions and fees	**$ 1,121**	$ 1,267	$ 1,282	**(12)%**	(1)%
Principal transactions[4]	**775**	1,240	494	**(38)**	NM
Other	**172**	110	(21)	**56**	NM
Total non-interest revenue	**$ 2,068**	$ 2,617	$ 1,755	**(21)%**	49 %
Net interest revenue	**840**	810	1,124	**4**	(28)
Total equity markets[5]	**$ 2,908**	$ 3,427	$ 2,879	**(15)%**	19 %

(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 include 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) 2019 includes an approximate $350 million gain on Citi's investment in Tradeweb in the second quarter.
(3) 2017 includes the approximate $580 million gain on the sale of a fixed income analytics business.
(4) Excludes principal transactions revenues of *ICG* businesses other than *Markets*, primarily treasury and trade solutions and the private bank.
(5) Citi assesses its *Markets* business performance on a total revenue basis, as offsets may occur across revenue line items. For example, securities that generate *Net interest revenue* may be risk managed by derivatives that are recorded in *Principal transactions* revenue. For a description of the composition of these revenue line items, see Notes 4, 5 and 6 to the Consolidated Financial Statements.
NM Not meaningful

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.

2019 vs. 2018

Net income increased 3%, driven primarily by higher revenues and a lower effective tax rate, partially offset by higher expenses and higher cost of credit.

Revenues increased 3%, reflecting higher *Banking* revenues (increase of 1% including the gains (losses) on loan hedges) and higher *Markets and securities services* revenues (increase of 5%). Excluding the impact of the gains (losses) on loan hedges, *Banking* revenues were up 3%, driven by higher revenues in treasury and trade solutions, investment banking and the private bank, as corporate lending was largely unchanged. *Markets and securities services* revenues were up 5%, including a gain in the second quarter of 2019 from Citi's investment in Tradeweb, as higher revenues in fixed income markets were partially offset by lower equity markets revenues.

Citi expects that *ICG*'s revenues will likely be impacted by the lower interest rate environment in the near term.

Within *Banking*:

- *Investment banking* revenues increased 4%, reflecting gains in wallet share despite a decline in the overall market wallet. Debt underwriting increased 10%, reflecting gains in wallet share, primarily in investment grade underwriting, across *North America*, *EMEA* and *Asia*. Equity underwriting revenues decreased 2%, reflecting a decline in market wallet, particularly in *Asia* and *EMEA*, partially offset by gains in wallet share. Advisory revenues decreased 3%, largely due to a comparison to a strong prior year as well as a decline in market wallet, partially offset by gains in wallet share.
- *Treasury and trade solutions* revenues increased 4%. Excluding the impact of FX translation, revenues increased 6%, reflecting strength in all regions, driven by growth across both net interest and fee income. Revenues increased in the cash business, primarily driven by strong client engagement and solid growth in deposit and transaction volumes, partially offset by spread compression in the second half of 2019 due to the impact of lower interest rates. Revenue growth in the trade business was driven by improved spreads, due to growth in structured loans as well as the ability to continue to utilize distribution capabilities to optimize the balance sheet and drive returns, while supporting clients. Average deposits increased 10%, reflecting growth across regions. Average trade loans declined 3%, driven by *North America*, *EMEA* and *Asia* (for additional information, see "Liquidity Risk—Loans" below).
- *Corporate lending* revenues decreased 16%. Excluding the impact of gains (losses) on loan hedges, revenues were largely unchanged versus the prior year, as growth in the commercial loan portfolio was offset by lower volumes in the rest of the portfolio.
- *Private bank* revenues increased 2%, driven primarily by *North America* and *Asia*, partially offset by *Latin America*. The increase in revenues reflected strong client activity, driving higher lending and deposit volumes, as well as higher capital markets revenues, partially offset by lower deposit spreads.

Within *Markets and securities services*:

- *Fixed income markets* revenues increased 10%, including the Tradeweb gain, reflecting higher revenues across all regions. Non-interest revenues increased due to higher corporate and investor client activity as well as improved market activity, particularly in rates and spread products. The increase in non-interest revenues was partially offset by a decline in net interest revenues, 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 in the first half of the year.

  Rates and currencies revenues increased 9%, primarily driven by higher G10 rates and currencies revenues in *North America*, *Asia* and *EMEA*, reflecting a more favorable operating environment in the second half of 2019, with higher corporate and investor client activity. Local markets rates and currencies revenues increased modestly despite declining currency volatility.

  Spread products and other fixed income revenues increased 15%, including the Tradeweb gain, reflecting higher revenues in both *North America* and *EMEA*. The increase in revenues was driven by higher client activity as well as an improved trading environment, particularly in flow trading and financing products. This increase in revenues was partially offset by lower structured products revenues, reflecting a challenging trading environment.
- *Equity markets* revenues decreased 15%, driven by lower revenues across cash equities, equity derivatives and prime finance, particularly in *North America* and *Asia.* Cash equities revenues decreased largely due to lower client volumes. Despite strong corporate and investor client activity, equity derivatives revenues decreased due to the impact of a less favorable trading environment, given lower market volatility, as well as a comparison to a strong prior year. The decline in prime finance revenues was primarily driven by lower client activity and lower financing balances. Non-interest revenues decreased, primarily driven by lower principal transaction and commissions and fee revenues, due to lower client activity and a less favorable trading environment, as well as a change in the mix of trading positions in support of client activity.
- *Securities services* revenues were largely unchanged versus the prior year. Excluding the impact of FX translation, revenues increased 4%, reflecting higher revenues in *Asia* and *Latin America*. The increase in revenues was driven by higher net interest revenue due to higher deposit volumes and higher interest rates,

particularly in emerging markets, as well as higher client activity.

Expenses increased 2%, as higher compensation, volume-related expenses and continued investments were partially offset by efficiency savings and a benefit from FX translation.

Provisions increased $348 million, driven by an increase in net credit losses of $186 million, and an increase in the net loan loss reserve build of $162 million. Both the increase in net credit losses and the higher loan loss reserve build largely reflected a normalization of credit trends.

For information on the impact of Citi’s January 1, 2020 adoption of the new accounting standard on credit losses (CECL), see “Risk Factors—Operational Risks” below and Note 1 to the Consolidated Financial Statements.

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, 2019, *Corporate/Other* had $97 billion in assets.

In millions of dollars	**2019**	2018	2017	**% Change 2019 vs. 2018**	% Change 2018 vs. 2017
Net interest revenue	**$ 1,890**	$ 2,361	$ 2,043	**(20)%**	16 %
Non-interest revenue	**124**	(171)	1,134	**NM**	NM
Total revenues, net of interest expense	**$ 2,014**	$ 2,190	$ 3,177	**(8)%**	(31)%
Total operating expenses	**$ 2,150**	$ 2,275	$ 3,816	**(5)%**	(40)%
Net credit losses	**$ (8)**	$ 21	$ 149	**NM**	(86)%
Credit reserve build (release)	**(60)**	(218)	(317)	**72 %**	31
Provision (release) for unfunded lending commitments	**(7)**	(3)	—	**NM**	—
Provision for benefits and claims	**—**	(2)	(7)	**100**	71
Provisions (benefits) for credit losses and for benefits and claims	**$ (75)**	$ (202)	$ (175)	**63 %**	(15)%
Income (loss) from continuing operations before taxes	**$ (61)**	$ 117	$ (464)	**NM**	NM
Income taxes (benefits)	**(886)**	(88)	19,080	**NM**	(100)%
Income (loss) from continuing operations	**$ 825**	$ 205	$ (19,544)	**NM**	NM
Income (loss) from discontinued operations, net of taxes	**(4)**	(8)	(111)	**50 %**	93 %
Net income (loss) before attribution of noncontrolling interests	**$ 821**	$ 197	$ (19,655)	**NM**	NM
Noncontrolling interests	**20**	11	(6)	**82 %**	NM
Net income (loss)	**$ 801**	$ 186	$ (19,649)	**NM**	NM

NM Not meaningful

2019 vs. 2018

Net income was $801 million, compared to net income of $186 million in the prior year. Net income was largely driven by an income tax benefit of $886 million, compared to an income tax benefit of $88 million in the prior year. The increase in the income tax benefit primarily reflected the reduction in the valuation allowance related to Citi’s deferred tax assets and a pretax loss in the current year (see “Significant Accounting Policies and Significant Estimates—Income Taxes” below). The pretax loss was largely driven by lower revenues from legacy assets, partially offset by higher gains on investments. The pretax loss also reflected higher cost of credit, partially offset by lower expenses.

Revenues decreased 8%, driven by the continued wind-down of legacy assets, partially offset by gains on investments.

Expenses decreased 5%, as the continued wind-down of legacy assets was partially offset by higher infrastructure costs.

Provisions increased $127 million to a net benefit of $75 million, primarily due to a lower net loan loss reserve release, partially offset by lower net credit losses.

Citi expects that *Corporate/Other* results will likely be impacted by ongoing investments in infrastructure and controls as well as lower interest rates and lower investment gains during 2020.

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; and
- providing guarantees, indemnifications, loan commitments, letters of credit and representations and warranties.

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.

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	2020	2021	2022	2023	2024	Thereafter	Total
Long-term debt obligations—principal[1]	$ 37,257	$ 38,083	$ 27,090	$ 20,128	$ 16,023	$ 110,179	$ 248,760
Long-term debt obligations—interest payments[2]	7,548	6,313	5,244	4,470	3,877	34,220	61,672
Operating lease obligations[3]	801	695	572	425	314	935	3,742
Purchase obligations[4]	584	538	532	316	324	752	3,046
Other liabilities[5]	34,561	474	218	127	114	1,622	37,116
Total	**$ 80,751**	**$ 46,103**	**$ 33,656**	**$ 25,466**	**$ 20,652**	**$ 147,708**	**$ 354,336**

(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 2020–2024 are calculated by applying the December 31, 2019 weighted-average interest rate (3.28%) 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 (2025–2098) are calculated by applying current interest rates on the remaining contractual obligations on long-term debt for each of those years.
(3) For additional information about operating leases, see Note 26 to the Consolidated Financial Statements.
(4) 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).
(5) *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 2019, Citi returned a total of $22.3 billion of capital to common shareholders in the form of share repurchases (approximately 264 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 March 2019.

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 categories is composed of multiple indicators of equal weight, 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, 2020 will be based on 2019 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, 2020 would not become effective until January 1, 2022). 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, 2020 would become effective January 1, 2021).

The following table sets forth Citi's GSIB surcharge as determined under method 1 and method 2 for 2019 and 2018:

	2019	2018
Method 1	**2.0%**	2.0%
Method 2	**3.0**	3.0

Citi's GSIB surcharge effective for both 2019 and 2018 was 3.0%, as derived under the higher method 2 result. Citi's GSIB surcharge effective for 2020 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. Citi's GSIB surcharge effective for 2021 will not exceed 3.0%, and Citi's GSIB surcharge effective for 2022 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." With the exception of the non-grandfathered trust preferred securities, which do not fully phase-out of Tier 2 Capital until January 1, 2022, all other transition provisions have occurred and were entirely reflected in Citi's regulatory capital ratios beginning January 1, 2018. Moreover, the GSIB surcharge, Capital Conservation Buffer and any Countercyclical Capital Buffer (currently 0%) commenced phase-in on January 1, 2016, and became fully effective on January 1, 2019.

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. 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%. If a U.S. GSIB fails to exceed the 5.0% effective minimum Supplementary Leverage ratio requirement, 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.” In addition, insured depository institution subsidiaries of U.S. GSIBs, including Citibank, must maintain a minimum Supplementary Leverage ratio of 6.0% to be considered “well capitalized.” Citibank was “well capitalized” as of December 31, 2019.

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) and Dodd-Frank Act Stress Testing (DFAST).

For the largest and most complex firms, such as Citi, CCAR includes both a quantitative evaluation of a firm’s capital adequacy under stress and a qualitative evaluation of its abilities to determine its capital needs on a forward-looking basis. As part of the CCAR process, the Federal Reserve Board evaluates Citi’s capital adequacy, capital adequacy process and its planned capital distributions, such as dividend payments and common stock repurchases. 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 quantitative 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.

Based on recent changes to the Federal Reserve Board’s Capital Plan Rule, the qualitative objection to a firm’s capital plan will no longer apply. However, all CCAR firms, including Citi, will continue to be subject to a rigorous evaluation of their capital planning process. Firms with weak practices may be subject to a deficient supervisory rating, and potentially an enforcement action, for failing to meet supervisory expectations. For additional information regarding CCAR, see “Risk Factors—Strategic Risks” below.

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.

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 two supervisory scenarios (baseline 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.

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.

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.

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 capital requirements are presented in the table below.

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.

The following tables set forth Citi's capital components and ratios as of December 31, 2019, September 30, 2019 and December 31, 2018:

	Effective Minimum Requirement(1)		Advanced Approaches			Standardized Approach		
In millions of dollars, except ratios	**2019**	2018	**Dec. 31, 2019**	Sept. 30, 2019	Dec. 31, 2018	**Dec. 31, 2019**	Sept. 30, 2019	Dec. 31, 2018
Common Equity Tier 1 Capital			**$ 137,798**	$ 138,581	$ 139,252	**$ 137,798**	$ 138,581	$ 139,252
Tier 1 Capital			**155,805**	158,033	158,122	**155,805**	158,033	158,122
Total Capital (Tier 1 Capital + Tier 2 Capital)			**181,337**	183,996	183,144	**193,682**	196,354	195,440
Total Risk-Weighted Assets			**1,135,553**	1,145,091	1,131,933	**1,166,523**	1,197,050	1,174,448
Credit Risk			**$ 771,508**	$ 776,367	$ 758,887	**$ 1,107,775**	$ 1,134,584	$ 1,109,007
Market Risk			**57,317**	61,125	63,987	**58,748**	62,466	65,441
Operational Risk			**306,728**	307,599	309,059	**—**	—	—
Common Equity Tier 1 Capital ratio(2)	**10.0%**	8.625%	**12.13%**	12.10%	12.30%	**11.81%**	11.58%	11.86%
Tier 1 Capital ratio(2)	**11.5**	10.125	**13.72**	13.80	13.97	**13.36**	13.20	13.46
Total Capital ratio(2)	**13.5**	12.125	**15.97**	16.07	16.18	**16.60**	16.40	16.64

In millions of dollars, except ratios	**Effective Minimum Requirement**	**Dec. 31, 2019**	Sept. 30, 2019	Dec. 31, 2018
Quarterly Adjusted Average Total Assets(3)		**$ 1,957,039**	$ 1,960,675	$ 1,896,959
Total Leverage Exposure(4)		**2,507,891**	2,520,352	2,465,641
Tier 1 Leverage ratio	**4.0%**	**7.96%**	8.06%	8.34%
Supplementary Leverage ratio	**5.0**	**6.21**	6.27	6.41

(1) Citi's effective minimum risk-based capital requirements during 2019 and 2018 are inclusive of the 100% and 75% phase-in, respectively, of both the 2.5% Capital Conservation Buffer and the 3.0% GSIB surcharge (all of which must be composed of Common Equity Tier 1 Capital).
(2) 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 periods presented.
(3) Tier 1 Leverage ratio denominator. Represents quarterly average total assets less amounts deducted from Tier 1 Capital.
(4) Supplementary Leverage ratio denominator.

Common Equity Tier 1 Capital Ratio
Citi's Common Equity Tier 1 Capital ratio was 11.8% under the Basel III Standardized Approach at December 31, 2019, compared to 11.6% at September 30, 2019 and 11.9% at December 31, 2018. The quarter-over-quarter increase was primarily due to net income of $5.0 billion, a reduction in credit risk-weighted assets and beneficial net movements in *Accumulated other comprehensive income (AOCI)*, partially offset by the return of $6.2 billion of capital to common shareholders. The decline year-over-year was primarily due to the return of $22.3 billion of capital to common shareholders, partially offset by net income of $19.4 billion in 2019, beneficial net movements in *AOCI* and a reduction in risk-weighted assets.

Components of Citigroup Capital

In millions of dollars		**December 31, 2019**		December 31, 2018
Common Equity Tier 1 Capital				
Citigroup common stockholders' equity[(1)]	**$**	**175,414**	$	177,928
Add: Qualifying noncontrolling interests		**154**		147
Regulatory capital adjustments and deductions:				
Less: Accumulated net unrealized gains (losses) on cash flow hedges, net of tax[(2)]		**123**		(728)
Less: Cumulative unrealized net gain (loss) related to changes in fair value of financial liabilities attributable to own creditworthiness, net of tax[(3)]		**(679)**		580
Less: Intangible assets:				
Goodwill, net of related DTLs[(4)]		**21,066**		21,778
Identifiable intangible assets other than MSRs, net of related DTLs		**4,087**		4,402
Less: Defined benefit pension plan net assets		**803**		806
Less: DTAs arising from net operating loss, foreign tax credit and general business credit carry-forwards[(5)]		**12,370**		11,985
Total Common Equity Tier 1 Capital (Standardized Approach and Advanced Approaches)	**$**	**137,798**	$	139,252
Additional Tier 1 Capital				
Qualifying noncumulative perpetual preferred stock[(1)]	**$**	**17,828**	$	18,292
Qualifying trust preferred securities[(6)]		**1,389**		1,384
Qualifying noncontrolling interests		**42**		55
Regulatory capital deductions:				
Less: Permitted ownership interests in covered funds[(7)]		**1,216**		806
Less: Minimum regulatory capital requirements of insurance underwriting subsidiaries[(8)]		**36**		55
Total Additional Tier 1 Capital (Standardized Approach and Advanced Approaches)	**$**	**18,007**	$	18,870
Total Tier 1 Capital (Common Equity Tier 1 Capital + Additional Tier 1 Capital) (Standardized Approach and Advanced Approaches)	**$**	**155,805**	$	158,122
Tier 2 Capital				
Qualifying subordinated debt	**$**	**23,673**	$	23,324
Qualifying trust preferred securities[(9)]		**326**		321
Qualifying noncontrolling interests		**46**		47
Eligible allowance for credit losses[(10)]		**13,868**		13,681
Regulatory capital deduction:				
Less: Minimum regulatory capital requirements of insurance underwriting subsidiaries[(8)]		**36**		55
Total Tier 2 Capital (Standardized Approach)	**$**	**37,877**	$	37,318
Total Capital (Tier 1 Capital + Tier 2 Capital) (Standardized Approach)	**$**	**193,682**	$	195,440
Adjustment for excess of eligible credit reserves over expected credit losses[(10)]	**$**	**(12,345)**	$	(12,296)
Total Tier 2 Capital (Advanced Approaches)	**$**	**25,532**	$	25,022
Total Capital (Tier 1 Capital + Tier 2 Capital) (Advanced Approaches)	**$**	**181,337**	$	183,144

(1) Issuance costs of $152 million and $168 million related to noncumulative perpetual preferred stock outstanding at December 31, 2019 and 2018, 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 $23.1 billion of net DTAs at December 31, 2019, $12.4 billion was includable in Common Equity Tier 1 Capital pursuant to the U.S. Basel III rules, while $10.7 billion was excluded. Excluded from Citi's Common Equity Tier 1 Capital as of December 31, 2019 was $12.4 billion of net DTAs arising from net operating loss, foreign tax credit and general business credit carry-forwards, which was reduced by $1.7 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. Citi's DTAs arising from temporary differences are 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 that 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 $1.5 billion and $1.4 billion at December 31, 2019 and 2018, respectively.

Citigroup Capital Rollforward

In millions of dollars	Three Months Ended December 31, 2019	Twelve Months Ended December 31, 2019
Common Equity Tier 1 Capital, beginning of period	**$ 138,581**	**$ 139,252**
Net income	**4,979**	**19,401**
Common and preferred stock dividends declared	**(1,401)**	**(5,512)**
Net increase in treasury stock	**(5,119)**	**(17,290)**
Net change in common stock and additional paid-in capital	**92**	**(98)**
Net change in foreign currency translation adjustment net of hedges, net of tax	**972**	**(321)**
Net change in unrealized gains (losses) on debt securities AFS, net of tax	**(160)**	**1,985**
Net change in defined benefit plans liability adjustment, net of tax	**15**	**(552)**
Net change in adjustment related to change in fair value of financial liabilities attributable to own creditworthiness, net of tax	**82**	**123**
Net change in ASC 815—excluded component of fair value hedges	**(27)**	**25**
Net decrease in goodwill, net of related DTLs	**432**	**712**
Net decrease in identifiable intangible assets other than MSRs, net of related DTLs	**45**	**315**
Net decrease in defined benefit pension plan net assets	**187**	**3**
Net increase in DTAs arising from net operating loss, foreign tax credit and general business credit carry-forwards	**(883)**	**(385)**
Other	**3**	**140**
Net decrease in Common Equity Tier 1 Capital	**$ (783)**	**$ (1,454)**
Common Equity Tier 1 Capital, end of period (Standardized Approach and Advanced Approaches)	**$ 137,798**	**$ 137,798**
Additional Tier 1 Capital, beginning of period	**$ 19,452**	**$ 18,870**
Net decrease in qualifying perpetual preferred stock	**(1,493)**	**(464)**
Net increase in qualifying trust preferred securities	**—**	**5**
Net change in permitted ownership interests in covered funds	**49**	**(410)**
Other	**(1)**	**6**
Net decrease in Additional Tier 1 Capital	**$ (1,445)**	**$ (863)**
Tier 1 Capital, end of period (Standardized Approach and Advanced Approaches)	**$ 155,805**	**$ 155,805**
Tier 2 Capital, beginning of period (Standardized Approach)	**$ 38,321**	**$ 37,318**
Net change in qualifying subordinated debt	**(408)**	**349**
Net change in eligible allowance for credit losses	**(46)**	**187**
Other	**10**	**23**
Net change in Tier 2 Capital (Standardized Approach)	**$ (444)**	**$ 559**
Tier 2 Capital, end of period (Standardized Approach)	**$ 37,877**	**$ 37,877**
Total Capital, end of period (Standardized Approach)	**$ 193,682**	**$ 193,682**
Tier 2 Capital, beginning of period (Advanced Approaches)	**$ 25,963**	**$ 25,022**
Net change in qualifying subordinated debt	**(408)**	**349**
Net change in excess of eligible credit reserves over expected credit losses	**(33)**	**138**
Other	**10**	**23**
Net change in Tier 2 Capital (Advanced Approaches)	**$ (431)**	**$ 510**
Tier 2 Capital, end of period (Advanced Approaches)	**$ 25,532**	**$ 25,532**
Total Capital, end of period (Advanced Approaches)	**$ 181,337**	**$ 181,337**

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

In millions of dollars	Three Months Ended December 31, 2019	Twelve Months Ended December 31, 2019
Total Risk-Weighted Assets, beginning of period	**$ 1,197,050**	**$ 1,174,448**
Changes in Credit Risk-Weighted Assets		
General credit risk exposures[(1)]	**2,821**	**10,376**
Repo-style transactions[(2)]	**(19,681)**	**(7,420)**
Securitization exposures	**(277)**	**980**
Equity exposures[(3)]	**1,590**	**5,013**
Over-the-counter (OTC) derivatives[(4)]	**(13,283)**	**(6,669)**
Other exposures[(5)]	**4,639**	**9,290**
Off-balance sheet exposures[(6)]	**(2,618)**	**(12,802)**
Net decrease in Credit Risk-Weighted Assets	**$ (26,809)**	**$ (1,232)**
Changes in Market Risk-Weighted Assets		
Risk levels[(7)]	**$ (4,718)**	**$ (6,847)**
Model and methodology updates	**1,000**	**154**
Net decrease in Market Risk-Weighted Assets	**$ (3,718)**	**$ (6,693)**
Total Risk-Weighted Assets, end of period	**$ 1,166,523**	**$ 1,166,523**

(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 three and 12 months ended December 31, 2019, mainly driven by growth in commercial and retail loans and increases in investment securities.

(2) Repo-style transactions include repurchase and reverse repurchase transactions as well as securities borrowing and securities lending transactions. Repo-style transactions decreased during the three and 12 months ended December 31, 2019, driven by volume reduction and matured deals.

(3) Equity exposures increased during the three months ended December 31, 2019, primarily due to increased exposures from existing investments. Equity exposures increased during the 12 months ended December 31, 2019, primarily due to an increase in market value of investments and increased exposures from existing investments.

(4) OTC derivatives decreased during the three and 12 months ended December 31, 2019, primarily due to decreases in notionals.

(5) Other exposures include cleared transactions, unsettled transactions and other assets. Other exposures increased during the three months ended December 31, 2019, primarily due to increases in centrally cleared derivatives and various other assets. Other exposures increased during the 12 months ended December 31, 2019, primarily due to the recognition of right-of-use (ROU) assets in accordance with the adoption of ASU No. 2016-02, *Leases (Topic 842)*, effective January 1, 2019, as well as increases in centrally cleared derivatives and various other assets.

(6) Off-balance sheet exposures decreased during the three months ended December 31, 2019, primarily due to a decrease in standby letters of credit. Off-balance sheet exposures decreased during the 12 months ended December 31, 2019, primarily due to decreases in standby letters of credit and loan commitments.

(7) Risk levels decreased during the three months ended December 31, 2019, primarily due to a decrease in exposure levels subject to Stressed Value at Risk and Incremental Risk charges. Risk levels decreased during the 12 months ended December 31, 2019, primarily due to a decrease in exposure levels subject to Stressed Value at Risk.

As set forth in the table above, total risk-weighted assets under the Basel III Standardized Approach decreased from year-end 2018, due to decreases in market risk-weighted assets and credit risk-weighted assets. Market risk-weighted assets decreased from year-end 2018 primarily due to a net reduction in exposure levels. The decrease in credit risk-weighted assets was primarily due to decreases in standby letters of credit and loan commitments as well as volume reduction and matured deals in repo-style transactions and changes in OTC derivative trade activity, partially offset by increases in loan exposures, the recognition of right-of-use (ROU) assets in accordance with the adoption of ASU No. 2016-02, *Leases (Topic 842)*, effective January 1, 2019, and an increase in market value of investments.

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

In millions of dollars		Three Months Ended December 31, 2019		Twelve Months Ended December 31, 2019
Total Risk-Weighted Assets, beginning of period	**$**	**1,145,091**	**$**	**1,131,933**
Changes in Credit Risk-Weighted Assets				
Retail exposures(1)		**6,140**		**4,959**
Wholesale exposures(2)		**(3,007)**		**(9,288)**
Repo-style transactions(3)		**(8,761)**		**(3,184)**
Securitization exposures(4)		**153**		**5,889**
Equity exposures(5)		**1,764**		**4,924**
Over-the-counter (OTC) derivatives(6)		**(2,992)**		**8,508**
Derivatives CVA(7)		**(6,651)**		**(15,034)**
Other exposures(8)		**8,394**		**14,282**
Supervisory 6% multiplier		**101**		**1,565**
Net change in Credit Risk-Weighted Assets	**$**	**(4,859)**	**$**	**12,621**
Changes in Market Risk-Weighted Assets				
Risk levels(9)	**$**	**(4,808)**	**$**	**(6,824)**
Model and methodology updates		**1,000**		**154**
Net decrease in Market Risk-Weighted Assets	**$**	**(3,808)**	**$**	**(6,670)**
Net decrease in Operational Risk-Weighted Assets(10)	**$**	**(871)**	**$**	**(2,331)**
Total Risk-Weighted Assets, end of period	**$**	**1,135,553**	**$**	**1,135,553**

(1) Retail exposures increased during the three months ended December 31, 2019, primarily due to seasonal spending for qualifying revolving (cards) exposures. Retail exposures increased during the 12 months ended December 31, 2019, primarily due to increases in consumer loans, partially offset by decreases due to annual parameter updates.
(2) Wholesale exposures decreased during the three months ended December 31, 2019, primarily due to decreases in commercial loans partially offset by increases in investment securities. Wholesale exposures decreased during the 12 months ended December 31, 2019, primarily due to annual model parameter updates reflecting Citi's loss experience, partially offset by increases in commercial loans and investment securities.
(3) Repo-style transactions include repurchase and reverse repurchase transactions as well as securities borrowing and securities lending transactions. Repo-style transactions decreased during the three and 12 months ended December 31, 2019, driven by volume reduction and matured deals.
(4) Securitization exposures increased during the 12 months ended December 31, 2019, due to increased exposures from existing deals.
(5) Equity exposures increased during the three months ended December 31, 2019, primarily due to increased exposures from existing investments. Equity exposures increased during the 12 months ended December 31, 2019, primarily due to an increase in market value of investments and increased exposures from existing investments.
(6) OTC derivatives decreased during the three months ended December 31, 2019, primarily due to a reduction in notionals. OTC derivatives increased during the 12 months ended December 31, 2019, primarily due to approved model changes, partially offset by a reduction in notionals.
(7) Derivatives CVA decreased during the three months ended December 31, 2019, primarily due to exposure decreases and changes in credit spreads. Derivatives CVA decreased during the 12 months ended December 31, 2019, primarily due to approved model changes, exposure decreases and changes in credit spreads.
(8) Other exposures include cleared transactions, unsettled transactions, assets other than those reportable in specific exposure categories and non-material portfolios. Other exposures increased during the three months ended December 31, 2019, primarily due to increases in centrally cleared derivatives and various other assets. Other exposures increased during the 12 months ended December 31, 2019, primarily due to the recognition of ROU assets in accordance with the adoption of ASU No. 2016-02, *Leases (Topic 842)*, effective January 1, 2019, and increases in centrally cleared derivatives and various other assets.
(9) Risk levels decreased during the three months ended December 31, 2019, primarily due to a decrease in exposure levels subject to Stressed Value at Risk and Incremental Risk charges. Risk levels decreased during the 12 months ended December 31, 2019, primarily due to a decrease in exposure levels subject to Stressed Value at Risk.
(10) Operational risk-weighted assets decreased during the 12 months ended December 31, 2019, primarily due to changes in operational loss severity and frequency.

As set forth in the table above, total risk-weighted assets under the Basel III Advanced Approaches increased from year-end 2018 primarily due to an increase in credit risk-weighted assets, partially offset by decreases in market and operational risk-weighted assets. The increase in credit risk-weighted assets was primarily due to recognition of ROU assets in accordance with the adoption of ASU 2016-02, changes in OTC derivatives trade activities and increases in securitization exposures, loan exposures and equity exposures, partially offset by decreases in derivatives CVA and wholesale exposures mainly due to annual model parameter updates. Market risk-weighted assets decreased from year-end 2018, primarily due to a net reduction in exposure levels. The decrease in operational risk-weighted assets was primarily due to changes in operational loss severity and frequency.

Supplementary Leverage Ratio

The following table sets forth Citi's Supplementary Leverage ratio and related components as of December 31, 2019, September 30, 2019 and December 31, 2018:

In millions of dollars, except ratios		**December 31, 2019**		September 30, 2019		December 31, 2018
Tier 1 Capital	**$**	**155,805**	$	158,033	$	158,122
Total Leverage Exposure						
On-balance sheet assets(1)	**$**	**1,996,617**	$	2,000,082	$	1,936,791
Certain off-balance sheet exposures:(2)						
Potential future exposure on derivative contracts		**169,478**		176,546		187,130
Effective notional of sold credit derivatives, net(3)		**38,481**		41,328		49,402
Counterparty credit risk for repo-style transactions(4)		**23,715**		24,362		23,715
Unconditionally cancelable commitments		**70,870**		70,648		69,630
Other off-balance sheet exposures		**248,308**		246,793		238,805
Total of certain off-balance sheet exposures	**$**	**550,852**	$	559,677	$	568,682
Less: Tier 1 Capital deductions		**39,578**		39,407		39,832
Total Leverage Exposure	**$**	**2,507,891**	$	2,520,352	$	2,465,641
Supplementary Leverage ratio		**6.21%**		6.27%		6.41%

(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 Total Leverage Exposure 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 as well as securities borrowing or securities lending transactions.

As set forth in the table above, Citigroup's Supplementary Leverage ratio was 6.2% at December 31, 2019, compared to 6.3% at September 30, 2019 and 6.4% at December 31, 2018. The quarter-over-quarter decrease was primarily driven by a reduction in Tier 1 Capital resulting from the return of $6.2 billion of capital to common shareholders and a preferred stock redemption, partially offset by net income and beneficial net movements in *AOCI*, as well as a decrease in average off-balance sheet exposures. The year-over-year decrease was primarily driven by a reduction in Tier 1 Capital resulting from the return of $22.3 billion of capital to common shareholders, as well as an increase in average on-balance sheet assets, partially offset by net income and beneficial net movements in *AOCI*, as well as a decrease in average off-balance sheet exposures.

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.

The following tables set forth the capital components and ratios for Citibank, Citi's primary subsidiary U.S. depository institution, as of December 31, 2019, September 30, 2019 and December 31, 2018:

In millions of dollars, except ratios	**Effective Minimum Requirement[1]**		**Advanced Approaches**			**Standardized Approach**		
	2019	2018	**Dec. 31, 2019**	Sept. 30, 2019	Dec. 31, 2018	**Dec. 31, 2019**	Sept. 30, 2019	Dec. 31, 2018
Common Equity Tier 1 Capital			**$ 130,791**	$ 130,067	$ 129,091	**$ 130,791**	$ 130,067	$ 129,091
Tier 1 Capital			**132,918**	132,198	131,215	**132,918**	132,198	131,215
Total Capital (Tier 1 Capital + Tier 2 Capital)[2]			**145,989**	144,829	144,358	**157,324**	155,735	155,154
Total Risk-Weighted Assets			**932,432**	946,433	926,229	**1,019,916**	1,047,550	1,032,809
Credit Risk			**$ 664,828**	$ 664,014	$ 654,962	**$ 990,319**	$ 1,005,337	$ 994,294
Market Risk			**29,167**	41,867	38,144	**29,597**	42,213	38,515
Operational Risk			**238,437**	240,552	233,123	**—**	—	—
Common Equity Tier 1 Capital ratio[3][4]	**7.0%**	6.375%	**14.03%**	13.74%	13.94%	**12.82%**	12.42%	12.50%
Tier 1 Capital ratio[3][4]	**8.5**	7.875	**14.26**	13.97	14.17	**13.03**	12.62	12.70
Total Capital ratio[3][4]	**10.5**	9.875	**15.66**	15.30	15.59	**15.43**	14.87	15.02

In millions of dollars, except ratios	**Effective Minimum Requirement**	**Dec. 31, 2019**	Sept. 30, 2019	Dec. 31, 2018
Quarterly Adjusted Average Total Assets[5]		**$ 1,459,851**	$ 1,451,352	$ 1,398,875
Total Leverage Exposure[6]		**1,951,701**	1,952,628	1,914,663
Tier 1 Leverage ratio[4]	**4.0%**	**9.10%**	9.11%	9.38%
Supplementary Leverage ratio[4]	**6.0**	**6.81**	6.77	6.85

(1) Citibank's effective minimum risk-based capital requirements during 2019 and 2018 are inclusive of the 100% and 75% phase-in, respectively, of the 2.5% Capital Conservation Buffer (all of which must be composed of Common Equity Tier 1 Capital).
(2) Under the Advanced Approaches framework, eligible credit reserves that exceed expected credit losses are eligible for inclusion in Tier 2 Capital to the extent that 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.
(3) 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 for all periods presented.
(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. Citibank must also maintain a minimum Supplementary Leverage ratio of 6.0% to be considered "well capitalized."
(5) Tier 1 Leverage ratio denominator. Represents quarterly average total assets less amounts deducted from Tier 1 Capital.
(6) Supplementary Leverage ratio denominator.

As indicated in the table above, Citibank's capital ratios at December 31, 2019 were in excess of the stated and effective minimum requirements under the U.S. Basel III rules. In addition, Citibank was also "well capitalized" as of December 31, 2019.

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, 2019. This information 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 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.

	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**	**1.3**	**1.0**	**1.3**	**1.0**	**1.5**

	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**	**0.2**
Citibank	**0.7**	**0.6**	**0.5**	**0.3**

Citigroup Broker-Dealer Subsidiaries
At December 31, 2019, 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 $10.1 billion, which exceeded the minimum requirement by $6.9 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 $21.4 billion at December 31, 2019, 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 principal broker-dealer subsidiaries were in compliance with their regulatory capital requirements at December 31, 2019.

Total Loss-Absorbing Capacity (TLAC)

The table below details Citi's eligible external TLAC and LTD amounts and ratios, and each effective minimum TLAC and long-term debt (LTD) ratio requirement, as well as the surplus amount in dollars in excess of each requirement.

As of December 31, 2019, Citi exceeded each of the minimum TLAC and LTD requirements, resulting in a $14 billion surplus above its binding TLAC requirement of LTD as a percentage of Total Leverage Exposure.

	December 31, 2019	
In billions of dollars, except ratios	External TLAC	LTD
Total eligible amount	$ 289	$ 127
% of Standardized Approach risk-weighted assets	24.7%	10.9%
Effective minimum requirement(1)(2)	22.5	9.0
Surplus amount	$ 26	$ 22
% of Total Leverage Exposure	11.5%	5.1%
Effective minimum requirement	9.5	4.5
Surplus amount	$ 50	$ 14

(1) External TLAC includes method 1 GSIB surcharge of 2.0%.
(2) LTD includes method 2 GSIB surcharge of 3.0%.

For additional information on Citi's TLAC-related requirements, see "Liquidity Risk—Long-Term Debt—Total Loss-Absorbing Capacity (TLAC)" and "Risk Factors—Compliance, Conduct and Legal Risks" below.

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 (Topic 326).* The ASU introduces a new credit loss methodology, the CECL methodology, which requires earlier recognition of credit losses while also providing additional transparency about credit risk. The ASU was effective for Citi as of January 1, 2020. For additional information regarding Citi's adoption of the CECL methodology, see Note 1 to the Consolidated Financial Statements.

Citi and Citibank have elected the transition provisions provided by the U.S. banking agencies' rule. Accordingly, the "Day One" regulatory capital effects resulting from adoption of the CECL methodology commenced phase-in on January 1, 2020, and will be fully reflected in Citi's regulatory capital as of January 1, 2023. Based on Citi's regulatory capital position as of December 31, 2019, the estimated impact of adopting the CECL methodology would reduce Citi's Common Equity Tier 1 Capital ratio under the Standardized Approach by approximately 25 basis points in total, or approximately 6 basis points per year on January 1 of each year over the transition period. The actual basis point impact of adopting CECL on Citi's regulatory capital ratios may change, if Citi's capital position changes over time.

The Federal Reserve Board has 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).

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 2019. In the U.S., the most significant rule finalized in 2019 relates to the calculation of risk-weighted assets for derivative contracts, while the Stress Capital Buffer proposal from 2018 has not yet been finalized. The Basel Committee, among other things, finalized revisions to the minimum capital requirements for market risk and proposed revisions to its credit valuation adjustment risk framework.

U.S. Banking Agencies

Standardized Approach for Counterparty Credit Risk

In November 2019, the U.S. banking agencies released a final rule to introduce the Standardized Approach for Counterparty Credit Risk (SA-CCR) in the U.S. SA-CCR will 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. In addition, 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 as 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 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 mandatory compliance date of the final rule is January 1, 2022, with early adoption permitted beginning April 1, 2020. Citi's SA-CCR implementation efforts are already underway. Citi is currently evaluating a decision on its intended implementation date for SA-CCR, including consideration of the impact of SA-CCR on both Citigroup's and Citibank's regulatory capital ratios.

Stress Capital Buffer

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 under the Standardized Approach. The Stress Capital Buffer (SCB) would be based upon 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. Under the April 2018 proposal, the SCB would be subject to a floor of 2.5%.

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.

A final rule has not yet been issued. Senior staff at the Federal Reserve Board have indicated publicly that they plan to finalize certain components of the proposal for application in the 2020 CCAR cycle, and that they may re-propose certain other elements of the proposal to better balance the need to preserve the dynamism of stress testing while reducing unnecessary volatility, among other things. Senior staff at the Federal Reserve Board have also indicated publicly that they are considering two options in place of the "dividend add-on," which was a component of the SCB under the April 2018 proposal: setting the Countercyclical Capital Buffer at a higher baseline level during normal times, or raising the floor of the SCB higher than 2.5%. 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, and the consequences of breaching a buffer.

TLAC Holdings

In April 2019, the U.S. banking agencies released a proposal that would create a new regulatory capital deduction applicable to Advanced Approaches banking organizations for certain investments in covered debt instruments issued by GSIBs. The proposed rule is intended to reduce systemic risk by creating an incentive for Advanced Approaches banking organizations to limit their exposure to GSIBs.

Under the U.S. Basel III rules, investments in the capital of unconsolidated financial institutions are subject to deduction to the extent that they exceed certain thresholds. Under the proposed rule, an investment in a "covered debt instrument" would be treated as an investment in a Tier 2 capital instrument and, therefore, would be subject to deduction from the Advanced Approaches banking organization's own Tier 2 Capital in accordance with the existing rules for investments in unconsolidated financial institutions. Covered debt instruments would include unsecured debt instruments that are "eligible debt securities" for purposes of the TLAC rule, or that are pari passu or subordinated to such securities, in addition to certain unsecured debt instruments issued by foreign GSIBs.

To support a deep and liquid market for covered debt instruments, the proposed rule provides an exception from the approach described above for covered debt instruments held for 30 days or less for market-making purposes, if the aggregate amount of such debt instruments does not exceed 5% of the banking organization's Common Equity Tier 1 Capital.

The proposed rule does not specify a proposed effective date for the new regulatory capital deduction. If adopted as proposed, Citi does not expect the proposed rule to have a material impact on its regulatory capital.

Basel Committee

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 June 2019, the Basel Committee on Banking Supervision issued a final standard that revises its leverage ratio framework to align the leverage ratio measurement of client-cleared derivatives 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. 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 final rule permits both cash and non-cash forms of initial margin and variation margin received from clients to mitigate replacement cost and potential future exposure for client-cleared derivatives only. The Basel Committee stated in the rule that this revision balances the robustness of the leverage ratio as a non-risk-based safeguard against unsustainable sources of leverage with the policy objective of promoting central clearing of standardized derivative contracts.

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. As part of the SA-CCR final rule discussed previously, the U.S. agencies amended the Supplementary Leverage Ratio requirements in a manner similar to the Basel Committee. This particular aspect of the U.S. SA-CCR final rule will likely benefit Citi's Supplementary Leverage Ratio modestly upon implementation.

Credit Valuation Adjustment Risk—Targeted Revisions

In November 2019, the Basel Committee on Banking Supervision issued a consultative document that proposes a targeted set of revisions to the credit valuation adjustment (CVA) risk framework previously finalized in December 2017. The revisions aim to align the revised CVA risk framework, in part, with the revised market risk capital framework that was finalized in January 2019. The Basel Committee also sought feedback on a possible adjustment to the overall calibration of capital requirements calculated under their CVA risk framework.

The U.S. agencies may consider revisions to the CVA risk framework under the U.S. Basel III rules in the future, based upon any revisions adopted by the Basel Committee.

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.

	At December 31,				
In millions of dollars or shares, except per share amounts	**2019**	2018	2017	2016	2015
Total Citigroup stockholders' equity	**$193,242**	$196,220	$200,740	$225,120	$221,857
Less: Preferred stock	**17,980**	18,460	19,253	19,253	16,718
Common stockholders' equity	**$175,262**	$177,760	$181,487	$205,867	$205,139
Less:					
Goodwill	**22,126**	22,046	22,256	21,659	22,349
Identifiable intangible assets (other than MSRs)	**4,327**	4,636	4,588	5,114	3,721
Goodwill and identifiable intangible assets (other than MSRs) related to assets held-for-sale (HFS)	**—**	—	32	72	68
Tangible common equity (TCE)	**$148,809**	$151,078	$154,611	$179,022	$179,001
Common shares outstanding (CSO)	**2,114.1**	2,368.5	2,569.9	2,772.4	2,953.3
Book value per share (common equity/CSO)	**$ 82.90**	$ 75.05	$ 70.62	$ 74.26	$ 69.46
Tangible book value per share (TCE/CSO)	**70.39**	63.79	60.16	64.57	60.61

	For the Year Ended December 31,				
In millions of dollars	**2019**	2018	2017[1]	2016	2015
Net income available to common shareholders	**$ 18,292**	$ 16,871	$ 14,583	$ 13,835	$ 16,473

Average common stockholders' equity	**177,363**	179,497	207,747	209,629	204,188
Average TCE	**150,994**	153,343	180,458	182,135	176,505
Return on average common stockholders' equity	**10.3%**	9.4%	7.0%	6.6%	8.1%
Return on average TCE (RoTCE)(2)	**12.1**	11.0	8.1	7.6	9.3

(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. In addition, all CCAR firms, including Citi, will continue to be subject to a rigorous evaluation of their capital planning practices, including, but not limited to, governance, risk management and internal controls. For additional information on Citi's return of capital to common shareholders in 2019 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 Testing Component of Capital Planning" above and the risk management risk factor below.

The FRB has stated that it expects leading capital adequacy practices to continue to evolve and to 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.

Citi will be required to incorporate the current expected credit losses (CECL) methodology into its stress testing methodologies, data and disclosure beginning with the 2020 supervisory stress test cycle. The FRB has stated 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. The impacts on Citi's capital adequacy of incorporating CECL on an ongoing basis, and of other potential regulatory changes in the FRB's stress testing methodologies, remain unclear. For additional information regarding the CECL methodology, including the transition provisions related to the "Day One" adverse regulatory capital effects resulting from adoption of the CECL methodology, see "Capital Resources—Current Regulatory Capital Standards—Regulatory Capital Treatment—Implementation and Transition of the Current Expected Credit Losses (CECL) Methodology" above and Note 1 to the Consolidated Financial Statements.

In addition, in 2018, the FRB proposed 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. 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 Citi'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.

Macroeconomic, Geopolitical and Other 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, geopolitical and other challenges, uncertainties and volatility. For example, protracted or widespread trade tensions, including changes in trade policies, which have resulted in retaliatory measures from other countries, could result in a further reduction or realignment of trade flows among countries and negatively impact businesses, sectors and economic growth rates. In addition, adverse developments or downturns in one or more of the world's larger economies would likely have a significant impact on the global economy or the economies of other countries because of global financial and economic linkages. Additional areas of uncertainty include, among others, geopolitical tensions and conflicts, natural disasters, pandemics and election outcomes. For example, it was reported in January 2020 that a novel strain of coronavirus which first surfaced in China, had spread to several other countries, resulting in various uncertainties, including the potential impact to Asian and global economies, trade and consumer and corporate clients.

Governmental fiscal and monetary actions, or expected actions, such as changes in interest rate policies and any program implemented by a central bank to change 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 2019, the FRB reduced its benchmark U.S. interest rate three times to add additional stimulus to the U.S. economy. The interest rates on Citi loans are typically based off or set at a spread over a benchmark interest rate, including the U.S. benchmark interest rate, and are therefore likely to decline as benchmark rates decline. By contrast, the interest rates at which Citi pays depositors are already low and unlikely to decline much further. Consequently, declining loan rates and largely unchanged deposit rates would likely compress Citi's net interest revenue. Citi's net interest revenue could also be adversely affected due to a flattening of the interest rate yield curve (e.g., a lower spread between shorter-term versus longer-term interest rates), as Citi, similar to other banks, typically pays interest on deposits based on shorter-term interest rates and earns money on loans typically based on longer-term interest rates. For additional information on Citi's interest rate risk, see "Managing Global Risk—Market Risk—Net Interest Revenue at Risk" below.

Despite the U.K.'s official withdrawal from the European Union (EU) as of January 31, 2020, numerous uncertainties continue to exist regarding the U.K.'s future relationship with the EU. For example, the terms of the U.K. withdrawal continue to be negotiated between the U.K. and the EU, including their future trading relationship. It remains unclear whether the parties will be able to agree on terms prior to the end of the currently scheduled transition period on December 31, 2020. If no agreement is reached on terms of the exit in a timely manner, it would likely result in what is commonly referred to as a "no deal" 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 exit from the EU, see "Managing Global Risk—Strategic Risk—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 the U.K. and Europe over the resulting effects of the U.K.'s exit from the EU.

These and additional global macroeconomic, geopolitical and other 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, Its Management and Its Businesses Must Continually Review, Analyze and Successfully Adapt to Ongoing Regulatory and Legislative Uncertainties and Changes in the U.S. and Globally.

Despite the adoption of final regulations and laws in numerous areas impacting Citi and its businesses over the past several years, Citi, its management and its businesses continually face ongoing regulatory and legislative uncertainties and changes, both in the U.S. and globally. While the areas of ongoing regulatory and legislative uncertainties and changes facing Citi are too numerous to list completely, various examples include, but are not limited to (i) potential fiscal, monetary, regulatory and other changes arising from the U.S. federal government and others; (ii) potential changes to various aspects of the regulatory capital framework applicable to Citi (see the capital return risk factor and "Capital Resources—Regulatory Capital Standards Developments" above); and (iii) the terms of and other uncertainties resulting from the U.K.'s exit from the EU (see the macroeconomic challenges and uncertainties risk factor above). When referring to "regulatory," Citi is including both formal regulation and the views and expectations of its regulators in their supervisory roles.

Ongoing regulatory and legislative 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, U.S. and other regulators globally have implemented and continue 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 and legislative 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 requirements, including within a single jurisdiction. For example, in May 2019, the European Commission adopted, as part of Capital Requirements Directive V (CRD V), 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 in some respects the requirement mirrors an existing U.S. requirement for non-U.S. banking organizations to form U.S. intermediate holding companies, the implementation of the EU holding company requirement could lead to additional complexity with respect to Citi's resolution planning, capital and liquidity allocation and efficiency in various jurisdictions. Regulatory and legislative changes have also significantly increased Citi's compliance risks and costs (see the implementation and interpretation of regulatory changes risk factor below).

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 revenues 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-based solutions, as well as make investments in risk management and controls. Citi also has been investing in higher-return businesses, such as the U.S. cards and wealth management businesses in *Global Consumer Banking (GCB)* and treasury and trade solutions, securities services and other businesses in *Institutional Clients Group (ICG)*. Citi also continues to execute on its previously disclosed investment of more than $1 billion in Citibanamex. Further, Citi has been pursuing efficiency improvements through various technology and digital initiatives, organizational simplification and location strategies, which are intended to self-fund Citi's incremental investment initiatives as well as offset growth-driven expenses.

Citi's investments and efficiency initiatives are being undertaken as part of its overall strategy to meet operational and financial objectives, including, among others, those relating to shareholder returns. 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.

Uncertainties Regarding the Transition Away from or 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.

LIBOR is extensively used as a "benchmark" or "reference rate" across financial products and markets globally. The U.K. Financial Conduct Authority (FCA) has raised questions about the future sustainability of LIBOR, and, as a result, the FCA obtained voluntary panel bank support to sustain LIBOR only until 2021, and LIBOR is expected to be discontinued as early as January 1, 2022. In addition, following guidance provided by the Financial Stability Board, other regulators have suggested reforming or replacing other benchmark rates with alternative reference rates. Accordingly, the transition away from and discontinuance of LIBOR or any other benchmark rate presents various uncertainties, risks and challenges to financial markets and institutions, including Citi. These include, among others, the pricing, liquidity, value of, return on and market for financial instruments and contracts that reference LIBOR or any other applicable benchmark rate.

Citi issues, trades, holds or otherwise uses a substantial amount of securities or products that reference LIBOR, including, among others, derivatives, corporate loans, commercial and residential mortgages, credit cards, securitized products and other securities. The transition away from and discontinuation of LIBOR presents significant operational, legal, reputational or compliance, financial and other risks to Citi. For example, LIBOR transition presents various challenges related to contractual mechanics of existing floating rate financial instruments and contracts that reference LIBOR and mature after 2021. Certain of these instruments and contracts do not provide for alternative benchmark rates, which makes it unclear what the future benchmark rates would be after LIBOR's cessation. Even if the instruments and contracts provide for a transition to alternative benchmark rates, the new benchmark rates may significantly differ from the prior rates. As a result, Citi may need to proactively address any contractual uncertainties or rate differences in such instruments and contracts, which would likely be both time consuming and costly. In addition, the transition away from and discontinuance of LIBOR could result in disputes, including litigation, involving holders of outstanding instruments and contracts that reference LIBOR, whether or not the underlying documentation provides for alternative benchmark rates. Citi will also need to develop significant internal systems and infrastructure to transition to alternative benchmark rates to both manage its businesses and support clients.

For additional information about Citi's ongoing management of LIBOR transition risk, see "Managing Global Risk—Strategic Risk—LIBOR Transition Risk" 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.

At December 31, 2019, Citi's net DTAs were $23.1 billion, net of a valuation allowance of $6.5 billion, of which $10.7 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, 2019, $6.3 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, 2019 expire over the period of 2020–2029. 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 will primarily be dependent upon Citi's ability to generate U.S. taxable income in the relevant tax carry-forward periods. Although utilization of FTCs in any year is generally limited to 21% of foreign source taxable income in that year, overall domestic losses (ODL) that Citi has incurred in the past allow it to reclassify domestic source income as foreign source. Failure to realize any portion of the net DTAs would have a corresponding negative impact on Citi's net income and financial returns.

Citi does not expect to be subject to the Base Erosion Anti-Abuse Tax (BEAT), which, if applicable to Citi in any given year, would have a significantly adverse effect on both Citi's net income and regulatory capital.

For additional information on Citi's DTAs, including 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 various income-based and non-income-based 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 the Tax Cuts and Jobs Act (Tax Reform), to its entities, operations and businesses. Citi's interpretations and application of the tax laws, including with respect to Tax Reform, withholding, stamp, service and other non-income 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 Presence in the Emerging Markets Subjects It to Various Risks as well as Increased Compliance and Regulatory Risks and Costs.

During 2019, 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 limitations of hedges on foreign investments, foreign currency volatility, 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 those countries.

Moreover, if the economic situation in an emerging markets country where Citi operates were to deteriorate below a certain level, U.S. regulators may impose mandatory loan loss or other reserve requirements on Citi, which would increase its credit costs and decrease its earnings (see "Strategic Risk—Country Risk—Argentina" below for additional information on emerging markets risk). In addition, political turmoil and instability have occurred in certain regions and countries, including Asia, the Middle East and Latin America, which have required, and may continue to require, management time and attention and other resources (such as monitoring the impact of sanctions on certain emerging markets economies as well as impacting 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 that are 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, many 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).

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, whereby in the ordinary course of business 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, which include Sears, constituted an aggregate of approximately 11% of Citi's revenues in 2019. These relationships could be negatively impacted by, among other things, 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, despite its exit from bankruptcy in 2019, Sears continues to close stores and experience declining sales (for additional information regarding Citi retail services' co-brand and private label credit card products relationship with Sears, 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 the above events were to occur—such as by replacing the retailer or merchant or offering other card products—these 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).

Citi's Inability in Its Resolution Plan Submissions to Address Any Shortcomings or 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. On December 17, 2019, the FRB and FDIC issued feedback on the resolution plans filed on July 1, 2019 by the eight U.S. GSIBs, including Citi. The FRB and FDIC identified one shortcoming, but no deficiencies, in Citi's resolution plan relating to governance mechanisms. 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 diverse and 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 that 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.

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 data and other information as well as the monitoring of a large number of complex transactions on a minute-by-minute basis. For example, through *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, see the cybersecurity risk factor 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's 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 lead to 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. While many of Citi's agreements with the third parties include indemnification provisions, Citi may not be able to recover sufficiently, or at all, under the provisions to adequately offset any losses Citi may incur from third-party cyber incidents.

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 the 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 to Citi, including expenses such as repairing systems, replacing customer payment cards, credit monitoring 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.

Changes to or Incorrect Assumptions, Judgments or Estimates in Citi's Financial Statements Could Cause Significant Unexpected Losses or Impacts in the Future.

U.S. GAAP requires Citi to use certain assumptions, judgments and estimates in preparing its financial statements, including the estimate of the allowance for credit losses, reserves related to litigation, regulatory and tax matters exposures, valuation of DTAs and the fair values of certain assets and liabilities, among other items. If Citi's assumptions, judgments or estimates underlying its financial statements are incorrect or differ from actual or subsequent events, Citi could experience unexpected losses or other adverse impacts, some of which could be significant. For example, Citi has incurred losses related to its foreign operations that are reported in the foreign currency translation adjustment (CTA) components of *Accumulated other comprehensive income (loss) (AOCI)*. In accordance with U.S. GAAP, a sale or substantial liquidation of any foreign operations, such as those related to Citi's legacy businesses, would result in reclassification of any foreign CTA component of *AOCI* related to that foreign operation, including related hedges and taxes, into Citi's earnings. For additional information on Citi's accounting policy for foreign currency translation and its foreign CTA components of *AOCI*, see Notes 1 and 19 to the Consolidated Financial Statements.

In addition, 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 also 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 (see the changes to financial accounting and reporting standards risk factor below). 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.

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.

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 became effective for Citi on January 1, 2020, requires 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 required that a loss be "incurred" before it was recognized. The CECL methodology represents a significant change from existing GAAP and may result in material changes to Citi's accounting for financial instruments. Citi's ongoing estimates of its expected credit losses will depend upon its CECL models and assumptions, existing and forecasted macroeconomic conditions and the credit quality, composition and other characteristics of Citi's loan and other applicable portfolios. These factors are likely to cause variability in Citi's expected credit losses under CECL compared to previous GAAP and, thus, impact its results of operations and regulatory capital. For additional information on this and other accounting standards, including the expected impacts on Citi's results of operations and financial condition, see Note 1 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.

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 $310 billion and end-of-period corporate loans of $390 billion at year-end 2019. A default by a borrower or other counterparty, or a decline in the credit quality or value of any underlying collateral, exposes Citi to credit risk. Despite Citi's target client strategy, various macroeconomic, geopolitical and other factors, among other things, can increase Citi's credit risk and credit costs (for additional information, see the co-branding and private label credit card, macroeconomic challenges and uncertainties and emerging markets risk factors above).

While Citi provides reserves for expected losses for its credit exposures, such reserves are subject to judgments and estimates that could be incorrect or differ from actual future events. Under the new CECL accounting standard, the allowance for credit losses reflects expected losses, rather than incurred losses, which could lead to more volatility in the allowance and the provision for credit losses as forecasts of economic conditions change. In addition, Citi's future allowance may be affected by seasonality of its cards portfolios based on historical evidence showing that (i) credit card balances along with 30+ days past due balances increase during the third and fourth quarters each year as the holiday season approaches; and (ii) during the first and second quarters, borrowers use tax refunds to pay down balances while delinquent balances from the prior third and fourth quarters are charged off. For additional information, see the incorrect assumptions or estimates and changes to financial accounting and reporting standards risk factors above. For additional information on the impact of CECL, see Note 1 to the Consolidated Financial Statements. For additional information on Citi's credit and country risk, see each respective business's 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 2019, 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). In addition, Citi 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. Moreover, Citi has indemnification obligations in connection with various transactions that expose it to concentrations of risk, including credit risk from hedging or reinsurance arrangements related to those obligations (for additional information about these exposures, see Note 26 to the Consolidated Financial Statements). A rapid deterioration of a large borrower or other counterparty or within a sector or country where Citi has large exposures or guarantees 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. Citi competes with other banks and financial institutions for deposits, which represent Citi's most stable and lowest cost of long-term funding. The competition for retail banking deposits has increased as a result of online banks and digital banking, among others. Furthermore, given the decline in interest rates, 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 growth in deposits, has resulted in a more challenging environment for Citi. For additional information on the impact of interest rates, see the macroeconomic challenges and uncertainties risk factor above.

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 are driven by 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 "Managing Global Risk—Liquidity Risk" below.

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 declines, as is likely to occur in a liquidity stress event 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 their perceptions or the 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 a Ratings Downgrade 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. Their ratings of Citi and its more significant subsidiaries' long-term/senior debt and short-term/commercial paper are based on a number of factors, including standalone financial strength, as well as factors that are 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. A ratings downgrade 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 and the impact from derivative triggers, which could require Citi to meet cash obligations and collateral requirements. In addition, a ratings downgrade could have a negative impact on other funding sources such as secured financing and other margined transactions for which there may be no explicit triggers, and on contractual provisions and other credit requirements of Citi's counterparties and clients that may contain minimum ratings thresholds in order for Citi to hold third-party funds. Some entities could have ratings limitations on their permissible counterparties, of which Citi may or may not be aware.

Furthermore, a credit ratings downgrade could have impacts that may not be currently known to Citi or are not possible to quantify. 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.

COMPLIANCE RISKS

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

Citi is continually required to interpret and implement extensive and frequently changing regulatory and legislative requirements, resulting in substantial compliance, regulatory and other risks and costs. In addition, there are heightened regulatory scrutiny and expectations in the U.S. and globally for large financial institutions, as well as their employees and agents, with respect to, among other things, governance, risk management practices and controls. A failure to comply with these requirements and expectations or resolve any identified deficiencies could result in increased regulatory oversight and restrictions.

Over the past several years, Citi has been required to implement a significant number of regulatory and legislative changes across all of its businesses and functions, and these changes continue. The changes themselves may be complex and subject to interpretation, and will require continued investments in Citi's global operations and technology solutions. In some cases, Citi's implementation of a regulatory or legislative 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 some cases, there have been entirely new regulatory or legislative requirements or regimes, resulting in large volumes of regulation and potential uncertainty regarding regulatory expectations as to what is required in order to be in compliance.

Examples of regulatory or legislative 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.

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 2019, out of a total employee population of 200,000, compared to approximately 14,000 as of year-end 2008 with a total employee population of 323,000. These higher compliance costs can require management to incur additional expense, including potentially away from ongoing business investment initiatives.

Extensive and changing compliance requirements can also result in increased reputational and legal risks for Citi, as failure to comply with regulations and requirements, or failure to comply with regulatory expectations, can result in enforcement and/or regulatory proceedings (for additional discussion, see the legal and regulatory proceedings risk factor below).

Citi Is Subject to Extensive Legal and Regulatory Proceedings, Examinations, 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 challenging 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 and authorities 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. Citi can be subject to enforcement proceedings not only because of violations of law and regulation, but also due to a failure, as determined by its regulators, to have adequate policies and procedures, or to remedy deficiencies on a timely basis.

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 parties, that could harm clients, customers or the integrity of 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 the greater focus on conduct risk, the heightened scrutiny and expectations generally from regulators could lead to investigations and other inquiries, as well as remediation requirements, more regulatory or other enforcement proceedings, civil litigation and higher compliance and other risks and costs.

Further, while Citi takes numerous steps to prevent and detect conduct by employees and agents that could potentially harm clients, customers or the integrity of 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 individual employees, and criminal prosecutors in the U.S. have increasingly sought and obtained criminal guilty pleas or deferred prosecution agreements against corporate entities and individuals and other criminal sanctions from those institutions and individuals. 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.

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 its 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 Citi's clients' interests, create economic value and are always systemically responsible. In addition, 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 key policies, standards and processes through which Citi identifies, assesses, measures, monitors and controls risks across the Company. It also emphasizes Citi's risk culture and lays out standards, procedures and programs that are designed to set, reinforce and enhance the Company's risk culture, integrate its values and conduct expectations into the organization, providing employees with tools to assist them with making prudent and ethical risk decisions and to escalate issues appropriately.

Citi selectively takes risks in support of its underlying customer-centric strategy. Citi's objective is to ensure that those risks are consistent with its mission and value proposition and principle of responsible finance; that they are identified, assessed, measured, monitored and controlled; and that they are captured in Citi's risk/reward assessment.

Citi's risk appetite framework, which is approved by the Citigroup Board of Directors, includes both a risk appetite statement, which articulates the aggregate level and types of risk that Citi is willing to accept in order to achieve its business objectives, as well as the overall approach through which risk appetite is established, communicated and monitored. It is built on quantitative boundaries, which include risk limits or thresholds, and on qualitative principles to guide behavior. Citi's risk appetite framework is comprehensive, incorporating all risks, enterprise-wide and applicable across products, functions and geographies.

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 the 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 efficiently meet 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 (including price risk and interest rate 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 negative convexity of positions, as well as the presence of basis or correlation risks.
- *Operational risk* is the risk of loss resulting from inadequate or failed internal processes, systems, human factors or from external events. It includes the reputation and franchise risk impact associated with business practices or market conduct in which Citi is involved. It also includes the risk of failing to comply with applicable laws and regulations, but excludes strategic risk (see below).
- *Compliance risk* is the risk to current or projected financial conditions and resilience arising from violations of laws, rules or regulations, or from nonconformance with prescribed practices, internal policies and procedures or ethical standards. 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.
- *Reputation risk* is the risk to current or projected financial conditions 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 a "three lines of defense" model: (i) business management; (ii) Independent Risk Management and Independent Compliance Risk Management and other control functions; and (iii) Internal Audit. The three lines of defense collaborate with each other in structured forums and processes to bring together various perspectives and to lead the organization toward outcomes that are in clients' interests, that create economic value and that are systemically responsible.

First Line of Defense: Business Management

Through Citi's business management ("frontline units" or the "first line of defense"), each business owns the risks inherent in or arising from its businesses, and is responsible for identifying, assessing and controlling those risks to ensure they are within risk appetite, establishing and operating controls to mitigate those risks, including concentration risks, performing manager assessments of the design and effectiveness of internal controls, implementing appropriate procedures to fulfill its risk governance responsibilities and promoting a culture of compliance and control.

The first line of defense is composed of Citi's businesses *(Institutional Clients Group (ICG)* and *Global Consumer Bank (GCB))*, supporting clients globally as well as in regions and countries that execute Citi's strategy locally. In addition, there are functional teams, such as Enterprise Infrastructure, Operations and Technology (EIO&T) that support the Citi CEO in a first line capacity. The CEOs of each region, business, EIO&T and certain functional teams report to the Citigroup CEO.

Businesses at Citi organize and chair committees, councils, steering groups and other forums that cover risk considerations with participation from Independent Risk Management, Independent Compliance Risk Management and other control functions. These are often conducted across lines of defense and may include 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 Risk Management; Control Functions

Citi's Independent Risk Management (IRM) and Independent Compliance Risk Management (ICRM) together with other control functions (Finance, Human Resources, Legal) set standards that Citi and its businesses and products are required to adhere to in order to manage and oversee risks, including conformance with applicable laws, regulatory requirements, policies and other relevant standards of ethical conduct. IRM and ICRM provide credible challenge to first line units in their assessment and management of risk. In addition, among other responsibilities, IRM, ICRM and the control functions provide advice and training to Citi's businesses and establish tools, methodologies, processes and oversight of controls used by the businesses to foster a culture of compliance and control. Where certain activities of control functions constitute first line activity, such activities are subject to appropriate review and challenge.

Independent Risk Management

The Independent Risk Management organization sets standards for the business and actively manages and oversees aggregate credit, market (price, FX and interest rate), liquidity, strategic, operational, compliance and reputation risks across the Company, including risks that span categories, such as concentration risk.

Independent Risk Management is organized to align to businesses, regions, risk types and to Citi-wide, cross-risk functions or processes. There are teams that report to an independent Chief Risk Officer (CRO) for Citi's businesses (business CROs) and regions (regional CROs). In addition, there are teams that report to the heads for certain risk categories (e.g., Global Market Risk) and for certain foundational risk areas (e.g., Global Risk Review). All of the risk heads, together with the business and regional CROs, report to the Citigroup CRO.

The head of Independent Risk Management is the Citigroup CRO, who reports directly to the Citigroup CEO and to the Citigroup Risk Management Committee (RMC) of the Board of Directors. As part of its responsibilities, the RMC approves the appointment and removal of the CRO. The CRO has regular and unrestricted access to the full Citigroup Board, as well as the Risk Management Committee of the Board, to discuss risks and issues identified through Independent Risk Management's activities, including instances in which the CRO's assessment differs from that of the business or the CEO, and instances in which the business or the CEO may not be adhering to the risk governance framework.

Independent Compliance Risk Management

The Independent Compliance Risk Management organization is an independent risk management function that is designed to oversee and credibly challenge products, functions, jurisdictional activities and legal entities in managing compliance risk, as well as promoting business conduct and activity that is consistent with Citi's mission and value proposition and the compliance risk appetite. Citi's objective is to embed an enterprise-wide compliance risk management framework and culture that identifies, escalates, measures, monitors, reports and controls compliance risk across the three lines of defense. For further information on Citi's compliance risk framework, see "Compliance Risk" below.

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

Human Resources

Human Resources (HR) provides leadership with respect to Citi's human capital strategy, which is primarily focused on ensuring employees are appropriately rewarded for demonstrating Citi values and leadership standards and for maintaining a pipeline of new and developing talent to meet Citi's changing business needs.

HR is primarily composed of and organized around the core global disciplines of compensation and benefits, performance management, talent acquisition, talent and diversity and workforce relations, with consideration for support to Citi businesses, products and functions and second line of defense responsibilities. Through its disciplines, HR advises business management, escalates identified risks and establishes policies, standards or processes to manage risk.

The Head of HR reports to the Citigroup CEO and interacts regularly with the Personnel and Compensation Committee of the Citigroup Board of Directors. In addition, the Head of HR has regular and unrestricted access to the full Citigroup Board of Directors, as well as to the Audit Committee of the Board of Directors.

Legal

Citi Legal is responsible for advising Citi's lines of business and control functions in order to facilitate the prudent management of Citi's exposure to legal risk.

Citi Legal's organizational structure is designed to insulate it from potential conflicts of interest that could undermine its role in providing advice in regard to legal obligations and exposures of Citi.

Activities within Citi Legal include providing legal advice to Citi's businesses and other functions on the interpretation of legal and regulatory requirements, including contractual requirements, and on managing and mitigating legal exposure based on a proper understanding of legal requirements; providing legal advice to promote the reporting of Citi's and its subsidiaries obligations to identify legal matters to regulators and investors, as required by law; helping to identify current and emerging legal risks that arise in the context of Citi's provision of products and services to its clients; attending meetings of the Board of Directors and committees of the Board to facilitate the oversight role of these bodies; and participating in management committees and forums where legal risk should be considered and evaluated.

The General Counsel leads Citi Legal and reports directly to the Citigroup CEO. The General Counsel meets regularly with the Board of Directors, the Audit Committee, the Risk Management Committee, the Ethics, Conduct and Culture Committee and the Nomination, Governance and Public Affairs Committee and is involved in the discussion of legal issues that arise in the context of items being presented to the Board and its committees.

Finance

Finance's mission is to serve as an advisor to the business, delivering timely, accurate and complete information to each of its constituencies, accompanied by insightful analytics, and operating in a cost-efficient manner with highly effective controls.

The Finance organization, led by the Chief Financial Officer (CFO), is composed of a set of core, global disciplines (capital planning, controllers, corporate M&A, corporate treasury, financial planning and analysis, investor relations and tax). Through the disciplines, Finance advises business management, escalates identified risks and establishes policies, standards or processes to manage risk. Also reporting to the Citigroup CFO are a set of product, geographical and legal entity Finance Officers who, along with their teams, interact with the global finance disciplines in the execution of their responsibilities.

Citi's CFO 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

The role of Internal Audit is to provide independent and timely assurance to the Citigroup and Citibank Boards, the Audit Committees of the Boards, senior management and regulators regarding the effectiveness of governance, risk management and controls that mitigate current and evolving risks and enhance the control culture within Citi.

The Internal Audit function has designated Chief Auditors responsible for assessing the design and effectiveness of controls within the various business units, functions, geographies and legal entities in which Citi operates, including specific Chief Auditors for Finance, ICRM and Independent Risk Management.

The Citigroup Chief Auditor manages Internal Audit and reports functionally to the Chair 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 Committees, and Internal Audit employees accordingly report to the Citigroup Chief Auditor and do not have reporting lines to either first or second line of defense management.

Citigroup Board of Directors and Committees of the Board

Citigroup's Board of Directors actively oversees Citi's risk-taking activities and holds management accountable for adhering to the risk governance framework. Directors review reports prepared by and receive presentations from management, and exercise independent judgment to question, probe and challenge recommendations of 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, Conduct and Culture Committee, Operations and Technology Committee and Nomination, Governance and Public Affairs Committee. In addition to the standing committees, the Board establishes additional committees as necessary or appropriate 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, and 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 that 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 small business 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 small business 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, Citi serves customers in a somewhat broader set of segments and geographies. As of the fourth quarter of 2019, Citi's commercial banking businesses previously reported as part of *GCB* in *North America*, *Latin America* and *Asia*, including approximately $28 billion in end-of-period loans, are now reported in *ICG* for all periods presented.

Consumer Credit Portfolio

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

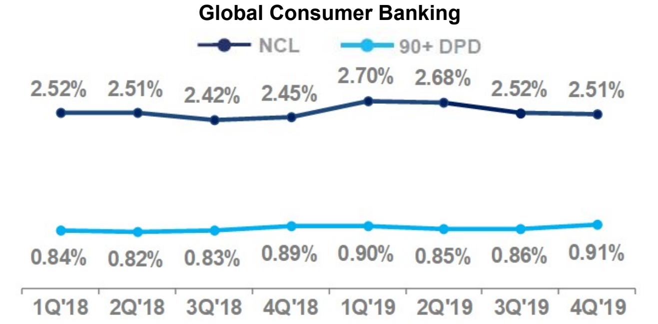
In billions of dollars	4Q'18	1Q'19	2Q'19	3Q'19	**4Q'19**
Retail banking:					
Mortgages	$ 80.6	$ 80.8	$ 81.9	$ 83.0	**$ 85.1**
Personal, small business and other	37.0	37.3	37.8	37.6	**39.7**
Total retail banking	$ 117.6	$ 118.1	$ 119.7	$ 120.6	**$ 124.8**
Cards:					
Citi-branded cards	$ 116.8	$ 111.4	$ 115.5	$ 115.8	**$ 122.2**
Citi retail services	52.7	48.9	49.6	50.0	**52.9**
Total cards	$ 169.5	$ 160.3	$ 165.1	$ 165.8	**$ 175.1**
Total *GCB*	$ 287.1	$ 278.4	$ 284.8	$ 286.4	**$ 299.9**
***GCB* regional distribution:**					
North America	67%	66%	66%	66%	**66%**
Latin America	6	6	6	6	**6**
Asia[(2)]	27	28	28	28	**28**
Total *GCB*	100%	100%	100%	100%	**100%**
***Corporate/Other*[(3)]**	$ 15.3	$ 12.6	$ 11.7	$ 11.0	**$ 9.6**
Total consumer loans	$ 302.4	$ 291.0	$ 296.5	$ 297.4	**$ 309.5**

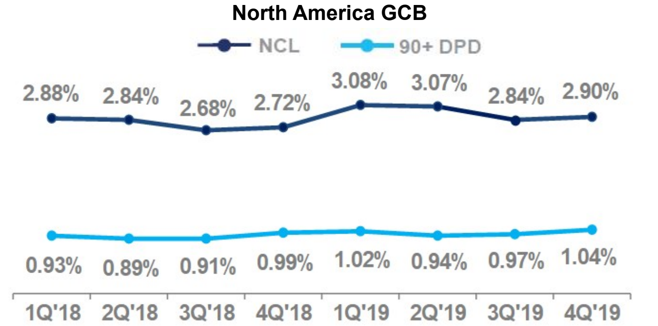
(1) End-of-period loans include interest and fees on credit cards.
(2) *Asia* includes loans and leases in certain *EMEA* countries for all periods presented.
(3) Primarily consists of legacy assets, principally *North America* consumer mortgages.

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 (90+ days past due (90+ DPD) ratio) and the net credit losses (NCL) ratio across both retail banking and cards for total *GCB* and by region.



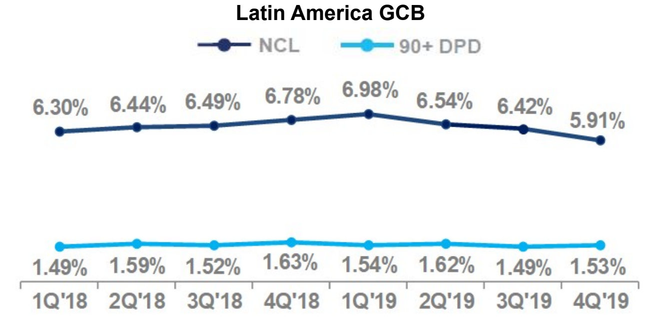


North America GCB provides mortgage, home equity, small business and personal loans through Citi's retail banking network and card products through Citi-branded cards and Citi retail services businesses. The retail bank is concentrated in six major metropolitan cities in the United States (for additional information on the U.S. retail bank, see "*North America GCB*" above).

As of December 31, 2019, approximately 75% 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 net credit loss rate in *North America GCB* increased quarter-over-quarter, primarily driven by seasonality in Citi retail services portfolios. The 90+ days past due delinquency rate also increased quarter-over-quarter, primarily due to seasonality in the cards portfolios.

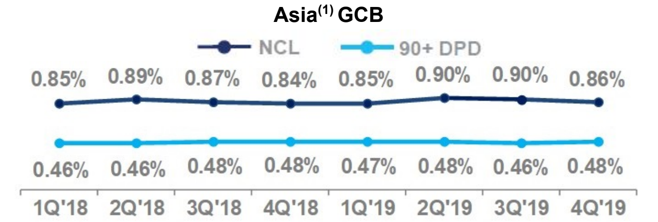
The net credit loss rate and 90+ days past due delinquency rate increased year-over-year, primarily driven by seasoning of more recent vintages in Citi-branded cards and an increase in net flow rates in later delinquency buckets in Citi retail services.



Latin America GCB operates in Mexico through Citibanamex, one of Mexico's largest banks, and provides credit cards, consumer mortgages and small business and personal loans. *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 net credit loss rate in *Latin America GCB* decreased quarter-over-quarter, primarily due to seasonality in the cards portfolio, while the 90+ days past due delinquency rate remained broadly stable.

The net credit loss and 90+ days past due rate decreased year-over-year, primarily due to the growth in recent vintages for cards as well as a slower pace of acquisitions in the retail portfolios during 2019.



(1) *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 and small business and personal loans.

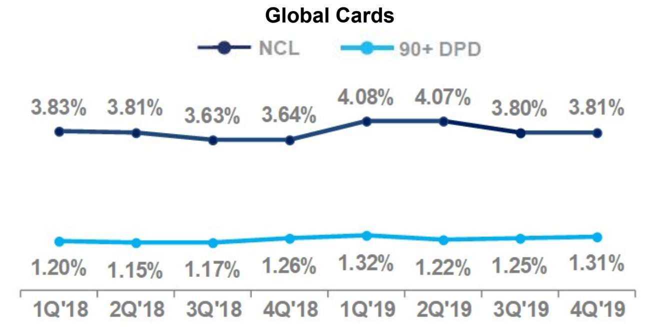
As shown in the chart above, the net credit loss rate in *Asia GCB* decreased quarter-over-quarter, primarily due to seasonality, while the 90+ days past due delinquency rate remained broadly stable quarter-over-quarter. Year-over-year, the net credit loss and the 90+ days past due delinquency rate remained broadly stable.

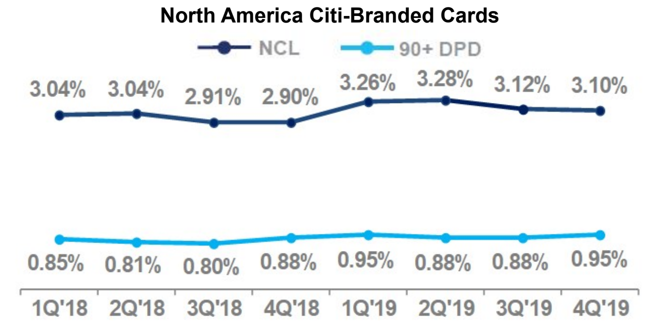
The stability in *Asia GCB*'s portfolios reflects the strong credit profiles in the region's target customer segments. Regulatory changes in many markets in *Asia* over the past few years have also resulted in stable portfolio credit quality.

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

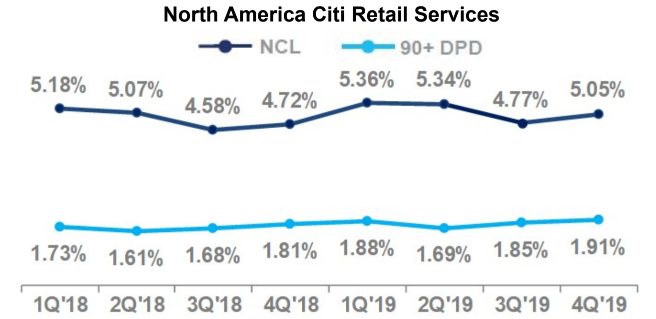
The following charts show the quarterly trends in delinquencies and net credit losses for total *GCB* cards, *North America* Citi-branded cards and Citi retail services portfolios, as well as for Citi's *Latin America* and *Asia* Citi-branded cards portfolios.





North America GCB's Citi-branded cards portfolio issues proprietary and co-branded cards. As shown in the chart above, the net credit loss rate in *North America* Citi-branded cards was relatively stable quarter-over-quarter, while the 90+ days past due delinquency rate increased, driven by seasonality.

The net credit loss and 90+ days past due delinquency rate increased year-over-year, primarily driven by seasoning of more recent vintages.

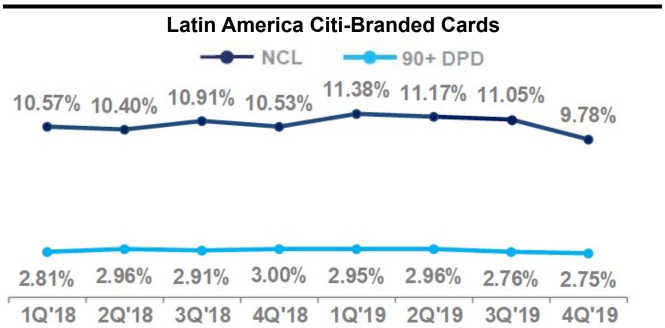


Citi retail services partners directly with more than 20 retailers and dealers to offer private label and co-branded cards. Citi retail services' target market is focused on select industry segments such as home improvement, specialty retail, consumer electronics and fuel.

Citi retail services continually evaluates opportunities to add partners within target industries that have strong loyalty, lending or payment programs and growth potential.

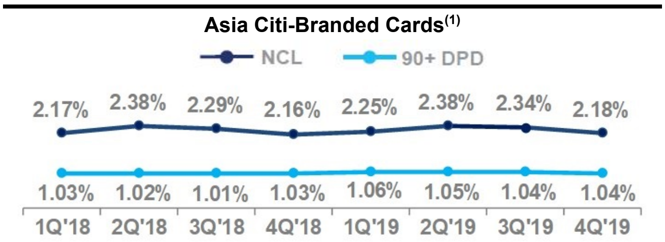
As shown in the chart above, the net credit loss and 90+ days past due delinquency rate in Citi retail services increased quarter-over-quarter, primarily due to seasonality.

The net credit loss rate and 90+ days past due delinquency rate increased year-over-year, primarily driven by an increase in net flow rates in later delinquency buckets.



Latin America GCB issues proprietary and co-branded cards. As shown in the chart above, the net credit loss rate in *Latin America* Citi-branded cards decreased quarter-over-quarter, primarily due to seasonality, while the 90+ days past due delinquency rate remained stable.

The net credit loss and 90+ days past due delinquency rate decreased year-over-year, primarily due to growth in recent vintages.



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

Asia GCB issues proprietary and co-branded cards.

As set forth in the chart above, the net credit loss rate in *Asia* Citi-branded cards decreased quarter-over-quarter, primarily due to seasonality, while the 90+ days past due delinquency rate remained broadly stable.

Year-over-year, the net credit loss rate and 90+ days past due delinquency rate remained broadly stable.

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 13 to the Consolidated Financial Statements.

North America Cards FICO Distribution

The following tables show the current FICO score distributions for Citi's *North America* cards 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 Cards

FICO distribution(1)	Dec 31, 2019	Sept. 30, 2019	Dec 31, 2018
> 760	**42%**	41%	42%
680–760	**41**	41	41
< 680	**17**	18	17
Total	**100%**	100%	100%

Citi Retail Services

FICO distribution(1)	Dec 31, 2019	Sept. 30, 2019	Dec 31, 2018
> 760	**25%**	24%	25%
680–760	**42**	43	42
< 680	**33**	33	33
Total	**100%**	100%	100%

(1) The FICO bands in the tables are consistent with general industry peer presentations.

Both the Citi-branded cards' and Citi retail services' cards FICO distributions remained stable as of year-end 2019.

For additional information on FICO scores, see Note 14 to the Consolidated Financial Statements.

Additional Consumer Credit Details

Consumer Loan Delinquencies and Ratios

In millions of dollars, except EOP loan amounts in billions	EOP loans[1] December 31, 2019	90+ days past due[2] December 31, 2019	2018	2017	30–89 days past due[2] December 31, 2019	2018	2017
***Global Consumer Banking*[3][4]**							
Total	**$ 299.9**	**$ 2,737**	$ 2,550	$ 2,378	**$ 3,001**	$ 2,864	$ 2,687
Ratio		**0.91%**	0.89%	0.84%	**1.00%**	1.00%	0.95%
Retail banking							
Total	**$ 124.8**	**$ 438**	$ 416	$ 415	**$ 816**	$ 752	$ 747
Ratio		**0.35%**	0.36%	0.35%	**0.66%**	0.64%	0.64%
North America	**50.3**	**146**	135	134	**334**	265	256
Ratio		**0.29%**	0.29%	0.29%	**0.67%**	0.56%	0.55%
Latin America	**11.7**	**106**	108	112	**180**	185	181
Ratio		**0.91%**	0.95%	0.96%	**1.54%**	1.62%	1.55%
Asia[5]	**62.8**	**186**	173	169	**302**	302	310
Ratio		**0.30%**	0.30%	0.29%	**0.48%**	0.52%	0.52%
Cards							
Total	**$ 175.1**	**$ 2,299**	$ 2,134	$ 1,963	**$ 2,185**	$ 2,112	$ 1,940
Ratio		**1.31%**	1.26%	1.19%	**1.25%**	1.25%	1.18%
North America—Citi-branded	**96.3**	**915**	812	768	**814**	755	698
Ratio		**0.95%**	0.88%	0.85%	**0.85%**	0.82%	0.77%
North America—Citi retail services	**52.9**	**1,012**	952	845	**945**	932	830
Ratio		**1.91%**	1.81%	1.72%	**1.79%**	1.77%	1.69%
Latin America	**6.0**	**165**	171	151	**159**	170	153
Ratio		**2.75%**	3.00%	2.80%	**2.65%**	2.98%	2.83%
Asia[5]	**19.9**	**207**	199	199	**267**	255	259
Ratio		**1.04%**	1.03%	1.01%	**1.34%**	1.32%	1.31%
***Corporate/Other*—Consumer[6]**							
Total	**$ 9.6**	**$ 278**	$ 382	$ 557	**$ 295**	$ 362	$ 542
Ratio		**3.02%**	2.63%	2.58%	**3.21%**	2.50%	2.51%
Total Citigroup	**$ 309.5**	**$ 3,015**	$ 2,932	$ 2,935	**$ 3,296**	$ 3,226	$ 3,229
Ratio		**0.98%**	0.97%	0.91%	**1.07%**	1.07%	1.06%

(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 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 agencies. The amounts excluded for loans 90+ days past due and (EOP loans) were $135 million ($0.5 billion), $211 million ($0.7 billion) and $305 million ($0.8 billion) at December 31, 2019, 2018 and 2017, respectively. The amounts excluded for loans 30–89 days past due (EOP loans have the same adjustment as above) were $72 million, $86 million and $93 million at December 31, 2019, 2018 and 2017, respectively.
(5) *Asia* includes delinquencies and loans in certain *EMEA* countries for all periods presented.
(6) The 90+ days past due 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 agencies. The amounts excluded for loans 90+ days past due and (EOP loans) were $172 million ($0.4 billion), $367 million ($0.8 billion) and $663 million ($1.2 billion) at December 31, 2019, 2018 and 2017, respectively. The amounts excluded for loans 30–89 days past due (EOP loans have the same adjustment as above) were $55 million, $122 million and $164 million at December 31, 2019, 2018 and 2017, 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	**2019**	**2019**	2018	2017
Global Consumer Banking				
Total	**$ 284.1**	**$ 7,382**	$ 6,884	$ 6,462
Ratio		**2.60 %**	2.48%	2.39%
Retail banking				
Total	**$ 119.7**	**$ 910**	$ 913	$ 923
Ratio		**0.76 %**	0.78%	0.79%
North America	**48.5**	**161**	126	135
Ratio		**0.33**	0.27	0.29
Latin America	**11.5**	**494**	545	550
Ratio		**4.30**	4.58	4.40
Asia[4]	**59.7**	**255**	242	238
Ratio		**0.43**	0.41	0.42
Cards				
Total	**$ 164.4**	**$ 6,472**	$ 5,971	$ 5,539
Ratio		**3.94 %**	3.72%	3.60%
North America—Citi-branded	**89.8**	**2,864**	2,602	2,447
Ratio		**3.19**	2.97	2.90
North America—Citi retail services	**49.9**	**2,558**	2,357	2,155
Ratio		**5.13**	4.88	4.73
Latin America	**5.7**	**615**	586	533
Ratio		**10.79**	10.65	10.06
Asia[4]	**19.0**	**435**	426	404
Ratio		**2.29**	2.25	2.17
***Corporate/Other*—Consumer**[3]				
Total	**$ 11.9**	**$ (6)**	$ 24	$ 156
Ratio		**(0.05)%**	0.14%	0.57%
International	—	—	42	82
Ratio		—	6.00	4.32
North America	**11.9**	**(6)**	(18)	74
Ratio		**(0.05)**	NM	0.29
Other[5]	—	—	—	(21)
Total Citigroup	**$ 296.0**	**$ 7,376**	$ 6,908	$ 6,597
Ratio		**2.49 %**	2.33%	2.22%

(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 of net credit losses (NCLs) were recorded as a reduction in revenue (*Other revenue*) during 2017. 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 NCLs and average loans in certain *EMEA* countries for all periods presented.
(5) 2017 NCLs reflected a recovery related to legacy assets.

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

In millions of dollars at December 31, 2019	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	$ 3	$ 118	$ 46,887	$ 47,008
Home equity loans	92	330	8,801	9,223
Total	**$ 95**	**$ 448**	**$ 55,688**	**$ 56,231**
Fixed/variable pricing of U.S. consumer mortgage loans with maturities due after one year				
Loans at fixed interest rates		$ 430	$ 35,975	
Loans at floating or adjustable interest rates		18	19,713	
Total		**$ 448**	**$ 55,688**	

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, consistent with client needs, encompass multiple products, including cash management and trade services, foreign exchange, lending, capital markets and M&A advisory. As of the fourth quarter of 2019, Citi's commercial banking businesses previously reported as part of *GCB* in *North America*, *Latin America* and *Asia*, including approximately $28 billion in end-of-period loans, are now reported in *ICG* for all periods presented.

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	**December 31, 2019** Due within 1 year	Greater than 1 year but within 5 years	Greater than 5 years	Total exposure	September 30, 2019 Due within 1 year	Greater than 1 year but within 5 years	Greater than 5 years	Total exposure	December 31, 2018 Due within 1 year	Greater than 1 year but within 5 years	Greater than 5 years	Total exposure
Direct outstandings (on-balance sheet)[(1)]	**$ 141**	**$ 117**	**$ 23**	**$ 281**	$ 150	$ 115	$ 24	$ 289	$ 144	$ 119	$ 23	$ 286
Unfunded lending commitments (off-balance sheet)[(2)]	**145**	**249**	**17**	**411**	133	250	16	399	111	253	18	382
Total exposure	**$ 286**	**$ 366**	**$ 40**	**$ 692**	$ 283	$ 365	$ 40	$ 688	$ 255	$ 372	$ 41	$ 668

(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 by geography and counterparty. The following table shows the regional percentages of this portfolio based on Citi's internal management geography:

	December 31, 2019	September 30, 2019	December 31, 2018
North America	**55%**	55%	54%
EMEA	**26**	26	26
Asia	**12**	12	12
Latin America	**7**	7	8
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 by leveraging 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 and 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, 2019	September 30, 2019	December 31, 2018
AAA/AA/A	**46%**	46%	47%
BBB	**36**	36	35
BB/B	**16**	16	17
CCC or below	**2**	2	1
Total	**100%**	100%	100%

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

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, 2019	September 30, 2019	December 31, 2018
Transportation and industrial	**21%**	21%	22%
Consumer retail and health	**17**	17	17
Technology, media and telecom	**12**	12	13
Power, chemicals, metals and mining	**11**	10	10
Banks/broker-dealers/finance companies	**8**	8	8
Real estate	**8**	8	8
Energy and commodities	**8**	8	8
Public sector	**4**	4	5
Insurance and special purpose entities	**4**	4	4
Hedge funds	**4**	4	4
Other industries	**3**	**4**	**1**
Total	**100%**	100%	100%

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

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. Citi may enter into partial-term hedges as well as full-term hedges. In advance of the expiration of partial-term hedges, Citi will determine, among other factors, the economic feasibility of hedging the remaining life of the instrument. The results of the mark-to-market and any realized gains or losses on credit derivatives are reflected primarily in *Principal transactions* in the Consolidated Statement of Income.

At December 31, 2019, September 30, 2019 and December 31, 2018, Citigroup had economic hedges in place on the corporate credit portfolio of $35.2 billion, $29.5 billion and $30.2 billion, respectively. 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, 2019	September 30, 2019	December 31, 2018
AAA/AA/A	**32%**	34%	35%
BBB	**51**	48	50
BB/B	**15**	17	14
CCC or below	**2**	1	1
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, 2019	September 30, 2019	December 31, 2018
Transportation and industrial	**24%**	23%	23%
Technology, media and telecom	**19**	19	17
Consumer retail and health	**18**	16	16
Power, chemicals, metals and mining	**15**	14	15
Energy and commodities	**9**	9	11
Insurance and special purpose entities	**7**	5	6
Banks/broker-dealers/finance companies	**3**	5	4
Public sector	**3**	4	3
Real estate	**2**	4	4
Other industries	—	**1**	**1**
Total	**100%**	100%	100%

Loan Maturities and Fixed/Variable Pricing of Corporate Loans

In millions of dollars at December 31, 2019	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	$ 20,679	$ 21,623	$ 13,627	$ 55,929
Financial institutions	19,938	20,846	13,138	53,922
Mortgage and real estate	19,735	20,633	13,003	53,371
Installment, revolving credit and other	11,550	12,077	7,611	31,238
Lease financing	477	499	314	1,290
In offices outside the U.S.	124,384	59,295	10,506	194,185
Total corporate loans	$ 196,763	$ 134,973	$ 58,199	$ 389,935
Fixed/variable pricing of corporate loans with maturities due after one year(1)				
Loans at fixed interest rates		$ 22,432	$ 20,676	
Loans at floating or adjustable interest rates		112,541	37,523	
Total		$ 134,973	$ 58,199	

(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, 2019	2018	2017	2016	2015
Consumer loans					
In North America offices[1]					
Residential first mortgages[2]	**$ 47,008**	$ 47,412	$ 49,375	$ 53,131	$ 56,872
Home equity loans[2]	**9,223**	11,543	14,827	19,454	22,745
Credit cards	**149,163**	144,542	139,718	133,297	113,352
Personal, small business and other	**3,699**	4,046	4,140	5,290	5,396
Total	**$ 209,093**	$ 207,543	$ 208,060	$ 211,172	$ 198,365
In offices outside North America[1]					
Residential first mortgages[2]	**$ 37,686**	$ 35,972	$ 37,419	$ 35,336	$ 40,139
Credit cards	**25,909**	24,951	25,727	23,055	26,617
Personal, small business and other	**36,860**	33,894	34,608	31,153	35,980
Total	**$ 100,455**	$ 94,817	$ 97,754	$ 89,544	$ 102,736
Consumer loans, net of unearned income[3]	**$ 309,548**	$ 302,360	$ 305,814	$ 300,716	$ 301,101
Corporate loans					
In North America offices[1]					
Commercial and industrial	**$ 55,929**	$ 60,861	$ 60,219	$ 57,886	$ 53,611
Financial institutions	**53,922**	48,447	39,128	35,517	36,425
Mortgage and real estate[2]	**53,371**	50,124	44,683	38,691	32,623
Installment, revolving credit and other	**31,238**	32,425	31,932	31,194	30,426
Lease financing	**1,290**	1,429	1,470	1,518	1,780
Total	**$ 195,750**	$ 193,286	$ 177,432	$ 164,806	$ 154,865
In offices outside North America[1]					
Commercial and industrial	**$ 112,668**	$ 114,029	$ 113,178	$ 100,532	$ 99,442
Financial institutions	**40,211**	36,837	35,273	26,886	28,704
Mortgage and real estate[2]	**9,780**	7,376	7,309	5,363	5,106
Installment, revolving credit and other	**27,303**	25,685	22,638	19,965	23,185
Lease financing	**95**	103	190	251	303
Governments and official institutions	**4,128**	4,520	5,200	5,850	4,911
Total	**$ 194,185**	$ 188,550	$ 183,788	$ 158,847	$ 161,651
Corporate loans, net of unearned income[4]	**$ 389,935**	$ 381,836	$ 361,220	$ 323,653	$ 316,516
Total loans—net of unearned income	**$ 699,483**	$ 684,196	$ 667,034	$ 624,369	$ 617,617
Allowance for loan losses—on drawn exposures	**(12,783)**	(12,315)	(12,355)	(12,060)	(12,626)
Total loans—net of unearned income and allowance for credit losses	**$ 686,700**	$ 671,881	$ 654,679	$ 612,309	$ 604,991
Allowance for loan losses as a percentage of total loans—net of unearned income[5]	**1.84%**	1.81%	1.86%	1.94%	2.06%
Allowance for consumer loan losses as a percentage of total consumer loans—net of unearned income[5]	**3.20%**	3.14%	3.08%	2.94%	3.08%
Allowance for corporate loan losses as a percentage of total corporate loans—net of unearned income[5]	**0.75%**	0.74%	0.82%	1.01%	1.08%

(1) North America includes the U.S., Canada and Puerto Rico. Mexico is included in offices outside North America. The classification of corporate loans between offices in North America and outside North America is based on the domicile of the booking unit. The difference between the domicile of the booking unit and the domicile of the managing unit is not material.
(2) Loans secured primarily by real estate.
(3) Consumer loans are net of unearned income of $783 million, $742 million, $768 million, $803 million and $850 million at December 31, 2019, 2018, 2017, 2016 and 2015, respectively. Unearned income on consumer loans primarily represents unamortized origination fees and costs, premiums and discounts.
(4) Corporate loans are net of unearned income of $(814) million, $(855) million, $(794) million, $(730) million and $(686) million at December 31, 2019, 2018, 2017, 2016 and 2015, respectively. Unearned income on corporate loans primarily represents interest received in advance, but not yet earned, on loans originated on a discounted basis.
(5) All periods exclude loans that are carried at fair value.

Details of Credit Loss Experience

In millions of dollars	**2019**	2018	2017	2016	2015
Allowance for loan losses at beginning of period	**$ 12,315**	$ 12,355	$ 12,060	$ 12,626	$ 15,994
Provision for loan losses					
Consumer	**$ 7,751**	$ 7,258	$ 7,329	$ 6,207	$ 6,073
Corporate	**467**	96	174	542	1,035
Total	**$ 8,218**	$ 7,354	$ 7,503	$ 6,749	$ 7,108
Gross credit losses					
Consumer					
In U.S. offices	**$ 6,538**	$ 5,971	$ 5,664	$ 4,874	$ 5,439
In offices outside the U.S.	**2,316**	2,351	2,377	2,594	3,077
Corporate					
Commercial and industrial, and other					
In U.S. offices	**265**	121	223	370	173
In offices outside the U.S.	**196**	208	401	334	297
Loans to financial institutions					
In U.S. offices	**—**	3	3	5	—
In offices outside the U.S.	**3**	7	1	5	4
Mortgage and real estate					
In U.S. offices	**23**	2	2	34	8
In offices outside the U.S.	**—**	2	2	6	43
Total	**$ 9,341**	$ 8,665	$ 8,673	$ 8,222	$ 9,041
Credit recoveries[1]					
Consumer					
In U.S. offices	**$ 975**	$ 912	$ 892	$ 972	$ 954
In offices outside the U.S.	**503**	502	552	576	642
Corporate					
Commercial and industrial, and other					
In U.S. offices	**28**	47	31	31	43
In offices outside the U.S.	**59**	78	117	79	84
Loans to financial institutions					
In U.S. offices	**—**	—	1	1	7
In offices outside the U.S.	**—**	3	1	1	2
Mortgage and real estate					
In U.S. offices	**8**	6	2	1	7
In offices outside the U.S.	**—**	4	1	—	—
Total	**$ 1,573**	$ 1,552	$ 1,597	$ 1,661	$ 1,739
Net credit losses					
In U.S. offices	**$ 5,815**	$ 5,132	$ 4,966	$ 4,278	$ 4,609
In offices outside the U.S.	**1,953**	1,981	2,110	2,283	2,693
Total	**$ 7,768**	$ 7,113	$ 7,076	$ 6,561	$ 7,302
Other—net[2][3][4][5][6][7][8]	**$ 18**	$ (281)	$ (132)	$ (754)	$ (3,174)
Allowance for loan losses at end of period	**$ 12,783**	$ 12,315	$ 12,355	$ 12,060	$ 12,626
Allowance for loan losses as a percentage of total loans[9]	**1.84%**	1.81%	1.86%	1.94%	2.06%
Allowance for unfunded lending commitments[8][10]	**$ 1,456**	$ 1,367	$ 1,258	$ 1,418	$ 1,402
Total allowance for loan losses and unfunded lending commitments	**$ 14,239**	$ 13,682	$ 13,613	$ 13,478	$ 14,028

Net consumer credit losses	**$**	**7,376**	$	6,908	$	6,597	$	5,920	$	6,920

As a percentage of average consumer loans	**2.49%**	2.33%	2.22%	2.00%	2.19%
Net corporate credit losses	**$ 392**	$ 205	$ 479	$ 641	$ 382
As a percentage of average corporate loans	**0.10%**	0.05%	0.14%	0.20%	0.12%
Allowance by type at end of period(11)					
Consumer	**$ 9,897**	$ 9,504	$ 9,412	$ 8,842	$ 9,273
Corporate	**2,886**	2,811	2,943	3,218	3,353
Total Citigroup	**$ 12,783**	$ 12,315	$ 12,355	$ 12,060	$ 12,626

(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) 2019 includes reductions of approximately $42 million related to the transfer to HFS of various real estate loan portfolios. In addition, 2019 includes an increase of approximately $60 million related to FX translation.
(4) 2018 includes reductions of approximately $201 million related to the sale or transfer to HFS of various loan portfolios, which include approximately $91 million related to the transfer of various real estate loan portfolios to HFS. In addition, 2018 includes a reduction of approximately $60 million related to FX translation.
(5) 2017 includes reductions of approximately $261 million related to the sale or transfer to HFS of various loan portfolios, which include approximately $106 million related to the transfer of various real estate loan portfolios to HFS. In addition, 2017 includes an increase of approximately $115 million related to FX translation.
(6) 2016 includes reductions of approximately $574 million related to the sale or transfer to HFS of various loan portfolios, which include approximately $106 million related to the transfer of various real estate loan portfolios to HFS. In addition, 2016 includes a reduction of approximately $199 million related to FX translation.
(7) 2015 includes reductions of approximately $2.4 billion related to the sale or transfer to HFS of various loan portfolios, which include approximately $1.5 billion related to the transfer of various real estate loan portfolios to HFS. In addition, 2015 includes a reduction of approximately $474 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, 2019, 2018, 2017, 2016 and 2015 exclude $4.1 billion, $3.2 billion, $4.4 billion, $3.5 billion and $5.0 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:

	December 31, 2019		
In billions of dollars	**Allowance for loan losses**	**Loans, net of unearned income**	**Allowance as a percentage of loans[(1)]**
North America cards[(2)]	**$ 7.0**	**$ 149.2**	**4.7%**
North America mortgages[(3)]	**0.3**	**56.2**	**0.5**
North America other	**0.1**	**3.7**	**2.7**
International cards	**0.7**	**25.9**	**2.7**
International other[(4)]	**1.8**	**74.6**	**2.4**
Total consumer	**$ 9.9**	**$ 309.6**	**3.2%**
Total corporate	**2.9**	**389.9**	**0.7**
Total Citigroup	**$ 12.8**	**$ 699.5**	**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 $7.0 billion of loan loss reserves represented approximately 15 months of coincident net credit loss coverage.
(3) Of the $0.3 billion, nearly all was allocated to *North America* mortgages in *Corporate/Other*, including $0.1 billion and $0.2 billion determined in accordance with ASC 450-20 and ASC 310-10-35 (troubled debt restructurings), respectively. Of the $56.2 billion in loans, approximately $54.2 billion and $2.0 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.

	December 31, 2018		
In billions of dollars	Allowance for loan losses	Loans, net of unearned income	Allowance as a percentage of loans[(1)]
North America cards[(2)]	$ 6.6	$ 144.5	4.6%
North America mortgages[(3)]	0.4	59.0	0.7
North America other	0.1	4.0	2.5
International cards	0.7	25.0	2.8
International other[(4)]	1.7	69.9	2.4
Total consumer	$ 9.5	$ 302.4	3.1%
Total corporate	2.8	381.8	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 $6.6 billion of loan loss reserves represented approximately 16 months of coincident net credit loss coverage.
(3) Of the $0.4 billion, nearly all was allocated to *North America* mortgages in *Corporate/Other*, including approximately $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 $59.0 billion in loans, approximately $56.3 billion and $2.5 billion 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.

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 44%, 41% and 48% of Citi's corporate non-accrual loans were performing at December 31, 2019, September 30, 2019 and December 31, 2018, 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	**2019**	2018	2017	2016	2015
Corporate non-accrual loans[1][2]					
North America	**$ 1,214**	$ 586	$ 966	$ 1,291	$ 1,005
EMEA	**430**	375	849	904	347
Latin America	**473**	307	348	441	421
Asia	**71**	243	70	220	191
Total corporate non-accrual loans	**$ 2,188**	$ 1,511	$ 2,233	$ 2,856	$ 1,964
Consumer non-accrual loans[1][3]					
North America	**$ 905**	$ 1,138	$ 1,468	$ 1,854	$ 2,328
Latin America	**632**	638	688	648	756
Asia[4]	**279**	250	243	221	206
Total consumer non-accrual loans	**$ 1,816**	$ 2,026	$ 2,399	$ 2,723	$ 3,290
Total non-accrual loans	**$ 4,004**	$ 3,537	$ 4,632	$ 5,579	$ 5,254

(1) Excludes purchased distressed loans, as they are generally accreting interest. The carrying value of these loans was $128 million at December 31, 2019, $128 million at December 31, 2018, $167 million at December 31, 2017, $187 million at December 31, 2016 and $250 million at December 31, 2015.
(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, 2019			Year ended December 31, 2018		
In millions of dollars	**Corporate**	**Consumer**	**Total**	Corporate	Consumer	Total
Non-accrual loans at beginning of period	**$ 1,511**	**$ 2,026**	**$ 3,537**	$ 2,233	$ 2,399	$ 4,632
Additions	**3,407**	**2,954**	**6,361**	2,108	3,148	5,256
Sales and transfers to HFS	**(23)**	**(171)**	**(194)**	(119)	(268)	(387)
Returned to performing	**(68)**	**(431)**	**(499)**	(127)	(629)	(756)
Paydowns/settlements	**(2,496)**	**(902)**	**(3,398)**	(2,282)	(1,052)	(3,334)
Charge-offs	**(268)**	**(1,444)**	**(1,712)**	(196)	(1,634)	(1,830)
Other	**125**	**(216)**	**(91)**	(106)	62	(44)
Ending balance	**$ 2,188**	**$ 1,816**	**$ 4,004**	$ 1,511	$ 2,026	$ 3,537

Non-Accrual Assets

The table below summarizes Citigroup's other real estate owned (OREO) assets. OREO is recorded on the Consolidated Balance Sheet within *Other assets.* 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	**2019**	2018	2017	2016	2015
OREO					
North America	**$ 39**	$ 64	$ 89	$ 161	$ 166
EMEA	**1**	1	2	—	1
Latin America	**14**	12	35	18	38
Asia	**7**	22	18	7	4
Total OREO	**$ 61**	$ 99	$ 144	$ 186	$ 209
Non-accrual assets					
Corporate non-accrual loans	**$ 2,188**	$ 1,511	$ 2,233	$ 2,856	$ 1,964
Consumer non-accrual loans	**1,816**	2,026	2,399	2,723	3,290
Non-accrual loans (NAL)	**$ 4,004**	$ 3,537	$ 4,632	$ 5,579	$ 5,254
OREO	**$ 61**	$ 99	$ 144	$ 186	$ 209
Non-accrual assets (NAA)	**$ 4,065**	$ 3,636	$ 4,776	$ 5,765	$ 5,463
NAL as a percentage of total loans	**0.57%**	0.52%	0.69%	0.89%	0.85%
NAA as a percentage of total assets	**0.21**	0.19	0.26	0.32	0.32
Allowance for loan losses as a percentage of NAL[1]	**319**	348	267	216	240

(1) 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, 2019	Dec. 31, 2018
Corporate renegotiated loans[1]		
In U.S. offices		
Commercial and industrial	**$ 226**	$ 188
Mortgage and real estate	**57**	111
Financial institutions	**—**	16
Other	**4**	2
Total	**$ 287**	$ 317
In offices outside the U.S.		
Commercial and industrial[2]	**$ 200**	$ 226
Mortgage and real estate	**22**	12
Financial institutions	**—**	9
Other	**40**	—
Total	**$ 262**	$ 247
Total corporate renegotiated loans	**$ 549**	$ 564
Consumer renegotiated loans[3]		
In U.S. offices		
Mortgage and real estate	**$ 1,956**	$ 2,520
Cards	**1,464**	1,338
Installment and other	**17**	13
Total	**$ 3,437**	$ 3,871
In offices outside the U.S.		
Mortgage and real estate	**$ 305**	$ 299
Cards	**466**	480
Installment and other	**400**	387
Total	**$ 1,171**	$ 1,166
Total consumer renegotiated loans	**$ 4,608**	$ 5,037

(1) Includes $472 million and $466 million of non-accrual loans included in the non-accrual loans table above at December 31, 2019 and 2018, respectively. The remaining loans are accruing interest.
(2) In addition to modifications reflected as TDRs at December 31, 2019 and 2018, Citi also modified $26 million and $2 million in offices outside 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 $814 million and $933 million of non-accrual loans included in the non-accrual loans table above at December 31, 2019 and 2018, respectively. The remaining loans are accruing interest.

Forgone Interest Revenue on Loans[1]

In millions of dollars	**In U.S. offices**	**In non-U.S. offices**	**2019 total**
Interest revenue that would have been accrued at original contractual rates[2]	**$ 488**	**$ 421**	**$ 909**
Amount recognized as interest revenue[2]	**130**	**112**	**242**
Forgone interest revenue	**$ 358**	**$ 309**	**$ 667**

(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 macroeconomic, geopolitical and other conditions. For additional information, see "Risk Factors" above.

Citi's funding and liquidity management 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
- Citi's non-bank and other entities, including the parent holding company (Citigroup Inc.), 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 Citigroup level, Citi'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, in order to meet its payment obligations as they come due. 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's funding and liquidity framework ensures that the tenor of these funding sources is of sufficient term 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 assets mature or are monetized. This excess liquidity is held primarily in the form of high-quality liquid assets (HQLA), as set forth in the table below.

Citi's liquidity is managed via a centralized treasury model by Treasury, in conjunction with regional and in-country treasurers with independent oversight provided by Independent Risk Management. Pursuant to this approach, Citi's HQLA are managed with emphasis on asset-liability management and entity-level liquidity adequacy throughout 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, among other things, 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 macroeconomic, geopolitical and other 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 Dec. 31, 2019	Citibank Sept. 30, 2019	Citibank Dec. 31, 2018	Citi non-bank and other entities Dec. 31, 2019	Citi non-bank and other entities Sept. 30, 2019	Citi non-bank and other entities Dec. 31, 2018	Total Dec. 31, 2019	Total Sept. 30, 2019	Total Dec. 31, 2018
Available cash	**$ 158.7**	$ 123.7	$ 97.1	**$ 2.1**	$ 31.8	$ 27.6	**$ 160.8**	$ 155.5	$ 124.7
U.S. sovereign	**100.2**	94.3	103.2	**29.6**	32.4	24.0	**129.8**	126.7	127.2
U.S. agency/agency MBS	**56.9**	55.5	60.0	**4.4**	4.6	5.8	**61.3**	60.1	65.8
Foreign government debt[1]	**66.4**	65.9	76.8	**16.5**	10.9	6.3	**82.9**	76.8	83.1
Other investment grade	**2.4**	2.9	1.5	**0.5**	0.7	1.4	**2.8**	3.6	2.9
Total HQLA (AVG)	**$ 384.6**	$ 342.3	$ 338.6	**$ 53.1**	$ 80.4	$ 65.1	**$ 437.6**	$ 422.7	$ 403.7

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. The table above incorporates various restrictions that could limit the transferability of liquidity between legal entities, including Section 23A of the Federal Reserve Act.

(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 Mexico, Hong Kong, South Korea, Singapore, India 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 Liquidity Coverage Ratio (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 other entities within Citigroup. Citigroup's HQLA increased sequentially, reflecting deposit growth and the issuance of long-term debt.

Citi's HQLA as set forth above does not include Citi's available borrowing capacity from the Federal Home Loan Banks (FHLBs) of which Citi is a member, which was approximately $35 billion as of December 31, 2019 (compared to $40 billion as of September 30, 2019 and $29 billion as of December 31, 2018) 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.

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

In addition to internal 30-day liquidity stress testing performed for Citi's major entities, operating subsidiaries and countries, Citi also monitors its liquidity by reference to the LCR.

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, 2019	Sept. 30, 2019	Dec. 31, 2018
HQLA	**$ 437.6**	$ 422.7	$ 403.7
Net outflows	**382.0**	373.4	334.8
LCR	**115%**	113%	121%
HQLA in excess of net outflows	**$ 55.6**	$ 49.3	$ 68.9

Note: The amounts are presented on an average basis.

Citi's average LCR increased sequentially, reflecting the issuance of long-term debt.

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, 2019, it will need to evaluate a final version of the rules. 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, 2019**	Sept. 30, 2019	Dec. 31, 2018
Global Consumer Banking			
North America	**$ 192.7**	$ 188.8	$ 186.8
Latin America	**17.4**	17.0	16.9
Asia(1)	**80.9**	78.3	76.7
Total	**$ 291.0**	$ 284.1	$ 280.4
Institutional Clients Group			
Corporate lending	**$ 154.2**	$ 160.9	$ 158.2
Treasury and trade solutions (TTS)	**74.5**	72.5	77.0
Private bank	**106.6**	104.0	94.7
Markets and securities services and other	**56.0**	52.3	49.2
Total	**$ 391.3**	$ 389.7	$ 379.1
Total *Corporate/Other*	**$ 10.3**	$ 11.2	$ 16.0
Total Citigroup loans (AVG)	**$ 692.6**	$ 685.0	$ 675.5
Total Citigroup loans (EOP)	**$ 699.5**	$ 691.7	$ 684.2

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

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

Excluding the impact of FX translation, average loans increased 3% year-over-year, driven by 4% aggregate across *GCB* and *ICG*. Within *GCB*, average loans grew 4%, driven by continued growth in *North America GCB* and *Asia GCB*. Average loans in *Latin America GCB* were largely unchanged year-over-year, reflecting lower overall industry volumes.

Average *ICG* loans increased 3% year-over-year. Treasury and trade solutions (TTS) loans declined 3% year-over-year, as Citi continued to utilize its distribution capabilities in order to optimize its balance sheet while supporting its clients. Corporate lending loans declined 2%, reflecting the episodic nature of clients' funding needs, as well as an active quarter in debt capital markets originations. Private bank loans increased 13%, reflecting growth across regions, driven by both new clients and the deepening of relationships with existing clients. *Markets and securities services* loans increased 14%, primarily driven by residential and commercial real estate warehouse lending.

Average *Corporate/Other* loans continued to decline (down 34%), 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, 2019**	Sept. 30, 2019	Dec. 31, 2018
Global Consumer Banking			
North America	**$ 156.2**	$ 153.6	$ 146.5
Latin America	**23.0**	22.5	22.3
Asia(1)	**103.4**	100.7	97.7
Total	**$ 282.6**	$ 276.8	$ 266.5
Institutional Clients Group			
Treasury and trade solutions (TTS)	**$ 558.7**	$ 541.0	$ 510.9
Banking ex-TTS	**140.7**	137.0	128.3
Markets and securities services	**95.0**	95.7	86.7
Total	**$ 794.4**	$ 773.7	$ 725.9
Total *Corporate/Other*	**$ 12.5**	$ 15.8	$ 13.3
Total Citigroup deposits (AVG)	**$ 1,089.5**	$ 1,066.3	$ 1,005.7
Total Citigroup deposits (EOP)	**$ 1,070.6**	$ 1,087.8	$ 1,013.2

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

End-of-period deposits increased 6% year-over-year and declined 2% quarter-over-quarter. On an average basis, deposits increased 8% year-over-year and 2% quarter-over-quarter.

Excluding the impact of FX translation, average deposits increased 9% year-over-year. In *GCB*, deposits increased 6%, driven by continued growth in *Asia GCB* and *North America GCB*. In *North America GCB*, deposit growth accelerated to 7%, with contributions from both traditional and digital channels.

In *ICG*, deposits increased 10%, primarily driven by 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 Citigroup parent company and Citi's non-bank subsidiaries 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 8.4 years as of December 31, 2019, unchanged from September 30, 2019 and a slight decline from the prior year. The weighted-average maturity is calculated based on the contractual maturity of each security. For securities that are redeemable prior to maturity at the option of the holder, the weighted-average maturity is calculated based on the earliest date an option becomes exercisable.

Citi's long-term debt outstanding at the Citigroup parent company includes benchmark 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 includes benchmark senior debt, FHLB advances and securitizations.

Long-Term Debt Outstanding

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

In billions of dollars	**Dec. 31, 2019**	Sept. 30, 2019	Dec. 31, 2018
Parent and other[(1)]			
Benchmark debt:			
Senior debt	**$ 106.6**	$ 104.3	$ 104.6
Subordinated debt	**25.5**	25.9	24.5
Trust preferred	**1.7**	1.7	1.7
Customer-related debt	**53.8**	50.1	37.1
Local country and other[(2)]	**7.9**	5.3	2.9
Total parent and other	**$ 195.5**	$ 187.3	$ 170.8
Bank			
FHLB borrowings	**$ 5.5**	$ 5.5	$ 10.5
Securitizations[(3)]	**20.7**	22.8	28.4
Citibank benchmark senior debt	**23.1**	23.1	18.8
Local country and other[(2)]	**4.0**	3.5	3.5
Total bank	**$ 53.3**	$ 54.9	$ 61.2
Total long-term debt	**$ 248.8**	$ 242.2	$ 232.0

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, 2019, parent and other included $46.9 billion of long-term debt issued by Citi's broker-dealer subsidiaries.

(2) Local country and other includes debt issued by Citi's affiliates in support of their local operations. Within parent and other, certain secured financing is also included.

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

Citi's total long-term debt outstanding increased both year-over-year and quarter-over-quarter, largely driven by an increase in customer-related debt at the non-bank entities. Year-over-year, this growth was partially offset by a decline in securitizations at 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 2019, Citi repurchased $13.1 billion of its outstanding long-term debt, including early redemptions of FHLB advances, but excluding the exercise of call options on $4.0 billion of securities with a remaining life of three months or less.

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:

	2019		2018		2017	
In billions of dollars	**Maturities**	**Issuances**	Maturities	Issuances	Maturities	Issuances
Parent and other						
Benchmark debt:						
Senior debt	**$ 16.5**	**$ 16.2**	$ 18.5	$ 14.8	$ 14.1	$ 21.6
Subordinated debt	**—**	**—**	2.9	0.6	1.6	1.3
Customer-related debt	**12.7**	**25.1**	6.6	16.9	7.6	12.3
Local country and other	**1.1**	**5.4**	1.2	2.3	1.2	0.1
Total parent and other	**$ 30.3**	**$ 46.7**	$ 29.2	$ 34.6	$ 24.5	$ 35.3
Bank						
FHLB borrowings	**$ 7.1**	**$ 2.1**	$ 15.8	$ 7.9	$ 7.8	$ 5.5
Securitizations	**7.9**	**0.1**	8.6	6.8	5.3	12.2
Citibank benchmark senior debt	**4.8**	**8.8**	2.3	8.5	—	12.6
Local country and other	**0.9**	**1.4**	2.2	2.9	3.4	2.4
Total bank	**$ 20.7**	**$ 12.4**	$ 28.9	$ 26.1	$ 16.5	$ 32.7
Total	**$ 51.0**	**$ 59.1**	$ 58.1	$ 60.7	$ 41.0	$ 68.0

The table below shows Citi's aggregate long-term debt maturities (including repurchases and redemptions) in 2019, as well as its aggregate expected annual long-term debt maturities as of December 31, 2019:

	Maturities							
In billions of dollars	**2019**	2020	2021	2022	2023	2024	Thereafter	Total
Parent and other								
Benchmark debt:								
Senior debt	**$ 16.5**	$ 6.4	$ 14.2	$ 11.3	$ 12.5	$ 7.0	$ 55.2	$ 106.6
Subordinated debt	**—**	—	—	0.7	1.2	0.9	22.7	25.5
Trust preferred	**—**	—	—	—	—	—	1.7	1.7
Customer-related debt	**12.7**	9.2	6.3	5.1	3.7	3.6	25.9	53.8
Local country and other	**1.1**	1.0	3.6	1.5	0.1	0.1	1.6	7.9
Total parent and other	**$ 30.3**	$ 16.6	$ 24.1	$ 18.6	$ 17.5	$ 11.6	$ 107.1	$ 195.5
Bank								
FHLB borrowings	**$ 7.1**	$ 5.5	$ —	$ —	$ —	$ —	$ —	$ 5.5
Securitizations	**7.9**	4.6	7.3	2.3	2.6	1.1	2.8	20.7
Citibank benchmark senior debt	**4.8**	8.7	6.1	5.6	—	2.7	—	23.1
Local country and other	**0.9**	1.9	0.6	0.6	—	0.6	0.3	4.0
Total bank	**$ 20.7**	$ 20.7	$ 14.0	$ 8.5	$ 2.6	$ 4.4	$ 3.1	$ 53.3
Total long-term debt	**$ 51.0**	$ 37.3	$ 38.1	$ 27.1	$ 20.1	$ 16.0	$ 110.2	$ 248.8

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 2019 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's 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.

As previously disclosed, in response to feedback received from the Federal Reserve and FDIC, Citigroup took the following actions:

(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.

On December 17, 2019, the FRB and FDIC issued feedback on the resolution plans filed on July 1, 2019 by the eight U.S. GSIBs, including Citi. The FRB and FDIC identified one shortcoming, but no deficiencies, in Citi's resolution plan relating to governance mechanisms. Citi is required to submit a plan to address the shortcoming by March 31, 2020, which the FRB and FDIC will take into account in determining the scope of Citi's targeted resolution plan due on July 1, 2021.

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 are 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. For additional information, including Citi's TLAC and LTD amounts and ratios, see "Capital Resources—Current Regulatory Capital Standards" and "Risk Factors—Compliance 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 2020). Accordingly, Citi's total current minimum TLAC requirement is 22.5% of RWA for 2020.

As of December 31, 2019, Citi exceeded each of the minimum TLAC requirements, with ratios of 11.5% of TLAC as a percentage of Total Leverage Exposure and 24.7% of TLAC as a percentage of Standardized Approach RWA.

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 2020), for a total current requirement of 9% of RWA for Citi, and (ii) 4.5% of the GSIB's total leverage exposure.

As of December 31, 2019, Citi exceeded each of the minimum LTD requirements, with ratios of 10.9% of LTD as a percentage of Standardized Approach RWA and 5.1% of LTD as a percentage of 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 financings that generally include (i) secured funding transactions consisting of 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.

Secured Funding Transactions

Secured funding is primarily accessed through Citi's broker-dealer subsidiaries to fund efficiently 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 are typically collateralized by 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 $166 billion as of December 31, 2019 decreased 6% from the prior year and 15% from the prior quarter. Excluding the impact of FX translation, secured funding decreased 7% from the prior year and 17% from the prior quarter, both driven by normal business activity. Average balances for secured funding were $188 billion for the quarter ended December 31, 2019.

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 which 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 establishing minimum required funding tenors. The weighted average maturity of Citi's secured funding of less liquid securities inventory was greater than 110 days as of December 31, 2019.

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. In addition, 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.

Short-Term Borrowings

Citi's short-term borrowings of $45 billion increased 39% year-over-year and 28% sequentially, primarily driven by an increase in FHLB advances as well as commercial paper issued out of the broker-dealer entities (see Note 17 to the Consolidated Financial Statements for further information on Citigroup's and its affiliates' outstanding short-term borrowings).

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:

	Securities sold under agreements to repurchase			Other borrowings[1][2]		
In billions of dollars	**2019**	2018	2017	**2019**	2018	2017
Amounts outstanding at year end	**$ 166.3**	$ 177.8	$ 156.3	**$ 93.7**	$ 96.9	$ 105.8
Average outstanding during the year[3][4]	**190.2**	172.1	157.7	**98.8**	108.4	97.7
Maximum month-end outstanding	**196.8**	191.2	163.0	**105.8**	113.5	112.3
Weighted average interest rate during the year[3][4][5]	**3.29%**	2.84%	1.69%	**2.49%**	2.04%	1.08%

(1) Original maturities of less than one year.
(2) Other borrowings include commercial paper, brokerage payables and borrowings from the FHLB and other market participants. See “Average Balances and Interest Rates” below.
(3) Interest rates and amounts include the effects of risk management activities associated with the respective liability categories.
(4) 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.
(5) Average rates reflect prevailing local interest rates, including inflationary effects and monetary correction in certain countries.

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, 2019. While not included in the table below, the long-term 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, 2019.

Ratings as of December 31, 2019

	Citigroup Inc.			Citibank, N.A.		
	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)	**A3**	**P-2**	**Stable**	**Aa3**	**P-1**	**Stable**
Standard & Poor's (S&P)	**BBB+**	**A-2**	**Stable**	**A+**	**A-1**	**Stable**

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, 2019, 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 \$0.5 billion, compared to \$0.3 billion as of September 30, 2019. 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, 2019, 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 \$0.3 billion, compared to \$0.7 billion as of September 30, 2019.

In total, as of December 31, 2019, 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 \$0.8 billion, compared to \$1.0 billion as of September 30, 2019 (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 \$385 billion for Citibank and \$53 billion for Citi's non-bank and other entities, for a total of approximately \$438 billion as of December 31, 2019. 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, 2019, Citibank had liquidity commitments of approximately $10.2 billion to consolidated asset-backed commercial paper conduits, compared to $10.0 billion as of September 30, 2019 (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. Citi's estimated IRE below assumes that its 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, and 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 sets forth the estimated impact to Citi's net interest revenue, *AOCI* and the Common Equity Tier 1 Capital ratio (on a fully implemented basis), each assuming an unanticipated parallel instantaneous 100 basis point (bps) increase in interest rates:

In millions of dollars, except as otherwise noted		**Dec. 31, 2019**		Sept. 30, 2019		Dec. 31, 2018
Estimated annualized impact to net interest revenue						
U.S. dollar[1]	**$**	**20**	$	292	$	758
All other currencies		**606**		605		661
Total	**$**	**626**	$	897	$	1,419
As a percentage of average interest-earning assets		**0.03%**		0.05%		0.08%
Estimated initial impact to *AOCI* (after-tax)[2]	**$**	**(5,002)**	$	(4,055)	$	(3,920)
Estimated initial impact on Common Equity Tier 1 Capital ratio (bps)		**(31)**		(24)		(28)

(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 $(240) million for a 100 bps instantaneous increase in interest rates as of December 31, 2019.
(2) Includes the effect of changes in interest rates on *AOCI* related to investment securities, cash flow hedges and pension liability adjustments.

The year-over-year decrease in the estimated impact to net interest revenue primarily reflected changes in Citi's balance sheet composition and Citi Treasury positioning. The year-over-year 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, 2019, Citi expects that the negative $5.0 billion impact to *AOCI* in such a scenario could potentially be offset over approximately 37 months.

The following table sets forth the estimated impact to Citi's net interest revenue, *AOCI* and the Common Equity Tier 1 Capital ratio (on a fully implemented basis) under five 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**		**Scenario 5**
Overnight rate change (bps)		100		100		—		—		(100)
10-year rate change (bps)		100		—		100		(100)		(100)
Estimated annualized impact to net interest revenue										
U.S. dollar	$	20	$	92	$	39	$	(93)	$	(363)
All other currencies		606		558		34		(34)		(411)
Total	$	626	$	650	$	73	$	(127)	$	(774)
Estimated initial impact to *AOCI* (after-tax)[1]	$	(5,002)	$	(3,230)	$	(1,944)	$	1,570	$	4,389
Estimated initial impact to Common Equity Tier 1 Capital ratio (bps)		(31)		(20)		(13)		9		26

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, 2019, 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 $1.5 billion, or 1%, 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, Euro, Australian dollar and Indian rupee.

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.

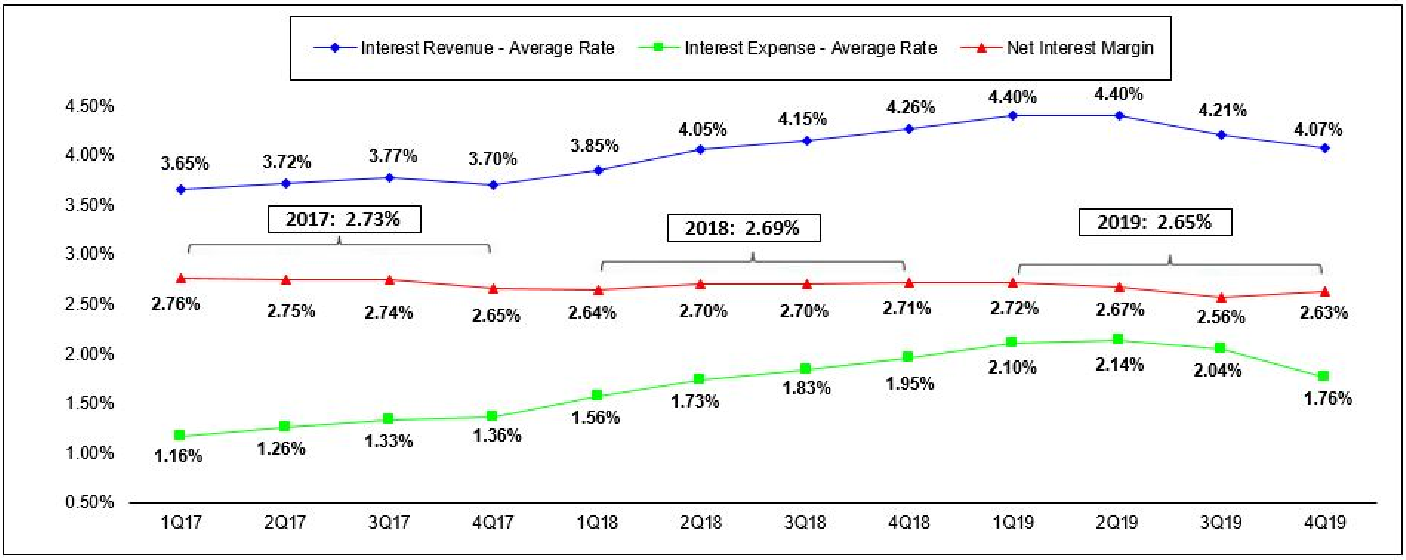
The effect of Citi's ongoing management strategies with respect to changes in foreign exchange rates and the impact of these changes on Citi's TCE and Common Equity Tier 1 Capital ratio are shown in the table below. For additional information on the changes in *AOCI*, see Note 19 to the Consolidated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

	For the quarter ended		
In millions of dollars, except as otherwise noted	**Dec. 31, 2019**	Sept. 30, 2019	Dec. 31, 2018
Change in FX spot rate[1]	**2.8%**	(3.0)%	(1.6)%
Change in TCE due to FX translation, net of hedges	**$ 659**	$ (1,192)	$ (491)
As a percentage of TCE	**0.4%**	(0.8)%	(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)	**(3)**	(1)	(1)

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

Interest Revenue/Expense and Net Interest Margin (NIM)

Average Rates - Interest Revenue, Interest Expense, and Net Interest Margin



In millions of dollars, except as otherwise noted	**2019**	2018	2017	**Change 2019 vs. 2018**	Change 2018 vs. 2017
Interest revenue[1]	**$ 76,718**	$ 71,082	$ 62,075	**8%**	15%
Interest expense[2]	**29,163**	24,266	16,518	**20**	47
Net interest revenue, taxable equivalent basis	**$ 47,555**	$ 46,816	$ 45,557	**2%**	3%
Interest revenue—average rate[3]	**4.27%**	4.08%	3.71%	**19 bps**	37 bps
Interest expense—average rate	**2.01**	1.77	1.28	**24 bps**	49 bps
Net interest margin[3][4]	**2.65**	2.69	2.73	**(4) bps**	(4) bps
Interest rate benchmarks					
Two-year U.S. Treasury note—average rate	**1.97%**	2.53%	1.40%	**(56) bps**	113 bps
10-year U.S. Treasury note—average rate	**2.14**	2.91	2.33	**(77) bps**	58 bps
10-year vs. two-year spread	**17 bps**	38 bps	93 bps		

Note: All interest expense amounts include FDIC, as well as other 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 2019 and 2018 and 35% in 2017) of $208 million, $254 million and $496 million for 2019, 2018 and 2017, 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 Statement of Income and is therefore not reflected in *Interest expense* in the table above.

(3) The average rate on interest revenue and net interest margin reflects the taxable equivalent gross-up adjustment. See footnote 1 on "Average Balances and Interest Rates—Assets" below.

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

Net Interest Revenue Excluding *ICG Markets*

In millions of dollars	**2019**	2018	2017
Net interest revenue—taxable equivalent basis[(1)] per above	**$ 47,555**	$ 46,816	$ 45,557
ICG Markets net interest revenue—taxable equivalent basis[(1)]	**4,372**	4,506	5,741
Net interest revenue excluding *ICG Markets*—taxable equivalent basis[(1)]	**$ 43,183**	$ 42,310	$ 39,816

(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 2019 and 2018 and 35% in 2017) of $208 million, $254 million and $496 million for 2019, 2018 and 2017, respectively.

Citi's net interest revenue in the fourth quarter of 2019 increased 1% to $12.0 billion (also $12.0 billion on a taxable equivalent basis) versus the prior-year period. Excluding the impact of FX translation, net interest revenue also increased 1%, or approximately $70 million, as growth in *ICG Markets* (fixed income markets and equity markets) net interest revenue of 21%, or $210 million, was partially offset by a 1% decline, or $150 million, in net interest revenue ex-markets. The increase in markets net interest revenue was driven by ongoing changes in the composition and mix of the business's revenues between net interest revenue and non-interest revenue. The decline in net interest revenue ex-markets was primarily due to the impact of lower interest rates, partially offset by growth in the non-markets franchise. Citi's NIM was 2.63% on a taxable equivalent basis in the fourth quarter of 2019, an increase of 7 basis points (bps) from the prior quarter, primarily driven by the higher markets net interest revenue, partially offset by the impact of lower interest rates.

Citi's net interest revenue for the full year 2019 increased 2% to $47.3 billion ($47.6 billion on a taxable equivalent basis) versus the prior year. Excluding the impact of FX translation, Citi's net interest revenue increased 3%, or approximately $1.4 billion, mainly reflecting strength in Citi-branded cards in *North America GCB* and treasury and trade solutions, including the impact of volume growth as well as interest rates. On a full-year basis, Citi's NIM was 2.65% on a taxable equivalent basis, compared to 2.69% in 2018. Citi's markets and non-markets net interest revenues are non-GAAP financial measures. Citi reviews non-markets net interest revenue to assess the performance of its lending, investing and deposit-raising activities. Citi believes disclosure of this metric assists in providing a meaningful depiction of the underlying fundamentals of its non-markets 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	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017
Assets									
Deposits with banks[(4)]	**$ 188,523**	$ 177,294	$ 169,385	**$ 2,682**	$ 2,203	$ 1,635	**1.42%**	1.24%	0.97%
Securities borrowed and purchased under agreements to resell[(5)]									
In U.S. offices	**$ 146,030**	$ 149,879	$ 141,308	**$ 4,752**	$ 3,818	$ 1,922	**3.25%**	2.55%	1.36%
In offices outside the U.S.[(4)]	**119,550**	117,695	106,606	**2,133**	1,674	1,327	**1.78**	1.42	1.24
Total	**$ 265,580**	$ 267,574	$ 247,914	**$ 6,885**	$ 5,492	$ 3,249	**2.59%**	2.05%	1.31%
Trading account assets[(6)(7)]									
In U.S. offices	**$ 109,064**	$ 94,065	$ 99,755	**$ 4,099**	$ 3,706	$ 3,531	**3.76%**	3.94%	3.54%
In offices outside the U.S.[(4)]	**131,217**	115,601	104,197	**3,589**	2,615	2,117	**2.74**	2.26	2.03
Total	**$ 240,281**	$ 209,666	$ 203,952	**$ 7,688**	$ 6,321	$ 5,648	**3.20%**	3.01%	2.77%
Investments									
In U.S. offices									
Taxable	**$ 221,895**	$ 228,686	$ 226,227	**$ 5,162**	$ 5,331	$ 4,450	**2.33%**	2.33%	1.97%
Exempt from U.S. income tax	**15,227**	17,199	18,152	**577**	706	775	**3.79**	4.10	4.27
In offices outside the U.S.[(4)]	**117,529**	104,033	106,040	**4,222**	3,600	3,309	**3.59**	3.46	3.12
Total	**$ 354,651**	$ 349,918	$ 350,419	**$ 9,961**	$ 9,637	$ 8,534	**2.81%**	2.75%	2.44%
Loans (net of unearned income)[(8)]									
In U.S. offices	**$ 395,792**	$ 385,350	$ 371,711	**$ 30,563**	$ 28,627	$ 25,944	**7.72%**	7.43%	6.98%
In offices outside the U.S.[(4)]	**288,319**	285,505	267,774	**17,266**	17,129	15,904	**5.99**	6.00	5.94
Total	**$ 684,111**	$ 670,855	$ 639,485	**$ 47,829**	$ 45,756	$ 41,848	**6.99%**	6.82%	6.54%
Other interest-earning assets[(9)]	**$ 64,322**	$ 67,269	$ 60,626	**$ 1,673**	$ 1,673	$ 1,161	**2.60%**	2.49%	1.92%
Total interest-earning assets	**$ 1,797,468**	$ 1,742,576	$ 1,671,781	**$ 76,718**	$ 71,082	$ 62,075	**4.27%**	4.08%	3.71%
Non-interest-earning assets[(6)]	**$ 181,341**	$ 177,654	$ 203,657						
Total assets	**$ 1,978,809**	$ 1,920,230	$ 1,875,438						

(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 2019 and 2018 and 35% in 2017) of $208 million, $254 million and $496 million for 2019, 2018 and 2017, 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	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017
Liabilities									
Deposits									
In U.S. offices[(4)]	**$ 388,948**	$ 338,060	$ 313,094	**$ 6,304**	$ 4,500	$ 2,530	**1.62%**	1.33%	0.81%
In offices outside the U.S.[(5)]	**487,318**	453,793	436,949	**6,329**	5,116	4,057	**1.30**	1.13	0.93
Total	**$ 876,266**	$ 791,853	$ 750,043	**$ 12,633**	$ 9,616	$ 6,587	**1.44%**	1.21%	0.88%
Securities loaned and sold under agreements to repurchase[(6)]									
In U.S. offices	**$ 112,876**	$ 102,843	$ 96,258	**$ 4,194**	$ 3,320	$ 1,574	**3.72%**	3.23%	1.64%
In offices outside the U.S.[(5)]	**77,283**	69,264	61,434	**2,069**	1,569	1,087	**2.68**	2.27	1.77
Total	**$ 190,159**	$ 172,107	$ 157,692	**$ 6,263**	$ 4,889	$ 2,661	**3.29%**	2.84%	1.69%
Trading account liabilities[(7)(8)]									
In U.S. offices	**$ 37,099**	$ 37,305	$ 33,399	**$ 818**	$ 612	$ 380	**2.20%**	1.64%	1.14%
In offices outside the U.S.[(5)]	**51,817**	58,919	57,149	**490**	389	258	**0.95**	0.66	0.45
Total	**$ 88,916**	$ 96,224	$ 90,548	**$ 1,308**	$ 1,001	$ 638	**1.47%**	1.04%	0.70%
Short-term borrowings[(9)]									
In U.S. offices	**$ 78,230**	$ 85,009	$ 74,825	**$ 2,138**	$ 1,885	$ 684	**2.73%**	2.22%	0.91%
In offices outside the U.S.[(5)]	**20,575**	23,402	22,837	**327**	324	375	**1.59**	1.38	1.64
Total	**$ 98,805**	$ 108,411	$ 97,662	**$ 2,465**	$ 2,209	$ 1,059	**2.49%**	2.04%	1.08%
Long-term debt[(10)]									
In U.S. offices	**$ 193,972**	$ 197,933	$ 192,079	**$ 6,398**	$ 6,386	$ 5,382	**3.30%**	3.23%	2.80%
In offices outside the U.S.[(5)]	**4,803**	4,895	4,615	**96**	165	191	**2.00**	3.37	4.14
Total	**$ 198,775**	$ 202,828	$ 196,694	**$ 6,494**	$ 6,551	$ 5,573	**3.27%**	3.23%	2.83%
Total interest-bearing liabilities	**$ 1,452,921**	$ 1,371,423	$ 1,292,639	**$ 29,163**	$ 24,266	$ 16,518	**2.01%**	1.77%	1.28%
Demand deposits in U.S. offices	**$ 27,737**	$ 33,398	$ 37,824						
Other non-interest-bearing liabilities[(7)]	**301,813**	315,862	316,129						
Total liabilities	**$ 1,782,471**	$ 1,720,683	$ 1,646,592						
Citigroup stockholders' equity	**$ 195,632**	$ 198,681	$ 227,849						
Noncontrolling interests	**706**	866	997						
Total equity	**$ 196,338**	$ 199,547	$ 228,846						
Total liabilities and stockholders' equity	**$ 1,978,809**	$ 1,920,230	$ 1,875,438						
Net interest revenue as a percentage of average interest-earning assets[(11)]									
In U.S. offices	**$ 1,017,021**	$ 992,543	$ 970,439	**$ 28,466**	$ 28,157	$ 27,551	**2.80%**	2.84%	2.84%
In offices outside the U.S.[(6)]	**780,447**	750,033	701,342	**19,089**	18,659	18,006	**2.45**	2.49	2.57
Total	**$ 1,797,468**	$ 1,742,576	$ 1,671,781	**$ 47,555**	$ 46,816	$ 45,557	**2.65%**	2.69%	2.73%

(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 2019 and 2018 and 35% in 2017) of $208 million, $254 million and $496 million for 2019, 2018 and 2017, 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)

	2019 vs. 2018			2018 vs. 2017		
	Increase (decrease) due to change in:			Increase (decrease) due to change in:		
In millions of dollars	**Average volume**	**Average rate**	**Net change**	Average volume	Average rate	Net change
Deposits with banks(3)	**$ 146**	**$ 333**	**$ 479**	$ 79	$ 489	$ 568
Securities borrowed and purchased under agreements to resell						
In U.S. offices	**$ (100)**	**$ 1,034**	**$ 934**	$ 123	$ 1,773	$ 1,896
In offices outside the U.S.(3)	**27**	**432**	**459**	146	201	347
Total	**$ (73)**	**$ 1,466**	**$ 1,393**	$ 269	$ 1,974	$ 2,243
Trading account assets(4)						
In U.S. offices	**$ 570**	**$ (177)**	**$ 393**	$ (209)	$ 384	$ 175
In offices outside the U.S.(3)	**382**	**592**	**974**	245	253	498
Total	**$ 952**	**$ 415**	**$ 1,367**	$ 36	$ 637	$ 673
Investments(1)						
In U.S. offices	**$ (213)**	**$ (85)**	**$ (298)**	$ 32	$ 780	$ 812
In offices outside the U.S.(3)	**481**	**141**	**622**	(64)	355	291
Total	**$ 268**	**$ 56**	**$ 324**	$ (32)	$ 1,135	$ 1,103
Loans (net of unearned income)(5)						
In U.S. offices	**$ 789**	**$ 1,149**	**$ 1,938**	$ 974	$ 1,709	$ 2,683
In offices outside the U.S.(3)	**169**	**(34)**	**135**	1,062	163	1,225
Total	**$ 958**	**$ 1,115**	**$ 2,073**	$ 2,036	$ 1,872	$ 3,908
Other interest-earning assets(6)	**$ (75)**	**$ 75**	**$ —**	$ 137	$ 375	$ 512
Total interest revenue	**$ 2,176**	**$ 3,460**	**$ 5,636**	$ 2,525	$ 6,482	$ 9,007

(1) The taxable equivalent adjustments related to the tax-exempt bond portfolio, based on the U.S. federal statutory tax rates of 21% in 2019 and 2018 and 35% in 2017, are 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) Changes in average rates reflect changes in prevailing local interest rates, including inflationary effects and monetary corrections in certain countries.
(4) *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.
(5) Includes cash-basis loans.
(6) Includes *Brokerage receivables*.

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

In millions of dollars	2019 vs. 2018 Increase (decrease) due to change in: Average volume	Average rate	Net change	2018 vs. 2017 Increase (decrease) due to change in: Average volume	Average rate	Net change
Deposits						
In U.S. offices	**$ 738**	**$ 1,066**	**$ 1,804**	$ 216	$ 1,754	$ 1,970
In offices outside the U.S.[3]	**397**	**816**	**1,213**	162	897	1,059
Total	**$ 1,135**	**$ 1,882**	**$ 3,017**	$ 378	$ 2,651	$ 3,029
Securities loaned and sold under agreements to repurchase						
In U.S. offices	**$ 343**	**$ 531**	**$ 874**	$ 115	$ 1,631	$ 1,746
In offices outside the U.S.[3]	**194**	**306**	**500**	151	331	482
Total	**$ 537**	**$ 837**	**$ 1,374**	$ 266	$ 1,962	$ 2,228
Trading account liabilities[4]						
In U.S. offices	**$ (3)**	**$ 209**	**$ 206**	$ 49	$ 183	$ 232
In offices outside the U.S.[3]	**(51)**	**152**	**101**	8	123	131
Total	**$ (54)**	**$ 361**	**$ 307**	$ 57	$ 306	$ 363
Short-term borrowings[5]						
In U.S. offices	**$ (159)**	**$ 412**	**$ 253**	$ 105	$ 1,096	$ 1,201
In offices outside the U.S.[3]	**(42)**	**45**	**3**	9	(60)	(51)
Total	**$ (201)**	**$ 457**	**$ 256**	$ 114	$ 1,036	$ 1,150
Long-term debt						
In U.S. offices	**$ (129)**	**$ 141**	**$ 12**	$ 168	$ 836	$ 1,004
In offices outside the U.S.[3]	**(3)**	**(66)**	**(69)**	11	(37)	(26)
Total	**$ (132)**	**$ 75**	**$ (57)**	$ 179	$ 799	$ 978
Total interest expense	**$ 1,285**	**$ 3,612**	**$ 4,897**	$ 994	$ 6,754	$ 7,748
Net interest revenue	**$ 891**	**$ (152)**	**$ 739**	$ 1,531	$ (272)	$ 1,259

(1) The taxable equivalent adjustments related to the tax-exempt bond portfolio, based on the U.S. federal statutory tax rates of 21% in 2019 and 2018 and 35% in 2017, are 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) Changes in average rates reflect changes in prevailing local interest rates, including inflationary effects and monetary corrections in certain countries.
(4) *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.
(5) 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 and hedges of 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:

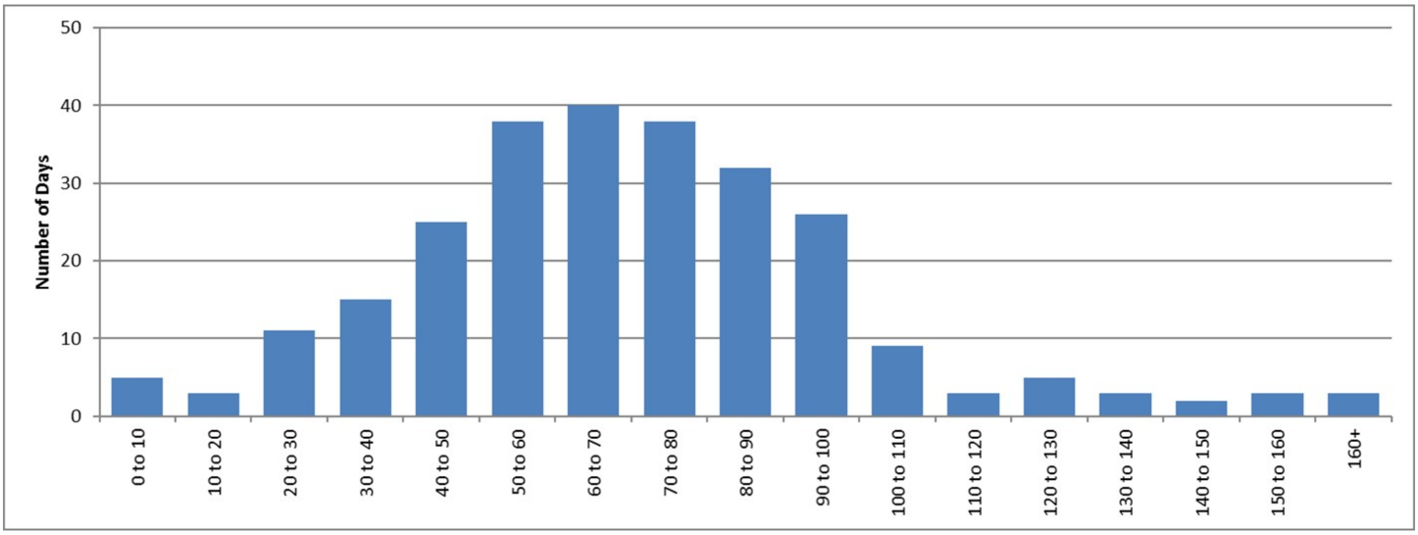
- factor sensitivities;
- value at risk (VAR); and
- stress testing.

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 of 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 below, positive trading-related revenue was achieved for 100% of the trading days in 2019.

Daily Trading-Related Revenue (Loss)(1)— Twelve Months ended December 31, 2019

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 that 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-monthly and correlation parameters updated monthly. The conservative features of the VAR calibration contribute an approximate 26% add-on to what would be a VAR estimated under the assumption of stable and perfectly, normally distributed markets.

As set forth in the table below, Citi's average trading VAR decreased from 2018 to 2019, mainly due to changes in interest rates in the *ICG Markets* businesses. The average trading and credit portfolio VAR also declined, although the decrease in average trading VAR was partially offset by additional hedging related to lending activities in 2019.

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

In millions of dollars	**December 31, 2019**	**2019 Average**	December 31, 2018	2018 Average
Interest rate	**$ 32**	**$ 35**	$ 48	$ 60
Credit spread	**44**	**44**	55	47
Covariance adjustment[1]	**(27)**	**(23)**	(23)	(24)
Fully diversified interest rate and credit spread[2]	**$ 49**	**$ 56**	$ 80	$ 83
Foreign exchange	**22**	**23**	18	25
Equity	**21**	**16**	25	22
Commodity	**13**	**24**	23	19
Covariance adjustment[1]	**(52)**	**(62)**	(66)	(67)
Total trading VAR—all market risk factors, including general and specific risk (excluding credit portfolios)[2]	**$ 53**	**$ 57**	$ 80	$ 82
Specific risk-only component[3]	**$ 3**	**$ 2**	$ 4	$ 4
Total trading VAR—general market risk factors only (excluding credit portfolios)	**$ 50**	**$ 55**	$ 76	$ 78
Incremental impact of the credit portfolio[4]	**$ 30**	**$ 14**	$ 18	$ 10
Total trading and credit portfolio VAR	**$ 83**	**$ 71**	$ 98	$ 92

(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 including Citi Treasury, 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 to the leveraged finance pipeline 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:

	2019		2018	
In millions of dollars	**Low**	**High**	Low	High
Interest rate	**$ 25**	**$ 58**	$ 34	$ 89
Credit spread	**36**	**55**	38	64
Fully diversified interest rate and credit spread	**$ 43**	**$ 89**	$ 59	$ 118
Foreign exchange	**12**	**34**	13	44
Equity	**7**	**29**	15	33
Commodity	**12**	**75**	13	27
Total trading	**$ 38**	**$ 87**	$ 56	$ 120
Total trading and credit portfolio	**54**	**103**	66	124

Note: No covariance adjustment can be inferred from the above table 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, 2019**
Total—all market risk factors, including general and specific risk	**$ 53**
Average—during year	**$ 57**
High—during year	**86**
Low—during year	**38**

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

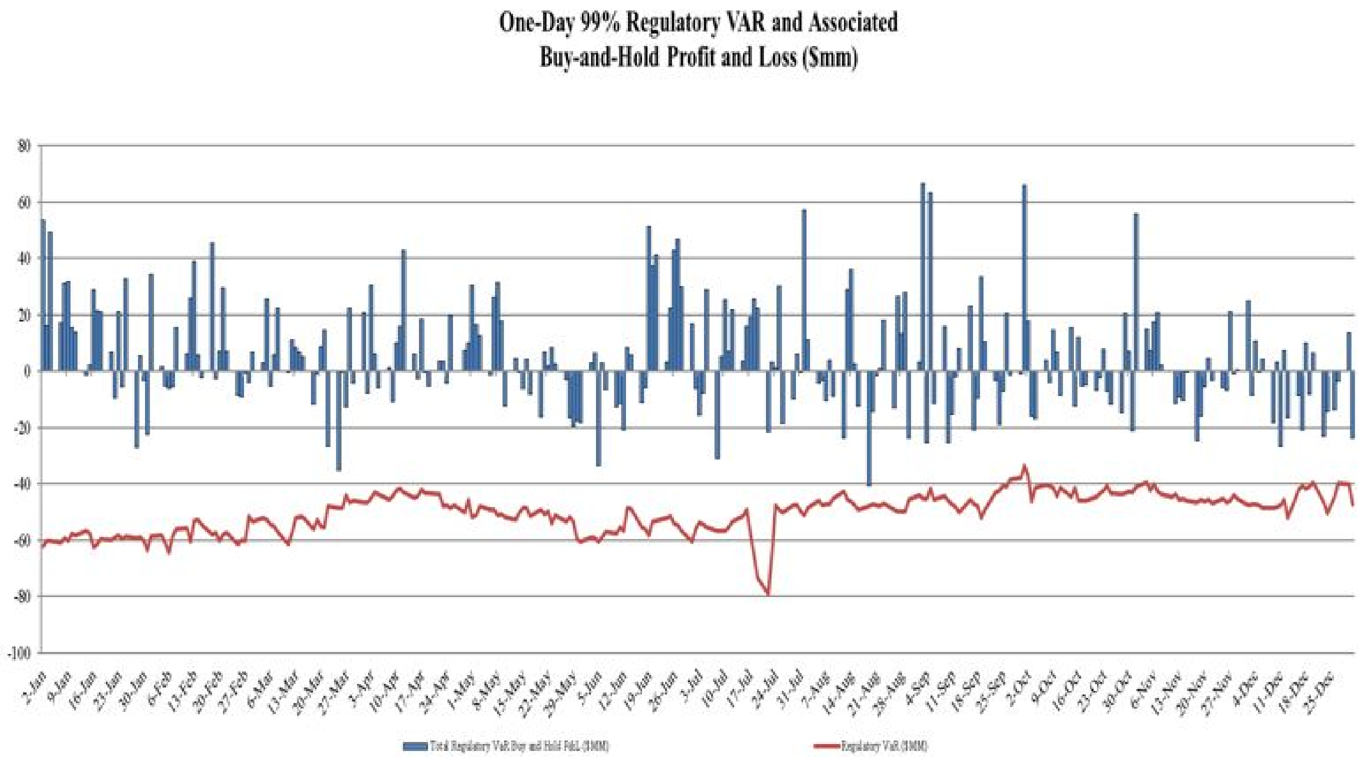
In accordance with Basel III, Citi is required to perform back-testing to evaluate the effectiveness of its Regulatory VAR model. Regulatory VAR back-testing is the process in which the daily one-day VAR, at a 99% confidence interval, is compared to the buy-and-hold profit and loss (i.e., the profit 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 when buy-and-hold losses exceed 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 2019. As of December 31, 2019, there were no back-testing exceptions observed for Citi's Regulatory VAR for the prior 12 months.

The difference between the 54.8% of days with buy-and-hold gains for Regulatory VAR back-testing and the 100% 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, 2019
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 and Risk Committees of Citi's Board of Directors.

Operational risk is measured and assessed through Operational Risk Capital and Operational Risk Regulatory Capital for the Advanced Approaches under Basel III. 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 under the Office of the Chief Information Security Officer 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 who 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 also has multiple senior committees such as the Information Security Risk Committee (ISRC), which governs enterprise-level risk tolerance inclusive of cybersecurity risk.

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, identifies and defines 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 tools and oversees and challenges 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 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 and regulatory and legal requirements. Citi must maintain and execute a proactive Compliance Risk Management (CRM) Policy that is designed to manage compliance risk effectively 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:

- Maintain and oversee an integrated CRM Policy 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;
- Assess compliance risks and issues across product lines, functions and geographies, supported by globally consistent systems and compliance risk management processes;
- Drive and embed a culture of compliance and control throughout Citi; and
- Provide compliance risk data aggregation and reporting capabilities.

To anticipate, control and mitigate compliance risk, Citi has established the CRM Policy 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 oversight of Citi's CRM Policy, while all businesses and global control functions are responsible for managing their compliance risks and operating within the Compliance Risk Appetite.

Citi carries out its objectives and fulfills its responsibilities through the integrated CRM Policy, which is based upon four components: (i) governance and organization; (ii) compliance risk requirements; (iii) processes and activities; and (iv) resources and capabilities. To achieve this, Citi follows these CRM Policy 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 is 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.

REPUTATION 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 reputation 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 reputation risks. The approach requires that each business segment or region escalates significant reputation 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 reputation risks. These committees may also raise potential franchise, reputation 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 decisions and actions. They are also expected to promptly and appropriately escalate all issues that present potential franchise, reputation and/or systemic risk.

STRATEGIC RISK

Overview

Citi executive management, with Citi's CEO at the lead, is responsible for the development and execution of Citi's strategy. This strategy is translated into forward-looking plans that are then cascaded across the organization. Strategic risk is monitored through a range of practices: regular Citigroup Board of Director meetings provide strategic external checkpoints where management's progress against executing the plans is assessed and where decisions to refine the strategic direction of the Company are evaluated; Citi's executive management assesses progress against executing the defined plans; CEO reviews, which include a risk assessment of the plans, occur across products, regions and functions to focus on progress against executing the plans; products, regions and functions have internal reviews to assess performance at lower levels across the organization; and specific forums exist to focus on key areas that drive strategic risk such as balance sheet management, the introduction of new or modified products and services and country management, among others. In addition to these day-to-day practices, significant strategic actions, such as mergers, acquisitions or capital expenditures, are reviewed and approved by, or notified to, the Citigroup and Citibank Boards of Directors, as appropriate.

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 official exit from the EU, which occurred as of January 31, 2020. In addition, Citi has established a formal program with senior-level sponsorship and governance to deliver a coordinated response to the U.K.'s exit.

Until negotiations between the U.K. and the EU are finalized and any exit agreement is ratified, Citi continues to plan for a "hard" exit scenario. Citi's strategy focuses on providing continuity of services to its U.K. and EU clients with minimal disruption. Consequently, Citi has migrated certain business activities to alternative legal entities and branches with appropriate regulatory permissions to carry out such activity, and has established required capabilities in the U.K. and EU. Citi's plans for a U.K. exit from the EU have primarily covered:

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

Citi has worked closely with clients, regulators and other relevant stakeholders in the execution of its plans to prepare for the U.K.'s 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 Risks" above.

LIBOR Transition Risk

Citi recognizes that a transition away from and discontinuance of LIBOR presents risks and challenges that could significantly impact financial markets and market participants, including Citi (for information about Citi's risks from a transition away from and discontinuation of LIBOR or any other benchmark, see “Risk Factors—Strategic Risks” above). Accordingly, Citi has continued its efforts to identify and manage its LIBOR transition risks.

Citi’s LIBOR governance and implementation program remains focused on identifying and addressing the LIBOR transition impacts to Citi’s clients, operational capabilities and legal and financial contracts, among others. The program operates globally across Citi’s businesses and functions and includes active involvement of senior management, oversight by Citi’s Asset and Liability Committee and reporting to the Risk Management Committee of Citigroup’s Board of Directors. As part of the program, Citi has developed LIBOR transition action plans and associated roadmaps under the following key workstreams: program management; transition strategy and risk management; customer management, including internal communications and training, legal/contract management and product management; financial exposures and risk management; regulatory and industry engagement; operations and technology; and finance, risk, tax and treasury.

During 2019, Citi continued to participate in a number of working groups formed by global regulators, including the Alternative Reference Rates Committee (ARRC) convened by the Federal Reserve Board. These working groups continue to promote and advance development of alternative reference rates and to identify and address potential challenges from any transition to such rates. Citi also continues to engage with and monitor developments involving regulators, financial accounting bodies and others on LIBOR transition matters and relief.

Moreover, Citi has been investing in its systems and infrastructure, as client activity moves away from LIBOR to alternative reference rates. Citi also has continued to identify its LIBOR transition exposures, including existing financial instruments that do not contain contract provisions that adequately contemplate the discontinuance of reference rates and that would require additional negotiation with counterparties. In addition, Citi has begun to mitigate its LIBOR transition exposures by, among other things, using alternative reference rates in certain newly issued financial instruments and products. For example, since early 2019, Citi has issued both preferred stock and benchmark debt referencing the Secured Overnight Financing Rate (SOFR) and updated the LIBOR determination method in its debt documentation with the ARRC recommended fallback language. Citi has also been conducting LIBOR transition-related training for employees.

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, 2019. The total exposure as of December 31, 2019 to the top 25 countries disclosed below, in combination with the U.S., would represent approximately 95% 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 33% of corporate loans presented in the table below are to U.K. domiciled entities (35% for unfunded commitments), with the balance of the loans predominately to European domiciled counterparties. Approximately 85% of the total U.K. funded loans and 89% of the total U.K. unfunded commitments were investment grade as of December 31, 2019. 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 4Q19**	Total as of 3Q19	Total as of 4Q18	**Total as a % of Citi as of 4Q19**
United Kingdom	$ 41.8	$ —	$ 1.9	$ 50.0	$ 12.3	$ (5.2)	$ 7.3	$ (2.3)	**$ 105.8**	$ 116.6	$ 111.6	**6.5%**
Mexico	17.8	17.6	0.3	8.9	0.8	(0.8)	16.0	4.4	**65.0**	67.3	59.6	**4.0**
Hong Kong	20.5	12.9	0.9	7.2	1.4	(0.7)	6.2	0.6	**49.0**	52.5	48.1	**3.0**
Singapore	14.5	13.3	0.1	5.0	0.7	(0.4)	8.2	1.9	**43.3**	41.3	40.7	**2.6**
Ireland	12.1	—	0.5	26.4	0.5	—	—	0.4	**39.9**	34.8	33.7	**2.4**
South Korea	3.1	16.5	0.1	2.4	1.0	(0.4)	8.9	3.1	**34.7**	31.2	33.8	**2.1**
India	6.5	4.8	0.9	5.9	1.5	(0.6)	10.1	0.9	**30.0**	29.6	30.2	**1.8**
Brazil	12.7	—	—	3.1	5.6	(0.9)	4.1	3.7	**28.3**	25.7	26.0	**1.7**
Germany	0.5	—	0.1	6.0	3.9	(3.9)	9.2	6.0	**21.8**	18.0	17.4	**1.3**
Australia	4.7	9.8	0.1	6.2	1.6	(0.4)	1.5	(2.0)	**21.5**	20.8	23.5	**1.3**
China	7.6	3.3	0.6	2.9	0.8	(0.5)	5.0	(1.0)	**18.7**	18.6	18.0	**1.1**
Taiwan	5.9	8.0	0.1	1.9	0.4	(0.1)	0.9	0.8	**17.9**	17.2	17.4	**1.1**
Japan	2.7	—	0.1	2.5	2.4	(1.7)	5.8	5.2	**17.0**	18.3	17.6	**1.0**
Canada	2.4	0.6	0.1	6.8	1.7	(0.7)	3.9	0.4	**15.2**	15.9	16.0	**0.9**
Poland	4.1	2.0	0.1	2.4	0.2	(0.1)	3.8	0.9	**13.4**	13.6	13.2	**0.8**
Jersey	8.0	—	0.1	5.1	—	(0.4)	—	—	**12.8**	13.6	10.4	**0.8**
United Arab Emirates	8.1	1.5	0.1	2.9	0.2	(0.1)	0.1	—	**12.8**	11.6	9.6	**0.8**
Malaysia	1.9	4.2	0.2	1.0	0.2	(0.1)	1.0	—	**8.4**	9.1	10.0	**0.5**
Thailand	0.9	2.9	—	1.8	—	—	1.7	0.4	**7.7**	7.8	7.4	**0.5**
Indonesia	2.4	0.9	—	1.4	0.1	(0.1)	1.1	0.1	**5.9**	5.9	6.3	**0.4**
Russia	1.9	1.0	—	0.7	0.2	(0.1)	1.1	0.2	**5.0**	5.0	4.6	**0.3**
Philippines	0.7	1.6	0.1	0.5	—	—	1.9	0.1	**4.9**	4.6	5.3	**0.3**
Luxembourg	—	—	—	—	0.7	(0.3)	3.7	0.5	**4.6**	3.1	4.9	**0.3**
Czech Republic	0.8	—	—	0.7	2.7	—	—	0.1	**4.3**	3.8	3.0	**0.3**
Cayman Islands	—	—	—	—	0.1	(0.6)	3.0	1.0	**3.5**	3.8	2.5	**0.2**
Total as a % of Citi's Total Exposure												**36.0%**
Total as a % of Citi's non-U.S. Total Exposure												**89.7%**

(1) *ICG* loans reflect funded corporate loans and private bank loans, net of unearned income. As of December 31, 2019, private bank loans in the table above totaled $30 billion, concentrated in Hong Kong ($9.3 billion), Singapore ($7.6 billion) and the U.K. ($7.2 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. Investment securities are reflected in the country that holds, not issues, the investments.
(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.

Argentina

Citi operates in Argentina through its *ICG* businesses. As of December 31, 2019, Citi's net investment in its Argentine operations was approximately $730 million. Citi uses the U.S. dollar as the functional currency for its operations in Argentina because the Argentine economy is considered highly inflationary under U.S. GAAP.

During 2019, the Argentine peso depreciated 59% against the U.S. dollar, and the U.S. rating agencies downgraded Argentina's sovereign debt rating given renewed concerns of a debt default. In addition, the government of Argentina re-profiled certain short-term debt obligations, and also implemented new capital and currency controls during the third quarter of 2019. Prior to the implementation of these new capital controls, Citi had already remitted all available earnings from its Argentine operations that could be remitted during the 2019 calendar year; the new controls may restrict Citi's ability to access U.S. dollars in Argentina and remit earnings from its Argentine operations in the future.

Citi economically hedges the foreign currency risk in its net Argentine peso-denominated assets to the extent possible and prudent using non-deliverable forward (NDF) derivative instruments that are executed outside of Argentina. As of December 31, 2019, the international NDF market had very limited liquidity, resulting in Citi being unable to economically hedge a significant portion of its Argentine peso exposure. To the extent that Citi is unable to execute additional NDF contracts in the future, devaluations on Citi's net Argentine peso-denominated assets would be recorded in earnings, without any benefit from a change in the fair value of derivative positions used to economically hedge the exposure.

In addition, Citi continually evaluates its economic exposure to its Argentine counterparties and reserves for changes in credit risk and sovereign risk associated with its Argentine assets. Citi believes it has established appropriate loan loss reserves on its Argentine loans, and appropriate fair value adjustments on Argentine assets and liabilities measured at fair value, for such risks under U.S. GAAP as of December 31, 2019. However, given the recent events in Argentina, U.S. regulatory agencies may require Citi to record additional reserves in the future, increasing *ICG*'s cost of credit, based on the perceived country risk associated with its Argentine exposures. For additional information on emerging markets risks, see "Risk Factors—Strategic Risks" above.

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, 2019									
	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)**
Cayman Islands	**$ —**	**$ —**	**$ 96.8**	**$ 10.3**	**$ 5.3**	**$ 75.9**	**$ 107.1**	**$ 10.0**	**$ —**	**$ —**
United Kingdom	**13.3**	**24.4**	**34.8**	**20.6**	**12.9**	**61.3**	**93.1**	**23.2**	**71.6**	**71.6**
Japan	**32.7**	**33.3**	**7.8**	**6.5**	**13.1**	**57.4**	**80.3**	**4.7**	**18.7**	**17.1**
Mexico	**2.8**	**26.3**	**9.4**	**35.2**	**5.5**	**37.0**	**73.7**	**22.4**	**8.9**	**8.8**
Germany	**6.8**	**29.8**	**7.7**	**9.7**	**9.3**	**33.6**	**54.0**	**13.1**	**48.0**	**46.4**
France	**8.4**	**6.8**	**22.2**	**7.5**	**9.6**	**35.3**	**44.9**	**29.0**	**56.0**	**54.3**
Singapore	**2.3**	**17.7**	**7.2**	**16.1**	**2.8**	**36.1**	**43.3**	**12.0**	**2.0**	**1.9**
South Korea	**2.0**	**16.0**	**1.7**	**21.7**	**2.6**	**31.4**	**41.4**	**12.0**	**13.9**	**13.0**
India	**1.7**	**12.9**	**3.1**	**16.3**	**2.7**	**23.4**	**34.0**	**10.8**	**2.3**	**2.0**
Hong Kong	**0.6**	**10.2**	**3.0**	**20.0**	**4.1**	**27.9**	**33.8**	**13.7**	**2.2**	**2.0**
Australia	**4.8**	**8.7**	**4.7**	**12.9**	**7.9**	**20.6**	**31.1**	**11.8**	**7.4**	**7.3**
China	**3.4**	**11.0**	**3.1**	**12.7**	**3.9**	**25.3**	**30.2**	**5.1**	**12.8**	**11.6**
Brazil	**3.3**	**13.3**	**1.8**	**11.0**	**6.1**	**20.8**	**29.4**	**3.2**	**8.1**	**8.2**
Canada	**2.9**	**4.7**	**11.5**	**5.0**	**3.1**	**13.5**	**24.1**	**14.7**	**4.3**	**5.1**
Netherlands	**6.8**	**8.5**	**3.9**	**4.6**	**4.6**	**15.7**	**23.8**	**11.0**	**26.9**	**26.5**
Taiwan	**0.6**	**6.8**	**1.6**	**14.3**	**2.9**	**13.2**	**23.3**	**14.6**	**0.1**	**0.1**
Italy	**3.3**	**15.9**	**0.7**	**1.7**	**12.8**	**14.9**	**21.6**	**2.5**	**44.5**	**44.0**
Switzerland	**1.2**	**14.5**	**1.1**	**4.6**	**2.2**	**18.1**	**21.4**	**8.2**	**17.8**	**17.3**
Ireland	**0.2**	**0.3**	**8.9**	**5.4**	**4.2**	**12.9**	**14.8**	**5.4**	**1.6**	**1.8**

	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	$ 23.5	$ 35.7	$ 22.4	$ 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	3.1	24.5	7.4	34.7	6.0	29.1	69.7	20.2	7.3	7.6
Germany	6.3	45.6	7.2	7.6	6.6	49.8	66.7	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
South Korea	1.5	17.8	3.0	22.6	1.8	33.2	44.9	12.1	12.2	12.2
Singapore	2.3	22.5	4.4	13.4	1.7	32.3	42.6	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

(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. Note 1 to the Consolidated Financial Statements contains a summary of all of Citigroup's significant accounting policies. 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.

For a discussion of the recently adopted CECL accounting pronouncement, see Note 1 to the Consolidated Financial Statements.

Goodwill

Citi tests goodwill for impairment annually on July 1 (the annual test) and through 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 2019, 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, 2019, 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 2018, Citigroup engaged an independent valuation specialist in 2019 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, 2019. 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, 2019.

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. For example, if it is more-likely-than-not that a carry-forward would expire unused, Citi would set up a valuation allowance against that DTA. Citi has established valuation allowances as described below.

As a result of the Tax Cuts and Jobs Act (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 Citi's 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.

Deferred Tax Assets and Valuation Allowances

At December 31, 2019, Citi had net DTAs of $23.1 billion. In the fourth quarter of 2019, Citi's DTAs increased by $0.6 billion, driven primarily by the release of a portion of the valuation allowance related to Citi's general basket FTC carry-forwards and losses in *AOCI*. On a full-year basis, Citi's DTAs increased $0.2 billion from $22.9 billion at December 31, 2018, primarily due to the releases of a portion of the valuation allowance related to Citi's general basket FTC carry-forwards, partially offset by gains in *AOCI*.

Of Citi's total net DTAs of $23.1 billion as of December 31, 2019, $10.7 billion, primarily related to tax carry-forwards, was excluded in calculating Citi's regulatory capital. The amount excluded from Citi's regulatory capital decreased $0.9 billion in the full year 2019, adjusting for the impact of the valuation allowance releases. Net DTAs arising from temporary differences are deducted from regulatory capital if in excess of the 10%/15% limitations (see "Capital Resources" above). For the year ended December 31, 2019, Citi did not have any such DTAs. Accordingly, the remaining $12.4 billion of net DTAs as of December 31, 2019 was not deducted in calculating regulatory capital pursuant to Basel III standards, and was appropriately risk weighted under those rules.

Citi's total valuation allowance at December 31, 2019 was $6.5 billion, a decrease of $2.8 billion from $9.3 billion at December 31, 2018. The decrease was primarily driven by carry-forward expirations in the FTC branch basket and in a non-U.S. NOL, FTC general basket valuation allowance releases and a reduction in the net U.S. residual DTA related to non-U.S. branches. Citi's valuation allowance of $6.5 billion is composed of $4.6 billion on its FTC carry-forwards, $0.8 billion on its U.S. residual DTA related to its non-U.S. branches, $1.0 billion on local non-U.S. DTAs and $0.1 billion on state net operating loss and capital loss carry-forwards.

Citi's valuation allowance of $3.5 billion against FTC carry-forwards relating to its non-U.S. branches decreased by $0.9 billion in 2019, primarily due to the expiration of the 2009 FTC carry-forward. Citi expects that the absolute amount of its valuation allowance may change 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 expiration of FTC carry-forwards.

Citi's valuation allowance of $1.1 billion against FTC carry-forwards in its general basket decreased by $0.5 billion, primarily due to actions taken to increase foreign source income in the U.S. and the updated forecast of foreign source income for the FTC carry-forward period. In the fourth quarter of 2019, Citi committed to a plan to move a financing business involving non-U.S. clients and its associated funding to the U.S. The incremental foreign source income generated by this action over time will more-likely-than-not enable usage of FTC carry-forwards of $0.2 billion. See Note 9 to the Consolidated Financial Statements. As stated above, 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. Citi continues to look for other actions that may improve foreign source income in the U.S. tax return and thus affect the valuation allowance. These actions can include the relocation of certain businesses to the U.S., each of which can raise client, regulatory or operational challenges. No other actions were deemed prudent and feasible as of December 31, 2019.

Recognized FTCs comprised approximately $6.3 billion of Citi's DTAs as of December 31, 2019, compared to approximately $6.8 billion as of December 31, 2018. The decrease in FTCs year-over-year was primarily due to current-year usage, partially offset by the valuation allowance release. The FTC carry-forward period represents the most time-sensitive component of Citi's DTAs.

Citi has an overall domestic loss (ODL) of approximately $39 billion at December 31, 2019, which allows Citi to elect a percentage between 50% and 100% of future years' domestic source income to be reclassified as foreign source income. (See Note 9 to the Consolidated Financial Statements for a description of the ODL).

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 its recognized net DTAs of $23.1 billion at December 31, 2019 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, 2019 (including the FTCs and applicable expiration dates of the FTCs), see Note 9 to the Consolidated Financial Statements. For information on Citi's ability to use its DTAs, see "Risk Factors—Strategic Risks" above.

Tax Cuts and Jobs Act

On December 22, 2017, the President signed Tax Reform into law, 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)

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
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.

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, 2019. 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, 2019 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, 2019, 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, 2019 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, 2019 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, 2019.

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 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 and illustrative, 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 forward-looking statements were made.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

KPMG

To the Stockholders and Board of Directors
Citigroup Inc.:

Opinions on the Consolidated Financial Statements and Internal Control Over Financial Reporting
We have audited the accompanying consolidated balance sheet of Citigroup Inc. and subsidiaries (the Company) as of December 31, 2019 and 2018, 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, 2019, and the related notes (collectively, the consolidated financial statements). We also have audited the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019 based on criteria established in *Internal Control— Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Basis for Opinions
The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying management's annual report on internal control over financial reporting. Our responsibility is to express an opinion on the Company's consolidated financial statements and an opinion on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control Over Financial Reporting
A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (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.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Assessment of the fair value of hard-to-price financial instruments

As described in Notes 1, 6, 24 and 25 to the consolidated financial statements, the Company's financial assets and liabilities recorded at fair value on a recurring basis were $1,148.7 billion and $615.5 billion, respectively at December 31, 2019. Financial instruments which are measured at fair value using valuation techniques, inclusive of complex internal valuation models or alternative pricing procedures with significant unobservable inputs, represent all Level 3 assets and liabilities ($8.0 billion and $23.0 billion, respectively) and certain Level 2 assets and liabilities (collectively, hard-to-price financial instruments). The Company estimated the fair value of hard-to-price financial instruments utilizing various valuation techniques including, but not limited to, internal valuation models, price-based or comparables analysis and discounted cash flows.

We identified the assessment of the fair value for hard-to-price financial instruments as a critical audit matter, as the assessment involved complex auditor judgment. In particular, there was a high level of subjectivity in the evaluation of the key assumptions and estimates utilized for prices and/or inputs that are not readily observable in the current market and complex internally developed valuation techniques and/or models were used. This assessment encompassed the evaluation of the fair value estimate methodologies, including the Company's key assumptions and inputs such as interest rate, price, yield, credit spread, volatilities, correlations and forward prices. This also included an evaluation of the underlying models for mathematical accuracy and assessing if the models are appropriate to value the financial instruments.

The following are the primary procedures we performed to address this critical audit matter. We tested internal controls over hard-to-price financial instruments, including pricing methodologies and valuation techniques, and key inputs and assumptions to determine the fair value. We tested the Company's process to develop the fair value estimate. This included performing an assessment of the key policies and methodologies used in the fair value determination. We involved valuation professionals with industry knowledge and experience who assisted in challenging the models' significant prices, inputs and assumptions that are not readily observable and which are used in the fair value determination, by testing the reliability of the process used by the Company to determine fair value and evaluating that:

- the key assumptions and/or inputs reflected those which a market participant would use to determine an exit price in the current market environment;
- the valuation models used were mathematically accurate and appropriate to value the financial instruments; and
- relevant information that was reasonably available was considered in the fair value determination.

We involved valuation professionals with industry knowledge and experience who assisted in developing an independent fair value estimate for certain financial instruments based on independently developed valuation models and/or assumptions and comparing to the Company's fair value measurements.

Assessment of the allowance for loan losses collectively evaluated for impairment

As discussed in Notes 1 and 15 to the consolidated financial statements, the Company's allowance for loan losses related to loans collectively evaluated for impairment (ALL) was $11.3 billion as of December 31, 2019. The Company estimated this ALL for consumer loans utilizing a migration analysis, in which historical delinquency and credit loss experience is applied to the current aging of the portfolio, together with analyses that reflect economic conditions. For corporate loans, the ALL was determined using a statistical model considering 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 model and migration analysis were each supplemented by qualitative assessments.

We identified the assessment of the ALL as a critical audit matter, as the assessment involved significant measurement uncertainty requiring complex auditor judgment, and knowledge and experience in the industry. This assessment encompassed the evaluation of the various components of the ALL methodology, including certain key assumptions and inputs for the Company's quantitative and qualitative assessments. Key assumptions and inputs for consumer loans included historical credit losses, delinquency status and the manner in which they are applied within a migration analysis. For corporate loans, key assumptions and inputs included internal risk ratings, probability of default and loss given default considered in the statistical model.

The following are the primary procedures we performed to address this critical audit matter. We tested certain internal controls over (1) the approval of the ALL methodologies and (2) the determination of the key assumptions and inputs used to estimate the quantitative and qualitative assessments. We evaluated the Company's process to develop the ALL estimate by testing certain sources of data, factors and assumptions that the Company used and considered the relevance and reliability of such data, factors and assumptions. We assessed the methodologies used to develop the resulting qualitative assessments and the effect of those assessments on the ALL compared with credit trends. We involved credit risk professionals with industry knowledge and experience who assisted in:

- reviewing the Company's ALL methodologies and key assumptions for compliance with U.S. generally accepted accounting principles;
- testing the key assumptions and inputs in the consumer loans migration analysis and corporate loans statistical model; and
- evaluating the qualitative assessments of the ALL.

We tested corporate loan internal risk ratings for a selection of credit facilities by (1) involving credit risk professionals with industry knowledge and risk rating experience to assist in evaluating the appropriateness of the internal risk ratings and (2) testing the historical accuracy of internal risk ratings compared to prior periods.

Assessment of the realizability of deferred tax assets, specifically as it relates to foreign tax credits

As discussed in Notes 1 and 9 to the consolidated financial statements, the Company's net deferred tax assets (DTA) were $23.1 billion as of December 31, 2019. This balance is net of a valuation allowance of $6.5 billion recorded by the Company. The estimation of the DTA for foreign tax credits (FTCs) and related valuation allowance was $10.9 billion and $4.6 billion respectively. The Company evaluated the realization of the DTA for FTCs to determine whether there was more than a 50% likelihood that the DTA for FTCs would be realized, based primarily on the Company's expectations of future taxable income in each relevant jurisdiction, available tax planning strategies and timing of tax credit expirations.

We identified the assessment of the realizability of the DTA for FTCs as a critical audit matter, as the assessment involved complex auditor judgment and knowledge of global tax regulations. This assessment encompassed the evaluation of the Company's estimations that are complex due to its global structure and subjective, given the Company's assumptions used to determine that sufficient taxable income will be generated or tax planning strategies implemented to support the realization of the DTA for FTCs before expiration of foreign tax credits.

The following are the primary procedures we performed to address this critical audit matter. We tested certain internal controls over the Company's analysis of the realizability of the DTA for FTCs, including future taxable income and tax planning strategies. We tested the Company's process to develop the valuation allowance estimate. This included performing an assessment of the key policies and methodologies used in the valuation allowance determination. We involved income tax professionals with FTC knowledge and experience, including resources from our national office, who assisted in assessing:

- the assumptions used to determine the Company's future taxable income, including the interpretation of the various tax laws and regulations and the source and character of future taxable income;
- the timing of tax credit expirations; and
- the prudence and feasibility of tax planning strategies.

We performed sensitivity analyses over the Company's expectations of future taxable income and timing of tax credit expirations.

/s/ KPMG LLP

We have served as the Company's auditor since 1969.

New York, New York
February 21, 2020

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CONSOLIDATED FINANCIAL STATEMENTS

CONSOLIDATED STATEMENT OF INCOME *Citigroup Inc. and Subsidiaries*

In millions of dollars, except per share amounts	Years ended December 31, 2019	2018	2017
Revenues			
Interest revenue	**$ 76,510**	$ 70,828	$ 61,579
Interest expense	**29,163**	24,266	16,518
Net interest revenue	**$ 47,347**	$ 46,562	$ 45,061
Commissions and fees	**$ 11,746**	$ 11,857	$ 12,707
Principal transactions	**8,892**	8,905	8,940
Administration and other fiduciary fees	**3,411**	3,580	3,584
Realized gains on sales of investments, net	**1,474**	421	778
Net impairment losses recognized in earnings	**$ (32)**	$ (132)	$ (63)
Other revenue	**$ 1,448**	$ 1,661	$ 1,437
Total non-interest revenues	**$ 26,939**	$ 26,292	$ 27,383
Total revenues, net of interest expense	**$ 74,286**	$ 72,854	$ 72,444
Provisions for credit losses and for benefits and claims			
Provision for loan losses	**$ 8,218**	$ 7,354	$ 7,503
Policyholder benefits and claims	**73**	101	109
Provision (release) for unfunded lending commitments	**92**	113	(161)
Total provisions for credit losses and for benefits and claims	**$ 8,383**	$ 7,568	$ 7,451
Operating expenses			
Compensation and benefits	**$ 21,433**	$ 21,154	$ 21,181
Premises and equipment	**2,328**	2,324	2,453
Technology/communication	**7,077**	7,193	6,909
Advertising and marketing	**1,516**	1,545	1,608
Other operating	**9,648**	9,625	10,081
Total operating expenses	**$ 42,002**	$ 41,841	$ 42,232
Income from continuing operations before income taxes	**$ 23,901**	$ 23,445	$ 22,761
Provision for income taxes	**4,430**	5,357	29,388
Income (loss) from continuing operations	**$ 19,471**	$ 18,088	$ (6,627)
Discontinued operations			
Loss from discontinued operations	**$ (31)**	$ (26)	$ (104)
Provision (benefit) for income taxes	**(27)**	(18)	7
Loss from discontinued operations, net of taxes	**$ (4)**	$ (8)	$ (111)
Net income (loss) before attribution of noncontrolling interests	**$ 19,467**	$ 18,080	$ (6,738)
Noncontrolling interests	**66**	35	60
Citigroup's net income (loss)	**$ 19,401**	$ 18,045	$ (6,798)
Basic earnings per share[(1)]			
Income (loss) from continuing operations	**$ 8.08**	$ 6.69	$ (2.94)
Loss from discontinued operations, net of taxes	**—**	—	(0.04)
Net income (loss)	**$ 8.08**	$ 6.69	$ (2.98)
Weighted average common shares outstanding *(in millions)*	**2,249.2**	2,493.3	2,698.5

CONSOLIDATED STATEMENT OF INCOME (Continued)

Citigroup Inc. and Subsidiaries

In millions of dollars, except per share amounts	Years ended December 31, 2019	2018	2017
Diluted earnings per share[1]			
Income (loss) from continuing operations	**$ 8.04**	$ 6.69	$ (2.94)
Income (loss) from discontinued operations, net of taxes	**—**	—	(0.04)
Net income (loss)	**$ 8.04**	$ 6.68	$ (2.98)
Adjusted weighted average common shares outstanding *(in millions)*	**2,265.3**	2,494.8	2,698.5

(1) 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, 2019	2018	2017
Citigroup's net income (loss)	**$ 19,401**	$ 18,045	$ (6,798)
Add: Citigroup's other comprehensive income (loss)			
Net change in unrealized gains and losses on debt securities, net of taxes[1][2]	**$ 1,985**	$ (1,089)	$ (863)
Net change in debt valuation adjustment (DVA), net of taxes[1]	**(1,136)**	1,113	(569)
Net change in cash flow hedges, net of taxes	**851**	(30)	(138)
Benefit plans liability adjustment, net of taxes[3]	**(552)**	(74)	(1,019)
Net change in foreign currency translation adjustment, net of taxes and hedges	**(321)**	(2,362)	(202)
Net change in excluded component of fair value hedges, net of taxes	**25**	(57)	—
Citigroup's total other comprehensive income (loss)[4]	**$ 852**	$ (2,499)	$ (2,791)
Citigroup's total comprehensive income (loss)	**$ 20,253**	$ 15,546	$ (9,589)
Add: Other comprehensive income (loss) attributable to noncontrolling interests	**$ —**	$ (43)	$ 114
Add: Net income attributable to noncontrolling interests	**66**	35	60
Total comprehensive income (loss)	**$ 20,319**	$ 15,538	$ (9,415)

(1) See Note 1 to the Consolidated Financial Statements.
(2) For the years ended December 31, 2019 and 2018, amounts represent the net change in unrealized gains and losses on available-for-sale (AFS) debt securities. Effective January 1, 2018, the AFS category was eliminated for equity securities under ASU 2016-01.
(3) See Note 8 to the Consolidated Financial Statements.
(4) Includes the impact of ASU 2018-02, adopted in 2017. See Note 1 to the Consolidated Financial Statements.

The Notes to the Consolidated Financial Statements are an integral part of these Consolidated Financial Statements.

CONSOLIDATED BALANCE SHEET

Citigroup Inc. and Subsidiaries

In millions of dollars	December 31, 2019	2018
Assets		
Cash and due from banks (including segregated cash and other deposits)	**$ 23,967**	$ 23,645
Deposits with banks	**169,952**	164,460
Securities borrowed and purchased under agreements to resell (including $153,193 and $147,701 as of December 31, 2019 and 2018, respectively, at fair value)	**251,322**	270,684
Brokerage receivables	**39,857**	35,450
Trading account assets (including $120,236 and $112,932 pledged to creditors at December 31, 2019 and 2018, respectively)	**276,140**	256,117
Investments:		
Available-for-sale debt securities (including $8,721 and $9,284 pledged to creditors as of December 31, 2019 and 2018, respectively)	**280,265**	288,038
Held-to-maturity debt securities (including $1,923 and $971 pledged to creditors as of December 31, 2019 and 2018, respectively)	**80,775**	63,357
Equity securities (including $1,162 and $1,109 as of December 31, 2019 and 2018, respectively, at fair value)	**7,523**	7,212
Total investments	**$ 368,563**	$ 358,607
Loans:		
Consumer (including $18 and $20 as of December 31, 2019 and 2018, respectively, at fair value)	**309,548**	302,360
Corporate (including $4,067 and $3,203 as of December 31, 2019 and 2018, respectively, at fair value)	**389,935**	381,836
Loans, net of unearned income	**$ 699,483**	$ 684,196
Allowance for loan losses	**(12,783)**	(12,315)
Total loans, net	**$ 686,700**	$ 671,881
Goodwill	**22,126**	22,046
Intangible assets (including MSRs of $495 and $584 as of December 31, 2019 and 2018, respectively, at fair value)	**4,822**	5,220
Other assets (including $12,830 and $20,788 as of December 31, 2019 and 2018, respectively, at fair value)	**107,709**	109,273
Total assets	**$ 1,951,158**	$ 1,917,383

The following table presents certain assets of consolidated variable interest entities (VIEs), which are included on 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. In addition, the assets in the table below include third-party assets of consolidated VIEs only and exclude intercompany balances that eliminate in consolidation.

In millions of dollars	December 31, 2019	2018
Assets of consolidated VIEs to be used to settle obligations of consolidated VIEs		
Cash and due from banks	**$ 108**	$ 270
Trading account assets	**6,719**	917
Investments	**1,295**	1,796
Loans, net of unearned income		
Consumer	**46,977**	49,403
Corporate	**16,175**	19,259
Loans, net of unearned income	**$ 63,152**	$ 68,662
Allowance for loan losses	**(1,841)**	(1,852)
Total loans, net	**$ 61,311**	$ 66,810
Other assets	**73**	151
Total assets of consolidated VIEs to be used to settle obligations of consolidated VIEs	**$ 69,506**	$ 69,944

Statement continues on the next page.

CONSOLIDATED BALANCE SHEET

Citigroup Inc. and Subsidiaries

(Continued)

In millions of dollars, except shares and per share amounts	December 31, **2019**	2018
Liabilities		
Non-interest-bearing deposits in U.S. offices	**$ 98,811**	$ 105,836
Interest-bearing deposits in U.S. offices (including $1,624 and $717 as of December 31, 2019 and 2018, respectively, at fair value)	**401,418**	361,573
Non-interest-bearing deposits in offices outside the U.S.	**85,692**	80,648
Interest-bearing deposits in offices outside the U.S. (including $695 and $758 as of December 31, 2019 and 2018, respectively, at fair value)	**484,669**	465,113
Total deposits	**$ 1,070,590**	$ 1,013,170
Securities loaned and sold under agreements to repurchase (including $40,651 and $44,510 as of December 31, 2019 and 2018, respectively, at fair value)	**166,339**	177,768
Brokerage payables	**48,601**	64,571
Trading account liabilities	**119,894**	144,305
Short-term borrowings (including $4,946 and $4,483 as of December 31, 2019 and 2018, respectively, at fair value)	**45,049**	32,346
Long-term debt (including $55,783 and $38,229 as of December 31, 2019 and 2018, respectively, at fair value)	**248,760**	231,999
Other liabilities (including $6,343 and $15,906 as of December 31, 2019 and 2018, respectively, at fair value)	**57,979**	56,150
Total liabilities	**$ 1,757,212**	$ 1,720,309
Stockholders' equity		
Preferred stock ($1.00 par value; authorized shares: 30 million), issued shares: **719,200 as of December 31, 2019** and 738,400 as of December 31, 2018, at aggregate liquidation value	**$ 17,980**	$ 18,460
Common stock ($0.01 par value; authorized shares: 6 billion), issued shares: **3,099,602,856 as of December 31, 2019** and 3,099,567,177 as of December 31, 2018	**31**	31
Additional paid-in capital	**107,840**	107,922
Retained earnings	**165,369**	151,347
Treasury stock, at cost: **985,479,501 shares as of December 31, 2019** and 731,099,833 shares as of December 31, 2018	**(61,660)**	(44,370)
Accumulated other comprehensive income (loss) (AOCI)	**(36,318)**	(37,170)
Total Citigroup stockholders' equity	**$ 193,242**	$ 196,220
Noncontrolling interest	**704**	854
Total equity	**$ 193,946**	$ 197,074
Total liabilities and equity	**$ 1,951,158**	$ 1,917,383

The following table presents certain liabilities of consolidated VIEs, which are included on 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, **2019**	2018
Liabilities of consolidated VIEs for which creditors or beneficial interest holders do not have recourse to the general credit of Citigroup		
Short-term borrowings	**$ 10,031**	$ 13,134
Long-term debt	**25,582**	28,514
Other liabilities	**917**	697
Total liabilities of consolidated VIEs for which creditors or beneficial interest holders do not have recourse to the general credit of Citigroup	**$ 36,530**	$ 42,345

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	**2019**	2018	2017	**2019**	2018	2017
Preferred stock at aggregate liquidation value						
Balance, beginning of year	**$ 18,460**	$ 19,253	$ 19,253	**738**	770	770
Issuance of new preferred stock	**1,500**	—	—	**60**	—	—
Redemption of preferred stock	**(1,980)**	(793)	—	**(79)**	(32)	—
Balance, end of period	**$ 17,980**	$ 18,460	$ 19,253	**719**	738	770
Common stock and additional paid-in capital						
Balance, beginning of year	**$ 107,953**	$ 108,039	$ 108,073	**3,099,567**	3,099,523	3,099,482
Employee benefit plans	**(112)**	(94)	(27)	**36**	44	41
Preferred stock issuance expense	**(4)**	—	—	**—**	—	—
Other	**34**	8	(7)	**—**	—	—
Balance, end of period	**$ 107,871**	$ 107,953	$ 108,039	**3,099,603**	3,099,567	3,099,523
Retained earnings						
Balance, beginning of year	**$ 151,347**	$ 138,425	$ 146,477			
Adjustment to opening balance, net of taxes[1]	**151**	(84)	(660)			
Adjusted balance, beginning of period	**$ 151,498**	$ 138,341	$ 145,817			
Citigroup's net income (loss)	**19,401**	18,045	(6,798)			
Common dividends[2]	**(4,403)**	(3,865)	(2,595)			
Preferred dividends	**(1,109)**	(1,174)	(1,213)			
Impact of Tax Reform related to *AOCI* reclassification[3]	**—**	—	3,304			
Other[4]	**(18)**	—	(90)			
Balance, end of period	**$ 165,369**	$ 151,347	$ 138,425			
Treasury stock, at cost						
Balance, beginning of year	**$ (44,370)**	$ (30,309)	$ (16,302)	**(731,100)**	(529,615)	(327,090)
Employee benefit plans[5]	**585**	484	531	**9,872**	10,557	11,651
Treasury stock acquired[6]	**(17,875)**	(14,545)	(14,538)	**(264,252)**	(212,042)	(214,176)
Balance, end of period	**$ (61,660)**	$ (44,370)	$ (30,309)	**(985,480)**	(731,100)	(529,615)
Citigroup's accumulated other comprehensive income (loss)						
Balance, beginning of year	**$ (37,170)**	$ (34,668)	$ (32,381)			
Adjustment to opening balance, net of taxes[1]	**—**	(3)	504			
Adjusted balance, beginning of period	**$ (37,170)**	$ (34,671)	$ (31,877)			
Citigroup's total other comprehensive income (loss)[3]	**852**	(2,499)	(2,791)			
Balance, end of period	**$ (36,318)**	$ (37,170)	$ (34,668)			
Total Citigroup common stockholders' equity	**$ 175,262**	$ 177,760	$ 181,487	**2,114,123**	2,368,467	2,569,908
Total Citigroup stockholders' equity	**$ 193,242**	$ 196,220	$ 200,740			
Noncontrolling interests						
Balance, beginning of year	**$ 854**	$ 932	$ 1,023			
Transactions between noncontrolling-interest shareholders and the related consolidated subsidiary	**—**	—	(28)			
Transactions between Citigroup and the noncontrolling-interest shareholders	**(169)**	(50)	(121)			
Net income attributable to noncontrolling-interest shareholders	**66**	35	60			
Distributions paid to noncontrolling-interest shareholders	**(40)**	(38)	(44)			
Other comprehensive income (loss) attributable to noncontrolling-interest shareholders	**—**	(43)	114			
Other	**(7)**	18	(72)			
Net change in noncontrolling interests	**$ (150)**	$ (78)	$ (91)			
Balance, end of period	**$ 704**	$ 854	$ 932			
Total equity	**$ 193,946**	$ 197,074	$ 201,672			

(1) See Note 1 to the Consolidated Financial Statements for additional details.
(2) Common dividends declared were $0.45 per share in the first and second quarters of 2019 and $0.51 per share in the third and fourth quarters of 2019; $0.32 per share in the first and second quarters of 2018 and $0.45 per share in the third and fourth quarters of 2018; and $0.16 in the first and second quarters of 2017 and $0.32 per share in the third and fourth quarters of 2017.
(3) Includes the impact of ASU 2018-02, which transferred those amounts from *AOCI* to 2017 *Retained earnings*. See Notes 1 and 19 to the Consolidated Financial Statements.
(4) 2017 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) 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*

In millions of dollars	Years ended December 31, 2019	2018	2017
Cash flows from operating activities of continuing operations			
Net income before attribution of noncontrolling interests	**$ 19,467**	$ 18,080	$ (6,738)
Net income attributable to noncontrolling interests	**66**	35	60
Citigroup's net income	**$ 19,401**	$ 18,045	$ (6,798)
Loss from discontinued operations, net of taxes	**(4)**	(8)	(111)
Income (loss) from continuing operations—excluding noncontrolling interests	**$ 19,405**	$ 18,053	$ (6,687)
Adjustments to reconcile net income to net cash provided by (used in) operating activities of continuing operations			
Net gains on significant disposals[1]	**—**	(247)	(602)
Depreciation and amortization	**3,905**	3,754	3,659
Deferred income taxes[2]	**(610)**	(51)	24,877
Provision for loan losses	**8,218**	7,354	7,503
Realized gains from sales of investments	**(1,474)**	(421)	(778)
Net impairment losses on investments	**32**	132	91
Change in trading account assets	**(20,124)**	(3,469)	(7,038)
Change in trading account liabilities	**(24,411)**	19,135	(15,375)
Change in brokerage receivables net of brokerage payables	**(20,377)**	6,163	(5,307)
Change in loans HFS	**(909)**	770	247
Change in other assets	**4,724**	(5,791)	(3,364)
Change in other liabilities	**1,829**	(871)	(3,044)
Other, net	**16,955**	(7,559)	(2,956)
Total adjustments	**$ (32,242)**	$ 18,899	$ (2,087)
Net cash provided by (used in) operating activities of continuing operations	**$ (12,837)**	$ 36,952	$ (8,774)
Cash flows from investing activities of continuing operations			
Change in securities borrowed and purchased under agreements to resell	**$ 19,362**	$ (38,206)	$ 4,335
Change in loans	**(22,466)**	(29,002)	(58,062)
Proceeds from sales and securitizations of loans	**2,878**	4,549	8,365
Purchases of investments	**(274,491)**	(152,487)	(185,740)
Proceeds from sales of investments	**137,173**	61,491	107,368
Proceeds from maturities of investments	**119,051**	83,604	84,369
Proceeds from significant disposals[1]	**—**	314	3,411
Capital expenditures on premises and equipment and capitalized software	**(5,336)**	(3,774)	(3,361)
Proceeds from sales of premises and equipment, subsidiaries and affiliates and repossessed assets	**259**	212	377
Other, net	**196**	181	187
Net cash used in investing activities of continuing operations	**$ (23,374)**	$ (73,118)	$ (38,751)
Cash flows from financing activities of continuing operations			
Dividends paid	**$ (5,447)**	$ (5,020)	$ (3,797)
Issuance of preferred stock	**1,496**	—	—
Redemption of preferred stock	**(1,980)**	(793)	—
Treasury stock acquired	**(17,571)**	(14,433)	(14,541)
Stock tendered for payment of withholding taxes	**(364)**	(482)	(405)
Change in securities loaned and sold under agreements to repurchase	**(11,429)**	21,491	14,456
Issuance of long-term debt	**59,134**	60,655	67,960
Payments and redemptions of long-term debt	**(51,029)**	(58,132)	(40,986)
Change in deposits	**57,420**	53,348	30,416
Change in short-term borrowings	**12,703**	(12,106)	13,751

CONSOLIDATED STATEMENT OF CASH FLOWS
(Continued)

Citigroup Inc. and Subsidiaries

	Years ended December 31,		
In millions of dollars	**2019**	2018	2017
Net cash provided by financing activities of continuing operations	**$ 42,933**	$ 44,528	$ 66,854
Effect of exchange rate changes on cash and cash equivalents	**$ (908)**	$ (773)	$ 693
Change in cash, due from banks and deposits with banks	**$ 5,814**	$ 7,589	$ 20,022
Cash, due from banks and deposits with banks at beginning of period[3]	**188,105**	180,516	160,494
Cash, due from banks and deposits with banks at end of period[3]	**$ 193,919**	$ 188,105	$ 180,516
Cash and due from banks	**$ 23,967**	$ 23,645	$ 23,775
Deposits with banks	**169,952**	164,460	156,741
Cash, due from banks and deposits with banks at end of period	**$ 193,919**	$ 188,105	$ 180,516
Supplemental disclosure of cash flow information for continuing operations			
Cash paid during the year for income taxes	**$ 4,888**	$ 4,313	$ 2,083
Cash paid during the year for interest	**28,682**	22,963	15,675
Non-cash investing activities[4]			
Transfers to loans HFS *(Other assets)* from loans	**$ 5,500**	$ 4,200	$ 5,900

(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) Includes the impact of ASU 2016-18, *Restricted Cash*. See Notes 1 and 26 to the Consolidated Financial Statements.
(4) Operating and finance lease right-of-use assets and lease liabilities represent non-cash investing and financing activities, respectively, and are not included in the non-cash investing activities presented here. See Note 26 to the Consolidated Financial Statements for more information and balances as of December 31, 2019.

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 debt and equity securities. Debt securities 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.

Debt Securities

- Debt 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*.
- Debt 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*.

Equity Securities

- Marketable equity securities are measured at fair value with changes in fair value recognized in earnings.
- 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 debt securities classified as HTM or AFS, 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.

Debt securities not measured at fair value through earnings, such as securities held in HTM or AFS, and equity securities under the 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 certain 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 for credit card receivable balances, which 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 held-for-sale (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 Federal Housing Administration (FHA)-insured loans.

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, 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.

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 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 who 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 Consolidated 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 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.

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, lease right-of-use assets, premises and equipment (including purchased and developed software), repossessed assets and other receivables. *Other liabilities* include, among other items, accrued expenses and other payables, lease liabilities, 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.

Instrument-specific Credit Risk
Citi presents 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. Accordingly, the change in fair value of liabilities for which the fair value option was elected, related to changes in Citigroup's own credit spreads, is presented in *AOCI*.

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

Lease Accounting
In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)*, which increases the transparency and comparability of accounting for lease transactions. The ASU requires lessees to recognize liabilities for operating leases and corresponding right-of-use (ROU) assets on the balance sheet. The ASU also requires quantitative and qualitative disclosures regarding key information about leasing arrangements. Lessee accounting for finance leases, as well as lessor accounting, are largely unchanged.

Effective January 1, 2019, the Company prospectively adopted the provisions of the ASU. At adoption, Citi recognized a lease liability and a corresponding ROU asset of approximately $4.4 billion on the Consolidated Balance Sheet related to its future lease payments as a lessee under operating leases. In addition, the Company recorded a $151 million increase in *Retained earnings* for the cumulative effect of recognizing previously deferred gains on sale/leaseback transactions. Adoption of the ASU did not have a material impact on the Consolidated Statement of Income. See Notes 14 and 26 for additional details.

The Company has elected not to separate lease and non-lease components in its lease contracts and accounts for them as a single lease component. Citi has also elected not to record an ROU asset for short-term leases that have a term of 12 months or less and do not contain purchase options that Citi is reasonably certain to exercise. The cost of short-term leases is recognized in the Consolidated Statement of Income on a straight-line basis over the lease term. In addition, Citi applies the portfolio approach to account for certain equipment leases with nearly identical contractual terms.

Lessee accounting
Operating lease ROU assets and lease liabilities are included in *Other assets* and *Other liabilities*, respectively, on the Consolidated Balance Sheet. Finance lease assets and liabilities are included in *Other assets* and *Long-term debt*, respectively, on the Consolidated Balance Sheet. The Company uses its incremental borrowing rate, factoring in the lease term, to determine the lease liability, which is measured at the present value of future lease payments. The ROU asset is initially measured at the amount of the lease liability plus any prepaid rent and remaining initial direct costs, less any remaining lease incentives and accrued rent. The ROU asset is subject to impairment, during the lease term, in a manner consistent with the impairment of long-lived assets. The lease terms include periods covered by options to extend or terminate the lease depending on whether Citi is reasonably certain to exercise such options.

Lessor accounting
Lessor accounting is largely unchanged under the ASU. Citi acts as a lessor for power, railcar, shipping and aircraft assets, where the Company has executed operating, direct financing and leveraged leasing arrangements. In a direct financing or a leveraged lease, Citi derecognizes the leased asset and records a lease financing receivable at lease commencement in *Loans*. Upon lease termination, Citi may obtain control of the asset, which is then recorded in *Other assets* on the Consolidated Balance Sheet and any remaining receivable for the asset's residual value is derecognized. Under the ASU, leveraged lease accounting is grandfathered and may continue to be applied until the leveraged lease is terminated or modified. Upon modification, the lease must be classified as an operating, direct finance or sales-type lease in accordance with the ASU.

Separately, as part of managing its real estate footprint, Citi subleases excess real estate space via operating lease arrangements.

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 for 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 additional charges of $0.2 billion related to the impact of a change to a "quasi-territorial tax system" and $0.9 billion 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 Global Intangible Low Taxed Income (GILTI) as incurred.

Revenue Recognition
In May 2014, the FASB issued ASU No. 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, 2019 and 2018 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 clarified 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 was applied prospectively. The components of the net benefit expense are disclosed in Note 8 to the Consolidated Financial Statements.

The 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.

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.

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 Consolidated 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 Consolidated Statement of Cash Flows for the year ended December 31, 2017 increased by $19.3 billion.

Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income

On February 14, 2018, the FASB issued ASU No. 2018-02, *Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*. The ASU allows a reclassification from *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 applied only to the period in which 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.

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 were effective January 1, 2020, with early adoption permitted. The Company early adopted this ASU as of December 31, 2019 in its entirety, with no material impact on the Company.

FUTURE ACCOUNTING CHANGES

Accounting for Financial Instruments—Credit Losses

Overview

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. Citi adopted the ASU as of January 1, 2020, which, as discussed below, resulted in an increase in Citi's *Allowance for credit losses* and a decrease to opening *Retained earnings*, net of deferred income taxes, at January 1, 2020.

The CECL methodology utilizes a lifetime "expected credit loss" measurement objective for the recognition of credit losses for loans, held-to-maturity debt securities, receivables and other financial assets 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. The CECL methodology represents a significant change from prior U.S. GAAP and replaced the prior multiple existing impairment methods, which generally required that a loss be incurred before it was recognized. Within the life cycle of a loan or other financial asset, the methodology generally results in the earlier recognition of the provision for credit losses and the related allowance for credit losses than prior U.S. GAAP. For available-for-sale debt securities where fair value is less than cost, that Citi intends to hold or more-likely-than-not will not be required to sell, credit-related impairment, if any, is recognized through an allowance for credit losses and adjusted each period for changes in credit risk.

January 1, 2020 CECL Transition (Day 1) Impact

The CECL methodology's impact on expected credit losses, among other things, reflects Citi's view of the current state of the economy, forecasted macroeconomic conditions and Citi's portfolios. At the January 1, 2020 date of adoption, based on forecasts of macroeconomic conditions and exposures at that time, the aggregate impact to Citi was an approximate $4.1 billion, or an approximate 29%, pretax increase in the *Allowance for credit losses*, along with a $3.1 billion after-tax decrease in *Retained earnings* and a deferred tax asset increase of $1.0 billion. This transition impact reflects (i) a $4.9 billion build to the *Allowance for credit losses* for Citi's consumer exposures, primarily driven by the impact on credit card receivables of longer estimated tenors under the CECL lifetime expected credit loss methodology (loss coverage of approximately 23 months) compared to shorter estimated tenors under the probable loss methodology under prior U.S. GAAP (loss coverage of approximately 14 months), net of recoveries; and (ii) a release of $0.8 billion of reserves primarily related to Citi's corporate net loan loss exposures, largely due to more precise contractual maturities that result in shorter remaining tenors, incorporation of recoveries and use of more specific historical loss data based on an increase in portfolio segmentation across industries and geographies.

Under the CECL methodology, the *Allowance for credit losses* consists of quantitative and qualitative components. Citi's quantitative component of the *Allowance for credit losses* is model based and utilizes a single forward-looking macroeconomic forecast, complemented by the qualitative component described below, in estimating expected credit losses and discounts inputs for the corporate classifiably managed portfolios. Reasonable and supportable forecast periods vary by product. For example, Citi's consumer cards models use a 13-quarter reasonable and supportable period and revert to historical loss experience thereafter, while its corporate loan models use a nine-quarter reasonable and supportable period followed by a three-quarter graduated transition to historical loss experience.

Citi's qualitative component of the *Allowance for credit losses* considers (i) the uncertainty of forward-looking scenarios based on the likelihood and severity of a possible recession as another possible scenario; (ii) certain portfolio characteristics, such as portfolio concentration and collateral coverage; and (iii) model limitations as well as idiosyncratic events.

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 was adopted by Citi as of January 1, 2020 with prospective application. 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.

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 Credit Card 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	**2019**	2018	2017
Total revenues, net of interest expense	**$ —**	$ —	$ —
Loss from discontinued operations	**$ (31)**	$ (26)	$ (104)
Provision (benefit) for income taxes	**(27)**	(18)	7
Loss from discontinued operations, net of taxes	**$ (4)**	$ (8)	$ (111)

Cash flows from *Discontinued operations* were not material for all periods presented.

Significant Disposals

There were no significant disposals during 2019. The transactions described below were identified as significant disposals during 2018 and 2017.

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 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 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 for the divested business, excluding the pretax gain on sale, was as follows:

In millions of dollars	**2019**	2018	2017
Income before taxes	**$ —**	$ 123	$ 164

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 for the divested businesses, excluding the pretax gain on sale, was immaterial.

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, which 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 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.

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. 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 for the divested business, excluding the pretax gain on sale, was as follows:

In millions of dollars	**2019**	2018	2017
Income before taxes	**$ —**	$ —	$ 41

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, 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. During 2019, financial data was reclassified to reflect:

- Citi's commercial banking businesses previously reported as part of *GCB* in *North America*, *Latin America* and *Asia*, including approximately $28 billion in end-of-period loans and approximately $37 billion in end-of-period deposits, are reported in *ICG* for all periods presented;
- 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 2018 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	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018
Global Consumer Banking	**$ 32,971**	$ 32,339	$ 31,445	**$ 1,746**	$ 1,689	$ 3,067	**$ 5,702**	$ 5,309	$ 3,542	**$ 407**	$ 388
Institutional Clients Group	**39,301**	38,325	37,822	**3,570**	3,756	7,241	**12,944**	12,574	9,375	**1,447**	1,438
Corporate/Other	**2,014**	2,190	3,177	**(886)**	(88)	19,080	**825**	205	(19,544)	**97**	91
Total	**$ 74,286**	$ 72,854	$ 72,444	**$ 4,430**	$ 5,357	$ 29,388	**$ 19,471**	$ 18,088	$ (6,627)	**$ 1,951**	$ 1,917

(1) Includes total revenues, net of interest expense (excluding *Corporate/Other*), in *North America* of $33.9 billion, $33.4 billion and $34.1 billion; in *EMEA* of $12.0 billion, $11.8 billion and $10.9 billion; in *Latin America* of $10.4 billion, $10.3 billion and $9.6 billion; and in *Asia* of $16.0 billion, $15.3 billion and $14.6 billion in 2019, 2018 and 2017, 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 $7.9 billion, $7.6 billion and $7.6 billion; in the *ICG* results of $563 million, $215 million and $19 million; and in the *Corporate/Other* results of $(75) million, $(202) million and $(175) million in 2019, 2018 and 2017, respectively.

4. INTEREST REVENUE AND EXPENSE

Interest revenue and *Interest expense* consisted of the following:

In millions of dollars	**2019**	2018	2017
Interest revenue			
Loan interest, including fees	**$ 47,751**	$ 45,682	$ 41,736
Deposits with banks	**2,682**	2,203	1,635
Securities borrowed and purchased under agreements to resell	**6,872**	5,492	3,249
Investments, including dividends	**9,860**	9,494	8,295
Trading account assets(1)	**7,672**	6,284	5,501
Other interest	**1,673**	1,673	1,163
Total interest revenue	**$ 76,510**	$ 70,828	$ 61,579
Interest expense			
Deposits(2)	**$ 12,633**	$ 9,616	$ 6,587
Securities loaned and sold under agreements to repurchase	**6,263**	4,889	2,661
Trading account liabilities(1)	**1,308**	1,001	638
Short-term borrowings	**2,465**	2,209	1,059
Long-term debt	**6,494**	6,551	5,573
Total interest expense	**$ 29,163**	$ 24,266	$ 16,518
Net interest revenue	**$ 47,347**	$ 46,562	$ 45,061
Provision for loan losses	**8,218**	7,354	7,503
Net interest revenue after provision for loan losses	**$ 39,129**	$ 39,208	$ 37,558

(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 $781 million, $1,182 million and $1,249 million for 2019, 2018 and 2017, respectively.

5. COMMISSIONS AND FEES; ADMINISTRATION AND OTHER FIDUCIARY FEES

Commissions and Fees

The primary components of *Commissions and fees* revenue are investment banking fees, brokerage commissions, credit card 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. For the periods presented, the contract liability amount 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 $485 million, $521 million and $416 million of revenue related to such variable consideration for the years ended December 31, 2019, 2018 and 2017, respectively. These amounts primarily relate to performance obligations satisfied in prior periods.

Credit card 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 card 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 $322 million, $386 million and $440 million of revenue related to such variable consideration for the years ended December 31, 2019, 2018 and 2017, respectively. These amounts primarily relate to performance obligations satisfied 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:

	2019				2018				2017			
In millions of dollars	**ICG**	**GCB**	**Corp/Other**	**Total**	ICG	GCB	Corp/Other	Total	ICG	GCB	Corp/Other	Total
Investment banking	**$ 3,767**	**$ —**	**$ —**	**$ 3,767**	$ 3,568	$ —	$ —	$ 3,568	$ 3,817	$ —	$ —	$ 3,817
Brokerage commissions	**1,771**	**841**	**—**	**2,612**	1,977	815	—	2,792	1,889	826	3	2,718
Credit card and bank card income												
Interchange fees	**1,222**	**8,621**	**—**	**9,843**	1,077	8,112	11	9,200	953	7,523	99	8,575
Card-related loan fees	**60**	**718**	**—**	**778**	63	627	12	702	53	693	48	794
Card rewards and partner payments	**(691)**	**(8,883)**	**—**	**(9,574)**	(504)	(8,253)	(12)	(8,769)	(426)	(7,242)	(57)	(7,725)
Deposit-related fees[(1)]	**1,048**	**470**	**—**	**1,518**	1,031	572	1	1,604	1,031	642	14	1,687
Transactional service fees	**824**	**123**	**—**	**947**	733	83	4	820	751	78	49	878
Corporate finance[(2)]	**616**	**—**	**—**	**616**	734	—	—	734	766	—	—	766
Insurance distribution revenue	**12**	**524**	**—**	**536**	14	565	11	590	12	562	68	642
Insurance premiums	**—**	**186**	**—**	**186**	—	119	—	119	—	122	—	122
Loan servicing	**78**	**55**	**21**	**154**	100	91	37	228	117	71	95	283
Other	**99**	**261**	**3**	**363**	116	139	14	269	30	90	30	150
Total commissions and fees[(3)]	**$ 8,806**	**$ 2,916**	**$ 24**	**$11,746**	$ 8,909	$ 2,870	$ 78	$11,857	$ 8,993	$ 3,365	$ 349	$12,707

(1) Includes overdraft fees of $127 million, $128 million and $135 million for the years ended December 31, 2019, 2018 and 2017, 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) *Commissions and fees* includes $(7,695) million, $(6,853) million and $(5,627) million not accounted for under ASC 606, *Revenue from Contracts with Customers*, for the years ended December 31, 2019, 2018 and 2017, 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 revenue is 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, safekeeps, 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* revenue:

	2019				2018				2017			
In millions of dollars	**ICG**	**GCB**	**Corp/Other**	**Total**	ICG	GCB	Corp/Other	Total	ICG	GCB	Corp/Other	Total
Custody fees	**$1,453**	**$ 16**	**$ 73**	**$1,542**	$1,497	$ 133	$ 65	$1,695	$1,508	$ 164	$ 56	$1,728
Fiduciary fees	**647**	**621**	**28**	**1,296**	645	597	43	1,285	593	575	91	1,259
Guarantee fees	**558**	**8**	**7**	**573**	584	9	7	600	584	5	8	597
Total administration and other fiduciary fees[1]	**$2,658**	**$ 645**	**$ 108**	**$3,411**	$2,726	$ 739	$ 115	$3,580	$2,685	$ 744	$ 155	$3,584

(1) *Administration and other fiduciary fees* includes $573 million, $600 million and $597 million for the years ended December 31, 2019, 2018 and 2017, 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. 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) and FVA (funding valuation adjustments) on over-the-counter derivatives, and gains (losses) on certain economic hedges on loans in *ICG*. These adjustments are discussed further in Note 24 to the Consolidated Financial Statements.

In certain transactions, Citi incurs fees and presents these fees paid to third parties in operating expenses. The following table presents *Principal transactions* revenue:

In millions of dollars	**2019**	2018	2017
Interest rate risks(1)	**$ 5,990**	$ 5,178	$ 5,304
Foreign exchange risks(2)	**1,650**	1,398	2,435
Equity risks(3)	**872**	1,336	525
Commodity and other risks(4)	**516**	669	425
Credit products and risks(5)	**(136)**	324	251
Total	**$ 8,892**	$ 8,905	$ 8,940

(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 issued 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 6 or 12 months based on the award type).

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, 2018	31,728,596	$ 57.30
Granted(1)	14,920,917	61.78
Canceled	(1,104,448)	60.45
Vested(2)	(15,350,350)	53.58
Unvested at December 31, 2019	**30,194,715**	**$ 61.30**

(1) The weighted-average fair value of the shares granted during 2018 and 2017 was $73.87 and $59.12, respectively.
(2) The weighted-average fair value of the shares vesting during 2019 was approximately $63.38 per share.

Total unrecognized compensation cost related to unvested stock awards was $538 million at December 31, 2019. The cost is expected to be recognized over a weighted-average period of 1.6 years.

Performance Share Units

Certain executive officers were awarded a target number of performance share units (PSUs) each February from 2016 to 2019, for performance in the year prior to the award date.

The PSUs granted in February 2016 were earned over a three-year performance period based on Citigroup's relative total shareholder return as compared to peers.

The PSUs granted in February 2017, 2018 and 2019 are earned over a three-year performance period, based half on return on tangible common equity performance in the last year of the three-year performance period and the remaining half on cumulative earnings per share over the three-year performance period.

For all award years, 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 Citigroup outperforms peer firms. The number of PSUs 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.

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	2019	2018	2017
Expected volatility	**25.33%**	24.93%	25.79%
Expected dividend yield	**2.67**	1.75	1.30

A summary of the performance share unit activity for 2019 is presented below:

Performance share units	Units	Weighted-average grant date fair value per unit
Outstanding, beginning of period	**1,768,362**	**$ 51.88**
Granted(1)	**560,031**	**72.83**
Canceled	**(194,782)**	**42.24**
Payments	**(641,611)**	**27.03**
Outstanding, end of period	**1,492,000**	**$ 71.69**

(1) The weighted-average grant date fair value per unit awarded in 2018 and 2017 was $83.24 and $59.22, respectively.

PSUs granted in 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.

The following table presents information with respect to stock option activity under Citigroup's stock option programs:

	2019			2018			2017		
	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	**762,225**	**$ 101.84**	**$ —**	1,138,813	$ 161.96	$ —	1,527,396	$ 131.78	$ —
Canceled	**(11,365)**	**40.80**	**—**	—	—	—	—	—	—
Expired	**(449,916)**	**142.30**	**—**	(376,588)	283.63	—	—	—	—
Exercised	**(134,294)**	**39.00**	**23.50**	—	—	—	(388,583)	43.35	15.67
Outstanding, end of period	**166,650**	**$ 47.42**	**$ 32.47**	762,225	$ 101.84	$ —	1,138,813	$ 161.96	$ —
Exercisable, end of period	**166,650**			762,225			1,138,813		

The following table summarizes information about stock options outstanding under Citigroup's stock option programs at December 31, 2019:

	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**
$41.54–$60.00	**166,650**	**1.4 years**	**$ 47.42**	**166,650**	**$ 47.42**
Total at December 31, 2019	**166,650**	**1.4 years**	**$ 47.42**	**166,650**	**$ 47.42**

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 or accrue 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 delivered to the participant 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, 2019, approximately 29.7 million shares of Citigroup common stock were authorized and available for grant under Citigroup's 2019 Stock Incentive Plan, the only plan from which equity awards are currently granted.

The 2019 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 2019, and for the first quarter of 2020, 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	**2019**	2018	2017
Charges for estimated awards to retirement-eligible employees	**$ 683**	$ 669	$ 659
Amortization of deferred cash awards, deferred cash stock units and performance stock units	**355**	202	354
Immediately vested stock award expense(1)	**82**	75	70
Amortization of restricted and deferred stock awards(2)	**404**	435	474
Other variable incentive compensation	**666**	640	694
Total	**$ 2,190**	$ 2,021	$ 2,251

(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, 2019. 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	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017	**2019**	2018	2017
Benefits earned during the year	**$ 1**	$ 1	$ 3	**$ 146**	$ 146	$ 153	**$ —**	$ —	$ —	**$ 8**	$ 9	$ 9
Interest cost on benefit obligation	**469**	514	533	**287**	292	295	**24**	26	26	**104**	102	101
Expected return on plan assets	**(821)**	(844)	(865)	**(281)**	(291)	(299)	**(18)**	(14)	(6)	**(84)**	(88)	(89)
Amortization of unrecognized:												
Prior service cost (benefit)	**2**	2	2	**(4)**	(4)	(3)	**—**	—	—	**(10)**	(10)	(10)
Net actuarial loss	**200**	165	173	**61**	53	61	**—**	(1)	—	**23**	29	35
Curtailment loss (gain)[(1)]	**1**	1	6	**(6)**	(1)	—	**—**	—	—	**—**	—	—
Settlement loss[(1)]	**—**	—	—	**6**	7	12	**—**	—	—	**—**	—	—
Total net (benefit) expense	**$ (148)**	$ (161)	$ (148)	**$ 209**	$ 202	$ 219	**$ 6**	$ 11	$ 20	**$ 41**	$ 42	$ 46

(1) 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 2019 or 2018.

The following table summarizes the actual Company contributions for the years ended December 31, 2019 and 2018, as well as estimated expected Company contributions for 2020. 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	2020	**2019**	2018	2020	**2019**	2018	2020	**2019**	2018	2020	**2019**	2018
Contributions made by the Company	$ —	**$ 425**	$ —	$ 111	**$ 111**	$ 140	$ —	**$ —**	$ 145	$ 4	**$ 221**	$ 3
Benefits paid directly by the Company	58	**56**	55	53	**39**	42	6	**4**	5	6	**4**	6

(1) Amounts reported for 2020 are expected amounts.
(2) The U.S. pension plans include benefits paid directly by the Company for the nonqualified pension plans.

Funded Status and *Accumulated Other Comprehensive Income (AOCI)*

The following table summarizes 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	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018
Change in projected benefit obligation								
Projected benefit obligation at beginning of year	**$ 12,655**	$ 14,040	**$ 7,149**	$ 7,433	**$ 662**	$ 699	**$ 1,159**	$ 1,261
Benefits earned during the year	**1**	1	**146**	146	**—**	—	**8**	9
Interest cost on benefit obligation	**469**	514	**287**	292	**24**	26	**104**	102
Plan amendments	**—**	—	**7**	7	**—**	—	**—**	—
Actuarial loss (gain)[1]	**1,263**	(1,056)	**861**	(99)	**46**	(1)	**140**	(123)
Benefits paid, net of participants' contributions and government subsidy[2]	**(936)**	(845)	**(304)**	(293)	**(40)**	(62)	**(72)**	(68)
Settlement gain[3]	**—**		**(84)**	(121)	**—**	—	**—**	—
Curtailment loss (gain)[3]	**1**	1	**(4)**	(1)	**—**	—	**—**	—
Foreign exchange impact and other	**—**	—	**47**	(215)	**—**	—	**45**	(22)
Projected benefit obligation at year end	**$ 13,453**	$ 12,655	**$ 8,105**	$ 7,149	**$ 692**	$ 662	**$ 1,384**	$ 1,159
Change in plan assets								
Plan assets at fair value at beginning of year	**$ 11,490**	$ 12,725	**$ 6,699**	$ 7,128	**$ 345**	$ 262	**$ 1,036**	$ 1,119
Actual return on plan assets[1]	**1,682**	(445)	**781**	(11)	**36**	(5)	**138**	(26)
Company contributions	**481**	55	**150**	182	**4**	150	**225**	9
Benefits paid, net of participants' contributions and government subsidy[2]	**(936)**	(845)	**(304)**	(293)	**(40)**	(62)	**(72)**	(68)
Settlement gain[3]	**—**	—	**(84)**	(121)	**—**	—	**—**	—
Foreign exchange impact and other	**—**	—	**314**	(186)	**—**	—	**(200)**	2
Plan assets at fair value at year end	**$ 12,717**	$ 11,490	**$ 7,556**	$ 6,699	**$ 345**	$ 345	**$ 1,127**	$ 1,036
Funded status of the plans								
Qualified plans[4]	**$ (23)**	$ (483)	**$ (549)**	$ (450)	**$ (347)**	$ (317)	**$ (257)**	$ (123)
Nonqualified plans[5]	**(713)**	(682)	**—**	—	**—**	—	**—**	—
Funded status of the plans at year end	**$ (736)**	$ (1,165)	**$ (549)**	$ (450)	**$ (347)**	$ (317)	**$ (257)**	$ (123)
Net amount recognized								
Qualified plans								
Benefit asset	**$ —**	$ —	**$ 808**	$ 806	**$ —**	$ —	**$ 57**	$ 175
Benefit liability	**(23)**	(483)	**(1,357)**	(1,256)	**(347)**	(317)	**(314)**	(298)
Qualified plans	**$ (23)**	$ (483)	**$ (549)**	$ (450)	**$ (347)**	$ (317)	**$ (257)**	$ (123)
Nonqualified plans	**(713)**	(682)	**—**	—	**—**	—	**—**	—
Net amount recognized on the balance sheet	**$ (736)**	$ (1,165)	**$ (549)**	$ (450)	**$ (347)**	$ (317)	**$ (257)**	$ (123)
Amounts recognized in *AOCI*								
Net transition obligation	**$ —**	$ —	**$ —**	$ (1)	**$ —**	$ —	**$ —**	$ —
Prior service (cost) benefit	**(12)**	(13)	**1**	12	**—**	—	**76**	83
Net actuarial (loss) gain	**(7,092)**	(6,892)	**(1,735)**	(1,420)	**24**	53	**(416)**	(340)
Net amount recognized in equity (pretax)	**$ (7,104)**	$ (6,905)	**$ (1,734)**	$ (1,409)	**$ 24**	$ 53	**$ (340)**	$ (257)
Accumulated benefit obligation at year end	**$ 13,447**	$ 12,646	**$ 7,618**	$ 6,720	**$ 692**	$ 662	**$ 1,384**	$ 1,159

(1) During 2019, the actuarial loss is primarily due to the decline in global discount rates and actual return on plan assets due to favorable asset returns.
(2) U.S. postretirement benefit plans were net of Employer Group Waiver Plan subsidy of $22 million and $15 million in 2019 and 2018, respectively.
(3) Curtailment and settlement (gains) losses relate to repositioning and divestiture activities.
(4) The U.S. qualified pension plan is fully funded under specified Employee Retirement Income Security Act (ERISA) funding rules as of January 1, 2020 and no minimum required funding is expected for 2020.
(5) The nonqualified plans of the Company are unfunded.

The following table shows the change in *AOCI* related to the Company's pension, postretirement and post employment plans:

In millions of dollars	**2019**	2018	2017
Beginning of year balance, net of tax[(1)(2)]	**$ (6,257)**	$ (6,183)	$ (5,164)
Actuarial assumptions changes and plan experience	**(2,300)**	1,288	(760)
Net asset gain (loss) due to difference between actual and expected returns	**1,427**	(1,732)	625
Net amortization	**274**	214	229
Prior service (cost) credit	**(7)**	(7)	(4)
Curtailment/settlement gain[(3)]	**1**	7	17
Foreign exchange impact and other	**(66)**	136	(93)
Impact of Tax Reform[(4)]	**—**	—	(1,020)
Change in deferred taxes, net	**119**	20	(13)
Change, net of tax	**$ (552)**	$ (74)	$ (1,019)
End of year balance, net of tax[(1)(2)]	**$ (6,809)**	$ (6,257)	$ (6,183)

(1) See Note 19 to the Consolidated Financial Statements for further discussion of net *AOCI* balance.
(2) Includes net-of-tax amounts for certain profit-sharing plans outside the U.S.
(3) Curtailment and settlement relate to repositioning and divestiture activities.
(4) In the fourth quarter of 2017, Citi adopted ASU 2018-02, which transferred these amounts from *AOCI* to *Retained earnings*. See Note 1 to the Consolidated Financial Statements.

At December 31, 2019 and 2018, the aggregate projected benefit obligation (PBO), the aggregate accumulated benefit obligation (ABO) and the aggregate fair value of plan assets are presented for all defined benefit pension plans with a PBO in excess of plan assets and for all defined benefit pension plans with an ABO in excess of plan assets as follows:

	PBO exceeds fair value of plan assets				**ABO exceeds fair value of plan assets**			
	U.S. plans[(1)]		**Non-U.S. plans**		**U.S. plans**[(1)]		**Non-U.S. plans**	
In millions of dollars	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018
Projected benefit obligation	**$ 13,453**	$ 12,655	**$ 4,445**	$ 3,904	**$ 13,453**	$ 12,655	**$ 2,748**	$ 3,718
Accumulated benefit obligation	**13,447**	12,646	**4,041**	3,528	**13,447**	12,646	**2,435**	3,387
Fair value of plan assets	**12,717**	11,490	**3,089**	2,648	**12,717**	11,490	**1,429**	2,478

(1) At December 31, 2019 and 2018, for both the U.S. qualified plan and nonqualified plans, the aggregate PBO and the aggregate ABO exceeded plan assets.

Plan Assumptions

The Company utilizes a number of assumptions to determine plan obligations and expenses. Changes in one or a combination of these assumptions will have an impact on the Company's pension and postretirement PBO, funded status and (benefit) expense. Changes in the plans' funded status resulting from changes in the PBO and fair value of plan assets will have a corresponding impact on *Accumulated other comprehensive income (loss)*.

The actuarial assumptions at the respective years ended December 31 in the table below are used to measure the year-end PBO and the net periodic (benefit) expense for the subsequent year (period). Since Citi's Significant Plans are measured on a quarterly basis, the year-end rates for those plans are used to calculate the net periodic (benefit) expense for the subsequent year's first quarter.

As a result of the quarterly measurement process, the net periodic (benefit) expense for the Significant Plans is calculated at each respective quarter end based on the preceding quarter-end rates (as shown below for the U.S. and non-U.S. pension and postretirement plans). The actuarial assumptions for All Other Plans are measured annually.

Certain assumptions used in determining pension and postretirement benefit obligations and net benefit expense for the Company's plans are shown in the following table:

At year end	**2019**	2018
Discount rate		
U.S. plans		
Qualified pension	**3.25%**	4.25%
Nonqualified pension	**3.25**	4.25
Postretirement	**3.15**	4.20
Non-U.S. pension plans		
Range[1]	**-0.10 to 11.30**	0.25 to 12.00
Weighted average	**3.65**	4.47
Non-U.S. postretirement plans		
Range	**0.90 to 9.10**	1.75 to 10.75
Weighted average	**7.76**	9.05
Future compensation increase rate[2]		
Non-U.S. pension plans		
Range	**1.50 to 11.50**	1.30 to 13.67
Weighted average	**3.17**	3.16
Expected return on assets		
U.S. plans		
Qualified pension	**6.70**	6.70
Postretirement[3]	**6.70/3.00**	6.70/3.00
Non-U.S. pension plans		
Range	**0.00 to 11.50**	1.00 to 11.50
Weighted average	**3.95**	4.30
Non-U.S. postretirement plans		
Range	**6.20 to 8.00**	8.00 to 9.20
Weighted average	**7.99**	8.01

(1) Due to substantial downward movement in yields, there were negative discount rates for plans with relatively short duration in major markets, such as the Eurozone and Switzerland.
(2) Not material for U.S. plans.
(3) In 2019 and 2018, the expected rate of return for the VEBA Trust was 3.00%.

During the year	**2019**	2018	2017
Discount rate			
U.S. plans			
Qualified pension	**4.25%/3.85%/ 3.45%/3.10%**	3.60%/3.95%/ 4.25%/4.30%	4.10%/4.05%/ 3.80%/3.75%
Nonqualified pension	**4.25/3.90/ 3.50/3.10**	3.60/3.95/ 4.25/4.30	4.00/3.95/ 3.75/3.65
Postretirement	**4.20/3.80/ 3.35/3.00**	3.50/3.90/ 4.20/4.20	3.90/3.85/ 3.60/3.55
Non-U.S. pension plans[1]			
Range[2]	**-0.05 to 12.00**	0.00 to 10.75	0.25 to 72.50
Weighted average	**4.47**	4.17	4.40
Non-U.S. postretirement plans[1]			
Range	**1.75 to 10.75**	1.75 to 10.10	1.75 to 11.05
Weighted average	**9.05**	8.10	8.27
Future compensation increase rate[3]			
Non-U.S. pension plans[1]			
Range	**1.30 to 13.67**	1.17 to 13.67	1.25 to 70.00
Weighted average	**3.16**	3.08	3.21
Expected return on assets			
U.S. plans			
Qualified pension[4]	**6.70**	6.80/6.70	6.80
Postretirement[4][5]	**6.70/3.00**	6.80/6.70/3.00	6.80
Non-U.S. pension plans[1]			
Range	**1.00 to 11.50**	0.00 to 11.60	1.00 to 11.50
Weighted average	**4.30**	4.52	4.55
Non-U.S. postretirement plans[1]			
Range	**8.00 to 9.20**	8.00 to 9.80	8.00 to 10.30
Weighted average	**8.01**	8.01	8.02

(1) Reflects rates utilized to determine the quarterly expense for Significant non-U.S. pension and postretirement plans.
(2) Due to substantial downward movement in yields, there were negative discount rates for plans with relatively short duration in major markets, such as the Eurozone and Switzerland.
(3) Not material for U.S. plans.
(4) The expected rate of return for the U.S. pension and postretirement plans was lowered from 6.80% to 6.70% effective in the second quarter of 2018 to reflect a change in target asset allocation.
(5) In 2017, the VEBA Trust was funded with an expected rate of return on assets of 3.00%.

Discount Rate

The discount rates for the U.S. pension and postretirement plans were selected by reference to a Citigroup-specific analysis using each plan's specific cash flows and compared with high-quality corporate bond indices for reasonableness. The discount rates for the non-U.S. pension and postretirement plans are selected by reference to high-quality corporate bond rates in countries that have developed corporate bond markets. However, where developed corporate bond markets do not exist, the discount rates are selected by reference to local government bond rates with a premium added to reflect the additional risk for corporate bonds in certain countries.

Effective December 31, 2019, the established rounding convention is to the nearest 5 bps for all countries.

Expected Rate of Return

The Company determines its assumptions for the expected rate of return on plan assets for its U.S. pension and postretirement plans using a "building block" approach, which focuses on ranges of anticipated rates of return for each asset class. A weighted average range of nominal rates is then determined based on target allocations to each asset class. Market performance over a number of earlier years is evaluated covering a wide range of economic conditions to determine whether there are sound reasons for projecting any past trends.

The Company considers the expected rate of return to be a long-term assessment of return expectations and does not anticipate changing this assumption unless there are significant changes in investment strategy or economic conditions. This contrasts with the selection of the discount rate and certain other assumptions, which are reconsidered annually (or quarterly for the Significant Plans) in accordance with GAAP.

The expected rate of return for the U.S. pension and postretirement plans was 6.70% at December 31, 2019 and 2018 and 6.80% at December 31, 2017. The expected return on assets reflects the expected annual appreciation of the plan assets and reduces the Company's annual pension expense. The expected return on assets is deducted from the sum of service cost, interest cost and other components of pension expense to arrive at the net pension (benefit) expense.

The following table shows the expected rates of return used in determining the Company's pension expense compared to the actual rate of return on plan assets during 2019, 2018 and 2017 for the U.S. pension and postretirement plans:

U.S. plans	**2019**	2018	2017
Expected rate of return			
U.S. pension and postretirement trust	**6.70%**	6.80%/6.70%	6.80%
VEBA trust[1]	**3.00**	3.00	3.00
Actual rate of return[2]			
U.S. pension and postretirement trust	**15.20**	-3.40	10.90
VEBA trust[1]	**1.91 to 2.76**	0.43 to 1.41	—

(1) In December 2017, the VEBA Trust was funded for postretirement benefits with an expected rate of return on assets of 3.00%.

(2) Actual rates of return are presented net of fees.

For the non-U.S. pension plans, pension expense for 2019 was reduced by the expected return of $281 million, compared with the actual return of $781 million. Pension expense for 2018 and 2017 was reduced by expected returns of $291 million and $299 million, respectively.

Mortality Tables

At December 31, 2019, the Company adopted the Private Retirement Plans (PRI-2012) mortality table and the Mortality Projection 2019 (MP-2019) projection table for the U.S. plans.

U.S. plans	**2019**[1]	2018[2]
Mortality		
Pension	PRI-2012/MP-2019	RP-2014/MP-2018
Postretirement	PRI-2012/MP-2019	RP-2014/MP-2018

(1) The PRI-2012 table is the white-collar PRI-2012 table. The MP-2019 projection scale is projected from 2012, with convergence to 0.75% ultimate rate of annual improvement by 2035.

(2) The RP-2014 table is the white-collar RP-2014 table. The MP-2018 projection scale is projected from 2006, with convergence to 0.75% ultimate rate of annual improvement by 2034.

Sensitivities of Certain Key Assumptions

The following tables summarize the effect on pension expense:

	Discount rate		
	One-percentage-point increase		
In millions of dollars	**2019**	2018	2017
U.S. plans	**$ 28**	$ 25	$ 29
Non-U.S. plans	**(19)**	(22)	(27)
	One-percentage-point decrease		
In millions of dollars	**2019**	2018	2017
U.S. plans	**$ (44)**	$ (37)	$ (44)
Non-U.S. plans	**32**	32	41

The U.S. Qualified Pension Plan was frozen in 2008, and as a result, most service cost has been eliminated. The pension expense for the U.S. Qualified Pension Plan is driven primarily by interest cost rather than by service cost. An increase in the discount rate generally increases pension expense.

For Non-U.S. Pension Plans that are not frozen (in countries such as Mexico, the U.K. and South Korea), there is more service cost. The pension expense for the Non-U.S. Plans is driven by both service cost and interest cost. An increase in the discount rate generally decreases pension expense due to the greater impact on service cost compared to interest cost.

Since the U.S. Qualified Pension Plan was frozen, most of the prospective service cost has been eliminated and the gain/loss amortization period was changed to the life expectancy for inactive participants. As a result, pension expense for the U.S. Qualified Pension Plan is driven more by interest costs than service costs, and an increase in the discount rate would increase pension expense, while a decrease in the discount rate would decrease pension expense.

The following tables summarize the effect on pension expense:

	Expected rate of return		
	One-percentage-point increase		
In millions of dollars	**2019**	2018	2017
U.S. plans	**$ (123)**	$ (126)	$ (127)
Non-U.S. plans	**(64)**	(64)	(64)
	One-percentage-point decrease		
In millions of dollars	**2019**	2018	2017
U.S. plans	**$ 123**	$ 126	$ 127
Non-U.S. plans	**64**	64	64

Health Care Cost Trend Rate

Assumed health care cost trend rates were as follows:

	2019	2018
Health care cost increase rate for U.S. plans		
Following year	**6.75%**	7.00%
Ultimate rate to which cost increase is assumed to decline	**5.00**	5.00
Year in which the ultimate rate is reached	**2027**	2027
Health care cost increase rate for Non-U.S. plans (weighted average)		
Following year	**6.85%**	6.90%
Ultimate rate to which cost increase is assumed to decline	**6.85**	6.90
Year in which the ultimate rate is reached	**2020**	2019

Interest Crediting Rate

The Company has cash balance plans and other plans with promised interest crediting rates. For these plans, the interest crediting rates are set in line with plan rules or country legislation and do not change with market conditions.

	Weighted average interest crediting rate		
At year end	**2019**	2018	2017
U.S. plans	**2.25%**	3.25%	2.60%
Non-U.S. plans	**1.61**	1.68	1.74

Plan Assets

Citigroup's pension and postretirement plans' asset allocations for the U.S. plans and the target allocations by asset category based on asset fair values, are as follows:

	Target asset allocation	U.S. pension assets at December 31,		U.S. postretirement assets at December 31,	
Asset category[1]	2020	**2019**	2018	**2019**	2018
Equity securities[2]	0–26%	**17%**	15%	**17%**	15%
Debt securities[3]	35–82	**58**	57	**58**	57
Real estate	0–7	**4**	5	**4**	5
Private equity	0–10	**3**	3	**3**	3
Other investments	0–30	**18**	20	**18**	20
Total		**100%**	100%	**100%**	100%

(1) Asset allocations for the U.S. plans are set by investment strategy, not by investment product. For example, private equities with an underlying investment in real estate are classified in the real estate asset category, not private equity.
(2) Equity securities in the U.S. pension and postretirement plans do not include any Citigroup common stock at the end of 2019 and 2018.
(3) The VEBA Trust for postretirement benefits are primarily invested in cash equivalents and debt securities in 2019 and 2018, respectively, and are not reflected in the table above.

Third-party investment managers and advisors provide their services to Citigroup's U.S. pension and postretirement plans. Assets are rebalanced as the Company's Pension Plan Investment Committee deems appropriate. Citigroup's investment strategy, with respect to its assets, is to maintain a globally diversified investment portfolio across several asset classes that, when combined with Citigroup's contributions to the plans, will maintain the plans' ability to meet all required benefit obligations.

Citigroup's pension and postretirement plans' weighted-average asset allocations for the non-U.S. plans and the actual ranges, and the weighted-average target allocations by asset category based on asset fair values, are as follows:

	Non-U.S. pension plans				
	Target asset allocation	Actual range at December 31,		Weighted-average at December 31,	
Asset category[1]	2020	**2019**	2018	**2019**	2018
Equity securities	0–100%	**0–100%**	0–66%	**13%**	13%
Debt securities	0–100	**0–100**	0–100	**80**	80
Real estate	0–15	**0–15**	0–12	**1**	1
Other investments	0–100	**0–100**	0–100	**6**	6
Total				**100%**	100%

(1) Similar to the U.S. plans, asset allocations for certain non-U.S. plans are set by investment strategy, not by investment product.

	Non-U.S. postretirement plans				
	Target asset allocation	Actual range at December 31,		Weighted-average at December 31,	
Asset category[1]	2020	**2019**	2018	**2019**	2018
Equity securities	0–38%	**0–31%**	0–35%	**27%**	35%
Debt securities	56–100	**66–100**	62–100	**71**	62
Other investments	0–6	**0–3**	0–3	**2**	3
Total				**100%**	100%

(1) Similar to the U.S. plans, asset allocations for certain non-U.S. plans are set by investment strategy, not by investment product.

Fair Value Disclosure

For information on fair value measurements, including descriptions of Levels 1, 2 and 3 of the fair value hierarchy and the valuation methodology utilized by the Company, see Notes 1 and 24 to the Consolidated Financial Statements. ASU 2015-07 removed the requirement to categorize within the fair value hierarchy investments for which fair value is measured using the NAV per share practical expedient.

Certain investments may transfer between the fair value hierarchy classifications during the year due to changes in valuation methodology and pricing sources.

Plan assets by detailed asset categories and the fair value hierarchy are as follows:

	U.S. pension and postretirement benefit plans[1]			
In millions of dollars	Fair value measurement at December 31, 2019			
Asset categories	**Level 1**	**Level 2**	**Level 3**	**Total**
U.S. equities	**$ 739**	**$ —**	**$ —**	**$ 739**
Non-U.S. equities	**553**	**—**	**—**	**553**
Mutual funds and other registered investment companies	**280**	**—**	**—**	**280**
Commingled funds	**—**	**1,410**	**—**	**1,410**
Debt securities	**1,534**	**4,046**	**—**	**5,580**
Annuity contracts	**—**	**—**	**1**	**1**
Derivatives	**10**	**245**	**—**	**255**
Other investments	**—**	**—**	**75**	**75**
Total investments	**$ 3,116**	**$ 5,701**	**$ 76**	**$ 8,893**
Cash and short-term investments	**$ 93**	**$ 1,080**	**$ —**	**$ 1,173**
Other investment liabilities	**(87)**	**(249)**	**—**	**(336)**
Net investments at fair value	**$ 3,122**	**$ 6,532**	**$ 76**	**$ 9,730**
Other investment receivables redeemed at NAV				**$ 22**
Securities valued at NAV				**3,310**
Total net assets				**$ 13,062**

(1) The investments of the U.S. pension and postretirement plans are commingled in one trust. At December 31, 2019, the allocable interests of the U.S. pension and postretirement plans were 98.0% and 2.0%, respectively. The investments of the VEBA Trust for postretirement benefits are reflected in the above table.

	U.S. pension and postretirement benefit plans[1]			
In millions of dollars	Fair value measurement at December 31, 2018			
Asset categories	Level 1	Level 2	Level 3	Total
U.S. equities	$ 625	$ —	$ —	$ 625
Non-U.S. equities	481	—	—	481
Mutual funds and other registered investment companies	215	—	—	215
Commingled funds	—	1,344	—	1,344
Debt securities	1,346	3,443	—	4,789
Annuity contracts	—	—	1	1
Derivatives	16	252	—	268
Other investments	—	—	127	127
Total investments	$ 2,683	$ 5,039	$ 128	$ 7,850
Cash and short-term investments	$ 93	$ 897	$ —	$ 990
Other investment liabilities	(100)	(254)	—	(354)
Net investments at fair value	$ 2,676	$ 5,682	$ 128	$ 8,486
Other investment receivables redeemed at NAV				$ 80
Securities valued at NAV				3,269
Total net assets				$ 11,835

(1) The investments of the U.S. pension and postretirement plans are commingled in one trust. At December 31, 2018, the allocable interests of the U.S. pension and postretirement plans were 98.0% and 2.0%, respectively. The investments of the VEBA Trust for postretirement benefits are reflected in the above table.

In millions of dollars	Non-U.S. pension and postretirement benefit plans — Fair value measurement at December 31, 2019			
Asset categories	**Level 1**	**Level 2**	**Level 3**	**Total**
U.S. equities	**$ 4**	**$ 12**	**$ —**	**$ 16**
Non-U.S. equities	**127**	**262**	**—**	**389**
Mutual funds and other registered investment companies	**3,223**	**63**	**—**	**3,286**
Commingled funds	**23**	**—**	**—**	**23**
Debt securities	**4,307**	**1,615**	**10**	**5,932**
Real estate	**—**	**3**	**1**	**4**
Annuity contracts	**—**	**—**	**5**	**5**
Derivatives	**—**	**1,590**	**—**	**1,590**
Other investments	**1**	**—**	**274**	**275**
Total investments	**$ 7,685**	**$ 3,545**	**$ 290**	**$ 11,520**
Cash and short-term investments	**$ 86**	**$ 3**	**$ —**	**$ 89**
Other investment liabilities	**(3)**	**(2,938)**	**—**	**(2,941)**
Net investments at fair value	**$ 7,768**	**$ 610**	**$ 290**	**$ 8,668**
Securities valued at NAV				**$ 15**
Total net assets				**$ 8,683**

In millions of dollars	Non-U.S. pension and postretirement benefit plans — Fair value measurement at December 31, 2018			
Asset categories	Level 1	Level 2	Level 3	Total
U.S. equities	$ 4	$ 9	$ —	$ 13
Non-U.S. equities	100	100	—	200
Mutual funds and other registered investment companies	2,887	63	—	2,950
Commingled funds	21	—	—	21
Debt securities	5,145	1,500	9	6,654
Real estate	—	3	1	4
Annuity contracts	—	1	10	11
Derivatives	—	156	—	156
Other investments	1	—	210	211
Total investments	$ 8,158	$ 1,832	$ 230	$ 10,220
Cash and short-term investments	$ 91	$ 3	$ —	$ 94
Other investment liabilities	(1)	(2,589)	—	(2,590)
Net investments at fair value	$ 8,248	$ (754)	$ 230	$ 7,724
Securities valued at NAV				$ 11
Total net assets				$ 7,735

Level 3 Rollforward

The reconciliations of the beginning and ending balances during the year for Level 3 assets are as follows:

In millions of dollars — **U.S. pension and postretirement benefit plans**

Asset categories	Beginning Level 3 fair value at Dec. 31, 2018	Realized (losses)	Unrealized gains	Purchases, sales and issuances	Transfers in and/or out of Level 3	Ending Level 3 fair value at Dec. 31, 2019
Annuity contracts	$ 1	$ —	$ —	$ —	$ —	**$ 1**
Other investments	127	(7)	12	(57)	—	**75**
Total investments	$ 128	$ (7)	$ 12	$ (57)	$ —	**$ 76**

In millions of dollars — **U.S. pension and postretirement benefit plans**

Asset categories	Beginning Level 3 fair value at Dec. 31, 2017	Realized (losses)	Unrealized (losses)	Purchases, sales and issuances	Transfers in and/or out of Level 3	Ending Level 3 fair value at Dec. 31, 2018
Annuity contracts	$ 1	$ —	$ —	$ —	$ —	$ 1
Other investments	148	(2)	(18)	(1)	—	127
Total investments	$ 149	$ (2)	$ (18)	$ (1)	$ —	$ 128

In millions of dollars — **Non-U.S. pension and postretirement benefit plans**

Asset categories	Beginning Level 3 fair value at Dec. 31, 2018	Unrealized gains	Purchases, sales and issuances	Transfers in and/or out of Level 3	Ending Level 3 fair value at Dec. 31, 2019
Debt securities	$ 9	$ 1	$ —	$ —	**$ 10**
Real estate	1	—	—	—	**1**
Annuity contracts	10	—	(5)	—	**5**
Other investments	210	7	57	—	**274**
Total investments	$ 230	$ 8	$ 52	$ —	**$ 290**

In millions of dollars — **Non-U.S. pension and postretirement benefit plans**

Asset categories	Beginning Level 3 fair value at Dec. 31, 2017	Unrealized (losses)	Purchases, sales and issuances	Transfers in and/or out of Level 3	Ending Level 3 fair value at Dec. 31, 2018
Non-U.S. equities	$ 1	$ —	$ —	$ (1)	$ —
Debt securities	7	(1)	3	—	9
Real estate	1	—	—	—	1
Annuity contracts	9	(1)	1	1	10
Other investments	214	(3)	(1)	—	210
Total investments	$ 232	$ (5)	$ 3	$ —	$ 230

Investment Strategy

The Company's global pension and postretirement funds' investment strategy is to invest in a prudent manner for the exclusive purpose of providing benefits to participants. The investment strategies are targeted to produce a total return that, when combined with the Company's contributions to the funds, will maintain the funds' ability to meet all required benefit obligations. Risk is controlled through diversification of asset types and investments in domestic and international equities, fixed income securities and cash and short-term investments. The target asset allocation in most locations outside the U.S. is primarily in equity and debt securities. These allocations may vary by geographic region and country depending on the nature of applicable obligations and various other regional considerations. The wide variation in the actual range of plan asset allocations for the funded non-U.S. plans is a result of differing local statutory requirements and economic conditions. For example, in certain countries local law requires that all pension plan assets must be invested in fixed income investments, government funds or local-country securities.

Significant Concentrations of Risk in Plan Assets

The assets of the Company's pension plans are diversified to limit the impact of any individual investment. The U.S. qualified pension plan is diversified across multiple asset classes, with publicly traded fixed income, hedge funds, publicly traded equity and real estate representing the most significant asset allocations. Investments in these four asset classes are further diversified across funds, managers, strategies, vintages, sectors and geographies, depending on the specific characteristics of each asset class. The pension assets for the Company's non-U.S. Significant Plans are primarily invested in publicly traded fixed income and publicly traded equity securities.

Oversight and Risk Management Practices

The framework for the Company's pension oversight process includes monitoring of retirement plans by plan fiduciaries and/or management at the global, regional or country level, as appropriate. Independent Risk Management contributes to the risk oversight and monitoring for the Company's U.S. qualified pension plan and non-U.S. Significant Pension Plans. Although the specific components of the oversight process are tailored to the requirements of each region, country and plan, the following elements are common to the Company's monitoring and risk management process:

- periodic asset/liability management studies and strategic asset allocation reviews;
- periodic monitoring of funding levels and funding ratios;
- periodic monitoring of compliance with asset allocation guidelines;
- periodic monitoring of asset class and/or investment manager performance against benchmarks; and
- periodic risk capital analysis and stress testing.

Estimated Future Benefit Payments

The Company expects to pay the following estimated benefit payments in future years:

	Pension plans		Postretirement benefit plans	
In millions of dollars	U.S. plans	Non-U.S. plans	U.S. plans	Non-U.S. plans
2020	$ 821	$ 476	$ 64	$ 75
2021	840	434	63	80
2022	851	464	61	85
2023	866	480	59	91
2024	873	495	57	97
2025–2029	4,282	2,651	244	567

Post Employment Plans

The Company sponsors U.S. post employment plans that provide income continuation and health and welfare benefits to certain eligible U.S. employees on long-term disability.

As of December 31, 2019 and 2018, the plans' funded status recognized in the Company's Consolidated Balance Sheet was $(38) million and $(32) million, respectively. The pretax amounts recognized in *AOCI* as of December 31, 2019 and 2018 were $(15) million and $(15) million, respectively.

The following table summarizes the components of net expense recognized in the Consolidated Statement of Income for the Company's U.S. post employment plans:

	Net expense		
In millions of dollars	**2019**	2018	2017
Service-related expense			
Interest cost on benefit obligation	**$ 2**	$ 2	$ 2
Expected return on plan assets	**(1)**	(1)	—
Amortization of unrecognized:			
Prior service cost	**—**	(23)	(31)
Net actuarial loss	**2**	2	2
Total service-related (benefit) expense	**$ 3**	$ (20)	$ (27)
Non-service-related expense (benefit)	**$ 6**	$ 2	$ 30
Total net expense (benefit)	**$ 9**	$ (18)	$ 3

The following table summarizes certain assumptions used in determining the post employment benefit obligations and net benefit expense for the Company's U.S. post employment plans:

	2019	2018
Discount rate	**2.90%**	3.95%
Expected return on assets	**3.00**	3.00
Health care cost increase rate		
Following year	**6.75**	7.00
Ultimate rate to which cost increase is assumed to decline	**5.00**	5.00
Year in which the ultimate rate is reached	**2027**	2027

Defined Contribution Plans

The Company sponsors defined contribution plans in the U.S. and in certain non-U.S. locations, all of which are administered in accordance with local laws. The most significant defined contribution plan is the Citi Retirement Savings Plan (formerly known as the Citigroup 401(k) Plan) sponsored by the Company in the U.S.

Under the Citi Retirement Savings Plan, eligible U.S. employees received matching contributions of up to 6% of their eligible compensation for 2019 and 2018, subject to statutory limits. In addition, for eligible employees whose eligible compensation is $100,000 or less, a fixed contribution of up to 2% of eligible compensation is provided. All Company contributions are invested according to participants' individual elections. The following tables summarize the Company contributions for the defined contribution plans:

	U.S. plans		
In millions of dollars	**2019**	2018	2017
Company contributions	**$ 404**	$ 396	$ 383

	Non-U.S. plans		
In millions of dollars	**2019**	2018	2017
Company contributions	**$ 281**	$ 283	$ 270

9. INCOME TAXES

Income Tax Provision

Details of the Company's income tax provision are presented below:

In millions of dollars	**2019**	2018	2017
Current			
Federal	**$ 365**	$ 834	$ 332
Non-U.S.	**4,352**	4,290	3,910
State	**323**	284	269
Total current income taxes	**$ 5,040**	$ 5,408	$ 4,511
Deferred			
Federal	**$ (907)**	$ (620)	$ 24,902
Non-U.S.	**10**	371	(377)
State	**287**	198	352
Total deferred income taxes	**$ (610)**	$ (51)	$ 24,877
Provision for income tax on continuing operations before noncontrolling interests[(1)]	**$ 4,430**	$ 5,357	$ 29,388
Provision (benefit) for income taxes on discontinued operations	**(27)**	(18)	7
Income tax expense (benefit) reported in stockholders' equity related to:			
FX translation	**(11)**	(263)	188
Investment securities	**648**	(346)	(149)
Employee stock plans	**(16)**	(2)	(4)
Cash flow hedges	**269**	(8)	(12)
Benefit plans	**(119)**	(20)	13
FVO DVA	**(337)**	302	(250)
Excluded fair value hedges	**8**	(17)	—
Retained earnings[(2)]	**46**	(305)	(295)
Income taxes before noncontrolling interests	**$ 4,891**	$ 4,680	$ 28,886

(1) Includes the tax on realized investment gains and other-than-temporary-impairment losses resulting in a provision (benefit) of $373 million and $(9) million in 2019, $104 million and $(32) million in 2018 and $272 million and $(22) million in 2017, respectively.
(2) 2019 reflects the tax effect of the accounting change for ASU 2016-02. 2018 reflects the tax effect of the accounting change for ASU 2016-16 and the tax effect of the accounting change for ASU 2018-03, to report the net unrealized gains on former AFS equity securities. 2017 reflects the tax effect of the accounting change for ASU 2017-08. See Note 1 to the Consolidated Financial Statements.

Tax Rate

The reconciliation of the federal statutory income tax rate to the Company's effective income tax rate applicable to income from continuing operations (before noncontrolling interests and the cumulative effect of accounting changes) for each of the periods indicated is as follows:

	2019	2018	2017
Federal statutory rate	**21.0 %**	21.0 %	35.0 %
State income taxes, net of federal benefit	**1.9**	1.8	1.1
Non-U.S. income tax rate differential	**1.3**	5.3	(1.6)
Effect of tax law changes[(1)]	**(0.5)**	(0.6)	99.7
Basis difference in affiliates	**(0.1)**	(2.4)	(2.1)
Tax advantaged investments	**(2.3)**	(2.0)	(2.2)
Valuation allowance releases[(2)]	**(3.0)**	—	—
Other, net	**0.2**	(0.3)	(0.8)
Effective income tax rate	**18.5 %**	22.8 %	129.1 %

(1) 2018 includes one-time Tax Reform benefits of $94 million for amounts that were considered provisional pursuant to SAB 118. 2017 includes the one-time $22,594 million charge for Tax Reform.
(2) See the Deferred Tax Assets section below for a description of the components.

As set forth in the table above, Citi's effective tax rate for 2019 was 18.5%. The rate is lower than the 22.8% reported in 2018, primarily due to the general basket FTC valuation allowance release.

Deferred Income Taxes

Deferred income taxes at December 31 related to the following:

In millions of dollars	**2019**	2018
Deferred tax assets		
Credit loss deduction	**$ 3,809**	$ 3,419
Deferred compensation and employee benefits	**2,224**	1,975
Repositioning and settlement reserves	**345**	428
U.S. tax on non-U.S. earnings	**1,030**	2,080
Investment and loan basis differences	**2,727**	4,891
Tax credit and net operating loss carry-forwards	**19,711**	20,759
Fixed assets and leases	**2,607**	1,006
Other deferred tax assets	**2,996**	2,385
Gross deferred tax assets	**$ 35,449**	$ 36,943
Valuation allowance	**$ 6,476**	$ 9,258
Deferred tax assets after valuation allowance	**$ 28,973**	$ 27,685
Deferred tax liabilities		
Intangibles and leases	**$ (2,640)**	$ (1,284)
Debt issuances	**(201)**	(530)
Non-U.S. withholding taxes	**(974)**	(1,040)
Interest-related items	**(587)**	(594)
Other deferred tax liabilities	**(1,477)**	(1,334)
Gross deferred tax liabilities	**$ (5,879)**	$ (4,782)
Net deferred tax assets	**$ 23,094**	$ 22,903

Unrecognized Tax Benefits

The following is a rollforward of the Company's unrecognized tax benefits:

In millions of dollars	**2019**	2018	2017
Total unrecognized tax benefits at January 1	**$ 607**	$ 1,013	$ 1,092
Net amount of increases for current year's tax positions	**50**	40	43
Gross amount of increases for prior years' tax positions	**151**	46	324
Gross amount of decreases for prior years' tax positions	**(44)**	(174)	(246)
Amounts of decreases relating to settlements	**(21)**	(283)	(199)
Reductions due to lapse of statutes of limitation	**(23)**	(23)	(11)
Foreign exchange, acquisitions and dispositions	**1**	(12)	10
Total unrecognized tax benefits at December 31	**$ 721**	$ 607	$ 1,013

The total amounts of unrecognized tax benefits at December 31, 2019, 2018 and 2017 that, if recognized, would affect Citi's tax expense are $0.6 billion, $0.4 billion and $0.8 billion, respectively. The remaining uncertain tax positions have offsetting amounts in other jurisdictions or are temporary differences.

Interest and penalties (not included in "unrecognized tax benefits" above) are a component of *Provision for income taxes*.

	2019		2018		2017	
In millions of dollars	**Pretax**	**Net of tax**	Pretax	Net of tax	Pretax	Net of tax
Total interest and penalties on the Consolidated Balance Sheet at January 1	**$ 103**	**$ 85**	$ 121	$ 101	$ 260	$ 164
Total interest and penalties in the Consolidated Statement of Income	**(4)**	**(4)**	6	6	5	21
Total interest and penalties on the Consolidated Balance Sheet at December 31[(1)]	**100**	**82**	103	85	121	101

(1) Includes $3 million, $2 million and $3 million for non-U.S. penalties in 2019, 2018 and 2017. Also includes $1 million, $1 million and $3 million for state penalties in 2019, 2018 and 2017.

As of December 31, 2019, Citi was under audit by the Internal Revenue Service and other major taxing jurisdictions around the world. It is thus reasonably possible that significant changes in the gross balance of unrecognized tax benefits may occur within the next 12 months, although Citi does not expect such audits to result in amounts that would cause a significant change to its effective tax rate.

The following are the major tax jurisdictions in which the Company and its affiliates operate and the earliest tax year subject to examination:

Jurisdiction	**Tax year**
United States	2016
Mexico	2014
New York State and City	2009
United Kingdom	2015
India	2016
Singapore	2011
Hong Kong	2013
Ireland	2015

Non-U.S. Earnings

Non-U.S. pretax earnings approximated $16.7 billion in 2019, $16.1 billion in 2018 and $13.7 billion in 2017. As a U.S. corporation, Citigroup and its U.S. subsidiaries are currently subject to U.S. taxation on all non-U.S. pretax earnings of non-U.S. branches. Beginning in 2018, there is a separate foreign tax credit (FTC) basket for branches. Also, dividends from a non-U.S. subsidiary or affiliate are effectively exempt from U.S. taxation. The Company provides income taxes on the book over tax basis differences of non-U.S. subsidiaries except to the extent that such differences are indefinitely reinvested outside the U.S.

At December 31, 2019, $10.9 billion of basis differences of non-U.S. entities was indefinitely invested compared to $15.5 billion at December 31, 2018. At the existing tax rates, additional taxes (net of U.S. FTCs) of $4.1 billion would have to be provided if such assertions were reversed. The decrease of $4.6 billion in basis differences from the prior year end was primarily due to a tax election to treat a contiguous country affiliate as a branch rather than a subsidiary.

Income taxes are not provided for the Company's "savings bank base year bad debt reserves" that arose before 1988, because under current U.S. tax rules, such taxes will become payable only to the extent that such amounts are distributed in excess of limits prescribed by federal law. At December 31, 2019, the amount of the base year reserves totaled approximately $358 million (subject to a tax of $75 million).

Deferred Tax Assets

As of December 31, 2019, Citi had a valuation allowance of $6.5 billion, composed of valuation allowances of $4.6 billion on its FTC carry-forwards, $0.8 billion on its U.S. residual DTA related to its non-U.S. branches, $1.0 billion on local non-U.S. DTAs and $0.1 billion on state net operating loss carry-forwards. The valuation allowance against FTCs results from the impact of the lower tax rate and the new separate FTC basket for non-U.S. branches. The absolute amount of Citi's post-Tax Reform-related valuation allowances may change in future years. First, the separate FTC basket for non-U.S. branches may result in additional DTAs (for FTCs) requiring a valuation allowance, given that the local tax rate for these branches exceeds on average the U.S. tax rate of 21%, offset by expirations of carry-forwards. The valuation allowance for the branch basket FTCs was reduced from $4.4 billion to $3.5 billion, primarily as a result of the expiration of the 2009 FTC carry-forward.

Second, in Citi's general basket for FTCs, changes in the forecasted amount of income in U.S. locations derived from sources outside the U.S., as well as actions that Citi may be able to take to enhance such income, in addition to tax examination changes from prior years, could alter the amount of valuation allowance that is needed against such FTCs. The valuation allowance for the general basket decreased from $1.6 billion to $1.1 billion. The decrease consists of the following items. Citi committed to a plan to move a financing business involving non-U.S. clients and its associated funding to the U.S. The incremental foreign source income generated by this action over time will more-likely-than-not enable usage of FTC carry-forwards of $0.2 billion. In addition, Citi committed to a plan as part of the Company's liquidity management program, to increase its ownership of certain types of non-U.S. securities and to hold such securities in its U.S. operations. The incremental foreign source income generated by this action will more-likely-than-not enable the usage of FTC carry-forwards of another $0.2 billion. The remainder of the decrease in the valuation allowance in the general basket was the result of other increases in foreign source income of $0.3 billion (of which $0.2 billion is considered discrete and $0.1 billion is related to changes in 2019 foreign source income), partially offset by an increase of $0.2 billion relating to prior years' tax return adjustments that increased FTCs and the corresponding valuation allowance. The valuation allowance for U.S. residual DTA related to its non-U.S. branches decreased from $1.7 billion to $0.8 billion primarily due to a tax election to convert a contiguous country subsidiary into a branch, which resulted in $0.9 billion of U.S. DTLs offsetting non-U.S local DTAs. In addition, the non-U.S. local valuation allowance was reduced from $1.5 billion to $1.0 billion, primarily due to an expiration of NOL carry-forwards in a non-U.S. jurisdiction. The following table summarizes Citi's DTAs:

In billions of dollars

Jurisdiction/component(1)	DTAs balance December 31, 2019	DTAs balance December 31, 2018
U.S. federal(2)		
Net operating losses (NOLs)(3)	**$ 2.8**	$ 2.6
Foreign tax credits (FTCs)	**6.3**	6.8
General business credits (GBCs)	**2.5**	1.0
Future tax deductions and credits	**6.2**	6.7
Total U.S. federal	**$ 17.8**	$ 17.1
State and local		
New York NOLs	**$ 1.7**	$ 2.0
Other state NOLs	**0.2**	0.2
Future tax deductions	**1.3**	1.4
Total state and local	**$ 3.2**	$ 3.6
Non-U.S.		
NOLs	**$ 0.5**	$ 0.6
Future tax deductions	**1.6**	1.6
Total non-U.S.	**$ 2.1**	$ 2.2
Total	**$ 23.1**	$ 22.9

(1) All amounts are net of valuation allowances.
(2) Included in the net U.S. federal DTAs of $17.8 billion as of December 31, 2019 were deferred tax liabilities of $3.4 billion that will reverse in the relevant carry-forward period and may be used to support the DTAs.
(3) Consists of non-consolidated tax return NOL carry-forwards that are eventually expected to be utilized in Citigroup's consolidated tax return.

The following table summarizes the amounts of tax carry-forwards and their expiration dates:

In billions of dollars

Year of expiration	December 31, 2019	December 31, 2018
U.S. tax return general basket foreign tax credit carry-forwards[1]		
2020	**$ 0.9**	$ 2.0
2021	**1.1**	1.1
2022	**2.4**	2.4
2023	**0.4**	0.4
2025	**1.4**	1.4
2027	**1.2**	1.1
Total U.S. tax return general basket foreign tax credit carry-forwards	**$ 7.4**	$ 8.4
U.S. tax return branch basket foreign tax credit carry-forwards[1]		
2019	**$ —**	$ 0.9
2020	**0.7**	0.6
2021	**0.6**	0.7
2022	**1.0**	0.9
2028	**0.9**	1.3
2029	**0.3**	—
Total U.S. tax return branch basket foreign tax credit carry-forwards	**$ 3.5**	$ 4.4
U.S. tax return general business credit carry-forwards		
2033	**$ 0.3**	$ —
2034	**0.2**	—
2035	**0.2**	—
2036	**0.1**	0.1
2037	**0.5**	0.4
2038	**0.5**	0.5
2039	**0.7**	—
Total U.S. tax return general business credit carry-forwards	**$ 2.5**	$ 1.0
U.S. subsidiary separate federal NOL carry-forwards		
2027	**$ 0.1**	$ 0.2
2028	**0.1**	0.1
2030	**0.3**	0.3
2032	**—**	0.1
2033	**1.6**	1.6
2034	**2.0**	2.1
2035	**3.3**	3.3
2036	**2.1**	2.1
2037	**1.0**	1.0
Unlimited carry-forward period	**3.0**	1.7
Total U.S. subsidiary separate federal NOL carry-forwards[2]	**$ 13.5**	$ 12.5
New York State NOL carry-forwards[2]		
2034	**$ 9.9**	$ 11.7
New York City NOL carry-forwards[2]		
2034	**$ 10.0**	$ 11.5
Non-U.S. NOL carry-forwards[1]		
Various	**$ 1.5**	$ 2.0

The time remaining for utilization of the FTC component has shortened, given the passage of time. Although realization is not assured, Citi believes that the realization of the recognized net DTAs of $23.1 billion at December 31, 2019 is more-likely-than-not, based upon expectations as to future taxable income in the jurisdictions in which the DTAs arise and consideration of available tax planning strategies (as defined in ASC 740, *Income Taxes*).

Citi believes the U.S. federal and New York State and City NOL carry-forward period of 20 years provides enough time to fully utilize the DTAs pertaining to the existing NOL carry-forwards. This is due to Citi's forecast of sufficient U.S. taxable income and the fact that New York State and City continue to tax Citi's non-U.S. income.

With respect to the FTCs component of the DTAs, the carry-forward period is 10 years. Utilization of FTCs in any year is generally limited to 21% of foreign source taxable income in that year. However, overall domestic losses that Citi has incurred of approximately $39 billion as of December 31, 2019 are allowed to be reclassified as foreign source income to the extent of 50%–100% (at taxpayer's election) of domestic source income produced in subsequent years. Such resulting foreign source income would substantially cover the FTC carry-forwards after valuation allowance. As noted in the tables above, Citi's FTC carry-forwards were $6.3 billion ($10.9 billion before valuation allowance) as of December 31, 2019, compared to $6.8 billion as of December 31, 2018. Citi believes that it will generate sufficient U.S. taxable income within the 10-year carry-forward period to be able to utilize the net FTCs after the valuation allowance, after considering any FTCs produced in the tax return for such period, which must be used prior to any carry-forward utilization.

(1) Before valuation allowance.
(2) Pretax.

10. EARNINGS PER SHARE

The following table reconciles the income and share data used in the basic and diluted earnings per share (EPS) computations:

In millions of dollars, except per share amounts	**2019**	2018	2017
Earnings per common share			
Income from continuing operations before attribution of noncontrolling interests	**$ 19,471**	$ 18,088	$ (6,627)
Less: Noncontrolling interests from continuing operations	**66**	35	60
Net income from continuing operations (for EPS purposes)	**$ 19,405**	$ 18,053	$ (6,687)
Loss from discontinued operations, net of taxes	**(4)**	(8)	(111)
Citigroup's net income	**$ 19,401**	$ 18,045	$ (6,798)
Less: Preferred dividends[1]	**1,109**	1,174	1,213
Net income available to common shareholders	**$ 18,292**	$ 16,871	$ (8,011)
Less: Dividends and undistributed earnings allocated to employee restricted and deferred shares with rights to dividends, applicable to basic EPS	**121**	200	37
Net income allocated to common shareholders for basic EPS	**$ 18,171**	$ 16,671	$ (8,048)
Weighted-average common shares outstanding applicable to basic EPS *(in millions)*	**2,249.2**	2,493.3	2,698.5
Basic earnings per share[2]			
Income from continuing operations	**$ 8.08**	$ 6.69	$ (2.94)
Discontinued operations	**—**	—	(0.04)
Net income per share—basic	**$ 8.08**	$ 6.69	$ (2.98)
Diluted earnings per share			
Net income allocated to common shareholders for basic EPS	**$ 18,171**	$ 16,671	$ (8,048)
Add back: Dividends allocated to employee restricted and deferred shares with rights to dividends that are forfeitable	**33**	—	—
Net income allocated to common shareholders for diluted EPS	**$ 18,204**	$ 16,671	$ (8,048)
Weighted-average common shares outstanding applicable to basic EPS *(in millions)*	**$ 2,249.2**	$ 2,493.3	$ 2,698.5
Effect of dilutive securities			
Options[3]	**0.1**	0.1	—
Other employee plans	**16.0**	1.4	—
Adjusted weighted-average common shares outstanding applicable to diluted EPS *(in millions)*[4]	**2,265.3**	2,494.8	2,698.5
Diluted earnings per share[2]			
Income from continuing operations	**$ 8.04**	$ 6.69	$ (2.94)
Discontinued operations	**—**	—	(0.04)
Net income per share—diluted	**$ 8.04**	$ 6.68	$ (2.98)

(1) See Note 20 to the Consolidated Financial Statements for the potential future impact of preferred stock dividends.
(2) Due to rounding, earnings per share on continuing operations and discontinued operations may not sum to earnings per share on net income.
(3) During 2019, no significant options to purchase shares of common stock were outstanding. During 2018 and 2017, weighted-average options to purchase 0.5 million and 0.8 million shares of common stock, respectively, were outstanding but not included in the computation of earnings per share because the weighted-average exercise prices of $145.69 and $204.80 per share, respectively, were anti-dilutive.
(4) Due to rounding, common shares outstanding applicable to basic EPS and the effect of dilutive securities may not sum to common shares outstanding applicable to diluted EPS.

11. SECURITIES BORROWED, LOANED AND SUBJECT TO REPURCHASE AGREEMENTS

Securities borrowed and purchased under agreements to resell, at their respective carrying values, consisted of the following:

In millions of dollars		**December 31, 2019**		December 31, 2018
Securities purchased under agreements to resell	**$**	**169,874**	$	159,364
Deposits paid for securities borrowed		**81,448**		111,320
Total(1)	**$**	**251,322**	$	270,684

Securities loaned and sold under agreements to repurchase, at their respective carrying values, consisted of the following:

In millions of dollars		**December 31, 2019**		December 31, 2018
Securities sold under agreements to repurchase	**$**	**155,164**	$	166,090
Deposits received for securities loaned		**11,175**		11,678
Total(1)	**$**	**166,339**	$	177,768

(1) The above tables do not include securities-for-securities lending transactions of $6.3 billion and $15.9 billion at December 31, 2019 and 2018, respectively, where the Company acts as lender and receives securities that can be sold or pledged as collateral. In these transactions, the Company recognizes the securities received at fair value within *Other assets* and the obligation to return those securities as a liability within *Brokerage payables*.

The resale and repurchase agreements represent collateralized financing transactions. Citi executes these transactions primarily through its broker-dealer subsidiaries to facilitate customer matched-book activity and to efficiently fund a portion of Citi's trading inventory. Transactions executed by Citi's bank subsidiaries primarily facilitate customer financing activity.

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. Citi manages the risks in its collateralized financing transactions by conducting daily stress tests to account for changes in capacity, tenors, haircut, collateral profile and client actions. In addition, Citi maintains counterparty diversification by establishing concentration triggers and assessing counterparty reliability and stability under stress.

It is the Company's policy to take possession of the underlying collateral, monitor its market value relative to the amounts due under the agreements and, when necessary, require prompt transfer of additional collateral in order to maintain contractual margin protection. For resale and repurchase agreements, when necessary, the Company posts additional collateral in order to maintain contractual margin protection.

Collateral typically consists of government and government-agency securities, corporate and municipal bonds, equities and mortgage- and other asset-backed securities.

The resale and repurchase agreements are generally documented under industry standard agreements that allow the prompt close-out of all transactions (including the liquidation of securities held) and the offsetting of obligations to return cash or securities by the non-defaulting party, following a payment default or other type of default under the relevant master agreement. Events of default generally include (i) failure to deliver cash or securities as required under the transaction, (ii) failure to provide or return cash or securities as used for margining purposes, (iii) breach of representation, (iv) cross-default to another transaction entered into among the parties, or, in some cases, their affiliates and (v) a repudiation of obligations under the agreement. The counterparty that receives the securities in these transactions is generally unrestricted in its use of the securities, with the exception of transactions executed on a tri-party basis, where the collateral is maintained by a custodian and operational limitations may restrict its use of the securities.

A substantial portion of the resale and repurchase agreements is recorded at fair value, as described in Notes 24 and 25 to the Consolidated Financial Statements. The remaining portion is carried at the amount of cash initially advanced or received, plus accrued interest, as specified in the respective agreements.

The securities borrowing and lending agreements also represent collateralized financing transactions similar to the resale and repurchase agreements. Collateral typically consists of government and government-agency securities and corporate debt and equity securities.

Similar to the resale and repurchase agreements, securities borrowing and lending agreements are generally documented under industry standard agreements that allow the prompt close-out of all transactions (including the liquidation of securities held) and the offsetting of obligations to return cash or securities by the non-defaulting party, following a payment default or other default by the other party under the relevant master agreement. Events of default and rights to use securities under the securities borrowing and lending agreements are similar to the resale and repurchase agreements referenced above.

A substantial portion of securities borrowing and lending agreements is recorded at the amount of cash advanced or received. The remaining portion is recorded at fair value as the Company elected the fair value option for certain securities borrowed and loaned portfolios, as described in Note 25 to the Consolidated Financial Statements. With respect to securities loaned, the Company receives cash collateral in an amount generally in excess of the market value of the securities loaned. The Company monitors the market value of securities borrowed and securities loaned on a daily basis and obtains or posts additional collateral in order to maintain contractual margin protection.

The enforceability of offsetting rights incorporated in the master netting agreements for resale and repurchase agreements, and securities borrowing and lending agreements, is evidenced to the extent that (i) a supportive legal opinion has been obtained from counsel of recognized standing that provides the requisite level of certainty regarding the enforceability of these agreements and (ii) the exercise of rights by the non-defaulting party to terminate and close out transactions on a net basis under these agreements will not be stayed or avoided under applicable law upon an event of default including bankruptcy, insolvency or similar proceeding.

A legal opinion may not have been sought or obtained for certain jurisdictions where local law is silent or sufficiently ambiguous to determine the enforceability of offsetting rights or where adverse case law or conflicting regulation may cast doubt on the enforceability of such rights. In some jurisdictions and for some counterparty types, the insolvency law for a particular counterparty type may be nonexistent or unclear as overlapping regimes may exist. For example, this may be the case for certain sovereigns, municipalities, central banks and U.S. pension plans.

The following tables present the gross and net resale and repurchase agreements and securities borrowing and lending agreements and the related offsetting amounts permitted under ASC 210-20-45. The tables also include amounts related to financial instruments that are not permitted to be offset under ASC 210-20-45, but would be eligible for offsetting to the extent that an event of default has occurred and a legal opinion supporting enforceability of the offsetting rights has been obtained. Remaining exposures continue to be secured by financial collateral, but the Company may not have sought or been able to obtain a legal opinion evidencing enforceability of the offsetting right.

	As of December 31, 2019				
In millions of dollars	**Gross amounts of recognized assets**	**Gross amounts offset on the Consolidated Balance Sheet(1)**	**Net amounts of assets included on the Consolidated Balance Sheet**	**Amounts not offset on the Consolidated Balance Sheet but eligible for offsetting upon counterparty default(2)**	**Net amounts(3)**
Securities purchased under agreements to resell	**$ 281,274**	**$ 111,400**	**$ 169,874**	**$ 134,150**	**$ 35,724**
Deposits paid for securities borrowed	**90,047**	**8,599**	**81,448**	**27,067**	**54,381**
Total	**$ 371,321**	**$ 119,999**	**$ 251,322**	**$ 161,217**	**$ 90,105**

In millions of dollars	**Gross amounts of recognized liabilities**	**Gross amounts offset on the Consolidated Balance Sheet(1)**	**Net amounts of liabilities included on the Consolidated Balance Sheet**	**Amounts not offset on the Consolidated Balance Sheet but eligible for offsetting upon counterparty default(2)**	**Net amounts(3)**
Securities sold under agreements to repurchase	**$ 266,564**	**$ 111,400**	**$ 155,164**	**$ 91,034**	**$ 64,130**
Deposits received for securities loaned	**19,774**	**8,599**	**11,175**	**3,138**	**8,037**
Total	**$ 286,338**	**$ 119,999**	**$ 166,339**	**$ 94,172**	**$ 72,167**

	As of December 31, 2018				
In millions of dollars	Gross amounts of recognized assets	Gross amounts offset on the Consolidated Balance Sheet(1)	Net amounts of assets included on the Consolidated Balance Sheet	Amounts not offset on the Consolidated Balance Sheet but eligible for offsetting upon counterparty default(2)	Net amounts(3)
Securities purchased under agreements to resell	$ 246,788	$ 87,424	$ 159,364	$ 124,557	$ 34,807
Deposits paid for securities borrowed	111,320	—	111,320	35,766	75,554
Total	$ 358,108	$ 87,424	$ 270,684	$ 160,323	$ 110,361

In millions of dollars	Gross amounts of recognized liabilities	Gross amounts offset on the Consolidated Balance Sheet(1)	Net amounts of liabilities included on the Consolidated Balance Sheet	Amounts not offset on the Consolidated Balance Sheet but eligible for offsetting upon counterparty default(2)	Net amounts(3)
Securities sold under agreements to repurchase	$ 253,514	$ 87,424	$ 166,090	$ 82,823	$ 83,267
Deposits received for securities loaned	11,678	—	11,678	3,415	8,263

Total	$ 265,192	$ 87,424	$ 177,768	$ 86,238	$ 91,530

(1) Includes financial instruments subject to enforceable master netting agreements that are permitted to be offset under ASC 210-20-45.
(2) Includes financial instruments subject to enforceable master netting agreements that are not permitted to be offset under ASC 210-20-45, but would be eligible for offsetting to the extent that an event of default has occurred and a legal opinion supporting enforceability of the offsetting right has been obtained.
(3) Remaining exposures continue to be secured by financial collateral, but the Company may not have sought or been able to obtain a legal opinion evidencing enforceability of the offsetting right.

The following tables present the gross amounts of liabilities associated with repurchase agreements and securities lending agreements by remaining contractual maturity:

	As of December 31, 2019				
In millions of dollars	**Open and overnight**	**Up to 30 days**	**31–90 days**	**Greater than 90 days**	**Total**
Securities sold under agreements to repurchase	**$ 108,534**	**$ 82,749**	**$ 35,108**	**$ 40,173**	**$ 266,564**
Deposits received for securities loaned	**15,758**	**208**	**1,789**	**2,019**	**19,774**
Total	**$ 124,292**	**$ 82,957**	**$ 36,897**	**$ 42,192**	**$ 286,338**

	As of December 31, 2018				
In millions of dollars	Open and overnight	Up to 30 days	31–90 days	Greater than 90 days	Total
Securities sold under agreements to repurchase	$ 108,405	$ 70,850	$ 29,898	$ 44,361	$ 253,514
Deposits received for securities loaned	6,296	774	2,626	1,982	11,678
Total	$ 114,701	$ 71,624	$ 32,524	$ 46,343	$ 265,192

The following tables present the gross amounts of liabilities associated with repurchase agreements and securities lending agreements by class of underlying collateral:

	As of December 31, 2019		
In millions of dollars	**Repurchase agreements**	**Securities lending agreements**	**Total**
U.S. Treasury and federal agency securities	**$ 100,781**	**$ 27**	**$ 100,808**
State and municipal securities	**1,938**	**5**	**1,943**
Foreign government securities	**95,880**	**272**	**96,152**
Corporate bonds	**18,761**	**249**	**19,010**
Equity securities	**12,010**	**19,069**	**31,079**
Mortgage-backed securities	**28,458**	**—**	**28,458**
Asset-backed securities	**4,873**	**—**	**4,873**
Other	**3,863**	**152**	**4,015**
Total	**$ 266,564**	**$ 19,774**	**$ 286,338**

	As of December 31, 2018		
In millions of dollars	Repurchase agreements	Securities lending agreements	Total
U.S. Treasury and federal agency securities	$ 86,785	$ 41	$ 86,826
State and municipal securities	2,605	—	2,605
Foreign government securities	99,131	179	99,310
Corporate bonds	21,719	749	22,468
Equity securities	12,920	10,664	23,584
Mortgage-backed securities	19,421	—	19,421
Asset-backed securities	6,207	—	6,207
Other	4,726	45	4,771
Total	$ 253,514	$ 11,678	$ 265,192

12. BROKERAGE RECEIVABLES AND BROKERAGE PAYABLES

The Company has receivables and payables for financial instruments sold to and purchased from brokers, dealers and customers, which arise in the ordinary course of business. Citi is exposed to risk of loss from the inability of brokers, dealers or customers to pay for purchases or to deliver the financial instruments sold, in which case Citi would have to sell or purchase the financial instruments at prevailing market prices. Credit risk is reduced to the extent that an exchange or clearing organization acts as a counterparty to the transaction and replaces the broker, dealer or customer in question.

Citi seeks to protect itself from the risks associated with customer activities by requiring customers to maintain margin collateral in compliance with regulatory and internal guidelines. Margin levels are monitored daily, and customers deposit additional collateral as required. Where customers cannot meet collateral requirements, Citi may liquidate sufficient underlying financial instruments to bring the customer into compliance with the required margin level.

Exposure to credit risk is impacted by market volatility, which may impair the ability of clients to satisfy their obligations to Citi. Credit limits are established and closely monitored for customers and for brokers and dealers engaged in forwards, futures and other transactions deemed to be credit sensitive.

Brokerage receivables and *Brokerage payables* consisted of the following:

	December 31,	
In millions of dollars	**2019**	2018
Receivables from customers	**$ 15,912**	$ 14,415
Receivables from brokers, dealers and clearing organizations	**23,945**	21,035
Total brokerage receivables(1)	**$ 39,857**	$ 35,450
Payables to customers	**$ 37,613**	$ 40,273
Payables to brokers, dealers and clearing organizations	**10,988**	24,298
Total brokerage payables(1)	**$ 48,601**	$ 64,571

(1) Includes brokerage receivables and payables recorded by Citi broker-dealer entities that are accounted for in accordance with the AICPA Accounting Guide for Brokers and Dealers in Securities as codified in ASC 940-320.

13. INVESTMENTS

The following table presents Citi's investments by category:

In millions of dollars	December 31, 2019	2018
Debt securities AFS	$ 280,265	$ 288,038
Debt securities HTM[1]	80,775	63,357
Marketable equity securities carried at fair value[2]	458	220
Non-marketable equity securities carried at fair value[2]	704	889
Non-marketable equity securities measured using the measurement alternative[3]	700	538
Non-marketable equity securities carried at cost[4]	5,661	5,565
Total investments	$ 368,563	$ 358,607

(1) Carried at adjusted amortized cost basis, net of any credit-related impairment.
(2) Unrealized gains and losses are recognized in earnings.
(3) Impairment losses and adjustments to the carrying value as a result of observable price changes are recognized in earnings.
(4) Primarily consists of shares issued by the Federal Reserve Bank, Federal Home Loan Banks and certain exchanges of which Citigroup is a member.

The following table presents interest and dividend income on investments:

In millions of dollars	2019	2018	2017
Taxable interest	$ 9,269	$ 8,704	$ 7,538
Interest exempt from U.S. federal income tax	404	521	535
Dividend income	187	269	222
Total interest and dividend income	$ 9,860	$ 9,494	$ 8,295

The following table presents realized gains and losses on the sales of investments, which exclude OTTI losses:

In millions of dollars	2019	2018	2017
Gross realized investment gains	$ 1,599	$ 682	$ 1,039
Gross realized investment losses	(125)	(261)	(261)
Net realized gains on sale of investments	$ 1,474	$ 421	$ 778

The Company from time to time may sell certain debt securities that were classified as HTM. These sales were in response to significant deterioration in the creditworthiness of the issuers or securities or because the Company has collected a substantial portion (at least 85%) of the principal outstanding at acquisition of the security. In addition, certain other debt securities were reclassified to AFS investments in response to significant credit deterioration. Because the Company generally intends to sell these reclassified debt securities, Citi recorded OTTI on the securities. The following table presents, for the periods indicated, the carrying value of HTM debt securities sold and reclassified to AFS, as well as the related gain (loss) or the OTTI losses recorded on these securities:

In millions of dollars	**2019**	2018	2017
Carrying value of HTM debt securities sold	**$ —**	$ 61	$ 81
Net realized gain (loss) on sale of HTM debt securities	**—**	—	13
Carrying value of debt securities reclassified to AFS	**—**	8	74
OTTI losses on debt securities reclassified to AFS	**—**	—	—

Debt Securities Available-for-Sale

The amortized cost and fair value of AFS debt securities were as follows:

	2019				2018			
In millions of dollars	**Amortized cost**	**Gross unrealized gains**	**Gross unrealized losses**	**Fair value**	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value
Debt securities AFS								
Mortgage-backed securities[(1)]								
U.S. government agency guaranteed	**$ 34,963**	**$ 547**	**$ 280**	**$ 35,230**	$ 43,504	$ 241	$ 725	$ 43,020
Non-U.S. residential	**789**	**3**	**—**	**792**	1,310	4	2	1,312
Commercial	**75**	**—**	**—**	**75**	174	1	2	173
Total mortgage-backed securities	**$ 35,827**	**$ 550**	**$ 280**	**$ 36,097**	$ 44,988	$ 246	$ 729	$ 44,505
U.S. Treasury and federal agency securities								
U.S. Treasury	**$ 106,429**	**$ 50**	**$ 380**	**$ 106,099**	$ 109,376	$ 33	$ 1,339	$ 108,070
Agency obligations	**5,336**	**3**	**20**	**5,319**	9,283	1	132	9,152
Total U.S. Treasury and federal agency securities	**$ 111,765**	**$ 53**	**$ 400**	**$ 111,418**	$ 118,659	$ 34	$ 1,471	$ 117,222
State and municipal	**$ 5,024**	**$ 43**	**$ 89**	**$ 4,978**	$ 9,372	$ 96	$ 262	$ 9,206
Foreign government	**110,958**	**586**	**241**	**111,303**	100,872	415	596	100,691
Corporate	**11,266**	**52**	**101**	**11,217**	11,714	42	157	11,599
Asset-backed securities[(1)]	**524**	**—**	**2**	**522**	845	2	4	843
Other debt securities	**4,729**	**1**	**—**	**4,730**	3,973	—	1	3,972
Total debt securities AFS	**$ 280,093**	**$ 1,285**	**$ 1,113**	**$ 280,265**	$ 290,423	$ 835	$ 3,220	$ 288,038

(1) The Company invests in mortgage- and asset-backed securities. These securitization entities are generally considered VIEs. The Company's maximum exposure to loss from these VIEs is equal to the carrying amount of the securities, which is reflected in the table above. For mortgage- and asset-backed securitizations in which the Company has other involvement, see Note 21 to the Consolidated Financial Statements.

At December 31, 2019, the amortized cost of fixed income securities exceeded their fair value by $1,113 million. Of the $1,113 million, $802 million represented unrealized losses on fixed income investments that have been in a gross-unrealized-loss position for less than a year and, of these, 93% were rated investment grade; and $311 million represented unrealized losses on fixed income investments that have been in a gross-unrealized-loss position for a year or more and, of these, 92% were rated investment grade. Of the $311 million mentioned above, $132 million represents U.S. Treasury securities.

The following table shows the fair value of AFS debt securities that have been in an unrealized loss position:

In millions of dollars	Less than 12 months		12 months or longer		Total	
	Fair value	**Gross unrealized losses**	**Fair value**	**Gross unrealized losses**	**Fair value**	**Gross unrealized losses**
December 31, 2019						
Debt securities AFS						
Mortgage-backed securities						
U.S. government agency guaranteed	**$ 9,780**	**$ 242**	**$ 1,877**	**$ 38**	**$ 11,657**	**$ 280**
Non-U.S. residential	**208**	**—**	**1**	**—**	**209**	**—**
Commercial	**16**	**—**	**27**	**—**	**43**	**—**
Total mortgage-backed securities	**$ 10,004**	**$ 242**	**$ 1,905**	**$ 38**	**$ 11,909**	**$ 280**
U.S. Treasury and federal agency securities						
U.S. Treasury	**$ 45,484**	**$ 248**	**$ 26,907**	**$ 132**	**$ 72,391**	**$ 380**
Agency obligations	**781**	**2**	**3,897**	**18**	**4,678**	**20**
Total U.S. Treasury and federal agency securities	**$ 46,265**	**$ 250**	**$ 30,804**	**$ 150**	**$ 77,069**	**$ 400**
State and municipal	**$ 362**	**$ 62**	**$ 266**	**$ 27**	**$ 628**	**$ 89**
Foreign government	**35,485**	**149**	**8,170**	**92**	**43,655**	**241**
Corporate	**2,916**	**98**	**123**	**3**	**3,039**	**101**
Asset-backed securities	**112**	**1**	**166**	**1**	**278**	**2**
Other debt securities	**1,307**	**—**	**—**	**—**	**1,307**	**—**
Total debt securities AFS	**$ 96,451**	**$ 802**	**$ 41,434**	**$ 311**	**$ 137,885**	**$ 1,113**
December 31, 2018						
Debt securities AFS						
Mortgage-backed securities						
U.S. government agency guaranteed	$ 11,160	$ 286	$ 13,143	$ 439	$ 24,303	$ 725
Non-U.S. residential	284	2	2	—	286	2
Commercial	79	1	82	1	161	2
Total mortgage-backed securities	$ 11,523	$ 289	$ 13,227	$ 440	$ 24,750	$ 729
U.S. Treasury and federal agency securities						
U.S. Treasury	$ 8,389	$ 42	$ 77,883	$ 1,297	$ 86,272	$ 1,339
Agency obligations	277	2	8,660	130	8,937	132
Total U.S. Treasury and federal agency securities	$ 8,666	$ 44	$ 86,543	$ 1,427	$ 95,209	$ 1,471
State and municipal	$ 1,614	$ 34	$ 1,303	$ 228	$ 2,917	$ 262
Foreign government	40,655	265	15,053	331	55,708	596
Corporate	4,547	115	2,077	42	6,624	157
Asset-backed securities	441	4	55	—	496	4
Other debt securities	1,790	1	—	—	1,790	1
Total debt securities AFS	$ 69,236	$ 752	$ 118,258	$ 2,468	$ 187,494	$ 3,220

The following table presents the amortized cost and fair value of AFS debt securities by contractual maturity dates:

	December 31,			
	2019		2018	
In millions of dollars	**Amortized cost**	**Fair value**	Amortized cost	Fair value
Mortgage-backed securities[1]				
Due within 1 year	**$ 20**	**$ 20**	$ 14	$ 14
After 1 but within 5 years	**573**	**574**	662	661
After 5 but within 10 years	**594**	**626**	2,779	2,828
After 10 years[2]	**34,640**	**34,877**	41,533	41,002
Total	**$ 35,827**	**$ 36,097**	$ 44,988	$ 44,505
U.S. Treasury and federal agency securities				
Due within 1 year	**$ 40,757**	**$ 40,688**	$ 41,941	$ 41,867
After 1 but within 5 years	**70,128**	**69,850**	76,139	74,800
After 5 but within 10 years	**854**	**851**	489	462
After 10 years[2]	**26**	**29**	90	93
Total	**$ 111,765**	**$ 111,418**	$ 118,659	$ 117,222
State and municipal				
Due within 1 year	**$ 932**	**$ 932**	$ 2,586	$ 2,586
After 1 but within 5 years	**714**	**723**	1,676	1,675
After 5 but within 10 years	**195**	**215**	585	602
After 10 years[2]	**3,183**	**3,108**	4,525	4,343
Total	**$ 5,024**	**$ 4,978**	$ 9,372	$ 9,206
Foreign government				
Due within 1 year	**$ 42,611**	**$ 42,666**	$ 39,078	$ 39,028
After 1 but within 5 years	**58,820**	**59,071**	50,125	49,962
After 5 but within 10 years	**8,192**	**8,198**	10,153	10,149
After 10 years[2]	**1,335**	**1,368**	1,516	1,552
Total	**$ 110,958**	**$ 111,303**	$ 100,872	$ 100,691
All other[3]				
Due within 1 year	**$ 7,306**	**$ 7,311**	$ 6,166	$ 6,166
After 1 but within 5 years	**8,279**	**8,275**	8,459	8,416
After 5 but within 10 years	**818**	**797**	1,474	1,427
After 10 years[2]	**116**	**86**	433	405
Total	**$ 16,519**	**$ 16,469**	$ 16,532	$ 16,414
Total debt securities AFS	**$ 280,093**	**$ 280,265**	$ 290,423	$ 288,038

(1) Includes mortgage-backed securities of U.S. government-sponsored agencies.
(2) Investments with no stated maturities are included as contractual maturities of greater than 10 years. Actual maturities may differ due to call or prepayment rights.
(3) Includes corporate, asset-backed and other debt securities.

Debt Securities Held-to-Maturity

The carrying value and fair value of debt securities HTM were as follows:

In millions of dollars		Carrying value		Gross unrealized gains		Gross unrealized losses		Fair value
December 31, 2019								
Debt securities HTM								
Mortgage-backed securities[(1)(2)]								
U.S. government agency guaranteed	**$**	**46,637**	**$**	**1,047**	**$**	**21**	**$**	**47,663**
Non-U.S. residential		**1,039**		**5**		**—**		**1,044**
Commercial		**582**		**1**		**—**		**583**
Total mortgage-backed securities	**$**	**48,258**	**$**	**1,053**	**$**	**21**	**$**	**49,290**
State and municipal[(3)]	**$**	**9,104**	**$**	**455**	**$**	**28**	**$**	**9,531**
Foreign government		**1,934**		**37**		**1**		**1,970**
Asset-backed securities[(1)]		**21,479**		**12**		**59**		**21,432**
Total debt securities HTM	**$**	**80,775**	**$**	**1,557**	**$**	**109**	**$**	**82,223**
December 31, 2018								
Debt securities HTM								
Mortgage-backed securities[(1)(4)]								
U.S. government agency guaranteed	$	34,239	$	199	$	578	$	33,860
Non-U.S. residential		1,339		12		1		1,350
Commercial		368		—		—		368
Total mortgage-backed securities	$	35,946	$	211	$	579	$	35,578
State and municipal	$	7,628	$	167	$	138	$	7,657
Foreign government		1,027		—		24		1,003
Asset-backed securities[(1)]		18,756		8		112		18,652
Total debt securities HTM	$	63,357	$	386	$	853	$	62,890

(1) The Company invests in mortgage- and asset-backed securities. These securitization entities are generally considered VIEs. The Company's maximum exposure to loss from these VIEs is equal to the carrying amount of the securities, which is reflected in the table above. For mortgage- and asset-backed securitizations in which the Company has other involvement, see Note 21 to the Consolidated Financial Statements.

(2) In March 2019, Citibank transferred $5 billion of agency residential mortgage-backed securities (RMBS) from AFS classification to HTM classification in accordance with ASC 320. At the time of transfer, the securities were in an unrealized loss position of $56 million. The loss amounts will remain in *AOCI* and be amortized over the remaining life of the securities.

(3) In December 2019, Citibank transferred $173 million of state and municipal bonds from AFS classification to HTM classification in accordance with ASC 320. At the time of transfer, the bonds were in an unrealized gain position of $5 million. The gain amounts will remain in *AOCI* and be amortized over the remaining life of the securities.

(4) In November 2018, Citibank transferred $10 billion of agency residential mortgage-backed securities (RMBS) and commercial mortgage-backed securities (CMBS) from AFS classification to HTM classification in accordance with ASC 320. At the time of transfer, the securities were in an unrealized loss position of $598 million. This amount will remain in *AOCI* and be amortized over the remaining life of the securities.

The Company has the positive intent and ability to hold these securities to maturity or, where applicable, to exercise any issuer call options, absent any unforeseen significant changes in circumstances, including deterioration in credit or changes in regulatory capital requirements.

The net unrealized losses classified in *AOCI* for HTM securities primarily relate to debt securities previously classified as AFS that were transferred to HTM, and include any cumulative fair value hedge adjustments. The net unrealized loss amount also includes any non-credit-related changes in fair value of HTM debt securities that have suffered credit impairment recorded in earnings. The *AOCI* balance related to HTM debt securities is amortized as an adjustment of yield, in a manner consistent with the accretion of any difference between the carrying value at the transfer date and par value of the same debt securities.

The table below shows the fair value of debt securities HTM that have been in an unrecognized loss position:

	Less than 12 months		12 months or longer		Total	
In millions of dollars	**Fair value**	**Gross unrecognized losses**	**Fair value**	**Gross unrecognized losses**	**Fair value**	**Gross unrecognized losses**
December 31, 2019						
Debt securities HTM						
Mortgage-backed securities	**$ 3,590**	**$ 10**	**$ 1,116**	**$ 11**	**$ 4,706**	**$ 21**
State and municipal	**34**	**1**	**1,125**	**27**	**1,159**	**28**
Foreign government	**1,970**	**1**	**—**	**—**	**1,970**	**1**
Asset-backed securities	**7,972**	**11**	**765**	**48**	**8,737**	**59**
Total debt securities HTM	**$ 13,566**	**$ 23**	**$ 3,006**	**$ 86**	**$ 16,572**	**$ 109**
December 31, 2018						
Debt securities HTM						
Mortgage-backed securities	$ 2,822	$ 20	$ 18,086	$ 559	$ 20,908	$ 579
State and municipal	981	34	1,242	104	2,223	138
Foreign government	1,003	24	—	—	1,003	24
Asset-backed securities	13,008	112	—	—	13,008	112
Total debt securities HTM	$ 17,814	$ 190	$ 19,328	$ 663	$ 37,142	$ 853

Note: Excluded from the gross unrecognized losses presented in the above table are $(582) million and $(653) million of net unrealized losses recorded in *AOCI* as of December 31, 2019 and 2018, respectively, primarily related to the difference between the amortized cost and carrying value of HTM debt securities that were reclassified from AFS. Substantially all of these net unrecognized losses relate to securities that have been in a loss position for 12 months or longer at December 31, 2019 and 2018.

The following table presents the carrying value and fair value of HTM debt securities by contractual maturity dates:

	December 31,							
	2019				2018			
In millions of dollars	**Carrying value**		**Fair value**		Carrying value		Fair value	
Mortgage-backed securities								
Due within 1 year	**$**	**17**	**$**	**17**	$	3	$	3
After 1 but within 5 years		**458**		**463**		539		540
After 5 but within 10 years		**1,662**		**1,729**		997		1,011
After 10 years(1)		**46,121**		**47,081**		34,407		34,024
Total	**$**	**48,258**	**$**	**49,290**	$	35,946	$	35,578
State and municipal								
Due within 1 year	**$**	**2**	**$**	**26**	$	37	$	37
After 1 but within 5 years		**123**		**160**		168		174
After 5 but within 10 years		**597**		**590**		540		544
After 10 years(1)		**8,382**		**8,755**		6,883		6,902
Total	**$**	**9,104**	**$**	**9,531**	$	7,628	$	7,657
Foreign government								
Due within 1 year	**$**	**650**	**$**	**652**	$	60	$	36
After 1 but within 5 years		**1,284**		**1,318**		967		967
After 5 but within 10 years		**—**		**—**		—		—
After 10 years(1)		**—**		**—**		—		—
Total	**$**	**1,934**	**$**	**1,970**	$	1,027	$	1,003
All other(2)								
Due within 1 year	**$**	**—**	**$**	**—**	$	—	$	—
After 1 but within 5 years		**—**		**—**		—		—
After 5 but within 10 years		**8,545**		**8,543**		2,535		2,539
After 10 years(1)		**12,934**		**12,889**		16,221		16,113
Total	**$**	**21,479**	**$**	**21,432**	$	18,756	$	18,652
Total debt securities HTM	**$**	**80,775**	**$**	**82,223**	$	63,357	$	62,890

(1) Investments with no stated maturities are included as contractual maturities of greater than 10 years. Actual maturities may differ due to call or prepayment rights.
(2) Includes corporate and asset-backed securities.

Evaluating Investments for Other-Than-Temporary Impairment (OTTI)

Debt Securities

Overview

The Company conducts periodic reviews of all debt securities with unrealized losses to evaluate whether the impairment is other-than-temporary. This review applies to all debt securities that are not measured at fair value through earnings. Effective January 1, 2018, the AFS category was eliminated for equity securities and, therefore, other-than-temporary impairment (OTTI) review is not required for those securities.

An unrealized loss exists when the current fair value of an individual debt security is lower than its adjusted amortized cost basis. Unrealized losses that are determined to be temporary in nature are recorded, net of tax, in *AOCI* for AFS debt securities. Temporary losses related to HTM debt securities generally are not recorded, as these investments are carried at adjusted amortized cost basis. However, for HTM debt securities with credit-related impairment, the credit loss is recognized in earnings as OTTI, and any difference between the cost basis adjusted for the OTTI and fair value is recognized in *AOCI* and amortized as an adjustment of yield over the remaining contractual life of the security. For debt securities transferred to HTM from *Trading account assets*, amortized cost is defined as the fair value of the securities at the date of transfer, plus any accretion income and less any impairment recognized in earnings subsequent to transfer. For debt securities transferred to HTM from AFS, amortized cost is defined as the original purchase cost, adjusted for the cumulative accretion or amortization of any purchase discount or premium, plus or minus any cumulative fair value hedge adjustments, net of accretion or amortization, and less any impairment recognized in earnings.

Regardless of the classification of debt securities as AFS or HTM, the Company assesses each position with an unrealized loss for OTTI. Factors considered in determining whether a loss is temporary include:

- the length of time and the extent to which fair value has been below cost;
- the severity of the impairment;
- the cause of the impairment and the financial condition and near-term prospects of the issuer;
- activity in the market of the issuer that may indicate adverse credit conditions; and
- the Company's ability and intent to hold the investment for a period of time sufficient to allow for any anticipated recovery.

The Company's review for impairment generally entails:

- identification and evaluation of impaired investments;
- analysis of individual positions that have fair values lower than amortized cost, including consideration of the length of time the position has been in an unrealized loss position and the expected recovery period;
- consideration of evidential matter, including an evaluation of factors or triggers that could cause individual positions to qualify as having other-than-temporary impairment and those that would not support other-than-temporary impairment; and
- documentation of the results of these analyses, as required under business policies.

The entire difference between amortized cost basis and fair value is recognized in earnings as OTTI for impaired debt securities that the Company has an intent to sell or for which the Company believes it will more-likely-than-not be required to sell prior to recovery of the amortized cost basis. However, for those debt securities that the Company does not intend to sell and is not likely to be required to sell, only the credit-related impairment is recognized in earnings and any non-credit-related impairment is recorded in *AOCI*.

For debt securities, credit impairment exists where management does not expect to receive contractual principal and interest cash flows sufficient to recover the entire amortized cost basis of a security.

The sections below describe the Company's process for identifying credit-related impairments for debt security types that have the most significant unrealized losses as of December 31, 2019.

Mortgage-Backed Securities

For U.S. mortgage-backed securities, credit impairment is assessed using a cash flow model that estimates the principal and interest cash flows on the underlying mortgages using the security-specific collateral and transaction structure. The model distributes the estimated cash flows to the various tranches of securities, considering the transaction structure and any subordination and credit enhancements that exist in that structure. The cash flow model incorporates actual cash flows on the mortgage-backed securities through the current period and then estimates the remaining cash flows using a number of assumptions, including default rates, prepayment rates, recovery rates (on foreclosed properties) and loss severity rates (on non-agency mortgage-backed securities).

Management develops specific assumptions using market data, internal estimates and estimates published by rating agencies and other third-party sources. Default rates are projected by considering current underlying mortgage loan performance, generally assuming the default of (i) 10% of current loans, (ii) 25% of 30–59 day delinquent loans, (iii) 70% of 60–90 day delinquent loans and (iv) 100% of 91+ day delinquent loans. These estimates are extrapolated along a default timing curve to estimate the total lifetime pool default rate. Other assumptions contemplate the actual collateral attributes, including geographic concentrations, rating actions and current market prices.

Cash flow projections are developed using different stress test scenarios. Management evaluates the results of those stress tests (including the severity of any cash shortfall indicated and the likelihood of the stress scenarios actually occurring based on the underlying pool's characteristics and performance) to assess whether management expects to recover the amortized cost basis of the security. If cash flow projections indicate that the Company does not expect to recover its amortized cost basis, the Company recognizes the estimated credit loss in earnings.

State and Municipal Securities
The process for identifying credit impairments in Citigroup's AFS and HTM state and municipal bonds is primarily based on a credit analysis that incorporates third-party credit ratings. Citigroup monitors the bond issuers and any insurers providing default protection in the form of financial guarantee insurance. The average external credit rating, ignoring any insurance, is Aa3/AA-. In the event of an external rating downgrade or other indicator of credit impairment (i.e., based on instrument-specific estimates of cash flows or probability of issuer default), the subject bond is specifically reviewed for adverse changes in the amount or timing of expected contractual principal and interest payments.

For state and municipal bonds with unrealized losses that Citigroup plans to sell, or would be more-likely-than-not required to sell, the full impairment is recognized in earnings.

Equity Method Investments
Management assesses equity method investments that have fair values that are lower than their respective carrying values for OTTI. Fair value is measured as price multiplied by quantity if the investee has publicly listed securities. If the investee is not publicly listed, other methods are used (see Note 24 to the Consolidated Financial Statements).

For impaired equity method investments that Citi plans to sell prior to recovery of value or would more-likely-than-not be required to sell, with no expectation that the fair value will recover prior to the expected sale date, the full impairment is recognized in earnings as OTTI regardless of severity and duration. The measurement of the OTTI does not include partial projected recoveries subsequent to the balance sheet date.

For impaired equity method investments that management does not plan to sell and is not more-likely-than-not to be required to sell prior to recovery of value, the evaluation of whether an impairment is other-than-temporary is based on (i) whether and when an equity method investment will recover in value and (ii) whether the investor has the intent and ability to hold that investment for a period of time sufficient to recover the value. The determination of whether the impairment is considered other-than-temporary considers the following indicators:

- the cause of the impairment and the financial condition and near-term prospects of the issuer, including any specific events that may influence the operations of the issuer;
- the intent and ability to hold the investment for a period of time sufficient to allow for any anticipated recovery in market value; and
- the length of time and extent to which fair value has been less than the carrying value.

Recognition and Measurement of OTTI

The following tables present total OTTI on *Investments* recognized in earnings:

	Year ended December 31, 2019			
In millions of dollars	**AFS**	**HTM**	**Other assets**	**Total**
Impairment losses related to debt securities that the Company does not intend to sell nor will likely be required to sell:				
Total OTTI losses recognized during the period	**$ 1**	**$ —**	**$ 1**	**$ 2**
Less: portion of impairment loss recognized in *AOCI* (before taxes)	**—**	**—**	**—**	**—**
Net impairment losses recognized in earnings for debt securities that the Company does not intend to sell nor will likely be required to sell	**$ 1**	**$ —**	**$ 1**	**$ 2**
Impairment losses recognized in earnings for debt securities that the Company intends to sell, would be more-likely-than-not required to sell or will be subject to an issuer call deemed probable of exercise	**20**	**—**	**1**	**21**
Total OTTI losses recognized in earnings	**$ 21**	**$ —**	**$ 2**	**$ 23**

	Year ended December 31, 2018			
In millions of dollars	AFS(1)	HTM	Other assets	Total
Impairment losses related to debt securities that the Company does not intend to sell nor will likely be required to sell:				
Total OTTI losses recognized during the period	$ —	$ —	$ —	$ —
Less: portion of impairment loss recognized in *AOCI* (before taxes)	—	—	—	—
Net impairment losses recognized in earnings for debt securities that the Company does not intend to sell nor will likely be required to sell	$ —	$ —	$ —	$ —
Impairment losses recognized in earnings for debt securities that the Company intends to sell, would be more-likely-than-not required to sell or will be subject to an issuer call deemed probable of exercise	125	—	—	125
Total OTTI losses recognized in earnings	$ 125	$ —	$ —	$ 125

(1) For the year ended December 31, 2018, amounts represent AFS debt securities.

	Year ended December 31, 2017			
In millions of dollars	AFS(1)	HTM	Other assets	Total
Impairment losses related to securities that the Company does not intend to sell nor will likely be required to sell:				
Total OTTI losses recognized during the period	$ 2	$ —	$ —	$ 2
Less: portion of impairment loss recognized in *AOCI* (before taxes)	—	—	—	—
Net impairment losses recognized in earnings for securities that the Company does not intend to sell nor will likely be required to sell	$ 2	$ —	$ —	$ 2
Impairment losses recognized in earnings for securities that the Company intends to sell, would be more-likely-than-not required to sell or will be subject to an issuer call deemed probable of exercise	59	2	—	61
Total OTTI losses recognized in earnings	$ 61	$ 2	$ —	$ 63

(1) Includes OTTI on non-marketable equity securities.

The following are 12-month rollforwards of the credit-related impairments recognized in earnings for AFS and HTM debt securities that the Company does not intend to sell nor likely will be required to sell:

In millions of dollars	**Cumulative OTTI credit losses recognized in earnings on debt securities still held** Dec. 31, 2018 balance	**Credit impairments recognized in earnings on securities not previously impaired**	**Credit impairments recognized in earnings on securities that have been previously impaired**	**Changes due to credit-impaired securities sold, transferred or matured[1]**	**Dec. 31, 2019 balance**
AFS debt securities					
Mortgage-backed securities[1]	$ 1	**$ —**	**$ —**	**$ —**	**$ 1**
State and municipal	—	**—**	**4**	**—**	**4**
Corporate	4	**—**	**—**	**—**	**4**
All other debt securities	—	**1**	**—**	**—**	**1**
Total OTTI credit losses recognized for AFS debt securities	$ 5	**$ 1**	**$ 4**	**$ —**	**$ 10**
HTM debt securities					
State and municipal	3	**—**	**—**	**—**	**3**
Total OTTI credit losses recognized for HTM debt securities	$ 3	**$ —**	**$ —**	**$ —**	**$ 3**

In millions of dollars	Cumulative OTTI credit losses recognized in earnings on debt securities still held Dec. 31, 2017 balance	Credit impairments recognized in earnings on securities not previously impaired	Credit impairments recognized in earnings on securities that have been previously impaired	Changes due to credit-impaired securities sold, transferred or matured[3]	Dec. 31, 2018 balance
AFS debt securities					
Mortgage-backed securities[1]	$ 38	$ —	$ —	$ (37)	$ 1
State and municipal	4	—	—	(4)	—
Corporate	4	—	—	—	4
All other debt securities	2	—	—	(2)	—
Total OTTI credit losses recognized for AFS debt securities	$ 48	$ —	$ —	$ (43)	$ 5
HTM debt securities					
Mortgage-backed securities[2]	$ 54	$ —	$ —	$ (54)	$ —
State and municipal	3	—	—	—	3
Total OTTI credit losses recognized for HTM debt securities	$ 57	$ —	$ —	$ (54)	$ 3

(1) Primarily consists of Prime securities.
(2) Primarily consists of Alt-A securities.
(3) Includes $18 million in cumulative OTTI reclassified from HTM to AFS due to the transfer of the related debt securities from HTM to AFS. Citi adopted ASU 2017-12, *Targeted Improvements to Accounting for Hedging Activities*, on January 1, 2018 and transferred approximately $4 billion of HTM debt securities into AFS classification as permitted as a one-time transfer under the standard.

Non-Marketable Equity Securities Not Carried at Fair Value

Non-marketable equity securities are required to be 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. See Note 1 to the Consolidated Financial Statements for additional details.

The election to measure a non-marketable equity security using the measurement alternative is made on an instrument-by-instrument basis. Under the measurement alternative, an equity security 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. The carrying value of the equity security is adjusted to fair value on the date of an observed transaction. Fair value may differ from the observed transaction price due to a number of factors, including marketability adjustments and differences in rights and obligations when the observed transaction is not for the identical investment held by Citi.

Equity securities under the measurement alternative are also assessed for impairment. On a quarterly basis, management qualitatively assesses whether each equity security under the measurement alternative is impaired. Impairment indicators that are considered include, but are not limited to, the following:

- a significant deterioration in the earnings performance, credit rating, asset quality or business prospects of the investee;
- a significant adverse change in the regulatory, economic or technological environment of the investee;
- a significant adverse change in the general market condition of either the geographical area or the industry in which the investee operates;
- a bona fide offer to purchase, an offer by the investee to sell or a completed auction process for the same or similar investment for an amount less than the carrying amount of that investment; and
- factors that raise significant concerns about the investee's ability to continue as a going concern, such as negative cash flows from operations, working capital deficiencies or noncompliance with statutory capital requirements or debt covenants.

When the qualitative assessment indicates that impairment exists, the investment is written down to fair value, with the full difference between the fair value of the investment and its carrying amount recognized in earnings.

Below is the carrying value of non-marketable equity securities measured using the measurement alternative at December 31, 2019 and 2018:

In millions of dollars	**December 31, 2019**	December 31, 2018
Measurement alternative:		
Carrying value	**$ 700**	$ 538

Below are amounts recognized in earnings and life-to-date amounts for non-marketable equity securities measured using the measurement alternative:

	Years Ended December 31,	
In millions of dollars	**2019**	2018
Measurement alternative:		
Impairment losses[(1)]	**$ 9**	$ 7
Downward changes for observable prices[(1)]	**16**	18
Upward changes for observable prices[(1)]	**123**	219

(1) See Note 24 to the Consolidated Financial Statements for additional information on these nonrecurring fair value measurements.

	Life-to-date amounts on securities still held
In millions of dollars	**December 31, 2019**
Measurement alternative:	
Impairment losses	**$ 16**
Downward changes for observable prices	**34**
Upward changes for observable prices	**342**

A similar impairment analysis is performed for non-marketable equity securities carried at cost. For the years ended December 31, 2019 and 2018, there was no impairment loss recognized in earnings for non-marketable equity securities carried at cost.

Investments in Alternative Investment Funds That Calculate Net Asset Value

The Company holds investments in certain alternative investment funds that calculate net asset value (NAV), or its equivalent, including private equity funds, funds of funds and real estate funds, as provided by third-party asset managers. Investments in such funds are generally classified as non-marketable equity securities carried at fair value. The fair values of these investments are estimated using the NAV of the Company's ownership interest in the funds. Some of these investments are in "covered funds" for purposes of the Volcker Rule, which prohibits certain proprietary investment activities and limits the ownership of, and relationships with, covered funds. On April 21, 2017, Citi's request for extension of the permitted holding period under the Volcker Rule for certain of its investments in illiquid funds was approved, allowing the Company to hold such investments until the earlier of five years from the July 21, 2017 expiration date of the general conformance period, or the date such investments mature or are otherwise conformed with the Volcker Rule.

	Fair value		**Unfunded commitments**		**Redemption frequency (if currently eligible) monthly, quarterly, annually**	**Redemption notice period**
In millions of dollars	**December 31, 2019**	December 31, 2018	**December 31, 2019**	December 31, 2018		
Private equity funds[1][2]	**$ 134**	$ 168	**$ 62**	$ 62	—	—
Real estate funds[2][3]	**10**	14	**18**	19	—	—
Mutual/collective investment funds	**26**	25	**—**	—		
Total	**$ 170**	$ 207	**$ 80**	$ 81	—	—

(1) Private equity funds include funds that invest in infrastructure, emerging markets and venture capital.
(2) With respect to the Company's investments in private equity funds and real estate funds, distributions from each fund will be received as the underlying assets held by these funds are liquidated. It is estimated that the underlying assets of these funds will be liquidated over a period of several years as market conditions allow. Private equity and real estate funds do not allow redemption of investments by their investors. Investors are permitted to sell or transfer their investments, subject to the approval of the general partner or investment manager of these funds, which generally may not be unreasonably withheld.
(3) Includes several real estate funds that invest primarily in commercial real estate in the U.S., Europe and Asia.

14. LOANS

Citigroup loans are reported in two categories: consumer and corporate. These categories are classified primarily according to the segment and subsegment that manage the loans.

Consumer Loans
Consumer loans represent loans and leases managed primarily by *GCB* and *Corporate/Other*.

Citigroup has established a risk management process to monitor, evaluate and manage the principal risks associated with its consumer loan portfolio. Credit quality indicators that are actively monitored include delinquency status, consumer credit scores under Fair Isaac Corporation (FICO) and loan to value (LTV) ratios, each as discussed in more detail below.

Included in the loan table above are lending products whose terms may give rise to greater credit issues. Credit cards with below-market introductory interest rates and interest-only loans are examples of such products. These products are closely managed using credit techniques that are intended to mitigate their higher inherent risk.

Delinquency Status
Delinquency status is monitored and considered a key indicator of credit quality of consumer loans. Principally, the U.S. residential first mortgage loans use the Mortgage Bankers Association (MBA) method of reporting delinquencies, which considers a loan delinquent if a monthly payment has not been received by the end of the day immediately preceding the loan's next due date. All other loans use a method of reporting delinquencies that considers a loan delinquent if a monthly payment has not been received by the close of business on the loan's next due date.

As a general policy, residential first mortgages, home equity loans and installment loans are classified as non-accrual when loan payments are 90 days contractually past due. Credit cards and unsecured revolving loans generally accrue interest until payments are 180 days past due. 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. 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.

The policy for re-aging modified U.S. consumer loans to current status varies by product. Generally, one of the conditions to qualify for these modifications is that a minimum number of payments (typically ranging from one to three) 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 a 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, FHA and Department of Veterans Affairs (VA) loans are modified under those respective agencies' guidelines and payments are not always required in order to re-age a modified loan to current.

The following table provides Citi's consumer loans by type:

Consumer Loan Delinquencies and Non-Accrual Details at December 31, 2019

In millions of dollars	Total current(1)(2)	30–89 days past due(3)	≥ 90 days past due(3)	Past due government guaranteed(4)	Total loans(2)	Total non-accrual	90 days past due and accruing
In North America offices(5)							
Residential first mortgages(6)	$ 45,942	$ 411	$ 221	$ 434	$ 47,008	$ 479	$ 288
Home equity loans(7)(8)	8,860	174	189	—	9,223	405	—
Credit cards	145,477	1,759	1,927	—	149,163	—	1,927
Personal, small business and other	3,641	44	14	—	3,699	21	—
Total	$ 203,920	$ 2,388	$ 2,351	$ 434	$ 209,093	$ 905	$ 2,215
In offices outside North America(5)							
Residential first mortgages(6)	$ 37,316	$ 210	$ 160	$ —	$ 37,686	$ 421	$ —
Credit cards	25,111	426	372	—	25,909	310	242
Personal, small business and other	36,456	272	132	—	36,860	180	—
Total	$ 98,883	$ 908	$ 664	$ —	$ 100,455	$ 911	$ 242
Total Citigroup(9)	$ 302,803	$ 3,296	$ 3,015	$ 434	$ 309,548	$ 1,816	$ 2,457

Consumer Loan Delinquencies and Non-Accrual Details at December 31, 2018

In millions of dollars	Total current(1)(2)	30–89 days past due(3)	≥ 90 days past due(3)	Past due government guaranteed(4)	Total loans(2)	Total non-accrual	90 days past due and accruing
In North America offices(5)							
Residential first mortgages(6)	$ 45,953	$ 420	$ 253	$ 786	$ 47,412	$ 583	$ 549
Home equity loans(7)(8)	11,135	161	247	—	11,543	527	—
Credit cards	141,091	1,687	1,764	—	144,542	—	1,764
Personal, small business and other	3,983	46	17	—	4,046	28	—
Total	$ 202,162	$ 2,314	$ 2,281	$ 786	$ 207,543	$ 1,138	$ 2,313
In offices outside North America(5)							
Residential first mortgages(6)	$ 35,624	$ 203	$ 145	$ —	$ 35,972	$ 383	$ —
Credit cards	24,156	425	370	—	24,951	312	235
Personal, small business and other	33,474	284	136	—	33,894	193	—
Total	$ 93,254	$ 912	$ 651	$ —	$ 94,817	$ 888	$ 235
Total Citigroup (9)	$ 295,416	$ 3,226	$ 2,932	$ 786	$ 302,360	$ 2,026	$ 2,548

(1) Loans less than 30 days past due are presented as current.
(2) Includes $18 million and $20 million at December 31, 2019 and 2018, respectively, of residential first mortgages recorded at fair value.
(3) Excludes loans guaranteed by U.S. government-sponsored agencies.
(4) Consists of residential first mortgages that are guaranteed by U.S. government-sponsored agencies that are 30–89 days past due of $0.1 billion and $0.2 billion and 90 days or more past due of $0.3 billion and $0.6 billion at December 31, 2019 and 2018, respectively.
(5) North America includes the U.S., Canada and Puerto Rico. Mexico is included in offices outside North America.
(6) Includes approximately $0.1 billion and $0.1 billion at December 31, 2019 and 2018, respectively, of residential first mortgage loans in process of foreclosure.
(7) Includes approximately $0.1 billion and $0.1 billion at December 31, 2019 and 2018, respectively, of home equity loans in process of foreclosure.
(8) Fixed-rate home equity loans and loans extended under home equity lines of credit, which are typically in junior lien positions.
(9) Consumer loans are net of unearned income of $783 million and $742 million at December 31, 2019 and 2018, respectively. Unearned income on consumer loans primarily represents unamortized origination fees and costs, premiums and discounts.

During the years ended December 31, 2019 and 2018, the Company sold and/or reclassified to HFS $2.9 billion and $3.2 billion, respectively, of consumer loans.

Consumer Credit Scores (FICO)
In the U.S., independent credit agencies rate an individual's risk for assuming debt based on the individual's credit history and assign every consumer a FICO credit score. These scores are continually updated by the agencies based upon an individual's credit actions (e.g., taking out a loan or missed or late payments).

The following tables provide details on the FICO scores for Citi's U.S. consumer loan portfolio based on end-of-period receivables. FICO scores are updated monthly for substantially all of the portfolio or, otherwise, on a quarterly basis for the remaining portfolio.

FICO score distribution in U.S. portfolio[1][2][3]	**December 31, 2019**		
In millions of dollars	**Less than 680**	**680 to 760**	**Greater than 760**
Residential first mortgages	**$ 3,602**	**$ 13,178**	**$ 28,235**
Home equity loans	**1,881**	**3,475**	**3,630**
Credit cards	**33,290**	**59,536**	**52,935**
Personal, small business and other	**564**	**907**	**1,473**
Total	**$ 39,337**	**$ 77,096**	**$ 86,273**

FICO score distribution in U.S. portfolio[1][2][3]	December 31, 2018		
In millions of dollars	Less than 680	680 to 760	Greater than 760
Residential first mortgages	$ 4,530	$ 13,848	$ 26,546
Home equity loans	2,438	4,296	4,471
Credit cards	32,686	58,722	51,299
Personal, small business and other	625	1,097	1,121
Total	$ 40,279	$ 77,963	$ 83,437

(1) The FICO bands in the tables are consistent with general industry peer presentations.
(2) Excludes loans guaranteed by U.S. government-sponsored agencies, loans subject to long-term standby commitments (LTSC) with U.S. government-sponsored agencies and loans recorded at fair value.
(3) Excludes balances where FICO was not available. Such amounts are not material.

Loan to Value (LTV) Ratios
LTV ratios (loan balance divided by appraised value) are calculated at origination and updated by applying market price data.

The following tables provide details on the LTV ratios for Citi's U.S. consumer mortgage portfolios. LTV ratios are updated monthly using the most recent Core Logic Home Price Index data available for substantially all of the portfolio applied at the Metropolitan Statistical Area level, if available, or the state level if not. The remainder of the portfolio is updated in a similar manner using the Federal Housing Finance Agency indices.

LTV distribution in U.S. portfolio[1][2]	**December 31, 2019**		
In millions of dollars	**Less than or equal to 80%**	**> 80% but less than or equal to 100%**	**Greater than 100%**
Residential first mortgages	**$ 41,705**	**$ 3,302**	**$ 98**
Home equity loans	**7,934**	**819**	**235**
Total	**$ 49,639**	**$ 4,121**	**$ 333**

LTV distribution in U.S. portfolio[1][2]	December 31, 2018		
In millions of dollars	Less than or equal to 80%	> 80% but less than or equal to 100%	Greater than 100%
Residential first mortgages	$ 42,379	$ 2,474	$ 197
Home equity loans	9,465	1,287	390
Total	$ 51,844	$ 3,761	$ 587

(1) Excludes loans guaranteed by U.S. government-sponsored agencies, loans subject to LTSCs with U.S. government-sponsored agencies and loans recorded at fair value.
(2) Excludes balances where LTV was not available. Such amounts are not material.

Impaired Consumer Loans

A loan is considered impaired when Citi believes it is probable that all amounts due according to the original contractual terms of the loan will not be collected. Impaired consumer loans include non-accrual loans, as well as smaller-balance homogeneous loans whose terms have been modified due to the borrower's financial difficulties and where Citi has granted a concession to the borrower. These modifications may include interest rate reductions and/or principal forgiveness. Impaired consumer loans exclude smaller-balance homogeneous loans that have not been modified and are carried on a non-accrual basis.

The following tables present information about impaired consumer loans and interest income recognized on impaired consumer loans:

	At and for the year ended December 31, 2019				
In millions of dollars	Recorded investment(1)(2)	Unpaid principal balance	Related specific allowance(3)	Average carrying value(4)	Interest income recognized(5)
Mortgage and real estate					
Residential first mortgages	$ 1,666	$ 1,838	$ 161	$ 1,925	$ 60
Home equity loans	592	824	123	637	9
Credit cards	1,931	2,288	771	1,890	103
Installment and other					
Personal, small business and other	703	738	135	754	55
Total	$ 4,892	$ 5,688	$ 1,190	$ 5,206	$ 227

(1) Recorded investment in a loan includes net deferred loan fees and costs, unamortized premium or discount and direct write-downs and includes accrued interest only on credit card loans.
(2) $405 million of residential first mortgages, and $212 million of home equity loans do not have a specific allowance.
(3) Included in the *Allowance for loan losses*.
(4) Average carrying value represents the average recorded investment ending balance for the last four quarters and does not include the related specific allowance.
(5) Includes amounts recognized on both an accrual and cash basis.

	At and for the year ended December 31, 2018				
In millions of dollars	Recorded investment(1)(2)	Unpaid principal balance	Related specific allowance(3)	Average carrying value(4)	Interest income recognized(5)(6)
Mortgage and real estate					
Residential first mortgages	$ 2,130	$ 2,329	$ 178	$ 2,483	$ 81
Home equity loans	684	946	122	698	12
Credit cards	1,818	1,842	677	1,815	105
Installment and other					
Personal, small business and other	452	666	139	500	22
Total	$ 5,084	$ 5,783	$ 1,116	$ 5,496	$ 220

(1) Recorded investment in a loan includes net deferred loan fees and costs, unamortized premium or discount and direct write-downs and includes accrued interest only on credit card loans.
(2) $484 million of residential first mortgages and $263 million of home equity loans do not have a specific allowance.
(3) Included in the *Allowance for loan losses*.
(4) Average carrying value represents the average recorded investment ending balance for the last four quarters and does not include the related specific allowance.
(5) Includes amounts recognized on both an accrual and cash basis.
(6) Interest income recognized for the year ended December 31, 2017 was $342 million.

Consumer Troubled Debt Restructurings

In millions of dollars, except number of loans modified	For the year ended December 31, 2019 Number of loans modified	Post-modification recorded investment(1)(2)	Deferred principal(3)	Contingent principal forgiveness(4)	Principal forgiveness(5)	Average interest rate reduction
North America						
Residential first mortgages	**1,122**	**$ 172**	**$ —**	**$ —**	**$ —**	**—%**
Home equity loans	**717**	**79**	**3**	**—**	**—**	**1**
Credit cards	**268,778**	**1,165**	**—**	**—**	**—**	**17**
Personal, small business and other	**1,719**	**15**	**—**	**—**	**—**	**5**
Total(6)	**272,336**	**$ 1,431**	**$ 3**	**$ —**	**$ —**	
International						
Residential first mortgages	**2,448**	**$ 74**	**$ —**	**$ —**	**$ —**	**—%**
Credit cards	**72,325**	**288**	**—**	**—**	**10**	**17**
Personal, small business and other	**29,192**	**204**	**—**	**—**	**6**	**9**
Total(6)	**103,965**	**$ 566**	**$ —**	**$ —**	**$ 16**	

In millions of dollars, except number of loans modified	For the year ended December 31, 2018 Number of loans modified	Post-modification recorded investment(1)(7)	Deferred principal(3)	Contingent principal forgiveness(4)	Principal forgiveness(5)	Average interest rate reduction
North America						
Residential first mortgages	2,019	$ 300	$ 2	$ —	$ —	—%
Home equity loans	1,381	130	5	—	—	1
Credit cards	243,253	978	—	—	—	18
Personal, small business and other	1,349	12	—	—	—	4
Total(6)	248,002	$ 1,420	$ 7	$ —	$ —	
International						
Residential first mortgages	2,572	$ 85	$ —	$ —	$ —	—%
Credit cards	77,823	323	—	—	9	16
Personal, small business and other	30,849	216	—	—	7	9
Total(6)	111,244	$ 624	$ —	$ —	$ 16	

(1) Post-modification balances include past due amounts that are capitalized at the modification date.
(2) Post-modification balances in *North America* include $19 million of residential first mortgages and $7 million of home equity loans to borrowers who have gone through Chapter 7 bankruptcy in the year ended December 31, 2019. These amounts include $11 million of residential first mortgages and $6 million of home equity loans that were newly classified as TDRs during 2019, based on previously received OCC guidance.
(3) Represents portion of contractual loan principal that is non-interest bearing but still due from the borrower. Such deferred principal is charged off at the time of permanent modification to the extent that the related loan balance exceeds the underlying collateral value.
(4) Represents portion of contractual loan principal that is non-interest bearing and, depending upon borrower performance, eligible for forgiveness.
(5) Represents portion of contractual loan principal that was forgiven at the time of permanent modification.
(6) The above tables reflect activity for restructured loans that were considered TDRs during the year.
(7) Post-modification balances in *North America* include $38 million of residential first mortgages and $12 million of home equity loans to borrowers who have gone through Chapter 7 bankruptcy in the year ended December 31, 2018. These amounts include $27 million of residential first mortgages and $10 million of home equity loans that were newly classified as TDRs during 2018, based on previously received OCC guidance.

The following table presents consumer TDRs that defaulted for which the payment default occurred within one year of a permanent modification. Default is defined as 60 days past due.

	Years ended December 31,	
In millions of dollars	**2019**	2018
North America		
Residential first mortgages	**$ 85**	$ 136
Home equity loans	**15**	23
Credit cards	**301**	241
Personal, small business and other	**4**	4
Total	**$ 405**	$ 404
International		
Residential first mortgages	**$ 13**	$ 9
Credit cards	**142**	198
Personal, small business and other	**74**	80
Total	**$ 229**	$ 287

Corporate Loans

Corporate loans represent loans and leases managed by *ICG*. The following table presents information by corporate loan type:

In millions of dollars		December 31, 2019		December 31, 2018
In North America offices[1]				
Commercial and industrial	**$**	**55,929**	$	60,861
Financial institutions		**53,922**		48,447
Mortgage and real estate[2]		**53,371**		50,124
Installment, revolving credit and other		**31,238**		32,425
Lease financing		**1,290**		1,429
Total	**$**	**195,750**	$	193,286
In offices outside North America[1]				
Commercial and industrial	**$**	**112,668**	$	114,029
Financial institutions		**40,211**		36,837
Mortgage and real estate[2]		**9,780**		7,376
Installment, revolving credit and other		**27,303**		25,685
Lease financing		**95**		103
Governments and official institutions		**4,128**		4,520
Total	**$**	**194,185**	$	188,550
Corporate loans, net of unearned income[3]	**$**	**389,935**	$	381,836

(1) North America includes the U.S., Canada and Puerto Rico. Mexico is included in offices outside North America. The classification between offices in North America and outside North America is based on the domicile of the booking unit. The difference between the domicile of the booking unit and the domicile of the managing unit is not material.
(2) Loans secured primarily by real estate.
(3) Corporate loans are net of unearned income of ($814) million and ($855) million at December 31, 2019 and 2018, respectively. Unearned income on corporate loans primarily represents interest received in advance, but not yet earned, on loans originated on a discounted basis.

The Company sold and/or reclassified to held-for-sale $2.6 billion and $1.0 billion of corporate loans during the years ended December 31, 2019 and 2018, respectively. The Company did not have significant purchases of corporate loans classified as held-for-investment for the years ended December 31, 2019 or 2018.

Lease financing

Citi is a lessor in the power, railcars, shipping and aircraft sectors, where the Company has executed operating, direct financing and leveraged leases. Citi's $1.4 billion of lease financing receivables, as of December 31, 2019, is composed of approximately equal balances of direct financing lease receivables and net investments in leveraged leases. Citi uses the interest rate implicit in the lease to determine the present value of its lease financing receivables. Interest income on direct financing and leveraged leases during the year ended December 31, 2019 was not material.

The Company's leases have an average remaining maturity of approximately three and a half years. In certain cases, Citi obtains residual value insurance from third parties and/or the lessee to manage the risk associated with the residual value of the leased assets. The receivable related to the residual value of the leased assets is $0.9 billion as of December 31, 2019, while the amount covered by residual value guarantees is $0.3 billion.

The Company's operating leases, where Citi is a lessor, are not significant to the Consolidated Financial Statements.

Delinquency Status

Citi generally does not manage corporate loans on a delinquency basis. 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 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. While corporate loans are generally managed based on their internally assigned risk rating (see further discussion below), the following tables present delinquency information by corporate loan type.

Corporate Loan Delinquencies and Non-Accrual Details at December 31, 2019

In millions of dollars	30–89 days past due and accruing(1)	≥ 90 days past due and accruing(1)	Total past due and accruing	Total non-accrual(2)	Total current(3)	Total loans(4)
Commercial and industrial	**$ 676**	**$ 93**	**$ 769**	**$ 1,828**	**$ 164,249**	**$ 166,846**
Financial institutions	**791**	**3**	**794**	**50**	**91,008**	**91,852**
Mortgage and real estate	**534**	**4**	**538**	**188**	**62,425**	**63,151**
Lease financing	**58**	**9**	**67**	**41**	**1,277**	**1,385**
Other	**190**	**22**	**212**	**81**	**62,341**	**62,634**
Loans at fair value						**4,067**
Total	**$ 2,249**	**$ 131**	**$ 2,380**	**$ 2,188**	**$ 381,300**	**$ 389,935**

Corporate Loan Delinquencies and Non-Accrual Details at December 31, 2018

In millions of dollars	30–89 days past due and accruing(1)	≥ 90 days past due and accruing(1)	Total past due and accruing	Total non-accrual(2)	Total current(3)	Total loans(4)
Commercial and industrial	$ 403	$ 111	$ 514	$ 1,119	$ 173,257	$ 174,890
Financial institutions	87	7	94	102	85,088	85,284
Mortgage and real estate	128	5	133	215	57,152	57,500
Lease financing	5	10	15	—	1,517	1,532
Other	151	52	203	75	59,149	59,427
Loans at fair value						3,203
Total	$ 774	$ 185	$ 959	$ 1,511	$ 376,163	$ 381,836

(1) Corporate loans that are 90 days past due are generally classified as non-accrual. Corporate loans are considered past due when principal or interest is contractually due but unpaid.
(2) Non-accrual loans generally include those loans that are 90 days or more past due or those loans for which Citi believes, 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.
(3) Loans less than 30 days past due are presented as current.
(4) Total loans include loans at fair value, which are not included in the various delinquency columns.

Citigroup has a risk management process to monitor, evaluate and manage the principal risks associated with its corporate loan portfolio. As part of its risk management process, Citi assigns numeric risk ratings to its corporate loan facilities based on quantitative and qualitative assessments of the obligor and facility. These risk ratings are reviewed at least annually or more often if material events related to the obligor or facility warrant. Factors considered in assigning the risk ratings include financial condition of the obligor, qualitative assessment of management and strategy, amount and sources of repayment, amount and type of collateral and guarantee arrangements, amount and type of any contingencies associated with the obligor and the obligor's industry and geography.

The obligor risk ratings are defined by ranges of default probabilities. The facility risk ratings are defined by ranges of loss norms, which are the product of the probability of default and the loss given default. The investment grade rating categories are similar to the category BBB-/Baa3 and above as defined by S&P and Moody's. Loans classified according to the bank regulatory definitions as special mention, substandard and doubtful will have risk ratings within the non-investment-grade categories.

Corporate Loans Credit Quality Indicators

	Recorded investment in loans[1]	
In millions of dollars	**December 31, 2019**	December 31, 2018
Investment grade[2]		
Commercial and industrial	**$ 110,797**	$ 113,925
Financial institutions	**80,533**	73,533
Mortgage and real estate	**27,571**	26,799
Lease financing	**816**	1,035
Other	**57,339**	58,916
Total investment grade	**$ 277,056**	$ 274,208
Non-investment grade[2]		
Accrual		
Commercial and industrial	**$ 54,220**	$ 53,942
Financial institutions	**11,269**	10,866
Mortgage and real estate	**3,811**	4,200
Lease financing	**528**	497
Other	**5,206**	5,753
Non-accrual		
Commercial and industrial	**1,828**	1,119
Financial institutions	**50**	102
Mortgage and real estate	**188**	215
Lease financing	**41**	—
Other	**81**	75
Total non-investment grade	**$ 77,222**	$ 76,769
Non-rated private bank loans managed on a delinquency basis[2]	**$ 31,590**	$ 27,656
Loans at fair value	**4,067**	3,203
Corporate loans, net of unearned income	**$ 389,935**	$ 381,836

(1) Recorded investment in a loan includes net deferred loan fees and costs, unamortized premium or discount, less any direct write-downs.
(2) Held-for-investment loans are accounted for on an amortized cost basis.

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, less cost to sell. Cash-basis loans are returned to an accrual status when all contractual principal and interest amounts are reasonably assured of repayment and there is a sustained period of repayment performance, generally six months, in accordance with the contractual terms of the loan.

Non-Accrual Corporate Loans

The following tables present non-accrual loan information by corporate loan type and interest income recognized on non-accrual corporate loans:

In millions of dollars	At and for the year ended December 31, 2019 Recorded investment(1)	Unpaid principal balance	Related specific allowance	Average carrying value(2)	Interest income recognized(3)
Non-accrual corporate loans					
Commercial and industrial	$ 1,828	$ 1,942	$ 283	$ 1,449	$ 33
Financial institutions	50	120	2	63	—
Mortgage and real estate	188	362	10	192	—
Lease financing	41	41	—	8	—
Other	81	202	4	76	9
Total non-accrual corporate loans	$ 2,188	$ 2,667	$ 299	$ 1,788	$ 42

In millions of dollars	At and for the year ended December 31, 2018 Recorded investment(1)	Unpaid principal balance	Related specific allowance	Average carrying value(2)	Interest income recognized(3)
Non-accrual corporate loans					
Commercial and industrial	$ 1,119	$ 1,270	$ 245	$ 1,299	$ 49
Financial institutions	102	123	35	99	—
Mortgage and real estate	215	323	39	233	1
Lease financing	—	28	—	21	—
Other	75	165	6	83	6
Total non-accrual corporate loans	$ 1,511	$ 1,909	$ 325	$ 1,735	$ 56

In millions of dollars	December 31, 2019		December 31, 2018	
	Recorded investment(1)	Related specific allowance	Recorded investment(1)	Related specific allowance
Non-accrual corporate loans with specific allowance				
Commercial and industrial	$ 714	$ 283	$ 801	$ 245
Financial institutions	40	2	76	35
Mortgage and real estate	48	10	100	39
Lease financing	—	—	—	—
Other	7	4	24	6
Total non-accrual corporate loans with specific allowance	$ 809	$ 299	$ 1,001	$ 325
Non-accrual corporate loans without specific allowance				
Commercial and industrial	$ 1,114		$ 318	
Financial institutions	10		26	
Mortgage and real estate	140		115	
Lease financing	41		—	
Other	74		51	
Total non-accrual corporate loans without specific allowance	$ 1,379	N/A	$ 510	N/A

(1) Recorded investment in a loan includes net deferred loan fees and costs, unamortized premium or discount, less any direct write-downs.
(2) Average carrying value represents the average recorded investment balance and does not include related specific allowance.
(3) Interest income recognized for the year ended December 31, 2017 was $35 million.
N/A Not applicable

Corporate Troubled Debt Restructurings

For the year ended December 31, 2019:

In millions of dollars	Carrying value of TDRs modified during the period	TDRs involving changes in the amount and/or timing of principal payments(1)	TDRs involving changes in the amount and/or timing of interest payments(2)	TDRs involving changes in the amount and/or timing of both principal and interest payments
Commercial and industrial	$ 283	$ 19	$ —	$ 264
Mortgage and real estate	16	—	—	16
Other	6	6	—	—
Total	$ 305	$ 25	$ —	$ 280

For the year ended December 31, 2018:

In millions of dollars	Carrying value of TDRs modified during the period	TDRs involving changes in the amount and/or timing of principal payments(1)	TDRs involving changes in the amount and/or timing of interest payments(2)	TDRs involving changes in the amount and/or timing of both principal and interest payments
Commercial and industrial	$ 159	$ 5	$ 8	$ 146
Mortgage and real estate	60	3	—	57
Total	$ 219	$ 8	$ 8	$ 203

(1) TDRs involving changes in the amount or timing of principal payments may involve principal forgiveness or deferral of periodic and/or final principal payments. Because forgiveness of principal is rare for corporate loans, modifications typically have little to no impact on the loans' projected cash flows and thus little to no impact on the allowance established for the loans. Charge-offs for amounts deemed uncollectable may be recorded at the time of the restructuring or may have already been recorded in prior periods such that no charge-off is required at the time of the modification.

(2) TDRs involving changes in the amount or timing of interest payments may involve a below-market interest rate.

The following table presents total corporate loans modified in a TDR as well as those TDRs that defaulted and for which the payment default occurred within one year of a permanent modification. Default is defined as 60 days past due, except for classifiably managed commercial banking loans, where default is defined as 90 days past due.

In millions of dollars	**TDR balances at December 31, 2019**	**TDR loans in payment default during the year ended December 31, 2019**	TDR balances at December 31, 2018	TDR loans in payment default during the year ended December 31, 2018
Commercial and industrial	$ 603	$ 35	$ 568	$ 111
Financial institutions	—	—	25	—
Mortgage and real estate	79	—	123	—
Lease financing	—	—	—	—
Other	44	—	2	—
Total(1)	$ 726	$ 35	$ 718	$ 111

(1) The above table reflects activity for loans outstanding that were considered TDRs as of the end of the reporting period.

15. ALLOWANCE FOR CREDIT LOSSES

In millions of dollars	**2019**	2018	2017
Allowance for loan losses at beginning of period	**$ 12,315**	$ 12,355	$ 12,060
Gross credit losses	**(9,341)**	(8,665)	(8,673)
Gross recoveries[1]	**1,573**	1,552	1,597
Net credit losses (NCLs)	**$ (7,768)**	$ (7,113)	$ (7,076)
NCLs	**$ 7,768**	$ 7,113	$ 7,076
Net reserve builds (releases)	**364**	394	544
Net specific reserve builds (releases)	**86**	(153)	(117)
Total provision for loan losses	**$ 8,218**	$ 7,354	$ 7,503
Other, net (see table below)	**18**	(281)	(132)
Allowance for loan losses at end of period	**$ 12,783**	$ 12,315	$ 12,355
Allowance for credit losses on unfunded lending commitments at beginning of period	**$ 1,367**	$ 1,258	$ 1,418
Provision (release) for unfunded lending commitments	**92**	113	(161)
Other, net	**(3)**	(4)	1
Allowance for credit losses on unfunded lending commitments at end of period[2]	**$ 1,456**	$ 1,367	$ 1,258
Total allowance for loans, leases and unfunded lending commitments	**$ 14,239**	$ 13,682	$ 13,613

(1) Recoveries have been reduced by certain collection costs that are incurred only if collection efforts are successful.
(2) Represents additional credit loss reserves for unfunded lending commitments and letters of credit recorded in *Other liabilities* on the Consolidated Balance Sheet.

Other, net details

In millions of dollars	**2019**	2018	2017
Sales or transfers of various consumer loan portfolios to HFS			
Transfer of real estate loan portfolios	**$ (42)**	$ (91)	$ (106)
Transfer of other loan portfolios	**—**	(110)	(155)
Sales or transfers of various consumer loan portfolios to HFS	**$ (42)**	$ (201)	$ (261)
FX translation, primarily consumer	**60**	(60)	115
Other	**—**	(20)	14
Other, net	**$ 18**	$ (281)	$ (132)

Allowance for Credit Losses and End-of-Period Loans at December 31, 2019

In millions of dollars	Corporate	Consumer	Total
Allowance for loan losses at beginning of year	**$ 2,811**	**$ 9,504**	**$ 12,315**
Charge-offs	**(487)**	**(8,854)**	**(9,341)**
Recoveries	**95**	**1,478**	**1,573**
Replenishment of net charge-offs	**392**	**7,376**	**7,768**
Net reserve builds (releases)	**96**	**268**	**364**
Net specific reserve builds (releases)	**(21)**	**107**	**86**
Other	**—**	**18**	**18**
Ending balance	**$ 2,886**	**$ 9,897**	**$ 12,783**
Allowance for loan losses			
Collectively evaluated in accordance with ASC 450	**$ 2,587**	**$ 8,706**	**$ 11,293**
Individually evaluated in accordance with ASC 310-10-35	**299**	**1,190**	**1,489**
Purchased credit impaired in accordance with ASC 310-30	**—**	**1**	**1**
Total allowance for loan losses	**$ 2,886**	**$ 9,897**	**$ 12,783**
Loans, net of unearned income			
Collectively evaluated in accordance with ASC 450	**$ 383,828**	**$ 304,510**	**$ 688,338**
Individually evaluated in accordance with ASC 310-10-35	**2,040**	**4,892**	**6,932**
Purchased credit impaired in accordance with ASC 310-30	**—**	**128**	**128**
Held at fair value	**4,067**	**18**	**4,085**
Total loans, net of unearned income	**$ 389,935**	**$ 309,548**	**$ 699,483**

Allowance for Credit Losses and End-of-Period Loans at December 31, 2018

In millions of dollars	Corporate	Consumer	Total
Allowance for loan losses at beginning of year	$ 2,943	$ 9,412	$ 12,355
Charge-offs	(343)	(8,322)	(8,665)
Recoveries	138	1,414	1,552
Replenishment of net charge-offs	205	6,908	7,113
Net reserve builds (releases)	42	352	394
Net specific reserve builds (releases)	(151)	(2)	(153)
Other	(23)	(258)	(281)
Ending balance	$ 2,811	$ 9,504	$ 12,315
Allowance for loan losses			
Collectively evaluated in accordance with ASC 450	$ 2,486	$ 8,386	$ 10,872
Individually evaluated in accordance with ASC 310-10-35	325	1,116	1,441
Purchased credit impaired in accordance with ASC 310-30	—	2	2
Total allowance for loan losses	$ 2,811	$ 9,504	$ 12,315
Loans, net of unearned income			
Collectively evaluated in accordance with ASC 450	$ 377,186	$ 297,128	$ 674,314
Individually evaluated in accordance with ASC 310-10-35	1,447	5,084	6,531
Purchased credit impaired in accordance with ASC 310-30	—	128	128
Held at fair value	3,203	20	3,223
Total loans, net of unearned income	$ 381,836	$ 302,360	$ 684,196

Allowance for Credit Losses at December 31, 2017

In millions of dollars	Corporate	Consumer	Total
Allowance for loan losses at beginning of year	$ 3,218	$ 8,842	$ 12,060
Charge-offs	(632)	(8,041)	(8,673)
Recoveries	153	1,444	1,597
Replenishment of net charge-offs	479	6,597	7,076
Net reserve builds (releases)	(274)	818	544
Net specific reserve builds (releases)	(31)	(86)	(117)
Other	30	(162)	(132)
Ending balance	$ 2,943	$ 9,412	$ 12,355

16. GOODWILL AND INTANGIBLE ASSETS

Goodwill

The changes in *Goodwill* by segment were as follows:

In millions of dollars	Global Consumer Banking	Institutional Clients Group	Corporate/Other	Total
Balance at December 31, 2016[1]	$ 11,874	$ 9,741	$ 44	$ 21,659
Foreign exchange translation	$ 286	$ 443	$ —	$ 729
Divestitures[2]	(32)	(72)	—	(104)
Impairment of goodwill[3]	—	—	(28)	(28)
Balance at December 31, 2017	$ 12,128	$ 10,112	$ 16	$ 22,256
Foreign exchange translation	$ (41)	$ (153)	$ —	$ (194)
Divestitures[4]	—	—	(16)	(16)
Balance at December 31, 2018	$ 12,087	$ 9,959	$ —	$ 22,046
Foreign exchange translation	$ 15	$ 65	$ —	$ 80
Balance at December 31, 2019	**$ 12,102**	**$ 10,024**	**$ —**	**$ 22,126**

(1) December 31, 2016 has been revised to reflect intersegment goodwill allocations that resulted from the 2019 reorganization of the Citi commercial banking business from *GCB* to *ICG*. See Note 3 to the Consolidated Financial Statements.
(2) Primarily related to the sale of a fixed income analytics business and a fixed income index business completed in 2017 and agreement to sell a Mexico asset management business as of December 31, 2017. See Note 2 to the Consolidated Financial Statements.
(3) Related to the transfer of the mortgage servicing business from *North America GCB* to *Corporate/Other* effective January 1, 2017.
(4) Primarily related to the sale of consumer operations in Colombia in 2018.

Goodwill impairment testing is performed at the level below each business segment (referred to as a reporting unit). See Note 3 for further information on business segments.

The Company performed its annual goodwill impairment test as of July 1, 2019. The fair values of the Company's reporting units exceeded their carrying values by approximately 33% to 134% and no reporting unit is at risk of impairment.

Effective in the fourth quarter of 2019, the Citi commercial banking business, previously included in *North America GCB*, *Latin America GCB* and *Asia GCB,* was reorganized and is now part of *ICG*. Goodwill was allocated to the transferred business based on relative fair value to the legacy reporting units. An interim goodwill impairment test was performed under both the legacy and current reporting unit structures, which resulted in no impairment. No additional triggering events were identified and no goodwill was impaired during the year.

Intangible Assets

The components of intangible assets were as follows:

In millions of dollars	**December 31, 2019** Gross carrying amount	Accumulated amortization	Net carrying amount	December 31, 2018 Gross carrying amount	Accumulated amortization	Net carrying amount
Purchased credit card relationships	**$ 5,676**	**$ 4,059**	**$ 1,617**	$ 5,733	$ 3,936	$ 1,797
Credit card contract-related intangibles[(1)]	**5,393**	**3,069**	**2,324**	5,225	2,791	2,434
Core deposit intangibles	**434**	**433**	**1**	419	415	4
Other customer relationships	**424**	**275**	**149**	470	299	171
Present value of future profits	**34**	**31**	**3**	32	29	3
Indefinite-lived intangible assets	**228**	**—**	**228**	218	—	218
Other	**82**	**77**	**5**	84	75	9
Intangible assets (excluding MSRs)	**$ 12,271**	**$ 7,944**	**$ 4,327**	$ 12,181	$ 7,545	$ 4,636
Mortgage servicing rights (MSRs)[(2)]	**495**	**—**	**495**	584	—	584
Total intangible assets	**$ 12,766**	**$ 7,944**	**$ 4,822**	$ 12,765	$ 7,545	$ 5,220

(1) Primarily reflects contract-related intangibles associated with the American Airlines, The Home Depot, Costco and AT&T credit card program agreements, which represented 96% of the aggregate net carrying amount as of December 31, 2019.
(2) For additional information on Citi's MSRs, see Note 21 to the Consolidated Financial Statements.

Intangible assets amortization expense was $564 million, $557 million and $603 million for 2019, 2018 and 2017, respectively. Intangible assets amortization expense is estimated to be $424 million in 2020, $399 million in 2021, $1,025 million in 2022, $226 million in 2023 and $219 million in 2024.

The changes in intangible assets were as follows:

In millions of dollars	Net carrying amount at December 31, 2018	**Acquisitions/ divestitures**	**Amortization**	**Impairments**	**FX translation and other**	**Net carrying amount at December 31, 2019**
Purchased credit card relationships[(1)]	$ 1,797	**$ 9**	**$ (189)**	**$ —**	**$ —**	**$ 1,617**
Credit card contract-related intangibles[(2)]	2,434	**73**	**(336)**	**—**	**153**	**2,324**
Core deposit intangibles	4	**—**	**(4)**	**—**	**1**	**1**
Other customer relationships	171	**—**	**(24)**	**—**	**2**	**149**
Present value of future profits	3	**—**	**—**	**—**	**—**	**3**
Indefinite-lived intangible assets	218	**4**	**—**	**—**	**6**	**228**
Other	9	**6**	**(11)**	**—**	**1**	**5**
Intangible assets (excluding MSRs)	$ 4,636	**$ 92**	**$ (564)**	**$ —**	**$ 163**	**$ 4,327**
Mortgage servicing rights (MSRs)[(3)]	584					**495**
Total intangible assets	$ 5,220					**$ 4,822**

(1) Reflects intangibles for the value of cardholder relationships, which are discrete from partner contract-related intangibles and include credit card accounts primarily in the Costco, Macy's and Sears portfolios.
(2) Primarily reflects contract-related intangibles associated with the American Airlines, The Home Depot, Costco and AT&T credit card program agreements, which represent 96% of the aggregate net carrying amount at December 31, 2019 and 2018.
(3) For additional information on Citi's MSRs, including the rollforward from 2018 to 2019, see Note 21 to the Consolidated Financial Statements.

17. DEBT

Short-Term Borrowings

	December 31,			
	2019		2018	
In millions of dollars	**Balance**	**Weighted average coupon**	Balance	Weighted average coupon
Commercial paper				
Bank(1)	**$ 10,155**		$ 13,238	
Broker-dealer and other(2)	**6,321**		—	
Total commercial paper	**$ 16,476**	**1.98%**	$ 13,238	1.95%
Other borrowings(3)	**28,573**	**2.57**	19,108	2.99
Total	**$ 45,049**		$ 32,346	

(1) Represents Citibank entities as well as other bank entities.
(2) Represents broker-dealer and other non-bank subsidiaries that are consolidated into Citigroup Inc., the parent holding company.
(3) Includes borrowings from the Federal Home Loan Banks and other market participants. At December 31, 2019 and 2018, collateralized short-term advances from the Federal Home Loan Banks were $17.6 billion and $9.5 billion, respectively.

Borrowings under bank lines of credit may be at interest rates based on LIBOR, CD rates, the prime rate or bids submitted by the banks. Citigroup pays commitment fees for its lines of credit.

Some of Citigroup's non-bank subsidiaries have credit facilities with Citigroup's subsidiary depository institutions, including Citibank. Borrowings under these facilities are secured in accordance with Section 23A of the Federal Reserve Act.

Citigroup Global Markets Holdings Inc. (CGMHI) has borrowing agreements consisting of facilities that CGMHI has been advised are available, but where no contractual lending obligation exists. These arrangements are reviewed on an ongoing basis to ensure flexibility in meeting CGMHI's short-term requirements.

Long-Term Debt

			Balances at December 31,	
In millions of dollars	**Weighted average coupon(1)**	**Maturities**	**2019**	2018
Citigroup Inc.(2)				
Senior debt	3.11%	2020-2098	**$ 123,292**	$ 117,511
Subordinated debt(3)	5.59	2022-2046	**25,463**	24,545
Trust preferred securities	8.15	2036-2067	**1,722**	1,711
Bank(4)				
Senior debt	2.51	2020-2038	**53,340**	61,237
Broker-dealer(5)				
Senior debt	2.43	2020-2098	**44,817**	26,947
Subordinated debt(3)	2.37	2022-2046	**126**	48
Total	3.28%		**$ 248,760**	$ 231,999
Senior debt			**$ 221,449**	$ 205,695
Subordinated debt(3)			**25,589**	24,593
Trust preferred securities			**1,722**	1,711
Total			**$ 248,760**	$ 231,999

(1) The weighted average coupon excludes structured notes accounted for at fair value.
(2) Represents the parent holding company.
(3) Includes notes that are subordinated within certain countries, regions or subsidiaries.
(4) Represents Citibank entities as well as other bank entities. At December 31, 2019 and 2018, collateralized long-term advances from the Federal Home Loan Banks were $5.5 billion and $10.5 billion, respectively.
(5) Represents broker-dealer and other non-bank subsidiaries that are consolidated into Citigroup Inc., the parent holding company.

The Company issues both fixed- and variable-rate debt in a range of currencies. It uses derivative contracts, primarily interest rate swaps, to effectively convert a portion of its fixed-rate debt to variable-rate debt. The maturity structure of the derivatives generally corresponds to the maturity structure of the debt being hedged. In addition, the Company uses other derivative contracts to manage the foreign exchange impact of certain debt issuances. At December 31, 2019, the Company's overall weighted average interest rate for long-term debt, excluding structured notes accounted for at fair value, was 3.28% on a contractual basis and 3.54% including the effects of derivative contracts.

Aggregate annual maturities of long-term debt obligations (based on final maturity dates) including trust preferred securities are as follows:

In millions of dollars	2020	2021	2022	2023	2024	Thereafter	Total
Citigroup Inc.	$ 7,033	$ 15,208	$ 13,061	$ 14,202	$ 8,247	$ 92,726	$ 150,477
Bank	20,654	14,023	8,471	2,634	4,417	3,141	53,340
Broker-dealer	9,570	8,852	5,558	3,292	3,359	14,312	44,943
Total	$ 37,257	$ 38,083	$ 27,090	$ 20,128	$ 16,023	$ 110,179	$ 248,760

The following table summarizes Citi's outstanding trust preferred securities at December 31, 2019:

						Junior subordinated debentures owned by trust		
Trust	**Issuance date**	**Securities issued**	**Liquidation value[(1)]**	**Coupon rate[(2)]**	**Common shares issued to parent**	**Amount**	**Maturity**	**Redeemable by issuer beginning**
In millions of dollars, except securities and share amounts								
Citigroup Capital III	Dec. 1996	194,053	$ 194	7.625%	6,003	$ 200	Dec. 1, 2036	Not redeemable
Citigroup Capital XIII	Sept. 2010	89,840,000	2,246	3 mo LIBOR + 637 bps	1,000	2,246	Oct. 30, 2040	Oct. 30, 2015
Citigroup Capital XVIII	June 2007	99,901	132	3 mo LIBOR + 88.75 bps	50	132	June 28, 2067	June 28, 2017
Total obligated			**$ 2,572**			**$ 2,578**		

Note: Distributions on the trust preferred securities and interest on the subordinated debentures are payable semiannually for Citigroup Capital III and Citigroup Capital XVIII and quarterly for Citigroup Capital XIII.

(1) Represents the notional value received by outside investors from the trusts at the time of issuance. This differs from Citi's balance sheet carrying value due primarily to unamortized discount and issuance costs.

(2) In each case, the coupon rate on the subordinated debentures is the same as that on the trust preferred securities.

18. REGULATORY CAPITAL

Citigroup is subject to risk-based capital and leverage standards issued by the Federal Reserve Board, which constitute the U.S. Basel III rules. Citi's U.S.-insured depository institution subsidiaries, including Citibank, are subject to similar standards issued by their respective primary federal bank regulatory agencies. These standards are used to evaluate capital adequacy and include the required minimums shown in the following table. The regulatory agencies are required by law to take specific, prompt corrective actions with respect to institutions that do not meet minimum capital standards.

The following table sets forth for Citigroup and Citibank the regulatory capital tiers, total risk-weighted assets, quarterly adjusted average total assets, Total Leverage Exposure, risk-based capital ratios and leverage ratios:

		Citigroup			Citibank		
In millions of dollars, except ratios	**Stated minimum**	**Well-capitalized minimum**	**December 31, 2019**	December 31, 2018	**Well-capitalized minimum**	**December 31, 2019**	December 31, 2018
Common Equity Tier 1 Capital			**$ 137,798**	$ 139,252		**$ 130,791**	$ 129,091
Tier 1 Capital			**155,805**	158,122		**132,918**	131,215
Total Capital (Tier 1 Capital + Tier 2 Capital)—Standardized Approach			**193,682**	195,440		**157,324**	155,154
Total Capital (Tier 1 Capital + Tier 2 Capital)—Advanced Approaches			**181,337**	183,144		**145,989**	144,358
Total risk-weighted assets—Standardized Approach			**1,166,523**	1,174,448		**1,019,916**	1,032,809
Total risk-weighted assets—Advanced Approaches			**1,135,553**	1,131,933		**932,432**	926,229
Quarterly adjusted average total assets(1)			**1,957,039**	1,896,959		**1,459,851**	1,398,875
Total Leverage Exposure(2)			**2,507,891**	2,465,641		**1,951,701**	1,914,663
Common Equity Tier 1 Capital ratio(3)	**4.5%**	**N/A**	**11.81%**	11.86%	**6.5%**	**12.82%**	12.50%
Tier 1 Capital ratio(3)	**6.0**	**6.0%**	**13.36**	13.46	**8.0**	**13.03**	12.70
Total Capital ratio(3)	**8.0**	**10.0**	**15.97**	16.18	**10.0**	**15.43**	15.02
Tier 1 Leverage ratio	**4.0**	**N/A**	**7.96**	8.34	**5.0**	**9.10**	9.38
Supplementary Leverage ratio	**3.0**	**N/A**	**6.21**	6.41	**6.0**	**6.81**	6.85

(1) Tier 1 Leverage ratio denominator.
(2) Supplementary Leverage ratio denominator.
(3) As of December 31, 2019 and 2018, Citigroup'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 ratios were the lower derived under the Basel III Advanced Approaches framework. As of December 31, 2019 and 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.
N/A Not applicable

As indicated in the table above, Citigroup and Citibank were "well capitalized" under the current federal bank regulatory agency definitions as of December 31, 2019 and 2018.

Banking Subsidiaries—Constraints on Dividends

There are various legal limitations on the ability of Citigroup's subsidiary depository institutions to extend credit, pay dividends or otherwise supply funds to Citigroup and its non-bank subsidiaries. The approval of the Office of the Comptroller of the Currency is required if total dividends declared in any calendar year were to exceed amounts specified by the agency's regulations.

In determining the dividends, each subsidiary depository institution must also consider its effect on applicable risk-based capital and leverage ratio requirements, as well as policy statements of the federal bank regulatory agencies that indicate that banking organizations should generally pay dividends out of current operating earnings. Citigroup received $17.3 billion and $8.3 billion in dividends from Citibank during 2019 and 2018, respectively.

19. CHANGES IN ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS) (AOCI)

Changes in each component of Citigroup's *Accumulated other comprehensive income (loss)* were as follows:

In millions of dollars	Net unrealized gains (losses) on investment securities	Debt valuation adjustment (DVA)[1]	Cash flow hedges[2]	Benefit plans[3]	Foreign currency translation adjustment (CTA), net of hedges[4]	Excluded component of fair value hedges[5]	Accumulated other comprehensive income (loss)
Balance, December 31, 2016	$ (799)	$ (352)	$ (560)	$ (5,164)	$ (25,506)	$ —	$ (32,381)
Adjustment to opening balance, net of taxes[6]	$ 504	$ —	$ —	$ —	$ —	$ —	$ 504
Adjusted balance, beginning of period	$ (295)	$ (352)	$ (560)	$ (5,164)	$ (25,506)	$ —	$ (31,877)
Impact of Tax Reform[7]	$ (223)	$ (139)	$ (113)	$ (1,020)	$ (1,809)	$ —	$ (3,304)
Other comprehensive income before reclassifications	(186)	(426)	(111)	(158)	1,607	—	726
Increase (decrease) due to amounts reclassified from *AOCI*	(454)	(4)	86	159	—	—	(213)
Change, net of taxes	$ (863)	$ (569)	$ (138)	$ (1,019)	$ (202)	$ —	$ (2,791)
Balance, December 31, 2017	$ (1,158)	$ (921)	$ (698)	$ (6,183)	$ (25,708)	$ —	$ (34,668)
Adjustment to opening balance, net of taxes[8]	$ (3)	$ —	$ —	$ —	$ —	$ —	$ (3)
Adjusted balance, beginning of period	$ (1,161)	$ (921)	$ (698)	$ (6,183)	$ (25,708)	$ —	$ (34,671)
Other comprehensive income before reclassifications	(866)	1,081	(135)	(240)	(2,607)	(57)	(2,824)
Increase (decrease) due to amounts reclassified from *AOCI*[9]	(223)	32	105	166	245	—	325
Change, net of taxes	$ (1,089)	$ 1,113	$ (30)	$ (74)	$ (2,362)	$ (57)	$ (2,499)
Balance at December 31, 2018	$ (2,250)	$ 192	$ (728)	$ (6,257)	$ (28,070)	$ (57)	$ (37,170)
Other comprehensive income before reclassifications	**3,065**	**(1,151)**	**549**	**(758)**	**(647)**	**25**	**1,083**
Increase (decrease) due to amounts reclassified from *AOCI*	**(1,080)**	**15**	**302**	**206**	**326**	**—**	**(231)**
Change, net of taxes	**$ 1,985**	**$ (1,136)**	**$ 851**	**$ (552)**	**$ (321)**	**$ 25**	**$ 852**
Balance at December 31, 2019	**$ (265)**	**$ (944)**	**$ 123**	**$ (6,809)**	**$ (28,391)**	**$ (32)**	**$ (36,318)**

(1) Changes in DVA are reflected as a component of *AOCI*, pursuant to the adoption of ASU 2016-01 relating to the presentation of DVA on fair value option liabilities.
(2) Primarily driven by Citi's pay fixed/receive floating interest rate swap programs that hedge the floating rates on liabilities.
(3) Primarily reflects adjustments based on the quarterly actuarial valuations of the Company's significant pension and postretirement plans, annual actuarial valuations of all other plans and amortization of amounts previously recognized in other comprehensive income.
(4) Primarily reflects the movements in (by order of impact) the Indian rupee, Brazilian real, Chilean peso, and Euro against the U.S. dollar and changes in related tax effects and hedges for the year ended December 31, 2019. Primarily reflects the movements in (by order of impact) the Brazilian real, Indian rupee, Mexican peso, and Australian dollar against the U.S. dollar and changes in related tax effects and hedges for the year ended December 31, 2018. Primarily reflects the movements in (by order of impact) the Euro, Mexican peso, Polish zloty and South Korean won against the U.S. dollar and changes in related tax effects and hedges for the year ended December 31, 2017. Amounts recorded in the CTA component of AOCI remain in AOCI until the sale or substantial liquidation of the foreign entity, at which point such amounts related to the foreign entity are reclassified into earnings.
(5) Beginning in the first quarter of 2018, changes in the excluded component of fair value hedges are reflected as a component of *AOCI*, pursuant to the early adoption of ASU 2017-12, *Targeted Improvements to Accounting for Hedging Activities*. See Note 1 of the Consolidated Financial Statements for further information regarding this change.
(6) In the second quarter of 2017, Citi early adopted ASU 2017-08. Upon adoption, a cumulative effect adjustment was recorded to reduce *Retained earnings*, effective January 1, 2017, for the incremental amortization of cumulative fair value hedge adjustments on callable state and municipal debt securities. See Note 1 to the Consolidated Financial Statements.
(7) In the fourth quarter of 2017, Citi adopted ASU 2018-02, which transferred these amounts from *AOCI* to *Retained earnings*. See Note 1 to the Consolidated Financial Statements.
(8) Citi adopted ASU 2016-01 and ASU 2018-03 on January 1, 2018. Upon adoption, a cumulative effect adjustment was recorded from *AOCI* to *Retained earnings* for net unrealized gains on former AFS equity securities. For additional information, see Note 1 to the Consolidated Financial Statements.
(9) Includes the impact of the release of foreign currency translation adjustment, net of hedges, upon meeting the accounting trigger for substantial liquidation of Citi's Japan Consumer Finance business during the fourth quarter of 2018. See Note 1 to the Consolidated Financial Statements.

The pretax and after-tax changes in each component of *Accumulated other comprehensive income (loss)* were as follows:

In millions of dollars	Pretax	Tax effect[1]	After-tax
Balance, December 31, 2016	$ (42,035)	$ 9,654	$ (32,381)
Adjustment to opening balance[2]	803	(299)	504
Adjusted balance, beginning of period	$ (41,232)	$ 9,355	$ (31,877)
Change in net unrealized gains (losses) on investment securities	(1,088)	225	(863)
Debt valuation adjustment (DVA)	(680)	111	(569)
Cash flow hedges	(37)	(101)	(138)
Benefit plans	14	(1,033)	(1,019)
Foreign currency translation adjustment	1,795	(1,997)	(202)
Change	$ 4	$ (2,795)	$ (2,791)
Balance, December 31, 2017	$ (41,228)	$ 6,560	$ (34,668)
Adjustment to opening balance[3]	(4)	1	(3)
Adjusted balance, beginning of period	$ (41,232)	$ 6,561	$ (34,671)
Change in net unrealized gains (losses) on investment securities	(1,435)	346	(1,089)
Debt valuation adjustment (DVA)	1,415	(302)	1,113
Cash flow hedges	(38)	8	(30)
Benefit plans	(94)	20	(74)
Foreign currency translation adjustment	(2,624)	262	(2,362)
Excluded component of fair value hedges	(74)	17	(57)
Change	$ (2,850)	$ 351	$ (2,499)
Balance, December 31, 2018	$ (44,082)	$ 6,912	$ (37,170)
Change in net unrealized gains (losses) on AFS debt securities	**2,633**	**(648)**	**1,985**
Debt valuation adjustment (DVA)	**(1,473)**	**337**	**(1,136)**
Cash flow hedges	**1,120**	**(269)**	**851**
Benefit plans	**(671)**	**119**	**(552)**
Foreign currency translation adjustment	**(332)**	**11**	**(321)**
Excluded component of fair value hedges	**33**	**(8)**	**25**
Change	**$ 1,310**	**$ (458)**	**$ 852**
Balance, December 31, 2019	**$ (42,772)**	**$ 6,454**	**$ (36,318)**

(1) Includes the impact of ASU 2018-02, which transferred amounts from *AOCI* to *Retained earnings*. See Note 1 to the Consolidated Financial Statements.
(2) In the second quarter of 2017, Citi early adopted ASU 2017-08. Upon adoption, a cumulative effect adjustment was recorded to reduce *Retained earnings*, effective January 1, 2017, for the incremental amortization of cumulative fair value hedge adjustments on callable state and municipal debt securities. See Note 1 to the Consolidated Financial Statements.
(3) Citi adopted ASU 2016-01 and ASU 2018-03 on January 1, 2018. Upon adoption, a cumulative effect adjustment was recorded from *AOCI* to *Retained earnings* for net unrealized gains on former AFS equity securities. For additional information, see Note 1 to the Consolidated Financial Statements.

The Company recognized pretax gains (losses) related to amounts in *AOCI* reclassified to the Consolidated Statement of Income as follows:

	Increase (decrease) in *AOCI* due to amounts reclassified to Consolidated Statement of Income		
	Year ended December 31,		
In millions of dollars	**2019**	2018	2017
Realized (gains) losses on sales of investments	**$ (1,474)**	$ (421)	$ (778)
Gross impairment losses	**23**	125	63
Subtotal, pretax	**$ (1,451)**	$ (296)	$ (715)
Tax effect	**371**	73	261
Net realized (gains) losses on investments, after-tax[(1)]	**$ (1,080)**	$ (223)	$ (454)
Realized DVA (gains) losses on fair value option liabilities, pretax	**$ 20**	$ 41	$ (7)
Tax effect	**(5)**	(9)	3
Net realized DVA, after-tax	**$ 15**	$ 32	$ (4)
Interest rate contracts	**$ 384**	$ 301	$ 126
Foreign exchange contracts	**7**	17	10
Subtotal, pretax	**$ 391**	$ 318	$ 136
Tax effect	**(89)**	(213)	(50)
Amortization of cash flow hedges, after-tax[(2)]	**$ 302**	$ 105	$ 86
Amortization of unrecognized			
Prior service cost (benefit)	**$ (12)**	$ (34)	$ (42)
Net actuarial loss	**286**	248	271
Curtailment/settlement impact[(3)]	**1**	6	17
Subtotal, pretax	**$ 275**	$ 220	$ 246
Tax effect	**(69)**	(54)	(87)
Amortization of benefit plans, after-tax[(3)]	**$ 206**	$ 166	$ 159
Foreign currency translation adjustment	**$ —**	$ 34	$ —
Tax effect	**326**	211	—
Foreign currency translation adjustment	**$ 326**	$ 245	$ —
Total amounts reclassified out of *AOCI*, pretax	**$ (765)**	$ 317	$ (340)
Total tax effect	**534**	8	127
Total amounts reclassified out of *AOCI*, after-tax	**$ (231)**	$ 325	$ (213)

(1) The pretax amount is reclassified to *Realized gains (losses) on sales of investments, net* and *Gross impairment losses* in the Consolidated Statement of Income. See Note 13 to the Consolidated Financial Statements for additional details.
(2) See Note 22 to the Consolidated Financial Statements for additional details.
(3) See Note 8 to the Consolidated Financial Statements for additional details.

20. PREFERRED STOCK

The following table summarizes the Company's preferred stock outstanding:

	Issuance date	Redeemable by issuer beginning	Dividend rate	Redemption price per depositary share/preference share	Number of depositary shares	Carrying value in millions of dollars December 31, 2019	December 31, 2018
Series A(1)	October 29, 2012	January 30, 2023	5.950%	$ 1,000	1,500,000	**$ 1,500**	$ 1,500
Series B(2)	December 13, 2012	February 15, 2023	5.900	1,000	750,000	**750**	750
Series D(3)	April 30, 2013	May 15, 2023	5.350	1,000	1,250,000	**1,250**	1,250
Series J(4)	September 19, 2013	September 30, 2023	7.125	25	38,000,000	**950**	950
Series K(5)	October 31, 2013	November 15, 2023	6.875	25	59,800,000	**1,495**	1,495
Series L(6)	February 12, 2014	February 12, 2019	6.875	25	19,200,000	**—**	480
Series M(7)	April 30, 2014	May 15, 2024	6.300	1,000	1,750,000	**1,750**	1,750
Series N(8)	October 29, 2014	November 15, 2019	5.800	1,000	1,500,000	**—**	1,500
Series O(9)	March 20, 2015	March 27, 2020	5.875	1,000	1,500,000	**1,500**	1,500
Series P(10)	April 24, 2015	May 15, 2025	5.950	1,000	2,000,000	**2,000**	2,000
Series Q(11)	August 12, 2015	August 15, 2020	5.950	1,000	1,250,000	**1,250**	1,250
Series R(12)	November 13, 2015	November 15, 2020	6.125	1,000	1,500,000	**1,500**	1,500
Series S(13)	February 2, 2016	February 12, 2021	6.300	25	41,400,000	**1,035**	1,035
Series T(14)	April 25, 2016	August 15, 2026	6.250	1,000	1,500,000	**1,500**	1,500
Series U(15)	September 12, 2019	September 12, 2024	5.000	1,000	1,500,000	**1,500**	—
						$ 17,980	$ 18,460

(1) Issued as depositary shares, each representing a 1/25th interest in a share of the corresponding series of non-cumulative perpetual preferred stock. Dividends are payable semiannually on January 30 and July 30 at a fixed rate until January 30, 2023, thereafter payable quarterly on January 30, April 30, July 30 and October 30 at a floating rate, in each case when, as and if declared by the Citi Board of Directors.
(2) Issued as depositary shares, each representing a 1/25th interest in a share of the corresponding series of non-cumulative perpetual preferred stock. Dividends are payable semiannually on February 15 and August 15 at a fixed rate until February 15, 2023, thereafter payable quarterly on February 15, May 15, August 15 and November 15 at a floating rate, in each case when, as and if declared by the Citi Board of Directors.
(3) Issued as depositary shares, each representing a 1/25th interest in a share of the corresponding series of non-cumulative perpetual preferred stock. Dividends are payable semiannually on May 15 and November 15 at a fixed rate until May 15, 2023, thereafter payable quarterly on February 15, May 15, August 15 and November 15 at a floating rate, in each case when, as and if declared by the Citi Board of Directors.
(4) Issued as depositary shares, each representing a 1/1,000th interest in a share of the corresponding series of non-cumulative perpetual preferred stock. Dividends are payable quarterly on March 30, June 30, September 30 and December 30 at a fixed rate until September 30, 2023, thereafter payable quarterly on the same dates at a floating rate, in each case when, as and if declared by the Citi Board of Directors.
(5) Issued as depositary shares, each representing a 1/1,000th interest in a share of the corresponding series of non-cumulative perpetual preferred stock. Dividends are payable quarterly on February 15, May 15, August 15 and November 15 at a fixed rate until November 15, 2023, thereafter payable quarterly on the same dates at a floating rate, in each case when, as and if declared by the Citi Board of Directors.
(6) The Series L preferred stock was redeemed in full on February 12, 2019.
(7) Issued as depositary shares, each representing a 1/25th interest in a share of the corresponding series of non-cumulative perpetual preferred stock. Dividends are payable semiannually on May 15 and November 15 at a fixed rate until May 15, 2024, thereafter payable quarterly on February 15, May 15, August 15 and November 15 at a floating rate, in each case when, as and if declared by the Citi Board of Directors.
(8) The Series N preferred stock was redeemed in full on November 15, 2019.
(9) Issued as depositary shares, each representing a 1/25th interest in a share of the corresponding series of non-cumulative perpetual preferred stock. Dividends are payable semiannually on March 27 and September 27 at a fixed rate until, but excluding, March 27, 2020, and thereafter payable quarterly on March 27, June 27, September 27 and December 27 at a floating rate, in each case when, as and if declared by the Citi Board of Directors.
(10) Issued as depositary shares, each representing a 1/25th interest in a share of the corresponding series of non-cumulative perpetual preferred stock. Dividends are payable semiannually on May 15 and November 15 at a fixed rate until, but excluding, May 15, 2025, and thereafter payable quarterly on February 15, May 15, August 15 and November 15 at a floating rate, in each case when, as and if declared by the Citi Board of Directors.
(11) Issued as depositary shares, each representing a 1/25th interest in a share of the corresponding series of non-cumulative perpetual preferred stock. Dividends are payable semiannually on February 15 and August 15 at a fixed rate until, but excluding, August 15, 2020, and thereafter payable quarterly on February 15, May 15, August 15 and November 15 at a floating rate, in each case when, as and if declared by the Citi Board of Directors.
(12) Issued as depositary shares, each representing a 1/25th interest in a share of the corresponding series of non-cumulative perpetual preferred stock. Dividends are payable semiannually on May 15 and November 15 at a fixed rate until, but excluding, November 15, 2020, and thereafter payable quarterly on February 15, May 15, August 15 and November 15 at a floating rate, in each case when, as and if declared by the Citi Board of Directors.
(13) Issued as depositary shares, each representing a 1/1,000th interest in a share of the corresponding series of non-cumulative perpetual preferred stock. Dividends are payable quarterly on February 12, May 12, August 12 and November 12 at a fixed rate, in each case when, as and if declared by the Citi Board of Directors.
(14) Issued as depositary shares, each representing a 1/25th interest in a share of the corresponding series of non-cumulative perpetual preferred stock. Dividends are payable semiannually on February 15 and August 15 at a fixed rate until, but excluding, August 15, 2026, thereafter payable quarterly on February 15, May 15, August 15 and November 15 at a floating rate, in each case when, as and if declared by the Citi Board of Directors.

(15) Issued as depositary shares, each representing a 1/25th interest in a share of the corresponding series of non-cumulative perpetual preferred stock. Dividends are payable semiannually on March 12 and September 12 at a fixed rate until, but excluding, September 12, 2024, thereafter payable quarterly on March 12, June 12, September 12 and December 12 at a floating rate, in each case when, as and if declared by the Citi Board of Directors.

During 2019, Citi distributed $1,109 million in dividends on its outstanding preferred stock. On January 15, 2020, Citi declared preferred dividends of approximately $291 million for the first quarter of 2020. During the first quarter of 2020, Citi issued 1.5 million Series V preferred shares for $1.5 billion. Semi-annual dividends on Series V, assuming such dividends are declared by the Citi Board of Directors, will be distributed beginning in the third quarter of 2020. As of February 21, 2020, Citi estimates it will distribute preferred dividends of approximately $253 million, $328 million and $253 million in the second, third and fourth quarters of 2020, respectively.

21. SECURITIZATIONS AND VARIABLE INTEREST ENTITIES

Uses of Special Purpose Entities

A special purpose entity (SPE) is an entity designed to fulfill a specific limited need of the company that organized it. The principal uses of SPEs by Citi are to obtain liquidity and favorable capital treatment by securitizing certain financial assets, to assist clients in securitizing their financial assets and to create investment products for clients. SPEs may be organized in various legal forms, including trusts, partnerships or corporations. In a securitization, through the SPE's issuance of debt and equity instruments, certificates, commercial paper or other notes of indebtedness, the company transferring assets to the SPE converts all (or a portion) of those assets into cash before they would have been realized in the normal course of business. These issuances are recorded on the balance sheet of the SPE, which may or may not be consolidated onto the balance sheet of the company that organized the SPE.

Investors usually have recourse only to the assets in the SPE, but may also benefit from other credit enhancements, such as a collateral account, a line of credit or a liquidity facility, such as a liquidity put option or asset purchase agreement. Because of these enhancements, the SPE issuances typically obtain a more favorable credit rating than the transferor could obtain for its own debt issuances. This results in less expensive financing costs than unsecured debt. The SPE may also enter into derivative contracts in order to convert the yield or currency of the underlying assets to match the needs of the SPE investors or to limit or change the credit risk of the SPE. Citigroup may be the provider of certain credit enhancements as well as the counterparty to any related derivative contracts.

Most of Citigroup's SPEs are variable interest entities (VIEs), as described below.

Variable Interest Entities

VIEs are entities that have either a total equity investment that is insufficient to permit the entity to finance its activities without additional subordinated financial support or whose equity investors lack the characteristics of a controlling financial interest (i.e., ability to make significant decisions through voting rights or similar rights and a right to receive the expected residual returns of the entity or an obligation to absorb the expected losses of the entity). Investors that finance the VIE through debt or equity interests or other counterparties providing other forms of support, such as guarantees, certain fee arrangements or certain types of derivative contracts, are variable interest holders in the entity.

The variable interest holder, if any, that has a controlling financial interest in a VIE is deemed to be the primary beneficiary and must consolidate the VIE. Citigroup would be deemed to have a controlling financial interest and be the primary beneficiary if it has both of the following characteristics:

- power to direct the activities of the VIE that most significantly impact the entity's economic performance; and
- an obligation to absorb losses of the entity that could potentially be significant to the VIE, or a right to receive benefits from the entity that could potentially be significant to the VIE.

The Company must evaluate each VIE to understand the purpose and design of the entity, the role the Company had in the entity's design and its involvement in the VIE's ongoing activities. The Company then must evaluate which activities most significantly impact the economic performance of the VIE and who has the power to direct such activities.

For those VIEs where the Company determines that it has the power to direct the activities that most significantly impact the VIE's economic performance, the Company must then evaluate its economic interests, if any, and determine whether it could absorb losses or receive benefits that could potentially be significant to the VIE. When evaluating whether the Company has an obligation to absorb losses that could potentially be significant, it considers the maximum exposure to such loss without consideration of probability. Such obligations could be in various forms, including, but not limited to, debt and equity investments, guarantees, liquidity agreements and certain derivative contracts.

In various other transactions, the Company may (i) act as a derivative counterparty (for example, interest rate swap, cross-currency swap or purchaser of credit protection under a credit default swap or total return swap where the Company pays the total return on certain assets to the SPE), (ii) act as underwriter or placement agent, (iii) provide administrative, trustee or other services or (iv) make a market in debt securities or other instruments issued by VIEs. The Company generally considers such involvement, by itself, not to be variable interests and thus not an indicator of power or potentially significant benefits or losses.

Citigroup's involvement with consolidated and unconsolidated VIEs with which the Company holds significant variable interests or has continuing involvement through servicing a majority of the assets in a VIE is presented below:

As of December 31, 2019

				Maximum exposure to loss in significant unconsolidated VIEs[1]				
				Funded exposures[2]		Unfunded exposures		
In millions of dollars	**Total involvement with SPE assets**	**Consolidated VIE/SPE assets**	**Significant unconsolidated VIE assets[3]**	**Debt investments**	**Equity investments**	**Funding commitments**	**Guarantees and derivatives**	**Total**
Credit card securitizations	**$ 43,534**	**$ 43,534**	**$ —**	**$ —**	**$ —**	**$ —**	**$ —**	**$ —**
Mortgage securitizations[4]								
U.S. agency-sponsored	**117,374**	**—**	**117,374**	**2,671**	**—**	**—**	**72**	**2,743**
Non-agency-sponsored	**39,608**	**1,187**	**38,421**	**876**	**—**	**—**	**1**	**877**
Citi-administered asset-backed commercial paper conduits	**15,622**	**15,622**	**—**	**—**	**—**	**—**	**—**	**—**
Collateralized loan obligations (CLOs)	**17,395**	**—**	**17,395**	**4,199**	**—**	**—**	**—**	**4,199**
Asset-based financing	**196,728**	**6,139**	**190,589**	**23,756**	**1,151**	**9,524**	**—**	**34,431**
Municipal securities tender option bond trusts (TOBs)	**6,950**	**1,458**	**5,492**	**4**	**—**	**3,544**	**—**	**3,548**
Municipal investments	**20,312**	**—**	**20,312**	**2,636**	**4,274**	**3,034**	**—**	**9,944**
Client intermediation	**1,455**	**1,391**	**64**	**4**	**—**	**—**	**—**	**4**
Investment funds	**827**	**174**	**653**	**5**	**—**	**16**	**1**	**22**
Other	**352**	**1**	**351**	**169**	**—**	**39**	**—**	**208**
Total	**$ 460,157**	**$ 69,506**	**$ 390,651**	**$ 34,320**	**$ 5,425**	**$ 16,157**	**$ 74**	**$ 55,976**

As of December 31, 2018

				Maximum exposure to loss in significant unconsolidated VIEs[1]				
				Funded exposures[2]		Unfunded exposures		
In millions of dollars	Total involvement with SPE assets	Consolidated VIE/SPE assets	Significant unconsolidated VIE assets[3]	Debt investments	Equity investments	Funding commitments	Guarantees and derivatives	Total
Credit card securitizations	$ 46,232	$ 46,232	$ —	$ —	$ —	$ —	$ —	$ —
Mortgage securitizations[4]								
U.S. agency-sponsored	116,563	—	116,563	3,038	—	—	60	3,098
Non-agency-sponsored	30,886	1,498	29,388	431	—	—	1	432
Citi-administered asset-backed commercial paper conduits	18,750	18,750	—	—	—	—	—	—
Collateralized loan obligations (CLOs)	21,837	—	21,837	5,891	—	—	9	5,900
Asset-based financing	99,433	628	98,805	21,640	715	9,757	—	32,112
Municipal securities tender option bond trusts (TOBs)	7,998	1,776	6,222	9	—	4,262	—	4,271
Municipal investments	18,044	3	18,041	2,813	3,922	2,738	—	9,473
Client intermediation	858	614	244	172	—	—	2	174
Investment funds	1,272	440	832	12	—	1	1	14
Other	63	3	60	37	—	23	—	60

Total	$	361,936	$	69,944	$	291,992	$	34,043	$	4,637	$	16,781	$	73	$ 55,534

(1) The definition of maximum exposure to loss is included in the text that follows this table.
(2) Included on Citigroup's December 31, 2019 and 2018 Consolidated Balance Sheet.
(3) A significant unconsolidated VIE is an entity in which the Company has any variable interest or continuing involvement considered to be significant, regardless of the likelihood of loss.
(4) Citigroup mortgage securitizations also include agency and non-agency (private label) re-securitization activities. These SPEs are not consolidated. See "Re-securitizations" below for further discussion.

The previous tables do not include:

- certain venture capital investments made by some of the Company's private equity subsidiaries, as the Company accounts for these investments in accordance with the Investment Company Audit Guide (codified in ASC 946);
- certain investment funds for which the Company provides investment management services and personal estate trusts for which the Company provides administrative, trustee and/or investment management services;
- certain third-party sponsored private equity funds to which the Company provides secured credit facilities. The Company has no decision-making power and does not consolidate these funds, some of which may meet the definition of a VIE. The Company's maximum exposure to loss is generally limited to a loan or lending-related commitment (for more information on these positions, see Notes 14 and 26 to the Consolidated Financial Statements);
- certain VIEs structured by third parties in which the Company holds securities in inventory, as these investments are made on arm's-length terms;
- certain positions in mortgage- and asset-backed securities held by the Company, which are classified as *Trading account assets* or *Investments*, in which the Company has no other involvement with the related securitization entity deemed to be significant (for more information on these positions, see Notes 13 and 24 to the Consolidated Financial Statements);
- certain representations and warranties exposures in legacy *ICG*-sponsored mortgage- and asset-backed securitizations in which the Company has no variable interest or continuing involvement as servicer. The outstanding balance of mortgage loans securitized during 2005 to 2008 in which the Company has no variable interest or continuing involvement as servicer was approximately $6 billion and $7 billion at December 31, 2019 and 2018, respectively;
- certain representations and warranties exposures in Citigroup residential mortgage securitizations in which the original mortgage loan balances are no longer outstanding; and
- VIEs such as trust preferred securities trusts used in connection with the Company's funding activities. The Company does not have a variable interest in these trusts.

The asset balances for consolidated VIEs represent the carrying amounts of the assets consolidated by the Company. The carrying amount may represent the amortized cost or the current fair value of the assets depending on the legal form of the asset (e.g., loan or security) and the Company's standard accounting policies for the asset type and line of business.

The asset balances for unconsolidated VIEs in which the Company has significant involvement represent the most current information available to the Company. In most cases, the asset balances represent an amortized cost basis without regard to impairments, unless fair value information is readily available to the Company.

The maximum funded exposure represents the balance sheet carrying amount of the Company's investment in the VIE. It reflects the initial amount of cash invested in the VIE, adjusted for any accrued interest and cash principal payments received. The carrying amount may also be adjusted for increases or declines in fair value or any impairment in value recognized in earnings. The maximum exposure of unfunded positions represents the remaining undrawn committed amount, including liquidity and credit facilities provided by the Company or the notional amount of a derivative instrument considered to be a variable interest. In certain transactions, the Company has entered into derivative instruments or other arrangements that are not considered variable interests in the VIE (e.g., interest rate swaps, cross-currency swaps or where the Company is the purchaser of credit protection under a credit default swap or total return swap where the Company pays the total return on certain assets to the SPE). Receivables under such arrangements are not included in the maximum exposure amounts.

Funding Commitments for Significant Unconsolidated VIEs—Liquidity Facilities and Loan Commitments
The following table presents the notional amount of liquidity facilities and loan commitments that are classified as funding commitments in the VIE tables above:

	December 31, 2019		December 31, 2018	
In millions of dollars	**Liquidity facilities**	**Loan/equity commitments**	Liquidity facilities	Loan/equity commitments
Asset-based financing	**$ —**	**$ 9,524**	$ —	$ 9,757
Municipal securities tender option bond trusts (TOBs)	**3,544**	**—**	4,262	—
Municipal investments	**—**	**3,034**	—	2,738
Investment funds	**—**	**16**	—	1
Other	**—**	**39**	—	23
Total funding commitments	**$ 3,544**	**$ 12,613**	$ 4,262	$ 12,519

Consolidated VIEs
The Company engages in on-balance sheet securitizations, which are securitizations that do not qualify for sales treatment; thus, the assets remain on Citi's Consolidated Balance Sheet, and any proceeds received are recognized as secured liabilities. The consolidated VIEs represent more than a hundred separate entities with which the Company is involved. In general, the third-party investors in the obligations of consolidated VIEs have legal recourse only to the assets of the respective VIEs and do not have such recourse to the Company, except where Citi has provided a guarantee to the investors or is the counterparty to certain derivative transactions involving the VIE. Thus, Citigroup's maximum legal exposure to loss related to consolidated VIEs is significantly less than the carrying value of the consolidated VIE assets due to outstanding third-party financing. Intercompany assets and liabilities are excluded from Citi's Consolidated Balance Sheet. All VIE assets are restricted from being sold or pledged as collateral. The cash flows from these assets are the only source used to pay down the associated liabilities, which are non-recourse to Citi's general assets. See the Consolidated Balance Sheet for more information about these Consolidated VIE assets and liabilities.

Significant Interests in Unconsolidated VIEs—Balance Sheet Classification
The following table presents the carrying amounts and classification of significant variable interests in unconsolidated VIEs:

In billions of dollars	**December 31, 2019**	December 31, 2018
Cash	**$ —**	$ —
Trading account assets	**2.6**	3.0
Investments	**9.9**	10.7
Total loans, net of allowance	**26.7**	24.5
Other	**0.5**	0.5
Total assets	**$ 39.7**	$ 38.7

Credit Card Securitizations

The Company securitizes credit card receivables through trusts established to purchase the receivables. Citigroup transfers receivables into the trusts on a non-recourse basis. Credit card securitizations are revolving securitizations: as customers pay their credit card balances, the cash proceeds are used to purchase new receivables and replenish the receivables in the trust.

Substantially all of the Company's credit card securitization activity is through two trusts—Citibank Credit Card Master Trust (Master Trust) and Citibank Omni Master Trust (Omni Trust), with the substantial majority through the Master Trust. These trusts are consolidated entities because, as servicer, Citigroup has the power to direct the activities that most significantly impact the economic performance of the trusts. Citigroup holds a seller's interest and certain securities issued by the trusts, which could result in exposure to potentially significant losses or benefits from the trusts. Accordingly, the transferred credit card receivables remain on Citi's Consolidated Balance Sheet with no gain or loss recognized. The debt issued by the trusts to third parties is included on Citi's Consolidated Balance Sheet.

Citi utilizes securitizations as one of the sources of funding for its business in *North America*. The following table reflects amounts related to the Company's securitized credit card receivables:

In billions of dollars	**December 31, 2019**	December 31, 2018
Ownership interests in principal amount of trust credit card receivables		
Sold to investors via trust-issued securities	**$ 19.7**	$ 27.3
Retained by Citigroup as trust-issued securities	**6.2**	7.6
Retained by Citigroup via non-certificated interests	**17.8**	11.3
Total	**$ 43.7**	$ 46.2

The following table summarizes selected cash flow information related to Citigroup's credit card securitizations:

In billions of dollars	**2019**	2018	2017
Proceeds from new securitizations	**$ —**	$ 6.8	$ 11.1
Pay down of maturing notes	**(7.6)**	(8.3)	(5.0)

Managed Loans

After securitization of credit card receivables, the Company continues to maintain credit card customer account relationships and provides servicing for receivables transferred to the trusts. As a result, the Company considers the securitized credit card receivables to be part of the business it manages. As Citigroup consolidates the credit card trusts, all managed securitized card receivables are on-balance sheet.

Funding, Liquidity Facilities and Subordinated Interests

As noted above, Citigroup securitizes credit card receivables through two securitization trusts—Master Trust and Omni Trust. The liabilities of the trusts are included on the Consolidated Balance Sheet, excluding those retained by Citigroup.

Master Trust Liabilities (at Par Value)

The Master Trust issues fixed- and floating-rate term notes. Some of the term notes may be issued to multi-seller commercial paper conduits. The weighted average maturity of the third-party term notes issued by the Master Trust was 3.1 years as of December 31, 2019 and 3.0 years as of December 31, 2018.

In billions of dollars	**Dec. 31, 2019**	Dec. 31, 2018
Term notes issued to third parties	**$ 18.2**	$ 25.8
Term notes retained by Citigroup affiliates	**4.3**	5.7
Total Master Trust liabilities	**$ 22.5**	$ 31.5

Omni Trust Liabilities (at Par Value)

The Omni Trust issues fixed- and floating-rate term notes, some of which are purchased by multi-seller commercial paper conduits. The weighted average maturity of the third-party term notes issued by the Omni Trust was 1.6 years as of December 31, 2019 and 2.7 years as of December 31, 2018.

In billions of dollars	**Dec. 31, 2019**	Dec. 31, 2018
Term notes issued to third parties	**$ 1.5**	$ 1.5
Term notes retained by Citigroup affiliates	**1.9**	1.9
Total Omni Trust liabilities	**$ 3.4**	$ 3.4

Mortgage Securitizations

Citigroup provides a wide range of mortgage loan products to a diverse customer base. Once originated, the Company often securitizes these loans through the use of VIEs. These VIEs are funded through the issuance of trust certificates backed solely by the transferred assets. These certificates have the same life as the transferred assets. In addition to providing a source of liquidity and less expensive funding, securitizing these assets also reduces Citi's credit exposure to the borrowers. These mortgage loan securitizations are primarily non-recourse, thereby effectively transferring the risk of future credit losses to the purchasers of the securities issued by the trust.

Citi's U.S. consumer mortgage business generally retains the servicing rights and in certain instances retains investment securities, interest-only strips and residual interests in future cash flows from the trusts and also provides servicing for a limited number of *ICG* securitizations. Citi's *ICG* business may hold investment securities pursuant to credit risk retention rules or in connection with secondary market-making activities.

The Company securitizes mortgage loans generally through either a U.S. government-sponsored agency, such as Ginnie Mae, Fannie Mae or Freddie Mac (U.S. agency-sponsored mortgages), or private label (non-agency-sponsored mortgages) securitization. Citi is not the primary beneficiary of its U.S. agency-sponsored mortgage securitization entities because Citigroup does not have the power to direct the activities of the VIEs that most significantly impact the entities' economic performance. Therefore, Citi does not consolidate these U.S. agency-sponsored mortgage securitization entities. 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 agency-sponsored mortgage securitization trusts are classified as *Trading account assets*, except for MSRs, which are included in *Other assets* on Citigroup's Consolidated Balance Sheet.

Citigroup does not consolidate certain non-agency-sponsored mortgage securitization entities because Citi is either not the servicer with the power to direct the significant activities of the entity or Citi is the servicer, but the servicing relationship is deemed to be a fiduciary relationship; therefore, Citi is not deemed to be the primary beneficiary of the entity.

In certain instances, the Company has (i) the power to direct the activities and (ii) the obligation to either absorb losses or the right to receive benefits that could be potentially significant to its non-agency-sponsored mortgage securitization entities and, therefore, is the primary beneficiary and, thus, consolidates the VIE.

The following tables summarize selected cash flow information and retained interests related to Citigroup mortgage securitizations:

	2019		2018		2017	
In billions of dollars	**U.S. agency-sponsored mortgages**	**Non-agency-sponsored mortgages**	U.S. agency-sponsored mortgages	Non-agency-sponsored mortgages	U.S. agency-sponsored mortgages	Non-agency-sponsored mortgages
Principal securitized	**$ 5.3**	**$ 18.9**	$ 4.0	$ 5.6	$ 7.8	$ 7.3
Proceeds from new securitizations[(1)]	**5.5**	**18.9**	4.2	7.1	8.1	7.3
Contractual servicing fees received	**0.1**	**—**	0.1	—	0.2	—
Purchases of previously transferred financial assets	**0.2**	**—**	0.2	—	0.4	—

Note: Excludes re-securitization transactions.

(1) The proceeds from new securitizations in 2019 include $0.2 billion related to personal loan securitizations.

For non-consolidated mortgage securitization entities where the transfer of loans to the VIE meets the conditions for sale accounting, Citi recognizes a gain or loss based on the difference between the carrying value of the transferred assets and the proceeds received (generally cash but may be beneficial interests or servicing rights).

Agency and non-agency securitization gains for the year ended December 31, 2019 were $16 million and $99 million, respectively.

Agency and non-agency securitization gains for the year ended December 31, 2018 were $17 million and $36 million, respectively, and $28 million and $70 million, respectively, for the year ended December 31, 2017.

	2019			2018		
		Non-agency-sponsored mortgages[(1)]			Non-agency-sponsored mortgages[(1)]	
In millions of dollars	**U.S. agency-sponsored mortgages**	**Senior interests**	**Subordinated interests[(3)]**	U.S. agency-sponsored mortgages	Senior interests	Subordinated interests
Carrying value of retained interests[(2)]	**$ 491**	**$ 748**	**$ 102**	$ 564	$ 300	$ 51

(1) Disclosure of non-agency-sponsored mortgages as senior and subordinated interests is indicative of the interests' position in the capital structure of the securitization.

(2) Retained interests consist of Level 2 or Level 3 assets depending on the observability of significant inputs. See Note 24 to the Consolidated Financial Statements for more information about fair value measurements.

(3) Senior interests in non-agency-sponsored mortgages include $150 million related to personal loan securitizations at December 31, 2019.

Key assumptions used in measuring the fair value of retained interests at the date of sale or securitization of mortgage receivables were as follows:

	December 31, 2019		
		Non-agency-sponsored mortgages[1]	
	U.S. agency-sponsored mortgages	Senior interests	Subordinated interests
Weighted average discount rate	**9.3%**	**3.6%**	**4.6%**
Weighted average constant prepayment rate	**12.9%**	**10.5%**	**7.6%**
Weighted average anticipated net credit losses[2]	**NM**	**3.9%**	**2.8%**
Weighted average life	**6.6 years**	**3 years**	**11.4 years**

	December 31, 2018		
		Non-agency-sponsored mortgages[1]	
	U.S. agency-sponsored mortgages	Senior interests	Subordinated interests
Weighted average discount rate	9.6%	2.8%	4.4%
Weighted average constant prepayment rate	5.8%	8.0%	9.1%
Weighted average anticipated net credit losses[2]	NM	4.4%	3.4%
Weighted average life	7.5 years	5.5 years	6.7 years

(1) Disclosure of non-agency-sponsored mortgages as senior and subordinated interests is indicative of the interests' position in the capital structure of the securitization.
(2) Anticipated net credit losses represent estimated loss severity associated with defaulted mortgage loans underlying the mortgage securitizations disclosed above. Anticipated net credit losses, in this instance, do not represent total credit losses incurred to date, nor do they represent credit losses expected on retained interests in mortgage securitizations.
NM Anticipated net credit losses are not meaningful due to U.S. agency guarantees.

The interests retained by the Company range from highly rated and/or senior in the capital structure to unrated and/or residual interests. Key assumptions used in measuring the fair value of retained interests at period end or securitization of mortgage receivables were as follows:

	December 31, 2019		
		Non-agency-sponsored mortgages[1]	
	U.S. agency-sponsored mortgages	Senior interests	Subordinated interests
Weighted average discount rate	**9.8%**	**7.6%**	**4.2%**
Weighted average constant prepayment rate	**10.1%**	**3.6%**	**6.1%**
Weighted average anticipated net credit losses[2]	**NM**	**5.2%**	**2.7%**
Weighted average life	**6.6 years**	**5.9 years**	**29.3 years**

	December 31, 2018		
		Non-agency-sponsored mortgages[1]	
	U.S. agency-sponsored mortgages	Senior interests	Subordinated interests
Weighted average discount rate	7.8%	9.3%	—
Weighted average constant prepayment rate	9.1%	8.0%	—
Weighted average anticipated net credit losses[2]	NM	40.0%	—
Weighted average life	6.4 years	6.6 years	—

(1) Disclosure of non-agency-sponsored mortgages as senior and subordinated interests is indicative of the interests' position in the capital structure of the securitization.
(2) Anticipated net credit losses represent estimated loss severity associated with defaulted mortgage loans underlying the mortgage securitizations disclosed above. Anticipated net credit losses, in this instance, do not represent total credit losses incurred to date, nor do they represent credit losses expected on retained interests in mortgage securitizations.
NM Anticipated net credit losses are not meaningful due to U.S. agency guarantees.

The sensitivity of the fair value to adverse changes of 10% and 20% in each of the key assumptions are presented in the tables below. The negative effect of each change is calculated independently, holding all other assumptions constant. Because the key assumptions may not be independent, the net effect of simultaneous adverse changes in the key assumptions may be less than the sum of the individual effects shown below.

	December 31, 2019		
		Non-agency-sponsored mortgages	
In millions of dollars	**U.S. agency-sponsored mortgages**	**Senior interests**	**Subordinated interests**
Discount rate			
Adverse change of 10%	**$ (18)**	**$ —**	**$ (1)**
Adverse change of 20%	**(35)**	**(1)**	**(1)**
Constant prepayment rate			
Adverse change of 10%	**(18)**	**—**	**—**
Adverse change of 20%	**(35)**	**—**	**—**
Anticipated net credit losses			
Adverse change of 10%	**NM**	**—**	**—**
Adverse change of 20%	**NM**	**—**	**—**

	December 31, 2018		
		Non-agency-sponsored mortgages	
In millions of dollars	U.S. agency-sponsored mortgages	Senior interests	Subordinated interests
Discount rate			
Adverse change of 10%	$ (16)	$ —	$ —
Adverse change of 20%	(32)	—	—
Constant prepayment rate			
Adverse change of 10%	(21)	—	—
Adverse change of 20%	(41)	—	—
Anticipated net credit losses			
Adverse change of 10%	NM	—	—
Adverse change of 20%	NM	—	—

NM Anticipated net credit losses are not meaningful due to U.S. agency guarantees.

The following table includes information about loan delinquencies and liquidation losses for assets held in non-consolidated, non-agency-sponsored securitization entities:

	Securitized assets		**90 days past due**		**Liquidation losses**	
In billions of dollars, except liquidation losses in millions	**2019**	2018	**2019**	2018	**2019**	2018
Securitized assets						
Residential mortgages	**$ 11.7**	$ 5.2	**$ 0.4**	$ 0.4	**$ 49.0**	$ 54.0
Commercial and other	**22.3**	13.1	**—**	—	**—**	—
Total	**$ 34.0**	$ 18.3	**$ 0.4**	$ 0.4	**$ 49.0**	$ 54.0

Mortgage Servicing Rights (MSRs)
In connection with the securitization of mortgage loans, Citi's U.S. consumer mortgage business generally retains the servicing rights, which entitle the Company to a future stream of cash flows based on the outstanding principal balances of the loans and the contractual servicing fee. Failure to service the loans in accordance with contractual requirements may lead to a termination of the servicing rights and the loss of future servicing fees.

These transactions create intangible assets referred to as MSRs, which are recorded at fair value on Citi's Consolidated Balance Sheet. The fair value of Citi's capitalized MSRs was $495 million and $584 million at December 31, 2019 and 2018, respectively. The MSRs correspond to principal loan balances of $58 billion and $62 billion as of December 31, 2019 and 2018, respectively.

The following table summarizes the changes in capitalized MSRs:

In millions of dollars	**2019**	2018
Balance, beginning of year	**$ 584**	$ 558
Originations	**70**	58
Changes in fair value of MSRs due to changes in inputs and assumptions	**(84)**	54
Other changes[1]	**(75)**	(68)
Sale of MSRs	**—**	(18)
Balance, as of December 31	**$ 495**	$ 584

(1) Represents changes due to customer payments and passage of time.

The fair value of the MSRs is primarily affected by changes in prepayments of mortgages that result from shifts in mortgage interest rates. Specifically, higher interest rates tend to lead to declining prepayments, which causes the fair value of the MSRs to increase. In managing this risk, Citigroup economically hedges a significant portion of the value of its MSRs through the use of interest rate derivative contracts, forward purchase and sale commitments of mortgage-backed securities and purchased securities, all classified as *Trading account assets*.

The Company receives fees during the course of servicing previously securitized mortgages. The amounts of these fees were as follows:

In millions of dollars	**2019**	2018	2017
Servicing fees	**$ 148**	$ 172	$ 276
Late fees	**8**	4	10
Ancillary fees	**1**	8	13
Total MSR fees	**$ 157**	$ 184	$ 299

In the Consolidated Statement of Income these fees are primarily classified as *Commissions and fees*, and changes in MSR fair values are classified as *Other revenue*.

Re-securitizations
The Company engages in re-securitization transactions in which debt securities are transferred to a VIE in exchange for new beneficial interests. Citi did not transfer non-agency (private label) securities to re-securitization entities during the years ended December 31, 2019 and 2018. These securities are backed by either residential or commercial mortgages and are often structured on behalf of clients.

As of December 31, 2019, Citi held no retained interests in private label re-securitization transactions structured by Citi. As of December 31, 2018, the fair value of Citi-retained interests in private label re-securitization transactions structured by Citi totaled approximately $16 million (all related to re-securitization transactions executed prior to 2016). Of this amount, all was related to subordinated beneficial interests. The original par value of private label re-securitization transactions in which Citi held a retained interest as of December 31, 2018 was approximately $271 million.

The Company also re-securitizes U.S. government-agency guaranteed mortgage-backed (agency) securities. During the years ended December 31, 2019 and 2018, Citi transferred agency securities with a fair value of approximately $31.9 billion and $26.3 billion, respectively, to re-securitization entities.

As of December 31, 2019, the fair value of Citi-retained interests in agency re-securitization transactions structured by Citi totaled approximately $2.2 billion (including $1.3 billion related to re-securitization transactions executed in 2019) compared to $2.5 billion as of December 31, 2018 (including $1.4 billion related to re-securitization transactions executed in 2018), which is recorded in *Trading account assets*. The original fair value of agency re-securitization transactions in which Citi holds a retained interest as of December 31, 2019 and 2018 was approximately $73.5 billion and $70.9 billion, respectively.

As of December 31, 2019 and 2018, the Company did not consolidate any private label or agency re-securitization entities.

Citi-Administered Asset-Backed Commercial Paper Conduits
The Company is active in the asset-backed commercial paper conduit business as administrator of several multi-seller commercial paper conduits and also as a service provider to single-seller and other commercial paper conduits sponsored by third parties.

Citi's multi-seller commercial paper conduits are designed to provide the Company's clients access to low-cost funding in the commercial paper markets. The conduits purchase assets from or provide financing facilities to clients and are funded by issuing commercial paper to third-party investors. The conduits generally do not purchase assets originated by Citi. The funding of the conduits is facilitated by the liquidity support and credit enhancements provided by the Company.

As administrator to Citi's conduits, the Company is generally responsible for selecting and structuring assets purchased or financed by the conduits, making decisions regarding the funding of the conduits, including determining the tenor and other features of the commercial paper issued, monitoring the quality and performance of the conduits' assets and facilitating the operations and cash flows of the conduits. In return, the Company earns structuring fees from customers for individual transactions and earns an administration fee from the conduit, which is equal to the income from the client program and liquidity fees of the conduit after payment of conduit expenses. This administration fee is fairly stable, since most risks and rewards of the underlying assets are passed back to the clients. Once the asset pricing is negotiated, most ongoing income, costs and fees are relatively stable as a percentage of the conduit's size.

The conduits administered by Citi do not generally invest in liquid securities that are formally rated by third parties. The assets are privately negotiated and structured transactions that are generally designed to be held by the conduit, rather than actively traded and sold. The yield earned by the conduit on each asset is generally tied to the rate on the commercial paper issued by the conduit, thus passing interest rate risk to the client. Each asset purchased by the conduit is structured with transaction-specific credit enhancement features provided by the third-party client seller, including over-collateralization, cash and excess spread collateral accounts, direct recourse or third-party guarantees. These credit enhancements are sized with the objective of approximating a credit rating of A or above, based on Citi's internal risk ratings. At December 31, 2019 and 2018, the commercial paper conduits administered by Citi had approximately $15.6 billion and $18.8 billion of purchased assets outstanding, respectively, and had incremental funding commitments with clients of approximately $16.3 billion and $14.0 billion, respectively.

Substantially all of the funding of the conduits is in the form of short-term commercial paper. At December 31, 2019 and 2018, the weighted average remaining lives of the commercial paper issued by the conduits were approximately 49 and 53 days, respectively.

The primary credit enhancement provided to the conduit investors is in the form of transaction-specific credit enhancements described above. In addition to the transaction-specific credit enhancements, the conduits, other than the government guaranteed loan conduit, have obtained a letter of credit from the Company, which is equal to at least 8%–10% of the conduit's assets with a minimum of $200 million. The letters of credit provided by the Company to the conduits total approximately $1.4 billion as of December 31, 2019 and $1.7 billion as of December 31, 2018. The net result across multi-seller conduits administered by the Company is that, in the event that defaulted assets exceed the transaction-specific credit enhancements described above, any losses in each conduit are allocated first to the Company and then to the commercial paper investors.

Citigroup also provides the conduits with two forms of liquidity agreements that are used to provide funding to the conduits in the event of a market disruption, among other events. Each asset of the conduits is supported by a transaction-specific liquidity facility in the form of an asset purchase agreement (APA). Under the APA, the Company has generally agreed to purchase non-defaulted eligible receivables from the conduit at par. The APA is not designed to provide credit support to the conduit, as it generally does not permit the purchase of defaulted or impaired assets. Any funding under the APA will likely subject the underlying conduit clients to increased interest costs. In addition, the Company provides the conduits with program-wide liquidity in the form of short-term lending commitments. Under these commitments, the Company has agreed to lend to the conduits in the event of a short-term disruption in the commercial paper market, subject to specified conditions. The Company receives fees for providing both types of liquidity agreements and considers these fees to be on fair market terms.

Finally, Citi is one of several named dealers in the commercial paper issued by the conduits and earns a market-based fee for providing such services. Along with third-party dealers, the Company makes a market in the commercial paper and may from time to time fund commercial paper pending sale to a third party. On specific dates with less liquidity in the market, the Company may hold in inventory commercial paper issued by conduits administered by the Company, as well as conduits administered by third parties. Separately, in the normal course of business, Citi purchases commercial paper, including commercial paper issued by Citigroup's conduits. At December 31, 2019 and 2018, the Company owned $5.5 billion and $5.5 billion, respectively, of the commercial paper issued by its administered conduits. The Company's investments were not driven by market illiquidity and the Company is not obligated under any agreement to purchase the commercial paper issued by the conduits.

The asset-backed commercial paper conduits are consolidated by Citi. The Company has determined that, through its roles as administrator and liquidity provider, it has the power to direct the activities that most significantly impact the entities' economic performance. These powers include its ability to structure and approve the assets purchased by the conduits, its ongoing surveillance and credit mitigation activities, its ability to sell or repurchase assets out of the conduits and its liability management. In addition, as a result of all the Company's involvement described above, it was concluded that Citi has an economic interest that could potentially be significant. However, the assets and liabilities of the conduits are separate and apart from those of Citigroup. No assets of any conduit are available to satisfy the creditors of Citigroup or any of its other subsidiaries.

Collateralized Loan Obligations (CLOs)

A collateralized loan obligation (CLO) is a VIE that purchases a portfolio of assets consisting primarily of non-investment grade corporate loans. CLOs issue multiple tranches of debt and equity to investors to fund the asset purchases and pay upfront expenses associated with forming the CLO. A third-party asset manager is contracted by the CLO to purchase the underlying assets from the open market and monitor the credit risk associated with those assets. Over the term of a CLO, the asset manager directs purchases and sales of assets in a manner consistent with the CLO's asset management agreement and indenture. In general, the CLO asset manager will have the power to direct the activities of the entity that most significantly impact the economic performance of the CLO. Investors in a CLO, through their ownership of debt and/or equity in it, can also direct certain activities of the CLO, including removing its asset manager under limited circumstances, optionally redeeming the notes, voting on amendments to the CLO's operating documents and other activities. A CLO has a finite life, typically 12 years.

Citi serves as a structuring and placement agent with respect to the CLOs. Typically, the debt and equity of the CLOs are sold to third-party investors. On occasion, certain Citi entities may purchase some portion of a CLO's liabilities for investment purposes. In addition, Citi may purchase, typically in the secondary market, certain securities issued by the CLOs to support its market making activities.

The Company generally does not have the power to direct the activities that most significantly impact the economic performance of the CLOs, as this power is generally held by a third-party asset manager of the CLO. As such, those CLOs are not consolidated.

The following tables summarize selected cash flow information and retained interests related to Citigroup CLOs:

In millions of dollars	**2019**	2018	2017
Principal securitized	$ —	$ —	$ 133
Proceeds from new securitizations	—	—	133
Cash flows received on retained interests and other net cash flows	**72**	127	107

In millions of dollars	**Dec. 31, 2019**	Dec. 31, 2018	Dec. 31, 2017
Carrying value of retained interests	**$ 1,404**	$ 3,142	$ 4,079

All of Citi's retained interests were held-to-maturity securities as of December 31, 2019 and 2018.

Asset-Based Financing

The Company provides loans and other forms of financing to VIEs that hold assets. Those loans are subject to the same credit approvals as all other loans originated or purchased by the Company. Financings in the form of debt securities or derivatives are, in most circumstances, reported in *Trading account assets* and accounted for at fair value through earnings. The Company generally does not have the power to direct the activities that most significantly impact these VIEs' economic performance; thus, it does not consolidate them.

The primary types of Citi's asset-based financings, total assets of the unconsolidated VIEs with significant involvement and Citi's maximum exposure to loss are shown below. For Citi to realize the maximum loss, the VIE (borrower) would have to default with no recovery from the assets held by the VIE.

	December 31, 2019	
In millions of dollars	**Total unconsolidated VIE assets**	**Maximum exposure to unconsolidated VIEs**
Type		
Commercial and other real estate	**$ 31,377**	**$ 7,489**
Corporate loans	**7,088**	**5,802**
Other (including investment funds, airlines and shipping)	**152,124**	**21,140**
Total	**$ 190,589**	**$ 34,431**

	December 31, 2018	
In millions of dollars	Total unconsolidated VIE assets	Maximum exposure to unconsolidated VIEs
Type		
Commercial and other real estate	$ 23,918	$ 6,928
Corporate loans	6,973	5,744
Other (including investment funds, airlines and shipping)	67,914	19,440
Total	$ 98,805	$ 32,112

Municipal Securities Tender Option Bond (TOB) Trusts

Municipal TOB trusts may hold fixed- or floating-rate, taxable or tax-exempt securities issued by state and local governments and municipalities. TOB trusts are typically structured as single-issuer entities whose assets are purchased from either the Company or from other investors in the municipal securities market. TOB trusts finance the purchase of their municipal assets by issuing two classes of certificates: long-dated, floating rate certificates ("Floaters") that are putable pursuant to a liquidity facility and residual interest certificates ("Residuals"). The Floaters are purchased by third-party investors, typically tax-exempt money market funds. The Residuals are purchased by the original owner of the municipal securities that are being financed.

From Citigroup's perspective, there are two types of TOB trusts: customer and non-customer. Customer TOB trusts are those trusts utilized by customers of the Company to finance their securities, generally municipal securities. The Residuals issued by these trusts are purchased by the customer being financed. Non-customer TOB trusts are generally used by the Company to finance its own municipal securities investments; the Residuals issued by non-customer TOB trusts are purchased by the Company.

With respect to both customer and non-customer TOB trusts, Citi may provide remarketing agent services. If Floaters are optionally tendered and the Company, in its role as remarketing agent, is unable to find a new investor to purchase the optionally tendered Floaters within a specified period of time, Citigroup may, but is not obligated to, purchase the tendered Floaters into its own inventory. The level of the Company's inventory of such Floaters fluctuates.

For certain customer TOB trusts, Citi may also serve as a voluntary advance provider. In this capacity, the Company may, but is not obligated to, make loan advances to customer TOB trusts to purchase optionally tendered Floaters that have not otherwise been successfully remarketed to new investors. Such loans are secured by pledged Floaters. As of December 31, 2019, Citi had no outstanding voluntary advances to customer TOB trusts.

For certain non-customer trusts, the Company also provides credit enhancement. At December 31, 2019 and 2018, none of the municipal bonds owned by non-customer TOB trusts were subject to a credit guarantee provided by the Company.

Citigroup also provides liquidity services to many customer and non-customer trusts. If a trust is unwound early due to an event other than a credit event on the underlying municipal bonds, the underlying municipal bonds are sold out of the trust and bond sale proceeds are used to redeem the outstanding trust certificates. If this results in a shortfall between the bond sale proceeds and the redemption price of the tendered Floaters, the Company, pursuant to the liquidity agreement, would be obligated to make a payment to the trust to satisfy that shortfall. For certain customer TOB trusts, Citigroup has also executed a reimbursement agreement with the holder of the Residual, pursuant to which the Residual holder is obligated to reimburse the Company for any payment the Company makes under the liquidity arrangement. These reimbursement agreements may be subject to daily margining based on changes in the market value of the underlying municipal bonds. In cases where a third party provides liquidity to a non-customer TOB trust, a similar reimbursement arrangement may be executed, whereby the Company (or a consolidated subsidiary of the Company), as Residual holder, would absorb any losses incurred by the liquidity provider.

For certain other non-customer TOB trusts, Citi serves as tender option provider. The tender option provider arrangement allows Floater holders to put their interests directly to the Company at any time, subject to the requisite notice period requirements, at a price of par.

At December 31, 2019 and 2018, liquidity agreements provided with respect to customer TOB trusts totaled $3.5 billion and $4.3 billion, respectively, of which $1.6 billion and $2.3 billion, respectively, were offset by reimbursement agreements. For the remaining exposure related to TOB transactions, where the residual owned by the customer was at least 25% of the bond value at the inception of the transaction, no reimbursement agreement was executed.

Citi considers both customer and non-customer TOB trusts to be VIEs. Customer TOB trusts are not consolidated by the Company, as the power to direct the activities that most significantly impact the trust's economic performance rests with the customer Residual holder, which may unilaterally cause the sale of the trust's bonds.

Non-customer TOB trusts generally are consolidated because the Company holds the Residual interest and thus has the unilateral power to cause the sale of the trust's bonds.

The Company also provides other liquidity agreements or letters of credit to customer-sponsored municipal investment funds, which are not variable interest entities, and municipality-related issuers that totaled $7.0 billion as of December 31, 2019 and $6.1 billion as of December 31, 2018. These liquidity agreements and letters of credit are offset by reimbursement agreements with various term-out provisions.

Municipal Investments
Municipal investment transactions include debt and equity interests in partnerships that finance the construction and rehabilitation of low-income housing, facilitate lending in new or underserved markets or finance the construction or operation of renewable municipal energy facilities. Citi generally invests in these partnerships as a limited partner and earns a return primarily through the receipt of tax credits and grants earned from the investments made by the partnership. The Company may also provide construction loans or permanent loans for the development or operation of real estate properties held by partnerships. These entities are generally considered VIEs. The power to direct the activities of these entities is typically held by the general partner. Accordingly, these entities are not consolidated by Citigroup.

Client Intermediation
Client intermediation transactions represent a range of transactions designed to provide investors with specified returns based on the returns of an underlying security, referenced asset or index. These transactions include credit-linked notes and equity-linked notes. In these transactions, the VIE typically obtains exposure to the underlying security, referenced asset or index through a derivative instrument, such as a total-return swap or a credit-default swap. In turn, the VIE issues notes to investors that pay a return based on the specified underlying security, referenced asset or index. The VIE invests the proceeds in a financial asset or a guaranteed insurance contract that serves as collateral for the derivative contract over the term of the transaction. The Company's involvement in these transactions includes being the counterparty to the VIE's derivative instruments and investing in a portion of the notes issued by the VIE. In certain transactions, the investor's maximum risk of loss is limited and the Company absorbs risk of loss above a specified level. Citi does not have the power to direct the activities of the VIEs that most significantly impact their economic performance and thus it does not consolidate them.

Citi's maximum risk of loss in these transactions is defined as the amount invested in notes issued by the VIE and the notional amount of any risk of loss absorbed by Citi through a separate instrument issued by the VIE. The derivative instrument held by the Company may generate a receivable from the VIE (for example, where the Company purchases credit protection from the VIE in connection with the VIE's issuance of a credit-linked note), which is collateralized by the assets owned by the VIE. These derivative instruments are not considered variable interests and any associated receivables are not included in the calculation of maximum exposure to the VIE.

Investment Funds
The Company is the investment manager for certain investment funds and retirement funds that invest in various asset classes including private equity, hedge funds, real estate, fixed income and infrastructure. Citigroup earns a management fee, which is a percentage of capital under management, and may earn performance fees. In addition, for some of these funds the Company has an ownership interest in the investment funds. Citi has also established a number of investment funds as opportunities for qualified employees to invest in private equity investments. The Company acts as investment manager for these funds and may provide employees with financing on both recourse and non-recourse bases for a portion of the employees' investment commitments.

22. DERIVATIVES

In the ordinary course of business, Citigroup enters into various types of derivative transactions, which include:

- *Futures and forward contracts*, which are commitments to buy or sell at a future date a financial instrument, commodity or currency at a contracted price that may be settled in cash or through delivery of an item readily convertible to cash.
- *Swap contracts*, which are commitments to settle in cash at a future date or dates that may range from a few days to a number of years, based on differentials between specified indices or financial instruments, as applied to a notional principal amount.
- *Option contracts*, which give the purchaser, for a premium, the right, but not the obligation, to buy or sell within a specified time a financial instrument, commodity or currency at a contracted price that may also be settled in cash, based on differentials between specified indices or prices.

Swaps, forwards and some option contracts are over-the-counter (OTC) derivatives that are bilaterally negotiated with counterparties and settled with those counterparties, except for swap contracts that are novated and "cleared" through central counterparties (CCPs). Futures contracts and other option contracts are standardized contracts that are traded on an exchange with a CCP as the counterparty from the inception of the transaction. Citigroup enters into derivative contracts relating to interest rate, foreign currency, commodity and other market/credit risks for the following reasons:

- *Trading Purposes*: Citigroup trades derivatives as an active market maker. Citigroup offers its customers derivatives in connection with their risk management actions to transfer, modify or reduce their interest rate, foreign exchange and other market/credit risks or for their own trading purposes. Citigroup also manages its derivative risk positions through offsetting trade activities, controls focused on price verification and daily reporting of positions to senior managers.
- *Hedging*: Citigroup uses derivatives in connection with its own risk management activities to hedge certain risks or reposition the risk profile of the Company. Hedging may be accomplished by applying hedge accounting in accordance with ASC 815, *Derivatives and Hedging*, or by an economic hedge. For example, Citigroup issues fixed-rate long-term debt and then enters into a receive-fixed, pay-variable-rate interest rate swap with the same tenor and notional amount to synthetically convert the interest payments to a net variable-rate basis. This strategy is the most common form of an interest rate hedge, as it minimizes net interest cost in certain yield curve environments. Derivatives are also used to manage market risks inherent in specific groups of on-balance sheet assets and liabilities, including AFS securities, commodities and borrowings, as well as other interest-sensitive assets and liabilities. In addition, foreign exchange contracts are used to hedge non-U.S.-dollar-denominated debt, foreign currency-denominated AFS securities and net investment exposures.

Derivatives may expose Citigroup to market, credit or liquidity risks in excess of the amounts recorded on the Consolidated Balance Sheet. Market risk on a derivative product is the exposure created by potential fluctuations in interest rates, market prices, foreign exchange rates and other factors and is a function of the type of product, the volume of transactions, the tenor and terms of the agreement and the underlying volatility. Credit risk is the exposure to loss in the event of nonperformance by the other party to satisfy a derivative liability where the value of any collateral held by Citi is not adequate to cover such losses. The recognition in earnings of unrealized gains on derivative transactions is subject to management's assessment of the probability of counterparty default. Liquidity risk is the potential exposure that arises when the size of a derivative position may affect the ability to monetize the position in a reasonable period of time and at a reasonable cost in periods of high volatility and financial stress.

Derivative transactions are customarily documented under industry standard master netting agreements, which provide that following an event of default, the non-defaulting party may promptly terminate all transactions between the parties and determine the net amount due to be paid to, or by, the defaulting party. Events of default include (i) failure to make a payment on a derivative transaction that remains uncured following applicable notice and grace periods, (ii) breach of agreement that remains uncured after applicable notice and grace periods, (iii) breach of a representation, (iv) cross default, either to third-party debt or to other derivative transactions entered into between the parties, or, in some cases, their affiliates, (v) the occurrence of a merger or consolidation that results in a party's becoming a materially weaker credit and (vi) the cessation or repudiation of any applicable guarantee or other credit support document. Obligations under master netting agreements are often secured by collateral posted under an industry standard credit support annex to the master netting agreement. An event of default may also occur under a credit support annex if a party fails to make a collateral delivery that remains uncured following applicable notice and grace periods.

The netting and collateral rights incorporated in the master netting agreements are considered to be legally enforceable if a supportive legal opinion has been obtained from counsel of recognized standing that provides (i) the requisite level of certainty regarding enforceability and (ii) that the exercise of rights by the non-defaulting party to terminate and close-out transactions on a net basis under these agreements will not be stayed or avoided under applicable law upon an event of default, including bankruptcy, insolvency or similar proceeding.

A legal opinion may not be sought for certain jurisdictions where local law is silent or unclear as to the enforceability of such rights or where adverse case law or conflicting regulation may cast doubt on the enforceability of such rights. In some jurisdictions and for some counterparty types, the insolvency law may not provide the requisite level of certainty. For example, this may be the case for certain sovereigns, municipalities, central banks and U.S. pension plans.

Exposure to credit risk on derivatives is affected by market volatility, which may impair the ability of counterparties to satisfy their obligations to the Company. Credit limits are established and closely monitored for customers engaged in derivatives transactions. Citi considers the level of legal certainty regarding enforceability of its offsetting rights under master netting agreements and credit support annexes to be an important factor in its risk management process. Specifically, Citi generally transacts much lower volumes of derivatives under master netting agreements where Citi does not have the requisite level of legal certainty regarding enforceability, because such derivatives consume greater amounts of single counterparty credit limits than those executed under enforceable master netting agreements.

Cash collateral and security collateral in the form of G10 government debt securities are often posted by a party to a master netting agreement to secure the net open exposure of the other party; the receiving party is free to commingle/rehypothecate such collateral in the ordinary course of its business. Nonstandard collateral such as corporate bonds, municipal bonds, U.S. agency securities and/or MBS may also be pledged as collateral for derivative transactions. Security collateral posted to open and maintain a master netting agreement with a counterparty, in the form of cash and/or securities, may from time to time be segregated in an account at a third-party custodian pursuant to a tri-party account control agreement.

As of January 1, 2018, Citigroup early adopted ASU 2017-12, *Targeted Improvements to Accounting for Hedge Activities*. This standard primarily impacts Citi's accounting for derivatives designated as cash flow hedges and fair value hedges. Refer to the respective sections below for details.

Information pertaining to Citigroup's derivative activities, based on notional amounts, is presented in the table below. Derivative notional amounts are reference amounts from which contractual payments are derived and do not represent a complete measure of Citi's exposure to derivative transactions. Citi's derivative exposure arises primarily from market fluctuations (i.e., market risk), counterparty failure (i.e., credit risk) and/or periods of high volatility or financial stress (i.e., liquidity risk), as well as any market valuation adjustments that may be required on the transactions. Moreover, notional amounts do not reflect the netting of offsetting trades. For example, if Citi enters into a receive-fixed interest rate swap with $100 million notional, and offsets this risk with an identical but opposite pay-fixed position with a different counterparty, $200 million in derivative notionals is reported, although these offsetting positions may result in de minimis overall market risk.

In addition, aggregate derivative notional amounts can fluctuate from period to period in the normal course of business based on Citi's market share, levels of client activity and other factors. All derivatives are recorded in *Trading account assets/Trading account liabilities* on the Consolidated Balance Sheet.

Derivative Notionals

	Hedging instruments under ASC 815		Trading derivative instruments	
In millions of dollars	**December 31, 2019**	December 31, 2018	**December 31, 2019**	December 31, 2018
Interest rate contracts				
Swaps	**$ 318,089**	$ 273,636	**$ 17,063,272**	$ 18,138,686
Futures and forwards	**—**	—	**3,636,658**	4,632,257
Written options	**—**	—	**2,114,511**	3,018,469
Purchased options	**—**	—	**1,857,770**	2,532,479
Total interest rate contracts	**$ 318,089**	$ 273,636	**$ 24,672,211**	$ 28,321,891
Foreign exchange contracts				
Swaps	**$ 63,104**	$ 57,153	**$ 6,063,853**	$ 6,738,158
Futures, forwards and spot	**38,275**	41,410	**3,979,188**	5,115,504
Written options	**80**	1,726	**908,061**	1,566,717
Purchased options	**80**	2,104	**959,149**	1,543,516
Total foreign exchange contracts	**$ 101,539**	$ 102,393	**$ 11,910,251**	$ 14,963,895
Equity contracts				
Swaps	**$ —**	$ —	**$ 197,893**	$ 217,580
Futures and forwards	**—**	—	**66,705**	52,053
Written options	**—**	—	**560,571**	454,675
Purchased options	**—**	—	**422,393**	341,018
Total equity contracts	**$ —**	$ —	**$ 1,247,562**	$ 1,065,326
Commodity and other contracts				
Swaps	**$ —**	$ —	**$ 69,445**	$ 79,133
Futures and forwards	**1,195**	802	**137,192**	146,647
Written options	**—**	—	**91,587**	62,629
Purchased options	**—**	—	**86,631**	61,298
Total commodity and other contracts	**$ 1,195**	$ 802	**$ 384,855**	$ 349,707
Credit derivatives[1]				
Protection sold	**$ —**	$ —	**$ 603,387**	$ 724,939
Protection purchased	**—**	—	**703,926**	795,649
Total credit derivatives	**$ —**	$ —	**$ 1,307,313**	$ 1,520,588
Total derivative notionals	**$ 420,823**	$ 376,831	**$ 39,522,192**	$ 46,221,407

(1) Credit derivatives are arrangements designed to allow one party (protection buyer) to transfer the credit risk of a "reference asset" to another party (protection seller). These arrangements allow a protection seller to assume the credit risk associated with the reference asset without directly purchasing that asset. The Company enters into credit derivative positions for purposes such as risk management, yield enhancement, reduction of credit concentrations and diversification of overall risk.

The following tables present the gross and net fair values of the Company's derivative transactions and the related offsetting amounts as of December 31, 2019 and 2018. Gross positive fair values are offset against gross negative fair values by counterparty, pursuant to enforceable master netting agreements. Under ASC 815-10-45, payables and receivables in respect of cash collateral received from or paid to a given counterparty pursuant to a credit support annex are included in the offsetting amount, if a legal opinion supporting the enforceability of netting and collateral rights has been obtained. GAAP does not permit similar offsetting for security collateral.

In addition, the following tables reflect rule changes adopted by clearing organizations that require or allow entities to treat derivative assets, liabilities and the related variation margin as settlement of the related derivative fair values for legal and accounting purposes, as opposed to presenting gross derivative assets and liabilities that are subject to collateral, whereby the counterparties would also record a related collateral payable or receivable. As a result, the tables reflect a reduction of approximately $180 billion and $100 billion as of December 31, 2019 and 2018, respectively, of derivative assets and derivative liabilities that previously would have been reported on a gross basis, but are now legally settled and not subject to collateral. The tables also present amounts that are not permitted to be offset, such as security collateral or cash collateral posted at third-party custodians, but which would be eligible for offsetting to the extent that an event of default has occurred and a legal opinion supporting enforceability of the netting and collateral rights has been obtained.

Derivative Mark-to-Market (MTM) Receivables/Payables

In millions of dollars at December 31, 2019	Derivatives classified in Trading account assets/liabilities(1)(2)	
Derivatives instruments designated as ASC 815 hedges	**Assets**	**Liabilities**
Over-the-counter	$ 1,682	$ 143
Cleared	41	111
Interest rate contracts	$ 1,723	$ 254
Over-the-counter	$ 1,304	$ 908
Cleared	—	2
Foreign exchange contracts	$ 1,304	$ 910
Total derivatives instruments designated as ASC 815 hedges	$ 3,027	$ 1,164
Derivatives instruments not designated as ASC 815 hedges		
Over-the-counter	$ 189,892	$ 169,749
Cleared	5,896	7,472
Exchange traded	157	180
Interest rate contracts	$ 195,945	$ 177,401
Over-the-counter	$ 105,401	$ 108,807
Cleared	862	1,015
Exchange traded	3	—
Foreign exchange contracts	$ 106,266	$ 109,822
Over-the-counter	$ 21,311	$ 22,411
Exchange traded	7,160	8,075
Equity contracts	$ 28,471	$ 30,486
Over-the-counter	$ 13,582	$ 16,773
Exchange traded	630	542
Commodity and other contracts	$ 14,212	$ 17,315
Over-the-counter	$ 8,896	$ 8,975
Cleared	1,513	1,763
Credit derivatives	$ 10,409	$ 10,738
Total derivatives instruments not designated as ASC 815 hedges	$ 355,303	$ 345,762
Total derivatives	$ 358,330	$ 346,926
Cash collateral paid/received(3)	$ 17,926	$ 14,391
Less: Netting agreements(4)	(274,970)	(274,970)
Less: Netting cash collateral received/paid(5)	(44,353)	(38,919)
Net receivables/payables included on the Consolidated Balance Sheet(6)	$ 56,933	$ 47,428
Additional amounts subject to an enforceable master netting agreement, but not offset on the Consolidated Balance Sheet		
Less: Cash collateral received/paid	$ (861)	$ (128)
Less: Non-cash collateral received/paid	(13,143)	(7,308)
Total net receivables/payables(6)	$ 42,929	$ 39,992

(1) The derivatives fair values are presented in Note 24 to the Consolidated Financial Statements.
(2) Over-the-counter (OTC) derivatives are derivatives executed and settled bilaterally with counterparties without the use of an organized exchange or central clearing house. Cleared derivatives include derivatives executed bilaterally with a counterparty in the OTC market, but then novated to a central clearing house, whereby the central clearing house becomes the counterparty to both of the original counterparties. Exchange-traded derivatives include derivatives executed directly on an organized exchange that provides pre-trade price transparency.
(3) Reflects the net amount of the $56,845 million and $58,744 million of gross cash collateral paid and received, respectively. Of the gross cash collateral paid, $38,919 million was used to offset trading derivative liabilities and, of the gross cash collateral received, $44,353 million was used to offset trading derivative assets.
(4) Represents the netting of derivative receivable and payable balances with the same counterparty under enforceable netting agreements. Approximately $262 billion, $6 billion and $7 billion of the netting against trading account asset/liability balances is attributable to each of the OTC, cleared and exchange-traded derivatives, respectively.
(5) Represents the netting of cash collateral paid and received by counterparties under enforceable credit support agreements. Substantially all cash collateral received and paid is netted against OTC derivative assets and liabilities, respectively.
(6) The net receivables/payables include approximately $7 billion of derivative asset and $6 billion of derivative liability fair values not subject to enforceable master netting agreements, respectively.

In millions of dollars at December 31, 2018	Derivatives classified in Trading account assets/liabilities[1][2]	
Derivatives instruments designated as ASC 815 hedges	Assets	Liabilities
Over-the-counter	$ 1,631	$ 172
Cleared	238	53
Interest rate contracts	$ 1,869	$ 225
Over-the-counter	$ 1,402	$ 736
Cleared	—	4
Foreign exchange contracts	$ 1,402	$ 740
Total derivatives instruments designated as ASC 815 hedges	$ 3,271	$ 965
Derivatives instruments not designated as ASC 815 hedges		
Over-the-counter	$ 161,183	$ 146,909
Cleared	8,489	7,594
Exchange traded	91	99
Interest rate contracts	$ 169,763	$ 154,602
Over-the-counter	$ 159,099	$ 156,904
Cleared	1,900	1,671
Exchange traded	53	40
Foreign exchange contracts	$ 161,052	$ 158,615
Over-the-counter	$ 18,253	$ 21,527
Cleared	17	32
Exchange traded	11,623	12,249
Equity contracts	$ 29,893	$ 33,808
Over-the-counter	$ 16,661	$ 19,894
Exchange traded	894	795
Commodity and other contracts	$ 17,555	$ 20,689
Over-the-counter	$ 6,967	$ 6,155
Cleared	3,798	4,196
Credit derivatives	$ 10,765	$ 10,351
Total derivatives instruments not designated as ASC 815 hedges	$ 389,028	$ 378,065
Total derivatives	$ 392,299	$ 379,030
Cash collateral paid/received[3]	$ 11,518	$ 13,906
Less: Netting agreements[4]	(311,089)	(311,089)
Less: Netting cash collateral received/paid[5]	(38,608)	(29,911)
Net receivables/payables included on the Consolidated Balance Sheet[6]	$ 54,120	$ 51,936
Additional amounts subject to an enforceable master netting agreement, but not offset on the Consolidated Balance Sheet		
Less: Cash collateral received/paid	$ (767)	$ (164)
Less: Non-cash collateral received/paid	(13,509)	(13,354)
Total net receivables/payables[6]	$ 39,844	$ 38,418

(1) The derivatives fair values are presented in Note 24 to the Consolidated Financial Statements.
(2) Over-the-counter (OTC) derivatives include derivatives executed and settled bilaterally with counterparties without the use of an organized exchange or central clearing house. Cleared derivatives include derivatives executed bilaterally with a counterparty in the OTC market, but then novated to a central clearing house, whereby the central clearing house becomes the counterparty to both of the original counterparties. Exchange-traded derivatives include derivatives executed directly on an organized exchange that provides pre-trade price transparency.
(3) Reflects the net amount of the $41,429 million and $52,514 million of gross cash collateral paid and received, respectively. Of the gross cash collateral paid, $29,911 million was used to offset trading derivative liabilities and, of the gross cash collateral received, $38,608 million was used to offset trading derivative assets.
(4) Represents the netting of balances with the same counterparty under enforceable netting agreements. Approximately $296 billion, $4 billion and $11 billion of the netting against trading account asset/liability balances is attributable to each of the OTC, cleared and exchange-traded derivatives, respectively.
(5) Represents the netting of cash collateral paid and received by counterparties under enforceable credit support agreements. Substantially all netting of cash collateral received and paid is against OTC derivative assets and liabilities, respectively.

(6) The net receivables/payables include approximately $5 billion of derivative asset and $7 billion of derivative liability fair values not subject to enforceable master netting agreements, respectively.

For the years ended December 31, 2019, 2018 and 2017, the amounts recognized in *Principal transactions* in the Consolidated Statement of Income include certain derivatives not designated in a qualifying hedging relationship. Citigroup presents this disclosure by business classification, showing derivative gains and losses related to its trading activities together with gains and losses related to non-derivative instruments within the same trading portfolios, as this represents how these portfolios are risk managed. See Note 6 to the Consolidated Financial Statements for further information.

The amounts recognized in *Other revenue* in the Consolidated Statement of Income related to derivatives not designated in a qualifying hedging relationship are shown below. The table below does not include any offsetting gains (losses) on the economically hedged items to the extent that such amounts are also recorded in *Other revenue*.

Gains (losses) included in Other revenue

	Year ended December 31,		
In millions of dollars	**2019**	2018	2017
Interest rate contracts	**$ 57**	$ (25)	$ (73)
Foreign exchange	**(29)**	(197)	2,062
Total	**$ 28**	$ (222)	$ 1,989

Accounting for Derivative Hedging

Citigroup accounts for its hedging activities in accordance with ASC 815, *Derivatives and Hedging*. As a general rule, hedge accounting is permitted where the Company is exposed to a particular risk, such as interest rate or foreign exchange risk, that causes changes in the fair value of an asset or liability or variability in the expected future cash flows of an existing asset, liability or a forecasted transaction that may affect earnings.

Derivative contracts hedging the risks associated with changes in fair value are referred to as fair value hedges, while contracts hedging the variability of expected future cash flows are cash flow hedges. Hedges that utilize derivatives or debt instruments to manage the foreign exchange risk associated with equity investments in non-U.S.-dollar-functional-currency foreign subsidiaries (net investment in a foreign operation) are net investment hedges.

To qualify as an accounting hedge under the hedge accounting rules (versus an economic hedge where hedge accounting is not applied), a hedging relationship must be highly effective in offsetting the risk designated as being hedged. The hedging relationship must be formally documented at inception, detailing the particular risk management objective and strategy for the hedge. This includes the item and risk(s) being hedged, the hedging instrument being used and how effectiveness will be assessed. The effectiveness of these hedging relationships is evaluated at hedge inception and on an ongoing basis both on a retrospective and prospective basis, typically using quantitative measures of correlation, with hedge ineffectiveness measured and recorded in current earnings. Hedge effectiveness assessment methodologies are performed in a similar manner for similar hedges, and are used consistently throughout the hedging relationships. The assessment of effectiveness may exclude changes in the value of the hedged item that are unrelated to the risks being hedged and the changes in fair value of the derivative associated with time value. Prior to January 1, 2018, these excluded items were recognized in current earnings for the hedging derivative, while changes in the value of a hedged item that were not related to the hedged risk were not recorded. Upon adoption of ASC 2017-12, Citi excludes changes in the cross-currency basis associated with cross-currency swaps from the assessment of hedge effectiveness and records it in *Other comprehensive income*.

Discontinued Hedge Accounting

A hedging instrument must be highly effective in accomplishing the hedge objective of offsetting either changes in the fair value or cash flows of the hedged item for the risk being hedged. Management may voluntarily de-designate an accounting hedge at any time, but if a hedging relationship is not highly effective, it no longer qualifies for hedge accounting and must be de-designated. Subsequent changes in the fair value of the derivative are recognized in *Other revenue* or *Principal transactions*, similar to trading derivatives, with no offset recorded related to the hedged item.

For fair value hedges, any changes in the fair value of the hedged item remain as part of the basis of the asset or liability and are ultimately realized as an element of the yield on the item. For cash flow hedges, changes in fair value of the end-user derivative remain in *Accumulated other comprehensive income (loss) (AOCI)* and are included in the earnings of future periods when the forecasted hedged cash flows impact earnings. However, if it becomes probable that some or all of the hedged forecasted transactions will not occur, any amounts that remain in *AOCI* related to these transactions must be immediately reflected in *Other revenue*.

The foregoing criteria are applied on a decentralized basis, consistent with the level at which market risk is managed, but are subject to various limits and controls. The underlying asset, liability or forecasted transaction may be an individual item or a portfolio of similar items.

Fair Value Hedges

Hedging of Benchmark Interest Rate Risk

Citigroup's fair value hedges are primarily hedges of fixed-rate long-term debt or assets, such as available-for-sale debt securities or loans.

For qualifying fair value hedges of interest rate risk, the changes in the fair value of the derivative and the change in the fair value of the hedged item attributable to the hedged risk are presented within *Interest revenue* or *Interest expense* based on whether the hedged item is an asset or a liability.

In the first quarter of 2019, Citigroup executed a last-of-layer hedge, which permits an entity to hedge the interest rate risk of a stated portion of a closed portfolio of prepayable financial assets that are expected to remain outstanding for the designated tenor of the hedge. In accordance with ASC 815, an entity may exclude prepayment risk when measuring the change in fair value of the hedged item attributable to interest rate risk under the last-of-layer approach. Similar to other fair value hedges, where the hedged item is an asset, the fair value of the hedged item attributable to interest rate risk will be presented in *Interest revenue* along with the change in the fair value of the hedging instrument.

Hedging of Foreign Exchange Risk

Citigroup hedges the change in fair value attributable to foreign exchange rate movements in available-for-sale debt securities and long-term debt that are denominated in currencies other than the functional currency of the entity holding the securities or issuing the debt. The hedging instrument is generally a forward foreign exchange contract or a cross-currency swap contract. Citigroup considers the premium associated with forward contracts (i.e., the differential between the spot and contractual forward rates) as the cost of hedging; this amount is excluded from the assessment of hedge effectiveness and is generally reflected directly in earnings over the life of the hedge. Citi also excludes changes in cross-currency basis associated with cross-currency swaps from the assessment of hedge effectiveness and records it in *Other comprehensive income.*

Hedging of Commodity Price Risk

Citigroup hedges the change in fair value attributable to spot price movements in physical commodities inventory. The hedging instrument is a futures contract to sell the underlying commodity. In this hedge, the change in the value of the hedged inventory is reflected in earnings, which offsets the change in the fair value of the futures contract that is also reflected in earnings. Although the change in the fair value of the hedging instrument recorded in earnings includes changes in forward rates, Citigroup excludes the differential between the spot and the contractual forward rates under the futures contract from the assessment of hedge effectiveness and reflects it directly in earnings over the life of the hedge.

The following table summarizes the gains (losses) on the Company's fair value hedges:

Gains (losses) on fair value hedges[1]

	Year Ended December 31,				
	2019		2018		2017[2]
In millions of dollars	**Other revenue**	**Net interest revenue**	Other revenue	Net interest revenue	Other revenue
Gain (loss) on the hedging derivatives included in assessment of the effectiveness of fair value hedges					
Interest rate hedges	**$ —**	**$ 2,273**	$ —	$ 794	$ (891)
Foreign exchange hedges	**337**	**—**	(2,064)	—	(824)
Commodity hedges	**(33)**	**—**	(123)	—	(17)
Total gain (loss) on the hedging derivatives included in assessment of the effectiveness of fair value hedges	**$ 304**	**$ 2,273**	$ (2,187)	$ 794	$ (1,732)
Gain (loss) on the hedged item in designated and qualifying fair value hedges					
Interest rate hedges	**$ —**	**$ (2,085)**	$ —	$ (747)	$ 853
Foreign exchange hedges	**(337)**	**—**	2,064	—	969
Commodity hedges	**33**	**—**	124	—	18
Total gain (loss) on the hedged item in designated and qualifying fair value hedges	**$ (304)**	**$ (2,085)**	$ 2,188	$ (747)	$ 1,840
Net gain (loss) on the hedging derivatives excluded from assessment of the effectiveness of fair value hedges					
Interest rate hedges	**$ —**	**$ 3**	$ —	$ (5)	$ (7)
Foreign exchange hedges[3]	**(109)**	**—**	(4)	—	96
Commodity hedges	**41**	**—**	(19)	—	1
Total net gain (loss) on the hedging derivatives excluded from assessment of the effectiveness of fair value hedges	**$ (68)**	**$ 3**	$ (23)	$ (5)	$ 90

(1) Beginning January 1, 2018, gain (loss) amounts for interest rate risk hedges are included in *Interest income/Interest expense*, while the remaining amounts including the amounts for interest rate hedges prior to January 1, 2018 are included in *Other revenue* or *Principal transactions* on the Consolidated Statement of Income. The accrued interest income on fair value hedges both prior to and after January 1, 2018 is recorded in *Net interest revenue* and is excluded from this table.

(2) Hedge ineffectiveness recognized in earnings on designated and qualifying fair value hedges for the year ended December 31, 2017 was $(31) million for interest rate hedges and $49 million for foreign exchange hedges, for a total of $18 million.

(3) Amounts relate to the premium associated with forward contracts (differential between spot and contractual forward rates) that are excluded from the assessment of hedge effectiveness and are generally reflected directly in earnings. After January 1, 2018, amounts related to cross-currency basis, which are recognized in *AOCI*, are not reflected in the table above. The amount of cross-currency basis that was included in *AOCI* was $33 million and $(74) million for the years ended December 31, 2019 and 2018, respectively.

Cumulative Basis Adjustment

Upon electing to apply ASC 815 fair value hedge accounting, the carrying value of the hedged item is adjusted to reflect the cumulative changes in the hedged risk. The hedge basis adjustment, whether from an active or de-designated hedge relationship, remains with the hedged item until the hedged item is derecognized from the balance sheet. The table below presents the carrying amount of Citi's hedged assets and liabilities under qualifying fair value hedges at December 31, 2019 and 2018, along with the cumulative hedge basis adjustments included in the carrying value of those hedged assets and liabilities, that would reverse through earnings in future periods.

In millions of dollars

Balance sheet line item in which hedged item is recorded	Carrying amount of hedged asset/ liability	Cumulative fair value hedging adjustment increasing (decreasing) the carrying amount	
		Active	De-designated
As of December 31, 2019			
Debt securities AFS[1][2]	**$ 94,659**	**$ (114)**	**$ 743**
Long-term debt	**157,387**	**2,334**	**3,445**
As of December 31, 2018			
Debt securities AFS[2]	$ 81,632	$ (196)	$ 295
Long-term debt	$ 149,054	$ 1,211	$ 869

(1) These amounts include a cumulative basis adjustment of $(8) million for active hedges and $157 million for de-designated hedges as of December 31, 2019 related to certain prepayable financial assets designated as the hedged item in a fair value hedge using the last-of-layer approach. The Company designated approximately $605 million as the hedged amount (from a closed portfolio of prepayable financial assets with a carrying value of $20 billion as of December 31, 2019) in a last-of-layer hedging relationship, which commenced in the first quarter of 2019.

(2) Carrying amount represents the amortized cost.

Cash Flow Hedges

Citigroup hedges the variability of forecasted cash flows due to changes in contractually specified interest rates associated with floating-rate assets/liabilities and other forecasted transactions. Variable cash flows from those liabilities are synthetically converted to fixed-rate cash flows by entering into receive-variable, pay-fixed interest rate swaps and receive-variable, pay-fixed forward-starting interest rate swaps. Variable cash flows associated with certain assets are synthetically converted to fixed-rate cash flows by entering into receive-fixed, pay-variable interest rate swaps. These cash flow hedging relationships use either regression analysis or dollar-offset ratio analysis to assess whether the hedging relationships are highly effective at inception and on an ongoing basis. Prior to the adoption of ASU 2017-12, Citigroup designated the risk being hedged as the risk of overall variability in the hedged cash flows for certain items.

With the adoption of ASU 2017-12, Citigroup hedges the variability from changes in a contractually specified rate and recognizes the entire change in fair value of the cash flow hedging instruments in *AOCI*. Prior to the adoption of ASU 2017-12, to the extent that these derivatives were not fully effective, changes in their fair values in excess of changes in the value of the hedged transactions were immediately included in *Other revenue*. With the adoption of ASU 2017-12, such amounts are no longer required to be immediately recognized in income, but instead the full change in the value of the hedging instrument is required to be recognized in *AOCI*, and then recognized in earnings in the same period that the cash flows impact earnings. The pretax change in *AOCI* from cash flow hedges is presented below:

In millions of dollars	**2019**		2018		2017
Amount of gain (loss) recognized in *AOCI* on derivatives					
Interest rate contracts		**$ 746**		$ (361)	$ (165)
Foreign exchange contracts		**(17)**		5	(8)
Total gain (loss) recognized in *AOCI*		**$ 729**		$ (356)	$ (173)
Amount of gain (loss) reclassified from *AOCI* to earnings[(1)]	**Other revenue**	**Net Interest revenue**	Other revenue	Net interest revenue	Other revenue
Interest rate contracts	**$ —**	**$ (384)**	$ —	$ (301)	$ (126)
Foreign exchange contracts	**(7)**	**—**	(17)	—	(10)
Total gain (loss) reclassified from *AOCI* into earnings	**$ (7)**	**$ (384)**	$ (17)	$ (301)	$ (136)
Net pretax change in cash flow hedges included within *AOCI*		**$ 1,120**		$ (38)	$ (37)

(1) All amounts reclassified into earnings for interest rate contracts are included in *Interest income/Interest expense (Net interest revenue)*. For all other hedges, the amounts reclassified to earnings are included primarily in *Other revenue* and *Net interest revenue* in the Consolidated Statement of Income.

For cash flow hedges, the entire change in the fair value of the hedging derivative is recognized in *AOCI* and then reclassified to earnings in the same period that the forecasted hedged cash flows impact earnings. The net gain (loss) associated with cash flow hedges expected to be reclassified from *AOCI* within 12 months of December 31, 2019 is approximately $84 million. The maximum length of time over which forecasted cash flows are hedged is 10 years.

The after-tax impact of cash flow hedges on *AOCI* is shown in Note 19 to the Consolidated Financial Statements.

Net Investment Hedges

Consistent with ASC 830-20, *Foreign Currency Matters—Foreign Currency Transactions*, ASC 815 allows the hedging of the foreign currency risk of a net investment in a foreign operation. Citigroup uses foreign currency forwards, cross-currency swaps, options and foreign currency-denominated debt instruments to manage the foreign exchange risk associated with Citigroup's equity investments in several non-U.S.-dollar-functional-currency foreign subsidiaries. Citigroup records the change in the carrying amount of these investments in Foreign currency translation adjustment within *AOCI*. Simultaneously, the effective portion of the hedge of this exposure is also recorded in Foreign currency translation adjustment and any ineffective portion is immediately recorded in earnings.

For derivatives designated as net investment hedges, Citigroup follows the forward-rate method outlined in ASC 815-35-35. According to that method, all changes in fair value, including changes related to the forward-rate component of the foreign currency forward contracts and the time value of foreign currency options, are recorded in Foreign currency translation adjustment within *AOCI*.

For foreign currency-denominated debt instruments that are designated as hedges of net investments, the translation gain or loss that is recorded in Foreign currency translation adjustment is based on the spot exchange rate between the functional currency of the respective subsidiary and the U.S. dollar, which is the functional currency of Citigroup. To the extent that the notional amount of the hedging instrument exactly matches the hedged net investment, and the underlying exchange rate of the derivative hedging instrument relates to the exchange rate between the functional currency of the net investment and Citigroup's functional currency (or, in the case of a non-derivative debt instrument, such instrument is denominated in the functional currency of the net investment), no ineffectiveness is recorded in earnings.

The pretax gain (loss) recorded in Foreign currency translation adjustment within *AOCI*, related to net investment hedges, is $(556) million, $1,207 million and $2,528 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Economic Hedges

Citigroup often uses economic hedges when hedge accounting would be too complex or operationally burdensome. End-user derivatives that are economic hedges are carried at fair value, with changes in value included in either *Principal transactions* or *Other revenue*.

For asset/liability management hedging, fixed-rate long-term debt is recorded at amortized cost under GAAP.

For other hedges that either do not meet the ASC 815 hedging criteria or for which management decides not to apply ASC 815 hedge accounting, the derivative is recorded at fair value on the balance sheet with the associated changes in fair value recorded in earnings, while the debt continues to be carried at amortized cost. Therefore, current earnings are affected by the interest rate shifts and other factors that cause a change in the swap's value, but for which no offsetting change in value is recorded on the debt.

Citigroup may alternatively elect to account for the debt at fair value under the fair value option. Once the irrevocable election is made upon issuance of the debt, the full change in fair value of the debt is reported in earnings. The changes in fair value of the related interest rate swap are also reflected in earnings, which provides a natural offset to the debt's fair value change. To the extent that the two amounts differ because the full change in the fair value of the debt includes risks not offset by the interest rate swap, the difference is automatically captured in current earnings.

Additional economic hedges include hedges of the credit risk component of commercial loans and loan commitments. Citigroup periodically evaluates its hedging strategies in other areas and may designate either an accounting hedge or an economic hedge after considering the relative costs and benefits. Economic hedges are also employed when the hedged item itself is marked to market through current earnings, such as hedges of commitments to originate one- to four-family mortgage loans to be HFS and MSRs.

Credit Derivatives

Citi is a market maker and trades a range of credit derivatives. Through these contracts, Citi either purchases or writes protection on either a single name or a portfolio of reference credits. Citi also uses credit derivatives to help mitigate credit risk in its corporate and consumer loan portfolios and other cash positions and to facilitate client transactions.

Citi monitors its counterparty credit risk in credit derivative contracts. As of both December 31, 2019 and 2018, approximately 98% of the gross receivables are from counterparties with which Citi maintains collateral agreements. A majority of Citi's top 15 counterparties (by receivable balance owed to Citi) are central clearing houses, banks, financial institutions or other dealers. Contracts with these counterparties do not include ratings-based termination events. However, counterparty ratings downgrades may have an incremental effect by lowering the threshold at which Citi may call for additional collateral.

The range of credit derivatives entered into includes credit default swaps, total return swaps, credit options and credit-linked notes.

A credit default swap is a contract in which, for a fee, a protection seller agrees to reimburse a protection buyer for any losses that occur due to a predefined credit event on a reference entity. These credit events are defined by the terms of the derivative contract and the reference credit and are generally limited to the market standard of failure to pay on indebtedness and bankruptcy of the reference credit and, in a more limited range of transactions, debt restructuring. Credit derivative transactions that reference emerging market entities also typically include additional credit events to cover the acceleration of indebtedness and the risk of repudiation or a payment moratorium. In certain transactions, protection may be provided on a portfolio of reference entities or asset-backed securities. If there is no credit event, as defined by the specific derivative contract, then the protection seller makes no payments to the protection buyer and receives only the contractually specified fee. However, if a credit event occurs as defined in the specific derivative contract sold, the protection seller will be required to make a payment to the protection buyer. Under certain contracts, the seller of protection may not be required to make a payment until a specified amount of losses has occurred with respect to the portfolio and/or may only be required to pay for losses up to a specified amount.

A total return swap typically transfers the total economic performance of a reference asset, which includes all associated cash flows, as well as capital appreciation or depreciation. The protection buyer receives a floating rate of interest and any depreciation on the reference asset from the protection seller and, in return, the protection seller receives the cash flows associated with the reference asset plus any appreciation. Thus, according to the total return swap agreement, the protection seller will be obligated to make a payment any time the floating interest rate payment plus any depreciation of the reference asset exceeds the cash flows associated with the underlying asset. A total return swap may terminate upon a default of the reference asset or a credit event with respect to the reference entity, subject to the provisions of the related total return swap agreement between the protection seller and the protection buyer.

A credit option is a credit derivative that allows investors to trade or hedge changes in the credit quality of a reference entity. For example, in a credit spread option, the option writer assumes the obligation to purchase or sell credit protection on the reference entity at a specified "strike" spread level. The option purchaser buys the right to sell credit default protection on the reference entity to, or purchase it from, the option writer at the strike spread level. The payments on credit spread options depend either on a particular credit spread or the price of the underlying credit-sensitive asset or other reference entity. The options usually terminate if a credit event occurs with respect to the underlying reference entity.

A credit-linked note is a form of credit derivative structured as a debt security with an embedded credit default swap. The purchaser of the note effectively provides credit protection to the issuer by agreeing to receive a return that could be negatively affected by credit events on the underlying reference credit. If the reference entity defaults, the note may be cash settled or physically settled by delivery of a debt security of the reference entity. Thus, the maximum amount of the note purchaser's exposure is the amount paid for the credit-linked note.

The following tables summarize the key characteristics of Citi's credit derivatives portfolio by counterparty and derivative form:

In millions of dollars at December 31, 2019	Fair values		Notionals	
	Receivable(1)	**Payable**(2)	**Protection purchased**	**Protection sold**
By industry of counterparty				
Banks	**$ 4,017**	**$ 4,102**	**$ 172,461**	**$ 169,546**
Broker-dealers	**1,724**	**1,528**	**54,843**	**53,846**
Non-financial	**92**	**76**	**2,601**	**1,968**
Insurance and other financial institutions	**4,576**	**5,032**	**474,021**	**378,027**
Total by industry of counterparty	**$ 10,409**	**$ 10,738**	**$ 703,926**	**$ 603,387**
By instrument				
Credit default swaps and options	**$ 9,759**	**$ 9,791**	**$ 685,643**	**$ 593,850**
Total return swaps and other	**650**	**947**	**18,283**	**9,537**
Total by instrument	**$ 10,409**	**$ 10,738**	**$ 703,926**	**$ 603,387**
By rating of reference entity				
Investment grade	**$ 4,579**	**$ 4,578**	**$ 560,806**	**$ 470,778**
Non-investment grade	**5,830**	**6,160**	**143,120**	**132,609**
Total by rating of reference entity	**$ 10,409**	**$ 10,738**	**$ 703,926**	**$ 603,387**
By maturity				
Within 1 year	**$ 1,806**	**$ 2,181**	**$ 231,135**	**$ 176,188**
From 1 to 5 years	**7,275**	**7,265**	**414,237**	**379,915**
After 5 years	**1,328**	**1,292**	**58,554**	**47,284**
Total by maturity	**$ 10,409**	**$ 10,738**	**$ 703,926**	**$ 603,387**

(1) The fair value amount receivable is composed of $3,415 million under protection purchased and $6,994 million under protection sold.
(2) The fair value amount payable is composed of $7,793 million under protection purchased and $2,945 million under protection sold.

In millions of dollars at December 31, 2018	Fair values		Notionals	
	Receivable(1)	Payable(2)	Protection purchased	Protection sold
By industry of counterparty				
Banks	$ 4,785	$ 4,432	$ 214,842	$ 218,273
Broker-dealers	1,706	1,612	62,904	63,014
Non-financial	64	87	2,687	1,192
Insurance and other financial institutions	4,210	4,220	515,216	442,460
Total by industry of counterparty	$ 10,765	$ 10,351	$ 795,649	$ 724,939
By instrument				
Credit default swaps and options	$ 10,030	$ 9,755	$ 771,865	$ 712,623
Total return swaps and other	735	596	23,784	12,316
Total by instrument	$ 10,765	$ 10,351	$ 795,649	$ 724,939
By rating of reference entity				
Investment grade	$ 4,725	$ 4,544	$ 637,790	$ 568,849
Non-investment grade	6,040	5,807	157,859	156,090
Total by rating of reference entity	$ 10,765	$ 10,351	$ 795,649	$ 724,939
By maturity				
Within 1 year	$ 2,037	$ 2,063	$ 251,994	$ 225,597
From 1 to 5 years	6,720	6,414	493,096	456,409
After 5 years	2,008	1,874	50,559	42,933
Total by maturity	$ 10,765	$ 10,351	$ 795,649	$ 724,939

(1) The fair value amount receivable is composed of $5,126 million under protection purchased and $5,639 million under protection sold.
(2) The fair value amount payable is composed of $5,882 million under protection purchased and $4,469 million under protection sold.

Fair values included in the above tables are prior to application of any netting agreements and cash collateral. For notional amounts, Citi generally has a mismatch between the total notional amounts of protection purchased and sold, and it may hold the reference assets directly rather than entering into offsetting credit derivative contracts as and when desired. The open risk exposures from credit derivative contracts are largely matched after certain cash positions in reference assets are considered and after notional amounts are adjusted, either to a duration-based equivalent basis or to reflect the level of subordination in tranched structures. The ratings of the credit derivatives portfolio presented in the tables and used to evaluate payment/performance risk are based on the assigned internal or external ratings of the reference asset or entity. Where external ratings are used, investment-grade ratings are considered to be "Baa/BBB" and above, while anything below is considered non-investment grade. Citi's internal ratings are in line with the related external rating system.

Citigroup evaluates the payment/performance risk of the credit derivatives for which it stands as a protection seller based on the credit rating assigned to the underlying reference credit. Credit derivatives written on an underlying non-investment grade reference credit represent greater payment risk to the Company. The non-investment grade category in the table above also includes credit derivatives where the underlying reference entity has been downgraded subsequent to the inception of the derivative.

The maximum potential amount of future payments under credit derivative contracts presented in the table above is based on the notional value of the derivatives. The Company believes that the notional amount for credit protection sold is not representative of the actual loss exposure based on historical experience. This amount has not been reduced by the value of the reference assets and the related cash flows. In accordance with most credit derivative contracts, should a credit event occur, the Company usually is liable for the difference between the protection sold and the value of the reference assets. Furthermore, the notional amount for credit protection sold has not been reduced for any cash collateral paid to a given counterparty, as such payments would be calculated after netting all derivative exposures, including any credit derivatives with that counterparty in accordance with a related master netting agreement. Due to such netting processes, determining the amount of collateral that corresponds to credit derivative exposures alone is not possible. The Company actively monitors open credit-risk exposures and manages this exposure by using a variety of strategies, including purchased credit derivatives, cash collateral or direct holdings of the referenced assets. This risk mitigation activity is not captured in the table above.

Credit Risk-Related Contingent Features in Derivatives

Certain derivative instruments contain provisions that require the Company to either post additional collateral or immediately settle any outstanding liability balances upon the occurrence of a specified event related to the credit risk of the Company. These events, which are defined by the existing derivative contracts, are primarily downgrades in the credit ratings of the Company and its affiliates.

The fair value (excluding CVA) of all derivative instruments with credit risk-related contingent features that were in a net liability position at both December 31, 2019 and 2018 was $30 billion and $33 billion, respectively. The Company posted $28 billion and $33 billion as collateral for this exposure in the normal course of business as of December 31, 2019 and 2018, respectively.

A downgrade could trigger additional collateral or cash settlement requirements for the Company and certain affiliates. In the event that Citigroup and Citibank were downgraded a single notch by all three major rating agencies as of December 31, 2019, the Company could be required to post an additional $0.6 billion as either collateral or settlement of the derivative transactions. In addition, the Company could be required to segregate with third-party custodians collateral previously received from existing derivative counterparties in the amount of $0.2 billion upon the single notch downgrade, resulting in aggregate cash obligations and collateral requirements of approximately $0.8 billion.

Derivatives Accompanied by Financial Asset Transfers

The Company executes total return swaps that provide it with synthetic exposure to substantially all of the economic return of the securities or other financial assets referenced in the contract. In certain cases, the derivative transaction is accompanied by the Company's transfer of the referenced financial asset to the derivative counterparty, most typically in response to the derivative counterparty's desire to hedge, in whole or in part, its synthetic exposure under the derivative contract by holding the referenced asset in funded form. In certain jurisdictions these transactions qualify as sales, resulting in derecognition of the securities transferred (see Note 1 to the Consolidated Financial Statements for further discussion of the related sale conditions for transfers of financial assets). For a significant portion of the transactions, the Company has also executed another total return swap where the Company passes on substantially all of the economic return of the referenced securities to a different third party seeking the exposure. In those cases, the Company is not exposed, on a net basis, to changes in the economic return of the referenced securities.

These transactions generally involve the transfer of the Company's liquid government bonds, convertible bonds or publicly traded corporate equity securities from the trading portfolio and are executed with third-party financial institutions. The accompanying derivatives are typically total return swaps. The derivatives are cash settled and subject to ongoing margin requirements.

When the conditions for sale accounting are met, the Company reports the transfer of the referenced financial asset as a sale and separately reports the accompanying derivative transaction. These transactions generally do not result in a gain or loss on the sale of the security, because the transferred security was held at fair value in the Company's trading portfolio. For transfers of financial assets accounted for as a sale by the Company and for which the Company has retained substantially all of the economic exposure to the transferred asset through a total return swap executed with the same counterparty in contemplation of the initial sale (and still outstanding), both the asset amounts derecognized and the gross cash proceeds received as of the date of derecognition were $5.8 billion and $4.6 billion as of December 31, 2019 and 2018, respectively.

At December 31, 2019, the fair value of these previously derecognized assets was $5.9 billion. The fair value of the total return swaps as of December 31, 2019 was $117 million recorded as gross derivative assets and $43 million recorded as gross derivative liabilities. At December 31, 2018, the fair value of these previously derecognized assets was $4.5 billion, and the fair value of the total return swaps was $55 million recorded as gross derivative assets and $40 million recorded as gross derivative liabilities.

The balances for the total return swaps are on a gross basis, before the application of counterparty and cash collateral netting, and are included primarily as equity derivatives in the tabular disclosures in this Note.

23. CONCENTRATIONS OF CREDIT RISK

Concentrations of credit risk exist when changes in economic, industry or geographic factors similarly affect groups of counterparties whose aggregate credit exposure is material in relation to Citigroup's total credit exposure. Although Citigroup's portfolio of financial instruments is broadly diversified along industry, product and geographic lines, material transactions are completed with other financial institutions, particularly in the securities trading, derivatives and foreign exchange businesses.

In connection with the Company's efforts to maintain a diversified portfolio, the Company limits its exposure to any one geographic region, country or individual creditor and monitors this exposure on a continuous basis. At December 31, 2019, Citigroup's most significant concentration of credit risk was with the U.S. government and its agencies. The Company's exposure, which primarily results from trading assets and investments issued by the U.S. government and its agencies, amounted to $250.9 billion and $250.0 billion at December 31, 2019 and 2018, respectively. The Japanese and German governments and their agencies, which are rated investment grade by both Moody's and S&P, were the next largest exposures. The Company's exposure to Japan amounted to $33.3 billion and $28.8 billion at December 31, 2019 and 2018, respectively, and was composed of investment securities, loans and trading assets. The Company's exposure to Germany amounted to $29.8 billion and $45.6 billion at December 31, 2019 and 2018, respectively, and was composed of investment securities, loans and trading assets.

The Company's exposure to states and municipalities amounted to $23.8 billion and $27.9 billion at December 31, 2019 and 2018, respectively, and was composed of trading assets, investment securities, derivatives and lending activities.

24. FAIR VALUE MEASUREMENT

ASC 820-10, *Fair Value Measurement*, defines fair value, establishes a consistent framework for measuring fair value and requires disclosures about fair value measurements. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date, and therefore represents an exit price. Among other things, the standard requires the Company to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value.

Under ASC 820-10, the probability of default of a counterparty is factored into the valuation of derivative and other positions as well as the impact of Citigroup's own credit risk on derivatives and other liabilities measured at fair value.

Fair Value Hierarchy

ASC 820-10 specifies a hierarchy of inputs based on whether the inputs are observable or unobservable. Observable inputs are developed using market data and reflect market participant assumptions, while unobservable inputs reflect the Company's market assumptions. These two types of inputs have created the following fair value hierarchy:

- Level 1: Quoted prices for *identical* instruments in active markets.
- Level 2: Quoted prices for *similar* instruments in active markets, quoted prices for identical or similar instruments in markets that are not active and model-derived valuations in which all significant inputs and significant value drivers are *observable* in active markets.
- Level 3: Valuations derived from valuation techniques in which one or more significant inputs or significant value drivers are *unobservable*.

As required under the fair value hierarchy, the Company considers relevant and observable market inputs in its valuations where possible. The frequency of transactions, the size of the bid-ask spread and the amount of adjustment necessary when comparing similar transactions are all factors in determining the relevance of observed prices in those markets.

Determination of Fair Value

For assets and liabilities carried at fair value, the Company measures fair value using the procedures set out below, irrespective of whether the assets and liabilities are measured at fair value as a result of an election or whether they are required to be measured at fair value.

When available, the Company uses quoted market prices to determine fair value and classifies such items as Level 1. In some specific cases where a market price is available, the Company will make use of acceptable practical expedients (such as matrix pricing) to calculate fair value, in which case the items are classified as Level 2.

The Company may also apply a price-based methodology, which utilizes, where available, quoted prices or other market information obtained from recent trading activity in positions with the same or similar characteristics to the position being valued. The frequency and size of transactions are among the factors that are driven by the liquidity of markets and determine the relevance of observed prices in those markets. If relevant and observable prices are available, those valuations may be classified as Level 2. When that is not the case, and there are one or more significant unobservable "price" inputs, then those valuations will be classified as Level 3. Furthermore, when less liquidity exists for a security or loan, a quoted price is stale, a significant adjustment to the price of a similar security is necessary to reflect differences in the terms of the actual security or loan being valued, or prices from independent sources are insufficient to corroborate the valuation, the "price" inputs are considered unobservable and the fair value measurements are classified as Level 3.

If quoted market prices are not available, fair value is based upon internally developed valuation techniques that use, where possible, current market-based parameters, such as interest rates, currency rates and option volatilities. 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 as Level 3 even though there may be some significant inputs that are readily observable.

Fair value estimates from internal valuation techniques are verified, where possible, to prices obtained from independent vendors or brokers. Vendors' and brokers' valuations may be based on a variety of inputs ranging from observed prices to proprietary valuation models, and the Company assesses the quality and relevance of this information in determining the estimate of fair value. The following section describes the valuation methodologies used by the Company to measure various financial instruments at fair value, including an indication of the level in the fair value hierarchy in which each instrument is generally classified. Where appropriate, the description includes details of the valuation models, the key inputs to those models and any significant assumptions.

Market Valuation Adjustments

Generally, the unit of account for a financial instrument is the individual financial instrument. The Company applies market valuation adjustments that are consistent with the unit of account, which does not include adjustment due to the size of the Company's position, except as follows. ASC 820-10 permits an exception, through an accounting policy election, to measure the fair value of a portfolio of financial assets and financial liabilities on the basis of the net open risk position when certain criteria are met. Citi has elected to measure certain portfolios of financial instruments that meet those criteria, such as derivatives, on the basis of the net open risk position. The Company applies market valuation adjustments, including adjustments to account for the size of the net open risk position, consistent with market participant assumptions.

Valuation adjustments are applied to items classified as Level 2 or Level 3 in the fair value hierarchy to ensure that the fair value reflects the price at which the net open risk position could be exited. These valuation adjustments are based on the bid/offer spread for an instrument in the market. When Citi has elected to measure certain portfolios of financial investments, such as derivatives, on the basis of the net open risk position, the valuation adjustment may take into account the size of the position.

Credit valuation adjustments (CVA) and funding valuation adjustments (FVA) are applied to the relevant population of over-the-counter (OTC) derivative instruments where adjustments to reflect counterparty credit risk, own credit risk and term funding risk are required to estimate fair value. This principally includes derivatives with a base valuation (e.g., discounted using overnight indexed swap (OIS)) requiring adjustment for these effects, such as uncollateralized interest rate swaps. The CVA represents a portfolio-level adjustment to reflect the risk premium associated with the counterparty's (assets) or Citi's (liabilities) non-performance risk.

FVA reflect a market funding risk premium inherent in the uncollateralized portion of a derivative portfolio and in certain collateralized derivative portfolios that do not include standard credit support annexes (CSAs), such as where the CSA does not permit the reuse of collateral received. Citi's FVA methodology leverages the existing CVA methodology to estimate a funding exposure profile. The calculation of this exposure profile considers collateral agreements in which the terms do not permit the Company to reuse the collateral received, including where counterparties post collateral to third-party custodians.

Citi's CVA and FVA methodology consists of two steps:

- First, the exposure profile for each counterparty is determined using the terms of all individual derivative positions and a Monte Carlo simulation or other quantitative analysis to generate a series of expected cash flows at future points in time. The calculation of this exposure profile considers the effect of credit risk mitigants and sources of funding, including pledged cash or other collateral and any legal right of offset that exists with a counterparty through arrangements such as netting agreements. Individual derivative contracts that are subject to an enforceable master netting agreement with a counterparty are aggregated as a netting set for this purpose, since it is those aggregate net cash flows that are subject to nonperformance risk. This process identifies specific, point-in-time future cash flows that are subject to nonperformance risk and unsecured funding, rather than using the current recognized net asset or liability as a basis to measure the CVA and FVA.
- Second, for CVA, market-based views of default probabilities derived from observed credit spreads in the credit default swap (CDS) market are applied to the expected future cash flows determined in step one. Citi's own-credit CVA is determined using Citi-specific CDS spreads for the relevant tenor. Generally, counterparty CVA is determined using CDS spread indices for each credit rating and tenor. For certain identified netting sets where individual analysis is practicable (e.g., exposures to counterparties with liquid CDSs), counterparty-specific CDS spreads are used. For FVA, a term structure of future liquidity spreads is applied to the expected future funding requirement.

The CVA and FVA are designed to incorporate a market view of the credit and funding risk, respectively, inherent in the derivative portfolio. However, most unsecured derivative instruments are negotiated bilateral contracts and are not commonly transferred to third parties. Derivative instruments are normally settled contractually or, if terminated early, are terminated at a value negotiated bilaterally between the counterparties. Thus, the CVA and FVA may not be realized upon a settlement or termination in the normal course of business. In addition, all or a portion of these adjustments may be reversed or otherwise adjusted in future periods in the event of changes in the credit or funding risk associated with the derivative instruments.

The table below summarizes the CVA and FVA applied to the fair value of derivative instruments at December 31, 2019 and 2018:

	Credit and funding valuation adjustments contra-liability (contra-asset)	
In millions of dollars	**December 31, 2019**	December 31, 2018
Counterparty CVA	**$ (705)**	$ (1,085)
Asset FVA	**(530)**	(544)
Citigroup (own-credit) CVA	**341**	482
Liability FVA	**72**	135
Total CVA—derivative instruments[1]	**$ (822)**	$ (1,012)

(1) FVA is included with CVA for presentation purposes.

The table below summarizes pretax gains (losses) related to changes in CVA on derivative instruments, net of hedges, FVA on derivatives and debt valuation adjustments (DVA) on Citi's own fair value option (FVO) liabilities for the years indicated:

	Credit/funding/debt valuation adjustments gain (loss)		
In millions of dollars	**2019**	2018	2017
Counterparty CVA	**$ 149**	$ (109)	$ 276
Asset FVA	**13**	46	90
Own-credit CVA	**(131)**	178	(153)
Liability FVA	**(63)**	56	(15)
Total CVA—derivative instruments	**$ (32)**	$ 171	$ 198
DVA related to own FVO liabilities[1]	**$ (1,473)**	$ 1,415	$ (680)
Total CVA and DVA[2]	**$ (1,505)**	$ 1,586	$ (482)

(1) See Notes 1, 17 and 19 to the Consolidated Financial Statements.

(2) FVA is included with CVA for presentation purposes.

Securities Purchased Under Agreements to Resell and Securities Sold Under Agreements to Repurchase

No quoted prices exist for these instruments, so fair value is determined using a discounted cash flow technique. Cash flows are estimated based on the terms of the contract, taking into account any embedded derivative or other features. These cash flows are discounted using interest rates appropriate to the maturity of the instrument as well as the nature of the underlying collateral. Generally, when such instruments are recorded at fair value, they are classified within Level 2 of the fair value hierarchy, as the inputs used in the valuation are readily observable. However, certain long-dated positions are classified within Level 3 of the fair value hierarchy.

Trading Account Assets and Liabilities—Trading Securities and Trading Loans

When available, the Company uses quoted market prices in active markets to determine the fair value of trading securities; such items are classified as Level 1 of the fair value hierarchy. Examples include government securities and exchange-traded equity securities.

For bonds and secondary market loans traded over the counter, the Company generally determines fair value utilizing valuation techniques, including discounted cash flows, price-based and internal models. Fair value estimates from these internal valuation techniques are verified, where possible, to prices obtained from independent sources, including third-party vendors. Vendors compile prices from various sources and may apply matrix pricing for similar bonds or loans where no price is observable. A price-based methodology utilizes, where available, quoted prices or other market information obtained from recent trading activity of assets with similar characteristics to the bond or loan being valued. The yields used in discounted cash flow models are derived from the same price information. Trading securities and loans priced using such methods are generally classified as Level 2. However, when less liquidity exists for a security or loan, a quoted price is stale, a significant adjustment to the price of a similar security or loan is necessary to reflect differences in the terms of the actual security or loan being valued, or prices from independent sources are insufficient to corroborate valuation, a loan or security is generally classified as Level 3. The price input used in a price-based methodology may be zero for a security, such as a subprime CDO, that is not receiving any principal or interest and is currently written down to zero.

When the Company's principal market for a portfolio of loans is the securitization market, the Company uses the securitization price to determine the fair value of the portfolio. The securitization price is determined from the assumed proceeds of a hypothetical securitization in the current market, adjusted for transformation costs (i.e., direct costs other than transaction costs) and securitization uncertainties such as market conditions and liquidity. As a result of the severe reduction in the level of activity in certain securitization markets since the second half of 2007, observable securitization prices for certain directly comparable portfolios of loans have not been readily available. Therefore, such portfolios of loans are generally classified as Level 3 of the fair value hierarchy. However, for other loan securitization markets, such as commercial real estate loans, price verification of the hypothetical securitizations has been possible, since these markets have remained active. Accordingly, this loan portfolio is classified as Level 2 of the fair value hierarchy.

For most of the lending and structured direct subprime exposures, fair value is determined utilizing observable transactions where available, other market data for similar assets in markets that are not active and other internal valuation techniques. The valuation of certain asset-backed security (ABS) CDO positions utilizes prices based on the underlying assets of the ABS CDO.

Trading Account Assets and Liabilities—Derivatives

Exchange-traded derivatives, measured at fair value using quoted (i.e., exchange) prices in active markets, where available, are classified as Level 1 of the fair value hierarchy.

Derivatives without a quoted price in an active market and derivatives executed over the counter are valued using internal valuation techniques. These derivative instruments are classified as either Level 2 or Level 3 depending on the observability of the significant inputs to the model.

The valuation techniques depend on the type of derivative and the nature of the underlying instrument. The principal techniques used to value these instruments are discounted cash flows and internal models, such as derivative pricing models (e.g., Black-Scholes and Monte Carlo simulations).

The key inputs depend upon the type of derivative and the nature of the underlying instrument and include interest rate yield curves, foreign exchange rates, volatilities and correlation. The Company typically uses OIS curves as fair value measurement inputs for the valuation of certain derivatives.

Investments

The investments category includes available-for-sale debt and marketable equity securities whose fair values are generally determined by utilizing similar procedures described for trading securities above or, in some cases, using vendor pricing as the primary source.

Also included in investments are nonpublic investments in private equity and real estate entities. Determining the fair value of nonpublic securities involves a significant degree of management judgment, as no quoted prices exist and such securities are generally thinly traded. In addition, there may be transfer restrictions on private equity securities. The Company's process for determining the fair value of such securities utilizes commonly accepted valuation techniques, including comparables analysis. In determining the fair value of nonpublic securities, the Company also considers events such as a proposed sale of the investee company, initial public offerings, equity issuances or other observable transactions. Private equity securities are generally classified as Level 3 of the fair value hierarchy.

In addition, the Company holds investments in certain alternative investment funds that calculate NAV per share, including hedge funds, private equity funds and real estate funds. Investments in funds are generally classified as non-marketable equity securities carried at fair value. The fair values of these investments are estimated using the NAV per share of the Company's ownership interest in the funds where it is not probable that the investment will be realized at a price other than the NAV. Consistent with the provisions of ASU 2015-07, these investments have not been categorized within the fair value hierarchy and are not included in the tables below. See Note 13 to the Consolidated Financial Statements for additional information.

Short-Term Borrowings and Long-Term Debt

Where fair value accounting has been elected, the fair value of non-structured liabilities is determined by utilizing internal models using the appropriate discount rate for the applicable maturity. Such instruments are generally classified as Level 2 of the fair value hierarchy when all significant inputs are readily observable.

The Company determines the fair value of hybrid financial instruments, including structured liabilities, using the appropriate derivative valuation methodology (described above in "Trading Account Assets and Liabilities—Derivatives") given the nature of the embedded risk profile. Such instruments are classified as Level 2 or Level 3 depending on the observability of significant inputs to the model.

Items Measured at Fair Value on a Recurring Basis

The following tables present for each of the fair value hierarchy levels the Company's assets and liabilities that are measured at fair value on a recurring basis at December 31, 2019 and 2018. The Company may hedge positions that have been classified in the Level 3 category with other financial instruments (hedging instruments) that may be classified as Level 3, but also with financial instruments classified as Level 1 or Level 2 of the fair value hierarchy. The effects of these hedges are presented gross in the following tables:

Fair Value Levels

In millions of dollars at December 31, 2019	Level 1	Level 2	Level 3	Gross inventory	Netting[1]	Net balance
Assets						
Securities borrowed and purchased under agreements to resell	$ —	$ 254,253	$ 303	$ 254,556	$(101,363)	$ 153,193
Trading non-derivative assets						
Trading mortgage-backed securities						
U.S. government-sponsored agency guaranteed	—	27,661	10	27,671	—	27,671
Residential	—	573	123	696	—	696
Commercial	—	1,632	61	1,693	—	1,693
Total trading mortgage-backed securities	$ —	$ 29,866	$ 194	$ 30,060	$ —	$ 30,060
U.S. Treasury and federal agency securities	$ 26,159	$ 3,736	$ —	$ 29,895	$ —	$ 29,895
State and municipal	—	2,573	64	2,637	—	2,637
Foreign government	50,948	20,326	52	71,326	—	71,326
Corporate	1,332	17,246	313	18,891	—	18,891
Equity securities	41,663	9,878	100	51,641	—	51,641
Asset-backed securities	—	1,539	1,177	2,716	—	2,716
Other trading assets[2]	74	11,412	555	12,041	—	12,041
Total trading non-derivative assets	$ 120,176	$ 96,576	$ 2,455	$ 219,207	$ —	$ 219,207
Trading derivatives						
Interest rate contracts	$ 7	$ 196,493	$ 1,168	$ 197,668		
Foreign exchange contracts	1	107,022	547	107,570		
Equity contracts	83	28,148	240	28,471		
Commodity contracts	—	13,498	714	14,212		
Credit derivatives	—	9,960	449	10,409		
Total trading derivatives	$ 91	$ 355,121	$ 3,118	$ 358,330		
Cash collateral paid[3]				$ 17,926		
Netting agreements					$(274,970)	
Netting of cash collateral received					(44,353)	
Total trading derivatives	$ 91	$ 355,121	$ 3,118	$ 376,256	$(319,323)	$ 56,933
Investments						
Mortgage-backed securities						
U.S. government-sponsored agency guaranteed	$ —	$ 35,198	$ 32	$ 35,230	$ —	$ 35,230
Residential	—	793	—	793	—	793
Commercial	—	74	—	74	—	74
Total investment mortgage-backed securities	$ —	$ 36,065	$ 32	$ 36,097	$ —	$ 36,097
U.S. Treasury and federal agency securities	$ 106,103	$ 5,315	$ —	$ 111,418	$ —	$ 111,418
State and municipal	—	4,355	623	4,978	—	4,978
Foreign government	69,957	41,196	96	111,249	—	111,249
Corporate	5,150	6,076	45	11,271	—	11,271
Marketable equity securities	87	371	—	458	—	458
Asset-backed securities	—	500	22	522	—	522
Other debt securities	—	4,730	—	4,730	—	4,730
Non-marketable equity securities[4]	—	93	441	534	—	534
Total investments	$ 181,297	$ 98,701	$ 1,259	$ 281,257	$ —	$ 281,257

Table continues on the next page.

In millions of dollars at December 31, 2019	Level 1	Level 2	Level 3	Gross inventory	Netting[1]	Net balance
Loans	$ —	$ 3,683	$ 402	$ 4,085	$ —	$ 4,085
Mortgage servicing rights	—	—	495	495	—	495
Non-trading derivatives and other financial assets measured on a recurring basis	$ 5,628	$ 7,201	$ 1	$ 12,830	$ —	$ 12,830
Total assets	$ 307,192	$ 815,535	$ 8,033	$ 1,148,686	$(420,686)	$ 728,000
Total as a percentage of gross assets[5]	27.2%	72.1%	0.7%			
Liabilities						
Interest-bearing deposits	$ —	$ 2,104	$ 215	$ 2,319	$ —	$ 2,319
Securities loaned and sold under agreements to repurchase	—	111,567	757	112,324	(71,673)	40,651
Trading account liabilities						
Securities sold, not yet purchased	60,429	11,965	48	72,442	—	72,442
Other trading liabilities	—	24	—	24	—	24
Total trading liabilities	$ 60,429	$ 11,989	$ 48	$ 72,466	$ —	$ 72,466
Trading derivatives						
Interest rate contracts	$ 8	$ 176,480	$ 1,167	$ 177,655		
Foreign exchange contracts	—	110,180	552	110,732		
Equity contracts	144	28,506	1,836	30,486		
Commodity contracts	—	16,542	773	17,315		
Credit derivatives	—	10,233	505	10,738		
Total trading derivatives	$ 152	$ 341,941	$ 4,833	$ 346,926		
Cash collateral received[6]				$ 14,391		
Netting agreements					$(274,970)	
Netting of cash collateral paid					(38,919)	
Total trading derivatives	$ 152	$ 341,941	$ 4,833	$ 361,317	$(313,889)	$ 47,428
Short-term borrowings	$ —	$ 4,933	$ 13	$ 4,946	$ —	$ 4,946
Long-term debt	—	38,614	17,169	55,783	—	55,783
Total non-trading derivatives and other financial liabilities measured on a recurring basis	$ 6,280	$ 63	$ —	$ 6,343	$ —	$ 6,343
Total liabilities	$ 66,861	$ 511,211	$ 23,035	$ 615,498	$(385,562)	$ 229,936
Total as a percentage of gross liabilities[5]	11.1%	85.0%	3.8%			

(1) Represents netting of (i) the amounts due under securities purchased under agreements to resell and the amounts owed under securities sold under agreements to repurchase and (ii) derivative exposures covered by a qualifying master netting agreement and cash collateral offsetting.
(2) Includes positions related to investments in unallocated precious metals, as discussed in Note 25 to the Consolidated Financial Statements. Also includes physical commodities accounted for at the lower of cost or fair value and unfunded credit products.
(3) Reflects the net amount of $56,845 million of gross cash collateral paid, of which $38,919 million was used to offset trading derivative liabilities.
(4) Amounts exclude $0.2 billion of investments measured at net asset value (NAV) in accordance with ASU No. 2015-07, *Fair Value Measurement (Topic 820): Disclosures for Investments in Certain Entities That Calculate Net Asset Value per Share (or Its Equivalent).*
(5) Because the amount of the cash collateral paid/received has not been allocated to the Level 1, 2 and 3 subtotals, these percentages are calculated based on total assets and liabilities measured at fair value on a recurring basis, excluding the cash collateral paid/received on derivatives.
(6) Reflects the net amount of $58,744 million of gross cash collateral received, of which $44,353 million was used to offset trading derivative assets.

Fair Value Levels

In millions of dollars at December 31, 2018	Level 1	Level 2	Level 3	Gross inventory	Netting[(1)]	Net balance
Assets						
Securities borrowed and purchased under agreements to resell	$ —	$ 214,570	$ 115	$ 214,685	$ (66,984)	$147,701
Trading non-derivative assets						
Trading mortgage-backed securities						
U.S. government-sponsored agency guaranteed	—	24,090	156	24,246	—	24,246
Residential	—	709	268	977	—	977
Commercial	—	1,323	77	1,400	—	1,400
Total trading mortgage-backed securities	$ —	$ 26,122	$ 501	$ 26,623	$ —	$ 26,623
U.S. Treasury and federal agency securities	$ 26,439	$ 4,802	$ 1	$ 31,242	$ —	$ 31,242
State and municipal	—	3,782	200	3,982	—	3,982
Foreign government	43,309	21,179	31	64,519	—	64,519
Corporate	1,026	14,510	360	15,896	—	15,896
Equity securities	36,342	7,308	153	43,803	—	43,803
Asset-backed securities	—	1,429	1,484	2,913	—	2,913
Other trading assets[(2)]	3	12,198	818	13,019	—	13,019
Total trading non-derivative assets	$ 107,119	$ 91,330	$ 3,548	$ 201,997	$ —	$201,997
Trading derivatives						
Interest rate contracts	$ 101	$ 169,860	$ 1,671	$ 171,632		
Foreign exchange contracts	—	162,108	346	162,454		
Equity contracts	647	28,903	343	29,893		
Commodity contracts	—	16,788	767	17,555		
Credit derivatives	—	9,839	926	10,765		
Total trading derivatives	$ 748	$ 387,498	$ 4,053	$ 392,299		
Cash collateral paid[(3)]				$ 11,518		
Netting agreements					$ (311,089)	
Netting of cash collateral received					(38,608)	
Total trading derivatives	$ 748	$ 387,498	$ 4,053	$ 403,817	$ (349,697)	$ 54,120
Investments						
Mortgage-backed securities						
U.S. government-sponsored agency guaranteed	$ —	$ 42,988	$ 32	$ 43,020	$ —	$ 43,020
Residential	—	1,313	—	1,313	—	1,313
Commercial	—	172	—	172	—	172
Total investment mortgage-backed securities	$ —	$ 44,473	$ 32	$ 44,505	$ —	$ 44,505
U.S. Treasury and federal agency securities	$ 107,577	$ 9,645	$ —	$ 117,222	$ —	$117,222
State and municipal	—	8,498	708	9,206	—	9,206
Foreign government	58,252	42,371	68	100,691	—	100,691
Corporate	4,410	7,033	156	11,599	—	11,599
Marketable equity securities	206	14	—	220	—	220
Asset-backed securities	—	656	187	843	—	843
Other debt securities	—	3,972	—	3,972	—	3,972
Non-marketable equity securities[(4)]	—	96	586	682	—	682
Total investments	$ 170,445	$ 116,758	$ 1,737	$ 288,940	$ —	$288,940

Table continues on the next page.

In millions of dollars at December 31, 2018	Level 1	Level 2	Level 3	Gross inventory	Netting[1]	Net balance
Loans	$ —	$ 2,946	$ 277	$ 3,223	$ —	$ 3,223
Mortgage servicing rights	—	—	584	584	—	584
Non-trading derivatives and other financial assets measured on a recurring basis	$ 15,839	$ 4,949	$ —	$ 20,788	$ —	$ 20,788
Total assets	$ 294,151	$ 818,051	$ 10,314	$ 1,134,034	$(416,681)	$717,353
Total as a percentage of gross assets[5]	26.2%	72.9%	0.9%			
Liabilities						
Interest-bearing deposits	$ —	$ 980	$ 495	$ 1,475	$ —	$ 1,475
Securities loaned and sold under agreements to repurchase	—	110,511	983	111,494	(66,984)	44,510
Trading account liabilities						
Securities sold, not yet purchased	78,872	11,364	586	90,822	—	90,822
Other trading liabilities	—	1,547	—	1,547	—	1,547
Total trading liabilities	$ 78,872	$ 12,911	$ 586	$ 92,369	$ —	$ 92,369
Trading account derivatives						
Interest rate contracts	$ 71	$ 152,931	$ 1,825	$ 154,827		
Foreign exchange contracts	—	159,003	352	159,355		
Equity contracts	351	32,330	1,127	33,808		
Commodity contracts	—	19,904	785	20,689		
Credit derivatives	—	9,486	865	10,351		
Total trading derivatives	$ 422	$ 373,654	$ 4,954	$ 379,030		
Cash collateral received[6]				$ 13,906		
Netting agreements					$(311,089)	
Netting of cash collateral paid					(29,911)	
Total trading derivatives	$ 422	$ 373,654	$ 4,954	$ 392,936	$(341,000)	$ 51,936
Short-term borrowings	$ —	$ 4,446	$ 37	$ 4,483	$ —	$ 4,483
Long-term debt	—	25,659	12,570	38,229	—	38,229
Non-trading derivatives and other financial liabilities measured on a recurring basis	$ 15,839	$ 67	$ —	$ 15,906	$ —	$ 15,906
Total liabilities	$ 95,133	$ 528,228	$ 19,625	$ 656,892	$(407,984)	$248,908
Total as a percentage of gross liabilities[5]	14.8%	82.1%	3.1%			

(1) Represents netting of (i) the amounts due under securities purchased under agreements to resell and the amounts owed under securities sold under agreements to repurchase and (ii) derivative exposures covered by a qualifying master netting agreement and cash collateral offsetting.
(2) Includes positions related to investments in unallocated precious metals, as discussed in Note 25 to the Consolidated Financial Statements. Also includes physical commodities accounted for at the lower of cost or fair value and unfunded credit products.
(3) Reflects the net amount of $41,429 million of gross cash collateral paid, of which $29,911 million was used to offset trading derivative liabilities.
(4) Amounts exclude $0.2 billion of investments measured at net asset value (NAV) in accordance with ASU 2015-07, *Fair Value Measurement (Topic 820): Disclosures for Investments in Certain Entities That Calculate Net Asset Value per Share (or Its Equivalent).*
(5) Because the amount of the cash collateral paid/received has not been allocated to the Level 1, 2 and 3 subtotals, these percentages are calculated based on total assets and liabilities measured at fair value on a recurring basis, excluding the cash collateral paid/received on derivatives.
(6) Reflects the net amount of $52,514 million of gross cash collateral received, of which $38,608 million was used to offset trading derivative assets.

Changes in Level 3 Fair Value Category

The following tables present the changes in the Level 3 fair value category for the years ended December 31, 2019 and 2018. The gains and losses presented below include changes in the fair value related to both observable and unobservable inputs.

The Company often hedges positions with offsetting positions that are classified in a different level. For example, the gains and losses for assets and liabilities in the Level 3 category presented in the tables below do not reflect the effect of offsetting losses and gains on hedging instruments that may be classified in the Level 1 and Level 2 categories. In addition, the Company hedges items classified in the Level 3 category with instruments also classified in Level 3 of the fair value hierarchy. The hedged items and related hedges are presented gross in the following tables:

Level 3 Fair Value Rollforward

		Net realized/unrealized gains/losses included in		Transfers							
In millions of dollars	Dec. 31, 2018	Principal transactions	Other[1][2]	into Level 3	out of Level 3	Purchases	Issuances	Sales	Settlements	Dec. 31, 2019	Unrealized gains/ losses still held[3]
Assets											
Securities borrowed and purchased under agreements to resell	$ 115	$ (5)	$ —	$ 191	$ (4)	$ 195	$ —	$ —	$ (189)	$ 303	$ 3
Trading non-derivative assets											
Trading mortgage-backed securities											
U.S. government-sponsored agency guaranteed	156	—	—	54	(72)	160	(1)	(287)	—	10	1
Residential	268	15	—	86	(80)	227	—	(393)	—	123	10
Commercial	77	14	—	150	(105)	136	—	(211)	—	61	(4)
Total trading mortgage-backed securities	$ 501	$ 29	$ —	$ 290	$ (257)	$ 523	$ (1)	$ (891)	$ —	$ 194	$ 7
U.S. Treasury and federal agency securities	$ 1	$ (9)	$ —	$ —	$ —	$ 20	$ —	$ (11)	$ (1)	$ —	$ —
State and municipal	200	(2)	—	1	(19)	2	—	(118)	—	64	(2)
Foreign government	31	28	—	12	(7)	88	—	(100)	—	52	1
Corporate	360	284	—	213	(86)	323	(29)	(742)	(10)	313	(11)
Marketable equity securities	153	(21)	—	13	(19)	117	—	(143)	—	100	(51)
Asset-backed securities	1,484	(65)	—	51	(127)	738	—	(904)	—	1,177	29
Other trading assets	818	(52)	—	97	(283)	598	36	(630)	(29)	555	(257)
Total trading non-derivative assets	$ 3,548	$ 192	$ —	$ 677	$ (798)	$ 2,409	$ 6	$ (3,539)	$ (40)	$ 2,455	$ (284)
Trading derivatives, net[4]											
Interest rate contracts	$ (154)	$ 116	$ —	$ (129)	$ 172	$ 154	$ 45	$ (1)	$ (202)	$ 1	$ 2,194
Foreign exchange contracts	(6)	(73)	—	152	(97)	113	—	(114)	20	(5)	(134)
Equity contracts	(784)	(425)	—	(213)	274	(111)	(147)	(8)	(182)	(1,596)	(422)
Commodity contracts	(18)	(121)	—	(15)	(15)	252	—	(133)	(9)	(59)	(33)
Credit derivatives	61	(412)	—	(114)	204	—	—	14	191	(56)	(289)
Total trading derivatives, net[4]	$ (901)	$ (915)	$ —	$ (319)	$ 538	$ 408	$ (102)	$ (242)	$ (182)	$ (1,715)	$ 1,316

Table continues on the next page.

In millions of dollars	Dec. 31, 2018	Net realized/unrealized gains/losses included in: Principal transactions	Other(1)(2)	Transfers: into Level 3	out of Level 3	Purchases	Issuances	Sales	Settlements	Dec. 31, 2019	Unrealized gains/ losses still held(3)
Investments											
Mortgage-backed securities											
U.S. government-sponsored agency guaranteed	$ 32	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	**$ 32**	**$ (1)**
Residential	—	—	—	—	—	—	—	—	—	—	—
Commercial	—	—	—	—	—	—	—	—	—	—	—
Total investment mortgage-backed securities	$ 32	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	**$ 32**	**$ (1)**
U.S. Treasury and federal agency securities	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	**$ —**	**$ —**
State and municipal	708	—	**86**	**14**	**(318)**	**430**	—	**(297)**	—	**623**	**82**
Foreign government	68	—	**2**	—	—	**145**	—	**(119)**	—	**96**	**2**
Corporate	156	—	**(14)**	**3**	**(94)**	—	—	**(6)**	—	**45**	—
Marketable equity securities	—	—	—	—	—	—	—	—	—	—	—
Asset-backed securities	187	—	**(11)**	**122**	**(612)**	**550**	—	**(214)**	—	**22**	**13**
Other debt securities	—	—	—	—	—	—	—	—	—	—	—
Non-marketable equity securities	586	—	**(11)**	**39**	**(1)**	**11**	—	**(151)**	**(32)**	**441**	**16**
Total investments	$ 1,737	**$ —**	**$ 52**	**$ 178**	**$(1,025)**	**$ 1,136**	**$ —**	**$ (787)**	**$ (32)**	**$ 1,259**	**$ 112**
Loans	$ 277	**$ —**	**$ 192**	**$ 148**	**$ (189)**	**$ 16**	**$ —**	**$ (40)**	**$ (2)**	**$ 402**	**$ 186**
Mortgage servicing rights	584	—	**(84)**	—	—	—	**70**	—	**(75)**	**495**	**(68)**
Other financial assets measured on a recurring basis	—	—	**96**	**6**	**(2)**	**2**	**32**	**(21)**	**(112)**	**1**	**18**
Liabilities											
Interest-bearing deposits	$ 495	**$ —**	**$ (16)**	**$ 10**	**$ (783)**	**$ —**	**$ 843**	**$ —**	**$ (366)**	**$ 215**	**$ (25)**
Securities loaned and sold under agreements to repurchase	983	**121**	—	**1**	**4**	—	—	**(168)**	**58**	**757**	**(26)**
Trading account liabilities											
Securities sold, not yet purchased	586	**122**	—	**68**	**(443)**	**19**	—	**(12)**	**(48)**	**48**	**3**
Other trading liabilities	—	—	—	—	—	—	—	—	—	—	—
Short-term borrowings	37	**32**	—	**13**	**(42)**	—	**168**	—	**(131)**	**13**	**(1)**
Long-term debt	12,570	**(2,140)**	—	**3,892**	**(5,188)**	**23**	**8,262**	**(5)**	**(4,525)**	**17,169**	**(3,300)**
Other financial liabilities measured on a recurring basis	—	—	**4**	**5**	—	—	**4**	—	**(5)**	—	—

(1) Changes in fair value of available-for-sale investments are recorded in *AOCI*, unless related to other-than-temporary impairment, while gains and losses from sales are recorded in *Realized gains (losses) from sales of investments* in the Consolidated Statement of Income.
(2) Unrealized gains (losses) on MSRs are recorded in *Other revenue* in the Consolidated Statement of Income.
(3) Represents the amount of total gains or losses for the period, included in earnings (and *AOCI* for changes in fair value of available-for-sale investments), attributable to the change in fair value relating to assets and liabilities classified as Level 3 that are still held at December 31, 2019.
(4) Total Level 3 trading derivative assets and liabilities have been netted in these tables for presentation purposes only.

In millions of dollars	Dec. 31, 2017	Net realized/unrealized gains (losses) included in		Transfers		Purchases	Issuances	Sales	Settlements	Dec. 31, 2018	Unrealized gains (losses) still held[3]
		Principal transactions	Other[1][2]	into Level 3	out of Level 3						
Assets											
Securities borrowed and purchased under agreements to resell	$ 16	$ 17	$ —	$ 50	$ —	$ 95	$ —	$ 16	$ (79)	$ 115	$ 9
Trading non-derivative assets											
Trading mortgage-backed securities											
U.S. government-sponsored agency guaranteed	163	5	—	92	(107)	281	—	(278)	—	156	186
Residential	164	112	—	124	(133)	154	—	(153)	—	268	4
Commercial	57	(7)	—	24	(49)	110	—	(58)	—	77	—
Total trading mortgage-backed securities	$ 384	$ 110	$ —	$ 240	$ (289)	$ 545	$ —	$ (489)	$ —	$ 501	$ 190
U.S. Treasury and federal agency securities	$ —	$ —	$ —	$ 6	$ (4)	$ 1	$ —	$ —	$ (2)	$ 1	$ —
State and municipal	274	22	—	—	(96)	45	—	(45)	—	200	9
Foreign government	16	(2)	—	5	(13)	75	—	(50)	—	31	(28)
Corporate	275	(72)	—	138	(122)	596	(40)	(415)	—	360	(32)
Marketable equity securities	120	2	—	25	(62)	290	—	(222)	—	153	(56)
Asset-backed securities	1,590	28	—	77	(90)	1,238	—	(1,359)	—	1,484	(21)
Other trading assets	615	276	—	197	(82)	598	8	(777)	(17)	818	91
Total trading non-derivative assets	$ 3,274	$ 364	$ —	$ 688	$ (758)	$ 3,388	$ (32)	$ (3,357)	$ (19)	$ 3,548	$ 153
Trading derivatives, net[4]											
Interest rate contracts	$ (422)	$ 414	$ —	$ (6)	$ (193)	$ 8	$ 17	$ (32)	$ 60	$ (154)	$ 336
Foreign exchange contracts	130	(99)	—	(29)	77	11	—	(89)	(7)	(6)	(72)
Equity contracts	(2,027)	479	—	(131)	1,114	25	(44)	(17)	(183)	(784)	52
Commodity contracts	(1,861)	(505)	—	(32)	2,180	62	—	(19)	157	(18)	(171)
Credit derivatives	(799)	261	—	(7)	391	2	—	1	212	61	87
Total trading derivatives, net[4]	$ (4,979)	$ 550	$ —	$ (205)	$ 3,569	$ 108	$ (27)	$ (156)	$ 239	$ (901)	$ 232
Investments											
Mortgage-backed securities											
U.S. government-sponsored agency guaranteed	$ 24	$ —	$ 10	$ —	$ —	$ —	$ —	$ (2)	$ —	$ 32	$ 14
Residential	—	—	—	—	—	—	—	—	—	—	—
Commercial	3	—	2	1	(1)	—	—	(5)	—	—	—
Total investment mortgage-backed securities	$ 27	$ —	$ 12	$ 1	$ (1)	$ —	$ —	$ (7)	$ —	$ 32	$ 14
U.S. Treasury and federal agency securities	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —
State and municipal	737	—	(20)	—	(18)	211	—	(202)	—	708	(29)
Foreign government	92	—	(3)	3	(4)	141	—	(161)	—	68	4
Corporate	71	—	(1)	61	(66)	101	—	(10)	—	156	—
Marketable equity securities	2	—	1	—	—	—	—	(2)	(1)	—	—
Asset-backed securities	827	—	(21)	10	(524)	63	—	(168)	—	187	—
Other debt securities	—	—	—	—	—	—	—	—	—	—	—
Non-marketable equity securities	681	—	(95)	193	—	91	—	(234)	(50)	586	55
Total investments	$ 2,437	$ —	$ (127)	$ 268	$ (613)	$ 607	$ —	$ (784)	$ (51)	$ 1,737	$ 44

Table continues on the next page.

		Net realized/unrealized gains (losses) included in		Transfers							
In millions of dollars	Dec. 31, 2017	Principal transactions	Other[1][2]	into Level 3	out of Level 3	Purchases	Issuances	Sales	Settlements	Dec. 31, 2018	Unrealized gains (losses) still held[3]
Loans	$ 550	$ —	$ (319)	$ —	$ 13	$ 140	$ —	$ (103)	$ (4)	$ 277	$ 236
Mortgage servicing rights	558	—	54	—	—	—	58	(18)	(68)	584	59
Other financial assets measured on a recurring basis	16	—	51	—	(11)	4	12	(12)	(60)	—	63
Liabilities											
Interest-bearing deposits	$ 286	$ —	$ 14	$ 13	$ (1)	$ —	$ 215	$ —	$ (4)	$ 495	$ (355)
Securities loaned and sold under agreements to repurchase	726	(8)	—	1	—	—	243	(31)	36	983	24
Trading account liabilities											
Securities sold, not yet purchased	22	(454)	—	187	(172)	7	226	(39)	(99)	586	(238)
Other trading liabilities	5	5	—	—	—	—	—	—	—	—	—
Short-term borrowings	18	53	—	72	(46)	—	86	—	(40)	37	25
Long-term debt	13,082	(182)	—	2,850	(3,514)	36	(18)	(45)	(3)	12,570	(2,871)
Other financial liabilities measured on a recurring basis	8	—	(2)	1	(10)	—	2	—	(3)	—	(8)

(1) Changes in fair value of available-for-sale debt securities are recorded in *AOCI*, unless related to other-than-temporary impairment, while gains and losses from sales are recorded in *Realized gains (losses) from sales of investments* in the Consolidated Statement of Income.
(2) Unrealized gains (losses) on MSRs are recorded in *Other revenue* in the Consolidated Statement of Income.
(3) Represents the amount of total gains or losses for the period, included in earnings (and *AOCI* for changes in fair value of available-for-sale debt securities), attributable to the change in fair value relating to assets and liabilities classified as Level 3 that are still held at December 31, 2018.
(4) Total Level 3 derivative assets and liabilities have been netted in these tables for presentation purposes only.

Level 3 Fair Value Rollforward

The following were the significant Level 3 transfers for the period December 31, 2018 to December 31, 2019:

- Transfers of *Long-Term Debt* of $3.9 billion from Level 2 to Level 3, and of $5.2 billion from Level 3 to Level 2, mainly related to structured debt, reflecting changes in the significance of unobservable inputs as well as certain underlying market inputs becoming less or more observable.

The following were the significant Level 3 transfers for the period December 31, 2017 to December 31, 2018:

- Transfers of *Equity Contract Derivatives* of $1.1 billion from Level 3 to Level 2, related to equity derivatives where the unobservable components were deemed insignificant.
- Transfers of *Commodity Contract Derivatives* of $2.2 billion from Level 3 to Level 2, related to commodity derivatives where the unobservable component of the derivatives were deemed insignificant.
- Transfers of *Long-term debt* of $2.9 billion from Level 2 to Level 3, and of $3.5 billion from Level 3 to Level 2, mainly related to structured debt, reflecting changes in the significance of unobservable inputs as well as certain underlying market inputs becoming less or more observable.

Valuation Techniques and Inputs for Level 3 Fair Value Measurements

The Company’s Level 3 inventory consists of both cash instruments and derivatives of varying complexity. The valuation methodologies used to measure the fair value of these positions include discounted cash flow analysis, internal models and comparative analysis. A position is classified within Level 3 of the fair value hierarchy when at least one input is unobservable and is considered significant to its valuation. The specific reason an input is deemed unobservable varies; for example, at least one significant input to the pricing model is not observable in the market, at least one significant input has been adjusted to make it more representative of the position being valued or the price quote available does not reflect sufficient trading activities.

The following tables present the valuation techniques covering the majority of Level 3 inventory and the most significant unobservable inputs used in Level 3 fair value measurements. Differences between this table and amounts presented in the Level 3 Fair Value Rollforward table represent individually immaterial items that have been measured using a variety of valuation techniques other than those listed.

As of December 31, 2019	**Fair value[1]** *(in millions)*	**Methodology**	**Input**	**Low[2][3]**	**High[2][3]**	**Weighted average[4]**
Assets						
Securities borrowed and purchased under agreements to resell	$ 303	Model-based	Credit spread	**15 bps**	**15 bps**	**15 bps**
			Interest rate	**1.59 %**	**3.67%**	**2.72%**
Mortgage-backed securities	$ 196	Price-based	Price	**$ 36**	**$ 505**	**$ 97**
	22	Model-based				
State and municipal, foreign government, corporate and other debt securities	$ 880	Model-based	Price	**$ —**	**$ 1,238**	**$ 90**
	677	Price-based	Credit spread	**35 bps**	**295 bps**	**209 bps**
Marketable equity securities[5]	$ 70	Price-based	Price	**$ —**	**$ 38,500**	**$ 2,979**
	30	Model-based	WAL	**1.48 years**	**1.48 years**	**1.48 years**
			Recovery *(in millions)*	**$ 5,450**	**$ 5,450**	**$ 5,450**
Asset-backed securities	$ 812	Price-based	Price	**$ 4**	**$ 103**	**$ 60**
	$ 368	Yield analysis	Yield	**0.61 %**	**23.38%**	**8.88%**
Non-marketable equities	$ 316	Comparables analysis	EBITDA multiples	**7.00x**	**17.95x**	**10.34x**
\	97	Price-based	Appraised value *(in thousands)*	**$ 397**	**$ 33,246**	**$ 8,446**
			Price	**$ 3**	**$ 2,019**	**$ 1,020**
			PE ratio	**14.70x**	**28.70x**	**20.54x**
			Price to book ratio	**1.50x**	**3.00x**	**1.88x**
			Discount to price	**— %**	**10.00%**	**2.32%**
Derivatives—gross[6]						
Interest rate contracts (gross)	$ 2,196	Model-based	Inflation volatility	**0.21 %**	**2.74%**	**0.79%**
			Mean reversion	**1.00 %**	**20.00%**	**10.50%**
			IR normal volatility	**0.09 %**	**0.66%**	**0.53%**
Foreign exchange contracts (gross)	$ 1,099	Model-based	FX volatility	**1.27 %**	**12.16%**	**9.17%**
			IR normal volatility	**0.27 %**	**0.66%**	**0.58%**
			FX rate	**37.39 %**	**586.84%**	**80.64%**
			Interest rate	**2.72 %**	**56.14%**	**13.11%**
			IR-IR correlation	**(51.00)%**	**40.00%**	**32.00%**
			IR-FX correlation	**40.00 %**	**60.00%**	**50.00%**
Equity contracts (gross)[7]	$ 2,076	Model-based	Equity volatility	**3.16 %**	**52.80%**	**28.43%**
			Forward price	**62.60 %**	**112.69%**	**98.46%**
			WAL	**1.48 years**	**1.48 years**	**1.48 years**
			Recovery *(in millions)*	**$ 5,450**	**$ 5,450**	**$ 5,450**

As of December 31, 2019	Fair value(1) *(in millions)*	Methodology	Input	Low(2)(3)	High(2)(3)	Weighted average(4)
Commodity and other contracts (gross)	**$ 1,487**	Model-based	Forward price	**37.62 %**	**362.57%**	**119.32%**
			Commodity volatility	**5.25 %**	**93.63%**	**23.55%**
			Commodity correlation	**(39.65)%**	**87.81%**	**41.80%**
Credit derivatives (gross)	**$ 613**	Model-based	Credit spread	**8 bps**	**283 bps**	**80 bps**
	341	Price-based	Upfront points	**2.59 %**	**99.94%**	**59.41%**
			Price	**$ 12**	**$ 100**	**$ 87**
			Credit correlation	**25.00 %**	**87.00%**	**48.57%**
			Recovery rate	**20.00 %**	**65.00%**	**48.00%**
Loans and leases	**$ 378**	Model-based	Credit spread	**9 bps**	**52 bps**	**48 bps**
			Equity volatility	**32.00 %**	**32.00%**	**32.00%**
Mortgage servicing rights	**$ 418**	Cash flow	Yield	**1.78 %**	**12.00%**	**9.49%**
	77	Model-based	WAL	**4.07 years**	**8.13 years**	**6.61 years**
Liabilities						
Interest-bearing deposits	**$ 215**	Model-based	Mean reversion	**1.00 %**	**20.00%**	**10.50%**
			Forward price	**97.59 %**	**111.06%**	**102.96%**
Securities loaned and sold under agreements to repurchase	**$ 757**	Model-based	Interest rate	**1.59 %**	**2.38%**	**1.95%**
Trading account liabilities						
Securities sold, not yet purchased	**$ 46**	Price-based	Price	**$ —**	**$ 866**	**$ 96**
Short-term borrowings and long-term debt	**$ 17,182**	Model-based	Mean reversion	**1.00 %**	**20.00%**	**10.50%**
			IR normal volatility	**0.09 %**	**0.66%**	**0.46%**
			Forward price	**37.62 %**	**362.57%**	**97.52%**
			Equity-IR Correlation	**15.00 %**	**44.00%**	**32.66%**

As of December 31, 2018	Fair value(1) *(in millions)*	Methodology	Input	Low(2)(3)	High(2)(3)	Weighted average(4)
Assets						
Securities borrowed and purchased under agreements to resell	$ 115	Model-based	Interest rate	2.52 %	7.43%	5.08 %
Mortgage-backed securities	$ 313	Price-based	Price	$ 11	$ 110	$ 90
	198	Yield analysis	Yield	2.27 %	8.70%	3.74 %
State and municipal, foreign government, corporate and other debt securities	$ 1,212	Price-based	Price	$ —	$ 104	$ 91
	938	Model-based	Credit spread	35 bps	446 bps	238 bps
Marketable equity securities(5)	$ 108	Price-based	Price	$ —	$ 20,255	$ 1,248
	45	Model-based	WAL	1.47 years	1.47 years	1.47 years
Asset-backed securities	$ 1,608	Price-based	Price	$ 3	$ 101	$ 66
Non-marketable equities	$ 293	Comparables analysis	Discount to price	— %	100.00%	0.66 %
	255	Price-based	EBITDA multiples	5.00x	34.00x	9.73x
			Net operating income multiple	24.70x	24.70x	24.70x
			Price	$ 2	$ 1,074	$ 420
			Revenue multiple	2.25x	16.50x	7.06x

Derivatives—gross(6)

As of December 31, 2018	Fair value(1) *(in millions)*	Methodology	Input	Low(2)(3)	High(2)(3)	Weighted average(4)
Interest rate contracts (gross)	$ 3,467	Model-based	Mean reversion	1.00 %	20.00%	10.50 %
			Inflation volatility	0.22 %	2.65%	0.77 %
			IR normal volatility	0.16 %	0.86%	0.56 %
Foreign exchange contracts (gross)	$ 626	Model-based	Foreign exchange (FX) volatility	3.15 %	17.35%	11.37 %
	73	Cash flow	IR-IR correlation	(51.00)%	40.00%	32.69 %
			IR-FX correlation	40.00 %	60.00%	50.00 %
			Credit spread	39 bps	676 bps	423 bps
			IR basis	(0.65)%	0.11%	(0.17)%
			Yield	6.98 %	7.48%	7.23 %
Equity contracts (gross)(7)	$ 1,467	Model-based	Equity volatility	3.00 %	78.39%	37.53 %
			Forward price	64.66 %	144.45%	98.55 %
			Equity-Equity correlation	(81.39)%	100.00%	35.49 %
			Equity-FX correlation	(86.27)%	70.00%	(1.20)%
			WAL	1.47 years	1.47 years	1.47 years
Commodity and other contracts (gross)	$ 1,552	Model-based	Forward price	15.30 %	585.07%	145.08 %
			Commodity volatility	8.92 %	59.86%	20.34 %
			Commodity correlation	(51.90)%	92.11%	40.71 %
Credit derivatives (gross)	$ 1,089	Model-based	Credit correlation	5.00 %	85.00%	41.06 %
	701	Price-based	Upfront points	7.41 %	99.04%	58.95 %
			Credit spread	2 bps	1,127 bps	87 bps
			Recovery rate	5.00 %	65.00%	46.40 %
			Price	$ 17	$ 98	$ 81
Loans and leases	$ 248	Model-based	Credit spread	138 bps	255 bps	147 bps
	29	Price-based	Yield	0.30 %	0.47%	0.32 %
			Price	$ 56	$ 110	$ 92
Mortgage servicing rights	$ 501	Cash flow	Yield	4.60 %	12.00%	7.79 %
	84	Model-based	WAL	3.55 years	7.45 years	6.39 years
Liabilities						
Interest-bearing deposits	$ 495	Model-based	Mean reversion	1.00 %	20.00%	10.50 %
			Forward price	64.66 %	144.45%	98.55 %
			Equity volatility	3.00 %	78.39%	43.49 %
Securities loaned and sold under agreements to repurchase	$ 983	Model-based	Interest rate	2.52 %	3.21%	2.87 %
Trading account liabilities						
Securities sold, not yet purchased	$ 509	Model-based	Forward price	15.30 %	585.07%	105.69 %
	77	Price-based	Equity volatility	3.00 %	78.39%	43.49 %
			Equity-Equity correlation	(81.39)%	100.00%	34.04 %
			Equity-FX correlation	(86.27)%	70.00%	(1.20)%
			Commodity volatility	8.92 %	59.86%	20.34 %
			Commodity correlation	(51.90)%	92.11%	40.71 %
			Equity-IR correlation	(40.00)%	70.37%	30.80 %
Short-term borrowings and long-term debt	$ 12,289	Model-based	Mean reversion	1.00 %	20.00%	10.50 %
			Forward price	64.66 %	144.45%	98.58 %
			Equity volatility	3.00 %	78.39%	43.24 %

(1) The fair value amounts presented in these tables represent the primary valuation technique or techniques for each class of assets or liabilities.

(2) Some inputs are shown as zero due to rounding.
(3) When the low and high inputs are the same, there is either a constant input applied to all positions, or the methodology involving the input applies to only one large position.
(4) Weighted averages are calculated based on the fair values of the instruments.
(5) For equity securities, the price inputs are expressed on an absolute basis, not as a percentage of the notional amount.
(6) Both trading and nontrading account derivatives—assets and liabilities—are presented on a gross absolute value basis.
(7) Includes hybrid products.

Uncertainty of Fair Value Measurements Relating to Unobservable Inputs

Valuation uncertainty arises when there is insufficient or disperse market data to allow a precise determination of the exit value of a fair-valued position or portfolio in today's market. This is especially prevalent in Level 3 fair value instruments, where uncertainty exists in valuation inputs that may be both unobservable and significant to the instrument's (or portfolio's) overall fair value measurement. The uncertainties associated with key unobservable inputs on the Level 3 fair value measurements may not be independent of one another. In addition, the amount and direction of the uncertainty on a fair value measurement for a given change in an unobservable input depends on the nature of the instrument as well as whether the Company holds the instrument as an asset or a liability. For certain instruments, the pricing, hedging and risk management are sensitive to the correlation between various inputs rather than on the analysis and aggregation of the individual inputs.

The following section describes some of the most significant unobservable inputs used by the Company in Level 3 fair value measurements.

Correlation

Correlation is a measure of the extent to which two or more variables change in relation to each other. A variety of correlation-related assumptions are required for a wide range of instruments, including equity and credit baskets, foreign exchange options, CDOs backed by loans or bonds, mortgages, subprime mortgages and many other instruments. For almost all of these instruments, correlations are not directly observable in the market and must be calculated using alternative sources, including historical information. Estimating correlation can be especially difficult where it may vary over time, and calculating correlation information from market data requires significant assumptions regarding the informational efficiency of the market (e.g., swaption markets). Uncertainty therefore exists when an estimate of the appropriate level of correlation as an input into some fair value measurements is required.

Changes in correlation levels can have a substantial impact, favorable or unfavorable, on the value of an instrument, depending on its nature. A change in the default correlation of the fair value of the underlying bonds comprising a CDO structure would affect the fair value of the senior tranche. For example, an increase in the default correlation of the underlying bonds would reduce the fair value of the senior tranche, because highly correlated instruments produce greater losses in the event of default and a portion of these losses would become attributable to the senior tranche. That same change in default correlation would have a different impact on junior tranches of the same structure.

Volatility

Volatility represents the speed and severity of market price changes and is a key factor in pricing options. Volatility generally depends on the tenor of the underlying instrument and the strike price or level defined in the contract. Volatilities for certain combinations of tenor and strike are not observable and need to be estimated using alternative methods, such as using comparable instruments, historical analysis or other sources of market information. This leads to uncertainty around the final fair value measurement of instruments with unobservable volatilities.

The general relationship between changes in the value of a portfolio to changes in volatility also depends on changes in interest rates and the level of the underlying index. Generally, long option positions (assets) benefit from increases in volatility, whereas short option positions (liabilities) will suffer losses. Some instruments are more sensitive to changes in volatility than others. For example, an at-the-money option would experience a greater percentage change in its fair value than a deep-in-the-money option. In addition, the fair value of an option with more than one underlying security (e.g., an option on a basket of bonds) depends on the volatility of the individual underlying securities as well as their correlations.

Yield

In some circumstances, the yield of an instrument is not observable in the market and must be estimated from historical data or from yields of similar securities. This estimated yield may need to be adjusted to capture the characteristics of the security being valued. In other situations, the estimated yield may not represent sufficient market liquidity and must be adjusted as well. Whenever the amount of the adjustment is significant to the value of the security, the fair value measurement is classified as Level 3.

Adjusted yield is generally used to discount the projected future principal and interest cash flows on instruments, such as asset-backed securities. Adjusted yield is impacted by changes in the interest rate environment and relevant credit spreads.

Prepayment

Voluntary unscheduled payments (prepayments) change the future cash flows for the investor and thereby change the fair value of the security. The effect of prepayments is more pronounced for residential mortgage-backed securities. An increase in prepayments—in speed or magnitude—generally creates losses for the holder of these securities. Prepayment is generally negatively correlated with delinquency and interest rate. A combination of low prepayment and high delinquencies amplifies each input's negative impact on mortgage securities' valuation. As prepayment speeds change, the weighted average life of the security changes, which impacts the valuation either positively or negatively, depending upon the nature of the security and the direction of the change in the weighted average life.

Recovery

Recovery is the proportion of the total outstanding balance of a bond or loan that is expected to be collected in a liquidation scenario. For many credit securities (such as asset-backed securities), there is no directly observable market input for recovery, but indications of recovery levels are available from pricing services. The assumed recovery of a security may differ from its actual recovery that will be observable in the future. The recovery rate impacts the valuation of credit securities. Generally, an increase in the recovery rate assumption increases the fair value of the security. An increase in loss severity, the inverse of the recovery rate, reduces the amount of principal available for distribution and, as a result, decreases the fair value of the security.

Credit Spread

Credit spread is a component of the security representing its credit quality. Credit spread reflects the market perception of changes in prepayment, delinquency and recovery rates, therefore capturing the impact of other variables on the fair value. Changes in credit spread affect the fair value of securities differently depending on the characteristics and maturity profile of the security. For example, credit spread is a more significant driver of the fair value measurement of a high yield bond as compared to an investment grade bond. Generally, the credit spread for an investment grade bond is also more observable and less volatile than its high yield counterpart.

Items Measured at Fair Value on a Nonrecurring Basis

Certain assets and liabilities are measured at fair value on a nonrecurring basis and, therefore, are not included in the tables above. These include assets measured at cost that have been written down to fair value during the periods as a result of an impairment. These also include non-marketable equity securities that have been measured using the measurement alternative and are either (i) written down to fair value during the periods as a result of an impairment or (ii) adjusted upward or downward to fair value as a result of a transaction observed during the periods for the identical or similar investment of the same issuer. In addition, these assets include loans held-for-sale and other real estate owned that are measured at the lower of cost or market value.

The following tables present the carrying amounts of all assets that were still held for which a nonrecurring fair value measurement was recorded:

In millions of dollars	Fair value	Level 2	Level 3
December 31, 2019			
Loans HFS(1)	**$ 4,579**	**$ 3,249**	**$ 1,330**
Other real estate owned	**20**	**6**	**14**
Loans(2)	**344**	**93**	**251**
Non-marketable equity securities measured using the measurement alternative	**249**	**249**	**—**
Total assets at fair value on a nonrecurring basis	**$ 5,192**	**$ 3,597**	**$ 1,595**

In millions of dollars	Fair value	Level 2	Level 3
December 31, 2018			
Loans HFS(1)	$ 5,055	$ 3,261	$ 1,794
Other real estate owned	78	62	16
Loans(2)	390	139	251
Non-marketable equity securities measured using the measurement alternative	261	192	69
Total assets at fair value on a nonrecurring basis	$ 5,784	$ 3,654	$ 2,130

(1) Net of fair value amounts on the unfunded portion of loans HFS recognized as *Other liabilities* on the Consolidated Balance Sheet.

(2) Represents impaired loans held for investment whose carrying amount is based on the fair value of the underlying collateral less costs to sell, primarily real estate.

The fair value of loans HFS is determined where possible using quoted secondary-market prices. If no such quoted price exists, the fair value of a loan is determined using quoted prices for a similar asset or assets, adjusted for the specific attributes of that loan. Fair value for the other real estate owned is based on appraisals. For loans whose carrying amount is based on the fair value of the underlying collateral, the fair values depend on the type of collateral. Fair value of the collateral is typically estimated based on quoted market prices if available, appraisals or other internal valuation techniques.

Where the fair value of the related collateral is based on an unadjusted appraised value, the loan is generally classified as Level 2. Where significant adjustments are made to the appraised value, the loan is classified as Level 3. In addition, for corporate loans, appraisals of the collateral are often based on sales of similar assets; however, because the prices of similar assets require significant adjustments to reflect the unique features of the underlying collateral, these fair value measurements are generally classified as Level 3.

The fair value of non-marketable equity securities under the measurement alternative is based on observed transaction prices for the identical or similar investment of the same issuer, or an internal valuation technique in the case of an impairment. Where significant adjustments are made to the observed transaction price or when an internal valuation technique is used, the security is classified as Level 3. Fair value may differ from the observed transaction price due to a number of factors, including marketability adjustments and differences in rights and obligations when the observed transaction is not for the identical investment held by Citi.

Valuation Techniques and Inputs for Level 3 Nonrecurring Fair Value Measurements

The following tables present the valuation techniques covering the majority of Level 3 nonrecurring fair value measurements and the most significant unobservable inputs used in those measurements:

As of December 31, 2019	Fair value[1] *(in millions)*	Methodology	Input	Low[2]	High	Weighted average[3]
Loans HFS	**$ 1,320**	Price-based	Price	**$ 86**	**$ 100**	**$ 99**
Other real estate owned	**$ 11**	Price-based	Appraised value[4]	**$ 2,297,358**	**$ 8,394,102**	**$ 5,615,884**
	$ 5	Recovery analysis				
Loans[6]	**$ 100**	Recovery analysis	Recovery rate	**0.57%**	**100.00%**	**64.78%**
	54	Cash flow	Price	**$ 2**	**$ 54**	**$ 27**
	47	Price-based	Cost of capital	**0.10%**	**100.00%**	**54.84%**
	29	Price-based	Appraised value[4]	**$ 17,521,218**	**$ 43,646,426**	**$ 30,583,822**

As of December 31, 2018	Fair value[1] *(in millions)*	Methodology	Input	Low[2]	High	Weighted average[3]
Loans HFS	$ 1,729	Price-based	Price	$ 81	$ 100	$ 98
Other real estate owned	$ 15	Price-based	Appraised value[4]	$ 8,394,102	$ 8,394,102	$ 8,394,102
	2	Recovery analysis	Discount to price	13.00%	13.00%	13.00%
			Price	$ 56	$ 83	$ 58
Loans[6]	$ 251	Recovery analysis	Recovery rate	30.60%	100.00%	50.51%
			Price	$ 3	$ 85	$ 28
Non-marketable equity securities measured using the measurement alternative	$ 66	Price-based	Price	$ 46	$ 1,514	$ 570

(1) The fair value amounts presented in this table represent the primary valuation technique or techniques for each class of assets or liabilities.
(2) Some inputs are shown as zero due to rounding.
(3) Weighted averages are calculated based on the fair values of the instruments.
(4) Appraised values are disclosed in whole dollars.
(5) Includes estimated costs to sell.
(6) Represents impaired loans held for investment whose carrying amounts are based on the fair value of the underlying collateral, primarily real estate secured loans.

Nonrecurring Fair Value Changes

The following tables present total nonrecurring fair value measurements for the period, included in earnings, attributable to the change in fair value relating to assets that were still held:

In millions of dollars	Year ended December 31, 2019
Loans HFS	**$ —**
Other real estate owned	**(1)**
Loans[1]	**(56)**
Non-marketable equity securities measured using the measurement alternative	**99**
Total nonrecurring fair value gains (losses)	**$ 42**

In millions of dollars	Year ended December 31, 2018
Loans HFS	$ (13)
Other real estate owned	(2)
Loans[1]	(22)
Non-marketable equity securities measured using the measurement alternative	194
Total nonrecurring fair value gains (losses)	$ 157

(1) Represents loans held for investment whose carrying amount is based on the fair value of the underlying collateral, primarily real estate.

Estimated Fair Value of Financial Instruments Not Carried at Fair Value

The following tables present the carrying value and fair value of Citigroup's financial instruments that are not carried at fair value. The tables below therefore exclude items measured at fair value on a recurring basis presented in the tables above.

The disclosure also excludes leases, affiliate investments, pension and benefit obligations, certain insurance contracts and tax-related items. Also, as required, the disclosure excludes the effect of taxes, any premium or discount that could result from offering for sale at one time the entire holdings of a particular instrument, excess fair value associated with deposits with no fixed maturity and other expenses that would be incurred in a market transaction. In addition, the tables exclude the values of non-financial assets and liabilities, as well as a wide range of franchise, relationship and intangible values, which are integral to a full assessment of Citigroup's financial position and the value of its net assets.

Fair values vary from period to period based on changes in a wide range of factors, including interest rates, credit quality and market perceptions of value, and as existing assets and liabilities run off and new transactions are entered into.

	December 31, 2019		**Estimated fair value**		
In billions of dollars	**Carrying value**	**Estimated fair value**	**Level 1**	**Level 2**	**Level 3**
Assets					
Investments	**$ 86.4**	**$ 87.8**	**$ 1.9**	**$ 83.8**	**$ 2.1**
Securities borrowed and purchased under agreements to resell	**98.1**	**98.1**	**—**	**98.1**	**—**
Loans[(1)(2)]	**681.2**	**677.7**	**—**	**4.7**	**673.0**
Other financial assets[(2)(3)]	**262.4**	**262.4**	**177.6**	**16.3**	**68.5**
Liabilities					
Deposits	**$ 1,068.3**	**$ 1,066.7**	**$ —**	**$ 875.5**	**$ 191.2**
Securities loaned and sold under agreements to repurchase	**125.7**	**125.7**	**—**	**125.7**	**—**
Long-term debt[(4)]	**193.0**	**203.8**	**—**	**187.3**	**16.5**
Other financial liabilities[(5)]	**110.2**	**110.2**	**—**	**37.5**	**72.7**

	December 31, 2018		Estimated fair value		
In billions of dollars	Carrying value	Estimated fair value	Level 1	Level 2	Level 3
Assets					
Investments	$ 68.9	$ 68.5	$ 1.0	$ 65.4	$ 2.1
Securities borrowed and purchased under agreements to resell	123.0	123.0	—	121.6	1.4
Loans[(1)(2)]	667.1	666.9	—	5.6	661.3
Other financial assets[(2)(3)]	249.7	250.1	172.3	15.8	62.0
Liabilities					
Deposits	$ 1,011.7	$ 1,009.5	$ —	$ 847.1	$ 162.4
Securities loaned and sold under agreements to repurchase	133.3	133.3	—	133.3	—
Long-term debt[(4)]	193.8	193.7	—	178.4	15.3
Other financial liabilities[(5)]	103.8	103.8	—	17.2	86.6

(1) The carrying value of loans is net of the *Allowance for loan losses* of $12.8 billion for December 31, 2019 and $12.3 billion for December 31, 2018. In addition, the carrying values exclude $1.4 billion and $1.6 billion of lease finance receivables at December 31, 2019 and 2018, respectively.
(2) Includes items measured at fair value on a nonrecurring basis.

(3) Includes cash and due from banks, deposits with banks, brokerage receivables, reinsurance recoverables and other financial instruments included in *Other assets* on the Consolidated Balance Sheet, for all of which the carrying value is a reasonable estimate of fair value.
(4) The carrying value includes long-term debt balances under qualifying fair value hedges.
(5) Includes brokerage payables, separate and variable accounts, short-term borrowings (carried at cost) and other financial instruments included in *Other liabilities* on the Consolidated Balance Sheet, for all of which the carrying value is a reasonable estimate of fair value.

The estimated fair values of the Company's corporate unfunded lending commitments at December 31, 2019 and 2018 were liabilities of $5.1 billion and $7.8 billion, respectively, substantially all of which are classified as Level 3. The Company does not estimate the fair values of consumer unfunded lending commitments, which are generally cancelable by providing notice to the borrower.

25. FAIR VALUE ELECTIONS

The Company may elect to report most financial instruments and certain other items at fair value on an instrument-by-instrument basis with changes in fair value reported in earnings, other than DVA (see below). The election is made upon the initial recognition of an eligible financial asset, financial liability or firm commitment or when certain specified reconsideration events occur. The fair value election may not otherwise be revoked once an election is made. The changes in fair value are recorded in current earnings, other than DVA, which is reported in *AOCI*. Additional discussion regarding the applicable areas in which fair value elections were made is presented in Note 24 to the Consolidated Financial Statements.

The Company has elected fair value accounting for its mortgage servicing rights (MSRs). See Note 21 to the Consolidated Financial Statements for further discussions regarding the accounting and reporting of MSRs.

The following table presents the changes in fair value of those items for which the fair value option has been elected:

	Changes in fair value for the years ended December 31,	
In millions of dollars	**2019**	2018
Assets		
Securities borrowed and purchased under agreements to resell	**$ 6**	$ (6)
Trading account assets	**77**	(337)
Investments	**—**	—
Loans		
Certain corporate loans	**(222)**	(116)
Certain consumer loans	**—**	—
Total loans	**$ (222)**	$ (116)
Other assets		
MSRs	**$ (84)**	$ 54
Certain mortgage loans HFS[1]	**91**	38
Total other assets	**$ 7**	$ 92
Total assets	**$ (132)**	$ (367)
Liabilities		
Interest-bearing deposits	**$ (205)**	$ 20
Securities loaned and sold under agreements to repurchase	**386**	(118)
Trading account liabilities	**27**	(13)
Short-term borrowings	**(78)**	150
Long-term debt[2]	**(5,174)**	3,048
Total liabilities	**$ (5,044)**	$ 3,087

(1) Includes gains (losses) associated with interest rate lock commitments for those loans that have been originated and elected under the fair value option.
(2) Includes DVA that is included in *AOCI*. See Notes 19 and 24 to the Consolidated Financial Statements.

Own Debt Valuation Adjustments (DVA)
Own debt valuation adjustments are recognized on Citi's liabilities for which the fair value option has been elected using Citi's credit spreads observed in the bond market. Changes in fair value of fair value option liabilities related to changes in Citigroup's own credit spreads (DVA) are reflected as a component of *AOCI*. See Note 1 to the Consolidated Financial Statements for additional information.

Among other variables, the fair value of liabilities for which the fair value option has been elected (other than non-recourse debt and similar liabilities) is impacted by the narrowing or widening of the Company's credit spreads.

The estimated changes in the fair value of these non-derivative liabilities due to such changes in the Company's own credit spread (or instrument-specific credit risk) were a loss of $1,473 million and a gain of $1,415 million for the years ended December 31, 2019 and 2018, respectively. Changes in fair value resulting from changes in instrument-specific credit risk were estimated by incorporating the Company's current credit spreads observable in the bond market into the relevant valuation technique used to value each liability as described above.

The Fair Value Option for Financial Assets and Financial Liabilities

Selected Portfolios of Securities Purchased Under Agreements to Resell, Securities Borrowed, Securities Sold Under Agreements to Repurchase, Securities Loaned and Certain Non-Collateralized Short-Term Borrowings
The Company elected the fair value option for certain portfolios of fixed income securities purchased under agreements to resell and fixed income securities sold under agreements to repurchase, securities borrowed, securities loaned and certain uncollateralized short-term borrowings held primarily by broker-dealer entities in the United States, the United Kingdom and Japan. In each case, the election was made because the related interest rate risk is managed on a portfolio basis, primarily with offsetting derivative instruments that are accounted for at fair value through earnings.

Changes in fair value for transactions in these portfolios are recorded in *Principal transactions*. The related interest revenue and interest expense are measured based on the contractual rates specified in the transactions and are reported as *Interest revenue* and *Interest expense* in the Consolidated Statement of Income.

Certain Loans and Other Credit Products
Citigroup has also elected the fair value option for certain other originated and purchased loans, including certain unfunded loan products, such as guarantees and letters of credit, executed by Citigroup's lending and trading businesses. None of these credit products are highly leveraged financing commitments. Significant groups of transactions include loans and unfunded loan products that are expected to be either sold or securitized in the near term, or transactions where the economic risks are hedged with derivative instruments, such as purchased credit default swaps or total return swaps where the Company pays the total return on the underlying loans to a third party. Citigroup has elected the fair value option to mitigate accounting mismatches in cases where hedge accounting is complex and to achieve operational simplifications. Fair value was not elected for most lending transactions across the Company.

The following table provides information about certain credit products carried at fair value:

	December 31, 2019		December 31, 2018	
In millions of dollars	**Trading assets**	**Loans**	Trading assets	Loans
Carrying amount reported on the Consolidated Balance Sheet	**$ 8,320**	**$ 4,086**	$ 10,108	$ 3,224
Aggregate unpaid principal balance in excess of (less than) fair value	**410**	**315**	435	741
Balance of non-accrual loans or loans more than 90 days past due	**—**	**1**	—	1
Aggregate unpaid principal balance in excess of (less than) fair value for non-accrual loans or loans more than 90 days past due	**—**	**—**	—	—

In addition to the amounts reported above, $1,062 million and $1,137 million of unfunded commitments related to certain credit products selected for fair value accounting were outstanding as of December 31, 2019 and 2018, respectively.

Changes in the fair value of funded and unfunded credit products are classified in *Principal transactions* in Citi's Consolidated Statement of Income. Related interest revenue is measured based on the contractual interest rates and reported as *Interest revenue* on *Trading account assets* or loan interest depending on the balance sheet classifications of the credit products. The changes in fair value for the years ended December 31, 2019 and 2018 due to instrument-specific credit risk totaled to a gain of $95 million and a loss of $27 million, respectively.

Certain Investments in Unallocated Precious Metals

Citigroup invests in unallocated precious metals accounts (gold, silver, platinum and palladium) as part of its commodity and foreign currency trading activities or to economically hedge certain exposures from issuing structured liabilities. Under ASC 815, the investment is bifurcated into a debt host contract and a commodity forward derivative instrument. Citigroup elects the fair value option for the debt host contract, and reports the debt host contract within *Trading account assets* on the Company's Consolidated Balance Sheet. The total carrying amount of debt host contracts across unallocated precious metals accounts was approximately $0.2 billion and $0.4 billion at December 31, 2019 and 2018, respectively. The amounts are expected to fluctuate based on trading activity in future periods.

As part of its commodity and foreign currency trading activities, Citi trades unallocated precious metals investments and executes forward purchase and forward sale derivative contracts with trading counterparties. When Citi sells an unallocated precious metals investment, Citi's receivable from its depository bank is repaid and Citi derecognizes its investment in the unallocated precious metal. The forward purchase or sale contract with the trading counterparty indexed to unallocated precious metals is accounted for as a derivative, at fair value through earnings. As of December 31, 2019, there were approximately $7.4 billion and $6.8 billion in notional amounts of such forward purchase and forward sale derivative contracts outstanding, respectively.

Certain Investments in Private Equity and Real Estate Ventures

Citigroup invests in private equity and real estate ventures for the purpose of earning investment returns and for capital appreciation. The Company has elected the fair value option for certain of these ventures, because such investments are considered similar to many private equity or hedge fund activities in Citi's investment companies, which are reported at fair value. The fair value option brings consistency in the accounting and evaluation of these investments. All investments (debt and equity) in such private equity and real estate entities are accounted for at fair value. These investments are classified as *Investments* on Citigroup's Consolidated Balance Sheet.

Changes in the fair values of these investments are classified in *Other revenue* in the Company's Consolidated Statement of Income.

Certain Mortgage Loans Held-for-Sale (HFS)

Citigroup has elected the fair value option for certain purchased and originated prime fixed-rate and conforming adjustable-rate first mortgage loans HFS. These loans are intended for sale or securitization and are hedged with derivative instruments. The Company has elected the fair value option to mitigate accounting mismatches in cases where hedge accounting is complex and to achieve operational simplifications.

The following table provides information about certain mortgage loans HFS carried at fair value:

In millions of dollars	**December 31, 2019**	December 31, 2018
Carrying amount reported on the Consolidated Balance Sheet	**$ 1,254**	$ 556
Aggregate fair value in excess of (less than) unpaid principal balance	**(31)**	21
Balance of non-accrual loans or loans more than 90 days past due	**1**	—
Aggregate unpaid principal balance in excess of fair value for non-accrual loans or loans more than 90 days past due	**—**	—

The changes in the fair values of these mortgage loans are reported in *Other revenue* in the Company's Consolidated Statement of Income. There was no net change in fair value during the years ended December 31, 2019 and 2018 due to instrument-specific credit risk. Related interest income continues to be measured based on the contractual interest rates and reported as *Interest revenue* in the Consolidated Statement of Income.

Certain Structured Liabilities
The Company has elected the fair value option for certain structured liabilities whose performance is linked to structured interest rates, inflation, currency, equity, referenced credit or commodity risks. The Company elected the fair value option because these exposures are considered to be trading-related positions and, therefore, are managed on a fair value basis. These positions will continue to be classified as debt, deposits or derivatives (*Trading account liabilities*) on the Company's Consolidated Balance Sheet according to their legal form.

The following table provides information about the carrying value of structured notes, disaggregated by type of embedded derivative instrument:

In billions of dollars	**December 31, 2019**	December 31, 2018
Interest rate linked	**$ 22.9**	$ 17.3
Foreign exchange linked	**0.9**	0.5
Equity linked	**21.7**	14.8
Commodity linked	**1.8**	1.2
Credit linked	**2.4**	1.9
Total	**$ 49.7**	$ 35.7

The portion of the changes in fair value attributable to changes in Citigroup's own credit spreads (DVA) is reflected as a component of *AOCI* while all other changes in fair value are reported in *Principal transactions*. Changes in the fair value of these structured liabilities include accrued interest, which is also included in the change in fair value reported in *Principal transactions*.

Certain Non-Structured Liabilities
The Company has elected the fair value option for certain non-structured liabilities with fixed and floating interest rates. The Company has elected the fair value option where the interest rate risk of such liabilities may be economically hedged with derivative contracts or the proceeds are used to purchase financial assets that will also be accounted for at fair value through earnings. The elections have been made to mitigate accounting mismatches and to achieve operational simplifications. These positions are reported in *Short-term borrowings* and *Long-term debt* on the Company's Consolidated Balance Sheet. The portion of the changes in fair value attributable to changes in Citigroup's own credit spreads (DVA) is reflected as a component of *AOCI* while all other changes in fair value are reported in *Principal transactions*.

Interest expense on non-structured liabilities is measured based on the contractual interest rates and reported as *Interest expense* in the Consolidated Statement of Income.

The following table provides information about long-term debt carried at fair value:

In millions of dollars	**December 31, 2019**	December 31, 2018
Carrying amount reported on the Consolidated Balance Sheet	**$ 55,783**	$ 38,229
Aggregate unpaid principal balance in excess of (less than) fair value	**(2,967)**	3,814

The following table provides information about short-term borrowings carried at fair value:

In millions of dollars	**December 31, 2019**	December 31, 2018
Carrying amount reported on the Consolidated Balance Sheet	**$ 4,946**	$ 4,483
Aggregate unpaid principal balance in excess of (less than) fair value	**1,411**	861

26. PLEDGED ASSETS, COLLATERAL, GUARANTEES AND COMMITMENTS

Pledged Assets

In connection with Citi's financing and trading activities, Citi has pledged assets to collateralize its obligations under repurchase agreements, secured financing agreements, secured liabilities of consolidated VIEs and other borrowings. The approximate carrying values of the significant components of pledged assets recognized on Citi's Consolidated Balance Sheet included the following:

In millions of dollars		**December 31, 2019**		December 31, 2018
Investment securities	$	**152,352**	$	148,756
Loans		**236,033**		227,840
Trading account assets		**132,332**		120,292
Total	$	**520,717**	$	496,888

Restricted Cash

Citigroup defines restricted cash (as cash subject to withdrawal restrictions) to include cash deposited with central banks that must be maintained to meet minimum regulatory requirements, and cash set aside for the benefit of customers or for other purposes such as compensating balance arrangements or debt retirement. Restricted cash includes minimum reserve requirements with the Federal
Reserve Bank and certain other central banks and cash segregated to satisfy rules regarding the protection of customer assets as required by Citigroup broker-dealers' primary regulators, including the United States Securities and Exchange Commission (SEC), the Commodities Futures Trading Commission and the United Kingdom's Prudential Regulation Authority.

Restricted cash is included on the Consolidated Balance Sheet within the following balance sheet lines:

In millions of dollars		**December 31, 2019**		December 31, 2018
Cash and due from banks	$	**3,758**	$	4,000
Deposits with banks		**26,493**		27,208
Total	$	**30,251**	$	31,208

In addition, included in *Cash and due from banks* and *Deposits with banks* at December 31, 2019 and 2018 were $8.5 billion and $8.3 billion, respectively, of cash segregated under federal and other brokerage regulations or deposited with clearing organizations.

Collateral

At December 31, 2019 and 2018, the approximate fair value of collateral received by Citi that may be resold or repledged, excluding the impact of allowable netting, was $569.8 billion and $526.0 billion, respectively. This collateral was received in connection with resale agreements, securities borrowings and loans, securities for securities lending transactions, derivative transactions and margined broker loans.

At December 31, 2019 and 2018, a substantial portion of the collateral received by Citi had been sold or repledged in connection with repurchase agreements, securities sold, not yet purchased, securities borrowings and loans, pledges to clearing organizations, segregation requirements under securities laws and regulations, derivative transactions and bank loans.

In addition, at December 31, 2019 and 2018, Citi had pledged $389.8 billion and $373.7 billion, respectively, of collateral that may not be sold or repledged by the secured parties.

Leases

The Company's operating leases, where Citi is a lessee, include real estate, such as office space and branches, and various types of equipment. These leases have a weighted-average remaining lease term of approximately six years as of December 31, 2019. The operating lease ROU asset and lease liability were $3.1 billion and $3.3 billion, respectively, as of December 31, 2019. The Company recognizes fixed lease costs on a straight-line basis throughout the lease term in the Consolidated Statement of Income. In addition, variable lease costs are recognized in the period in which the obligation for those payments is incurred. The total operating lease expense (principally for offices, branches and equipment), net of $56 million of sublease income, was $1,084 million for the year ended December 31, 2019. The decrease in the lease liability (and related operating lease financial information) from January 1, 2019 is primarily related to the purchase of a previously leased property in London during the second quarter of 2019. See Note 1 for additional lease liability details and balances at January 1, 2019. The purchased property is included in *Other assets* on the Consolidated Balance Sheet at December 31, 2019.

While Citi has certain finance leases as a lessee, such leases are not material to the Company's Consolidated Financial Statements.

Citi's lease arrangements that have not yet commenced as of December 31, 2019 and the Company's short-term lease, variable lease and finance lease costs, for the year ended December 31, 2019, are not material to the Consolidated Financial Statements.

Citi's cash outflows related to operating leases were $942 million for the year ended December 31, 2019, while the future lease payments are as follows:

In millions of dollars		
2020	$	801
2021		695
2022		572
2023		425
2024		314
Thereafter		935
Total future lease payments	$	3,742
Less imputed interest (based on weighted-average discount rate of 3.6%)	$	(402)
Lease liability	$	3,340

The minimum annual rent commitments under non-cancelable leases, net of sublease income, as of December 31, 2018 prior to the adoption of ASU 2016-02, were as follows:

In millions of dollars		
2019	$	925
2020		748
2021		657
2022		525
2023		394
Thereafter		1,890
Total lease commitments	$	5,139

Operating lease expenses were $1.0 billion and $1.1 billion for the years ended December 31, 2018 and 2017, respectively.

Guarantees

Citi provides a variety of guarantees and indemnifications to its customers to enhance their credit standing and enable them to complete a wide variety of business transactions. For certain contracts meeting the definition of a guarantee, the guarantor must recognize, at inception, a liability for the fair value of the obligation undertaken in issuing the guarantee.

In addition, the guarantor must disclose the maximum potential amount of future payments that the guarantor could be required to make under the guarantee, if there were a total default by the guaranteed parties. The determination of the maximum potential future payments is based on the notional amount of the guarantees without consideration of possible recoveries under recourse provisions or from collateral held or pledged. As such, Citi believes such amounts bear no relationship to the anticipated losses, if any, on these guarantees.

The following tables present information about Citi's guarantees:

In billions of dollars at December 31, 2019	Maximum potential amount of future payments: Expire within 1 year	Expire after 1 year	Total amount outstanding	Carrying value (in millions of dollars)
Financial standby letters of credit	**$ 31.9**	**$ 62.4**	**$ 94.3**	**$ 140**
Performance guarantees	**6.9**	**5.5**	**12.4**	**21**
Derivative instruments considered to be guarantees	**37.5**	**60.1**	**97.6**	**289**
Loans sold with recourse	**—**	**1.2**	**1.2**	**7**
Securities lending indemnifications[1]	**87.8**	**—**	**87.8**	**—**
Credit card merchant processing[1][2]	**91.6**	**—**	**91.6**	**—**
Credit card arrangements with partners	**0.2**	**0.4**	**0.6**	**23**
Custody indemnifications and other	**—**	**33.7**	**33.7**	**41**
Total	**$ 255.9**	**$ 163.3**	**$ 419.2**	**$ 521**

In billions of dollars at December 31, 2018	Maximum potential amount of future payments: Expire within 1 year	Expire after 1 year	Total amount outstanding	Carrying value (in millions of dollars)
Financial standby letters of credit	$ 32.1	$ 67.5	$ 99.6	$ 131
Performance guarantees	7.7	4.2	11.9	29
Derivative instruments considered to be guarantees	23.5	87.4	110.9	567
Loans sold with recourse	—	1.2	1.2	9
Securities lending indemnifications[1]	98.3	—	98.3	—
Credit card merchant processing[1][2]	94.7	—	94.7	—
Credit card arrangements with partners	0.3	0.8	1.1	162
Custody indemnifications and other	—	35.4	35.4	41
Total	$ 256.6	$ 196.5	$ 453.1	$ 939

(1) The carrying values of securities lending indemnifications and credit card merchant processing were not material for either period presented, as the probability of potential liabilities arising from these guarantees is minimal.

(2) At December 31, 2019 and 2018, this maximum potential exposure was estimated to be $92 billion and $95 billion, respectively. However, Citi believes that the maximum exposure is not representative of the actual potential loss exposure based on its historical experience. This contingent liability is unlikely to arise, as most products and services are delivered when purchased and amounts are refunded when items are returned to merchants.

Financial Standby Letters of Credit

Citi issues standby letters of credit, which substitute its own credit for that of the borrower. If a letter of credit is drawn down, the borrower is obligated to repay Citi. Standby letters of credit protect a third party from defaults on contractual obligations. Financial standby letters of credit include (i) guarantees of payment of insurance premiums and reinsurance risks that support industrial revenue bond underwriting, (ii) settlement of payment obligations to clearing houses, including futures and over-the-counter derivatives clearing (see further discussion below), (iii) support options and purchases of securities in lieu of escrow deposit accounts and (iv) letters of credit that backstop loans, credit facilities, promissory notes and trade acceptances.

Performance Guarantees

Performance guarantees and letters of credit are issued to guarantee a customer's tender bid on a construction or systems-installation project or to guarantee completion of such projects in accordance with contract terms. They are also issued to support a customer's obligation to supply specified products, commodities or maintenance or warranty services to a third party.

Derivative Instruments Considered to Be Guarantees

Derivatives are financial instruments whose cash flows are based on a notional amount and an underlying instrument, reference credit or index, where there is little or no initial investment, and whose terms require or permit net settlement. For a discussion of Citi's derivatives activities, see Note 22 to the Consolidated Financial Statements.

Derivative instruments considered to be guarantees include only those instruments that require Citi to make payments to the counterparty based on changes in an underlying instrument that is related to an asset, a liability or an equity security held by the guaranteed party. More specifically, derivative instruments considered to be guarantees include certain over-the-counter written put options where the counterparty is not a bank, hedge fund or broker-dealer (such counterparties are considered to be dealers in these markets and may, therefore, not hold the underlying instruments). Credit derivatives sold by Citi are excluded from the tables above as they are disclosed separately in Note 22 to the Consolidated Financial Statements. In instances where Citi's maximum potential future payment is unlimited, the notional amount of the contract is disclosed.

Loans Sold with Recourse

Loans sold with recourse represent Citi's obligations to reimburse the buyers for loan losses under certain circumstances. Recourse refers to the clause in a sales agreement under which a seller/lender will fully reimburse the buyer/investor for any losses resulting from the purchased loans. This may be accomplished by the seller taking back any loans that become delinquent.

In addition to the amounts shown in the tables above, Citi has recorded a repurchase reserve for its potential repurchases or make-whole liability regarding residential mortgage representation and warranty claims related to its whole loan sales to U.S. government-sponsored agencies and, to a lesser extent, private investors. The repurchase reserve was approximately $37 million and $49 million at December 31, 2019 and 2018, respectively, and these amounts are included in *Other liabilities* on the Consolidated Balance Sheet.

Securities Lending Indemnifications

Owners of securities frequently lend those securities for a fee to other parties who may sell them short or deliver them to another party to satisfy some other obligation. Banks may administer such securities lending programs for their clients. Securities lending indemnifications are issued by the bank to guarantee that a securities lending customer will be made whole in the event that the security borrower does not return the security subject to the lending agreement and collateral held is insufficient to cover the market value of the security.

Credit Card Merchant Processing

Credit card merchant processing guarantees represent the Company's indirect obligations in connection with (i) providing transaction processing services to various merchants with respect to its private label cards and (ii) potential liability for bank card transaction processing services. The nature of the liability in either case arises as a result of a billing dispute between a merchant and a cardholder that is ultimately resolved in the cardholder's favor. The merchant is liable to refund the amount to the cardholder. In general, if the credit card processing company is unable to collect this amount from the merchant, the credit card processing company bears the loss for the amount of the credit or refund paid to the cardholder.

With regard to (i) above, Citi has the primary contingent liability with respect to its portfolio of private label merchants. The risk of loss is mitigated as the cash flows between Citi and the merchant are settled on a net basis, and Citi has the right to offset any payments with cash flows otherwise due to the merchant. To further mitigate this risk, Citi may delay settlement, require a merchant to make an escrow deposit, include event triggers to provide Citi with more financial and operational control in the event of the financial deterioration of the merchant or require various credit enhancements (including letters of credit and bank guarantees). In the unlikely event that a private label merchant is unable to deliver products, services or a refund to its private label cardholders, Citi is contingently liable to credit or refund cardholders.

With regard to (ii) above, Citi has a potential liability for bank card transactions where Citi provides the transaction processing services as well as those where a third party provides the services and Citi acts as a secondary guarantor, should that processor fail to perform.

Citi's maximum potential contingent liability related to both bank card and private label merchant processing services is estimated to be the total volume of credit card transactions that meet the requirements to be valid charge-back transactions at any given time. At December 31, 2019 and 2018, this maximum potential exposure was estimated to be $91.6 billion and $94.7 billion, respectively.

However, Citi believes that the maximum exposure is not representative of the actual potential loss exposure based on its historical experience. This contingent liability is unlikely to arise, as most products and services are delivered when purchased and amounts are refunded when items are returned to merchants. Citi assesses the probability and amount of its contingent liability related to merchant processing based on the financial strength of the primary guarantor, the extent and nature of unresolved charge-backs and its historical loss experience. At December 31, 2019 and 2018, the losses incurred and the carrying amounts of Citi's contingent obligations related to merchant processing activities were immaterial.

Credit Card Arrangements with Partners

Citi, in certain of its credit card partner arrangements, provides guarantees to the partner regarding the volume of certain customer originations during the term of the agreement. To the extent that such origination targets are not met, the guarantees serve to compensate the partner for certain payments that otherwise would have been generated in connection with such originations.

Custody Indemnifications

Custody indemnifications are issued to guarantee that custody clients will be made whole in the event that a third-party subcustodian or depository institution fails to safeguard clients' assets.

Other Guarantees and Indemnifications

Credit Card Protection Programs

Citi, through its credit card businesses, provides various cardholder protection programs on several of its card products, including programs that provide insurance coverage for rental cars, coverage for certain losses associated with purchased products, price protection for certain purchases and protection for lost luggage. These guarantees are not included in the table, since the total outstanding amount of the guarantees and Citi's maximum exposure to loss cannot be quantified. The protection is limited to certain types of purchases and losses, and it is not possible to quantify the purchases that would qualify for these benefits at any given time. Citi assesses the probability and amount of its potential liability related to these programs based on the extent and nature of its historical loss experience. At December 31, 2019 and 2018, the actual and estimated losses incurred and the carrying value of Citi's obligations related to these programs were immaterial.

Other Representation and Warranty Indemnifications

In the normal course of business, Citi provides standard representations and warranties to counterparties in contracts in connection with numerous transactions and also provides indemnifications, including indemnifications that protect the counterparties to the contracts in the event that additional taxes are owed, due either to a change in the tax law or an adverse interpretation of the tax law. Counterparties to these transactions provide Citi with comparable indemnifications. While such representations, warranties and indemnifications are essential components of many contractual relationships, they do not represent the underlying business purpose for the transactions. The indemnification clauses are often standard contractual terms related to Citi's own performance under the terms of a contract and are entered into in the normal course of business based on an assessment that the risk of loss is remote. Often these clauses are intended to ensure that terms of a contract are met at inception. No compensation is received for these standard representations and warranties, and it is not possible to determine their fair value because they rarely, if ever, result in a payment. In many cases, there are no stated or notional amounts included in the indemnification clauses, and the contingencies potentially triggering the obligation to indemnify have not occurred and are not expected to occur. As a result, these indemnifications are not included in the tables above.

Value-Transfer Networks (Including Exchanges and Clearing Houses) (VTNs)

Citi is a member of, or shareholder in, hundreds of value-transfer networks (VTNs) (payment, clearing and settlement systems as well as exchanges) around the world. As a condition of membership, many of these VTNs require that members stand ready to pay a pro rata share of the losses incurred by the organization due to another member's default on its obligations. Citi's potential obligations may be limited to its membership interests in the VTNs, contributions to the VTN's funds, or, in certain narrow cases, to the full pro rata share. The maximum exposure is difficult to estimate as this would require an assessment of claims that have not yet occurred; however, Citi believes the risk of loss is remote given historical experience with the VTNs. Accordingly, Citi's participation in VTNs is not reported in the guarantees tables above, and there are no amounts reflected on the Consolidated Balance Sheet as of December 31, 2019 or 2018 for potential obligations that could arise from Citi's involvement with VTN associations.

Long-Term Care Insurance Indemnification

In 2000, Travelers Life & Annuity (Travelers), then a subsidiary of Citi, entered into a reinsurance agreement to transfer the risks and rewards of its long-term care (LTC) business to GE Life (now Genworth Financial Inc., or Genworth), then a subsidiary of the General Electric Company (GE). As part of this transaction, the reinsurance obligations were provided by two regulated insurance subsidiaries of GE Life, which funded two collateral trusts with securities. Presently, as discussed below, the trusts are referred to as the Genworth Trusts.

As part of GE's spin-off of Genworth in 2004, GE retained the risks and rewards associated with the 2000 Travelers reinsurance agreement by providing a reinsurance contract to Genworth through GE's Union Fidelity Life Insurance Company (UFLIC) subsidiary that covers the Travelers LTC policies. In addition, GE provided a capital maintenance agreement in favor of UFLIC that is designed to assure that UFLIC will have the funds to pay its reinsurance obligations. As a result of these reinsurance agreements and the spin-off of Genworth, Genworth has reinsurance protection from UFLIC (supported by GE) and has reinsurance obligations in connection with the Travelers LTC policies. As noted below, the Genworth reinsurance obligations now benefit Brighthouse Financial, Inc. (Brighthouse). While neither Brighthouse nor Citi are direct beneficiaries of the capital maintenance agreement between GE and UFLIC, Brighthouse and Citi benefit indirectly from the existence of the capital maintenance agreement, which helps assure that UFLIC will continue to have funds necessary to pay its reinsurance obligations to Genworth.

In connection with Citi's 2005 sale of Travelers to MetLife Inc. (MetLife), Citi provided an indemnification to MetLife for losses (including policyholder claims) relating to the LTC business for the entire term of the Travelers LTC policies, which, as noted above, are reinsured by subsidiaries of Genworth. In 2017, MetLife spun off its retail insurance business to Brighthouse. As a result, the Travelers LTC policies now reside with Brighthouse. The original reinsurance agreement between Travelers (now Brighthouse) and Genworth remains in place and Brighthouse is the sole beneficiary of the Genworth Trusts. The fair value of the Genworth Trusts was approximately $8.6 billion as of December 31, 2019, compared to approximately $7.5 billion at December 31, 2018. The Genworth Trusts are designed to provide collateral to Brighthouse in an amount equal to the statutory liabilities of Brighthouse in respect of the Travelers LTC policies. The assets in the Genworth Trusts are evaluated and adjusted periodically by Genworth to ensure that the fair value of the assets continues to provide collateral in an amount equal to these estimated statutory liabilities, as the liabilities change over time.

If both (i) Genworth fails to perform under the original Travelers/GE Life reinsurance agreement for any reason, including its insolvency or the failure of UFLIC to perform under its reinsurance contract or GE to perform under the capital maintenance agreement, and (ii) the assets of the two Genworth Trusts are insufficient or unavailable, then Citi, through its LTC reinsurance indemnification, must reimburse Brighthouse for any losses incurred in connection with the LTC policies. Since both events would have to occur before Citi would become responsible for any payment to Brighthouse pursuant to its indemnification obligation, and the likelihood of such events occurring is currently not probable, there is no liability reflected on the Consolidated Balance Sheet as of December 31, 2019 and 2018 related to this indemnification. However, if both events become reasonably possible (meaning more than remote but less than probable), Citi will be required to estimate and disclose a reasonably possible loss or range of loss to the extent that such an estimate could be made. In addition, if both events become probable, Citi will be required to accrue for such liability in accordance with applicable accounting principles.

Citi continues to closely monitor its potential exposure under the Brighthouse indemnification obligation, given GE's 2018 LTC and other charges and the September 2019 AM Best credit ratings downgrade for the two Genworth insurance subsidiaries.

Separately, Genworth announced that it had agreed to be purchased by China Oceanwide Holdings Co., Ltd, subject to a series of conditions and regulatory approvals. Citi is monitoring these developments.

Futures and Over-the-Counter Derivatives Clearing

Citi provides clearing services on central clearing parties (CCPs) for clients that need to clear exchange-traded and over-the-counter (OTC) derivatives contracts with CCPs. Based on all relevant facts and circumstances, Citi has concluded that it acts as an agent for accounting purposes in its role as clearing member for these client transactions. As such, Citi does not reflect the underlying exchange-traded or OTC derivatives contracts in its Consolidated Financial Statements. See Note 22 for a discussion of Citi's derivatives activities that are reflected in its Consolidated Financial Statements.

As a clearing member, Citi collects and remits cash and securities collateral (margin) between its clients and the respective CCP. In certain circumstances, Citi collects a higher amount of cash (or securities) from its clients than it needs to remit to the CCPs. This excess cash is then held at depository institutions such as banks or carry brokers.

There are two types of margin: initial and variation. Where Citi obtains benefits from or controls cash initial margin (e.g., retains an interest spread), cash initial margin collected from clients and remitted to the CCP or depository institutions is reflected within *Brokerage payables* (payables to customers) and *Brokerage receivables* (receivables from brokers, dealers and clearing organizations) or *Cash and due from banks*, respectively.

However, for exchange-traded and OTC-cleared derivatives contracts where Citi does not obtain benefits from or control the client cash balances, the client cash initial margin collected from clients and remitted to the CCP or depository institutions is not reflected on Citi's Consolidated Balance Sheet. These conditions are met when Citi has contractually agreed with the client that (i) Citi will pass through to the client all interest paid by the CCP or depository institutions on the cash initial margin, (ii) Citi will not utilize its right as a clearing member to transform cash margin into other assets, (iii) Citi does not guarantee and is not liable to the client for the performance of the CCP or the depository institution and (iv) the client cash balances are legally isolated from Citi's bankruptcy estate. The total amount of cash initial margin collected and remitted in this manner was approximately $13.3 billion and $13.8 billion as of December 31, 2019 and 2018, respectively.

Variation margin due from clients to the respective CCP, or from the CCP to clients, reflects changes in the value of the client's derivative contracts for each trading day. As a clearing member, Citi is exposed to the risk of non-performance by clients (e.g., failure of a client to post variation margin to the CCP for negative changes in the value of the client's derivative contracts). In the event of non-performance by a client, Citi would move to close out the client's positions. The CCP would typically utilize initial margin posted by the client and held by the CCP, with any remaining shortfalls required to be paid by Citi as clearing member. Citi generally holds incremental cash or securities margin posted by the client, which would typically be expected to be sufficient to mitigate Citi's credit risk in the event that the client fails to perform.

As required by ASC 860-30-25-5, securities collateral posted by clients is not recognized on Citi's Consolidated Balance Sheet.

Carrying Value—Guarantees and Indemnifications

At December 31, 2019 and 2018, the total carrying amounts of the liabilities related to the guarantees and indemnifications included in the tables above amounted to approximately $0.5 billion and $0.9 billion, respectively. The carrying value of financial and performance guarantees is included in *Other liabilities.* For loans sold with recourse, the carrying value of the liability is included in *Other liabilities*.

Collateral

Cash collateral available to Citi to reimburse losses realized under these guarantees and indemnifications amounted to $46.7 billion and $38.0 billion at December 31, 2019 and 2018, respectively. Securities and other marketable assets held as collateral amounted to $45.8 billion and $54.7 billion at December 31, 2019 and 2018, respectively. The majority of collateral is held to reimburse losses realized under securities lending indemnifications. In addition, letters of credit in favor of Citi held as collateral amounted to $4.4 billion and $4.1 billion at December 31, 2019 and 2018, respectively. Other property may also be available to Citi to cover losses under certain guarantees and indemnifications; however, the value of such property has not been determined.

Performance Risk

Citi evaluates the performance risk of its guarantees based on the assigned referenced counterparty internal or external ratings. Where external ratings are used, investment-grade ratings are considered to be Baa/BBB and above, while anything below is considered non-investment grade. Citi's internal ratings are in line with the related external rating system. On certain underlying referenced assets or entities, ratings are not available. Such referenced assets are included in the "not rated" category. The maximum potential amount of the future payments related to the outstanding guarantees is determined to be the notional amount of these contracts, which is the par amount of the assets guaranteed.

Presented in the tables below are the maximum potential amounts of future payments that are classified based upon internal and external credit ratings. The determination of the maximum potential future payments is based on the notional amount of the guarantees without consideration of possible recoveries under recourse provisions or from collateral held or pledged. As such, Citi believes such amounts bear no relationship to the anticipated losses, if any, on these guarantees.

	Maximum potential amount of future payments			
In billions of dollars at December 31, 2019	**Investment grade**	**Non-investment grade**	**Not rated**	**Total**
Financial standby letters of credit	**$ 66.4**	**$ 12.5**	**$ 15.4**	**$ 94.3**
Performance guarantees	**9.7**	**2.3**	**0.4**	**12.4**
Derivative instruments deemed to be guarantees	**—**	**—**	**97.6**	**97.6**
Loans sold with recourse	**—**	**—**	**1.2**	**1.2**
Securities lending indemnifications	**—**	**—**	**87.8**	**87.8**
Credit card merchant processing	**—**	**—**	**91.6**	**91.6**
Credit card arrangements with partners	**—**	**—**	**0.6**	**0.6**
Custody indemnifications and other	**21.3**	**12.4**	**—**	**33.7**
Total	**$ 97.4**	**$ 27.2**	**$ 294.6**	**$ 419.2**

	Maximum potential amount of future payments			
In billions of dollars at December 31, 2018	Investment grade	Non-investment grade	Not rated	Total
Financial standby letters of credit	$ 71.3	$ 11.9	$ 16.4	$ 99.6
Performance guarantees	9.2	2.1	0.6	11.9
Derivative instruments deemed to be guarantees	—	—	110.9	110.9
Loans sold with recourse	—	—	1.2	1.2
Securities lending indemnifications	—	—	98.3	98.3
Credit card merchant processing	—	—	94.7	94.7
Credit card arrangements with partners	—	—	1.1	1.1
Custody indemnifications and other	22.2	13.2	—	35.4
Total	$ 102.7	$ 27.2	$ 323.2	$ 453.1

Credit Commitments and Lines of Credit

The table below summarizes Citigroup's credit commitments:

In millions of dollars	U.S.	Outside of U.S.	December 31, 2019	December 31, 2018
Commercial and similar letters of credit	$ 746	$ 3,787	$ 4,533	$ 5,461
One- to four-family residential mortgages	2,088	1,633	3,721	2,671
Revolving open-end loans secured by one- to four-family residential properties	9,511	1,288	10,799	11,374
Commercial real estate, construction and land development	10,623	2,358	12,981	11,293
Credit card lines	609,866	98,157	708,023	696,007
Commercial and other consumer loan commitments	212,569	111,790	324,359	300,115
Other commitments and contingencies	1,852	96	1,948	3,321
Total	$ 847,255	$ 219,109	$ 1,066,364	$ 1,030,242

The majority of unused commitments are contingent upon customers maintaining specific credit standards. Commercial commitments generally have floating interest rates and fixed expiration dates and may require payment of fees. Such fees (net of certain direct costs) are deferred and, upon exercise of the commitment, amortized over the life of the loan or, if exercise is deemed remote, amortized over the commitment period.

Commercial and Similar Letters of Credit

A commercial letter of credit is an instrument by which Citigroup substitutes its credit for that of a customer to enable the customer to finance the purchase of goods or to incur other commitments. Citigroup issues a letter on behalf of its client to a supplier and agrees to pay the supplier upon presentation of documentary evidence that the supplier has performed in accordance with the terms of the letter of credit. When a letter of credit is drawn, the customer is then required to reimburse Citigroup.

One- to Four-Family Residential Mortgages

A one- to four-family residential mortgage commitment is a written confirmation from Citigroup to a seller of a property that the bank will advance the specified sums enabling the buyer to complete the purchase.

Revolving Open-End Loans Secured by One- to Four-Family Residential Properties

Revolving open-end loans secured by one- to four-family residential properties are essentially home equity lines of credit. A home equity line of credit is a loan secured by a primary residence or second home to the extent of the excess of fair market value over the debt outstanding for the first mortgage.

Commercial Real Estate, Construction and Land Development

Commercial real estate, construction and land development include unused portions of commitments to extend credit for the purpose of financing commercial and multifamily residential properties as well as land development projects.

Both secured-by-real-estate and unsecured commitments are included in this line, as well as undistributed loan proceeds, where there is an obligation to advance for construction progress payments. However, this line only includes those extensions of credit that, once funded, will be classified as *Total loans, net* on the Consolidated Balance Sheet.

Credit Card Lines

Citigroup provides credit to customers by issuing credit cards. The credit card lines are cancelable by providing notice to the cardholder or without such notice as permitted by local law.

Commercial and Other Consumer Loan Commitments

Commercial and other consumer loan commitments include overdraft and liquidity facilities as well as commercial commitments to make or purchase loans, purchase third-party receivables, provide note issuance or revolving underwriting facilities and invest in the form of equity.

Other Commitments and Contingencies

Other commitments and contingencies include all other transactions related to commitments and contingencies not reported on the lines above.

Unsettled Reverse Repurchase and Securities Borrowing Agreements and Unsettled Repurchase and Securities Lending Agreements

In addition, in the normal course of business, Citigroup enters into reverse repurchase and securities borrowing agreements, as well as repurchase and securities lending agreements, which settle at a future date. At December 31, 2019 and 2018, Citigroup had approximately \$34.0 billion and \$36.1 billion in unsettled reverse repurchase and securities borrowing agreements, respectively, and \$38.7 billion and \$30.7 billion in unsettled repurchase and securities lending agreements, respectively. For a further discussion of securities purchased under agreements to resell and securities borrowed, and securities sold under agreements to repurchase and securities loaned, including the Company's policy for offsetting repurchase and reverse repurchase agreements, see Note 11 to the Consolidated Financial Statements.

27. CONTINGENCIES

Accounting and Disclosure Framework

ASC 450 governs the disclosure and recognition of loss contingencies, including potential losses from litigation, regulatory, tax and other matters. ASC 450 defines a "loss contingency" as "an existing condition, situation, or set of circumstances involving uncertainty as to possible loss to an entity that will ultimately be resolved when one or more future events occur or fail to occur." It imposes different requirements for the recognition and disclosure of loss contingencies based on the likelihood of occurrence of the contingent future event or events. It distinguishes among degrees of likelihood using the following three terms: "probable," meaning that "the future event or events are likely to occur"; "remote," meaning that "the chance of the future event or events occurring is slight"; and "reasonably possible," meaning that "the chance of the future event or events occurring is more than remote but less than likely." These three terms are used below as defined in ASC 450.

Accruals. ASC 450 requires accrual for a loss contingency when it is "probable that one or more future events will occur confirming the fact of loss" *and* "the amount of the loss can be reasonably estimated." In accordance with ASC 450, Citigroup establishes accruals for contingencies, including the litigation, regulatory and tax matters disclosed herein, when Citigroup believes it is probable that a loss has been incurred and the amount of the loss can be reasonably estimated. When the reasonable estimate of the loss is within a range of amounts, the minimum amount of the range is accrued, unless some higher amount within the range is a better estimate than any other amount within the range. Once established, accruals are adjusted from time to time, as appropriate, in light of additional information. The amount of loss ultimately incurred in relation to those matters may be substantially higher or lower than the amounts accrued for those matters.

Disclosure. ASC 450 requires disclosure of a loss contingency if "there is at least a reasonable possibility that a loss or an additional loss may have been incurred" *and* there is no accrual for the loss because the conditions described above are not met or an exposure to loss exists in excess of the amount accrued. In accordance with ASC 450, if Citigroup has not accrued for a matter because Citigroup believes that a loss is reasonably possible but not probable, or that a loss is probable but not reasonably estimable, and the reasonably possible loss is material, it discloses the loss contingency. In addition, Citigroup discloses matters for which it has accrued if it believes a reasonably possible exposure to material loss exists in excess of the amount accrued. In accordance with ASC 450, Citigroup's disclosure includes an estimate of the reasonably possible loss or range of loss for those matters as to which an estimate can be made. ASC 450 does not require disclosure of an estimate of the reasonably possible loss or range of loss where an estimate cannot be made. Neither accrual nor disclosure is required for losses that are deemed remote.

Litigation, Regulatory and Other Contingencies

Overview. In addition to the matters described below, in the ordinary course of business, Citigroup, its affiliates and subsidiaries, and current and former officers, directors and employees (for purposes of this section, sometimes collectively referred to as Citigroup and Related Parties) routinely are named as defendants in, or as parties to, various legal actions and proceedings. Certain of these actions and proceedings assert claims or seek relief in connection with alleged violations of consumer protection, fair lending, securities, banking, antifraud, antitrust, anti-money laundering, employment and other statutory and common laws. Certain of these actual or threatened legal actions and proceedings include claims for substantial or indeterminate compensatory or punitive damages, or for injunctive relief, and in some instances seek recovery on a class-wide basis.

In the ordinary course of business, Citigroup and Related Parties also are subject to governmental and regulatory examinations, information-gathering requests, investigations and proceedings (both formal and informal), certain of which may result in adverse judgments, settlements, fines, penalties, restitution, disgorgement, injunctions or other relief. In addition, certain affiliates and subsidiaries of Citigroup are banks, registered broker-dealers, futures commission merchants, investment advisors or other regulated entities and, in those capacities, are subject to regulation by various U.S., state and foreign securities, banking, commodity futures, consumer protection and other regulators. In connection with formal and informal inquiries by these regulators, Citigroup and such affiliates and subsidiaries receive numerous requests, subpoenas and orders seeking documents, testimony and other information in connection with various aspects of their regulated activities. From time to time Citigroup and Related Parties also receive grand jury subpoenas and other requests for information or assistance, formal or informal, from federal or state law enforcement agencies including, among others, various United States Attorneys' Offices, the Asset Forfeiture and Money Laundering Section and other divisions of the Department of Justice, the Financial Crimes Enforcement Network of the United States Department of the Treasury, and the Federal Bureau of Investigation relating to Citigroup and its customers.

Because of the global scope of Citigroup's operations, and its presence in countries around the world, Citigroup and Related Parties are subject to litigation and governmental and regulatory examinations, information-gathering requests, investigations and proceedings (both formal and informal) in multiple jurisdictions with legal, regulatory and tax regimes that may differ substantially, and present substantially different risks, from those Citigroup and Related Parties are subject to in the United States. In some instances, Citigroup and Related Parties may be involved in proceedings involving the same subject matter in multiple jurisdictions, which may result in overlapping, cumulative or inconsistent outcomes.

Citigroup seeks to resolve all litigation, regulatory, tax and other matters in the manner management believes is in the best interests of Citigroup and its shareholders, and contests liability, allegations of wrongdoing and, where applicable, the amount of damages or scope of any penalties or other relief sought as appropriate in each pending matter.

Inherent Uncertainty of the Matters Disclosed. Certain of the matters disclosed below involve claims for substantial or indeterminate damages. The claims asserted in these matters typically are broad, often spanning a multi-year period and sometimes a wide range of business activities, and the plaintiffs' or claimants' alleged damages frequently are not quantified or factually supported in the complaint or statement of claim. Other matters relate to regulatory investigations or proceedings, as to which there may be no objective basis for quantifying the range of potential fine, penalty or other remedy. As a result, Citigroup is often unable to estimate the loss in such matters, even if it believes that a loss is probable or reasonably possible, until developments in the case, proceeding or investigation have yielded additional information sufficient to support a quantitative assessment of the range of reasonably possible loss. Such developments may include, among other things, discovery from adverse parties or third parties, rulings by the court on key issues, analysis by retained experts and engagement in settlement negotiations. Depending on a range of factors, such as the complexity of the facts, the novelty of the legal theories, the pace of discovery, the court's scheduling order, the timing of court decisions and the adverse party's, regulator's or other authority's willingness to negotiate in good faith toward a resolution, it may be months or years after the filing of a case or commencement of a proceeding or an investigation before an estimate of the range of reasonably possible loss can be made.

Matters as to Which an Estimate Can Be Made. For some of the matters disclosed below, Citigroup is currently able to estimate a reasonably possible loss or range of loss in excess of amounts accrued (if any). For some of the matters included within this estimation, an accrual has been made because a loss is believed to be both probable and reasonably estimable, but an exposure to loss exists in excess of the amount accrued. In these cases, the estimate reflects the reasonably possible range of loss in excess of the accrued amount. For other matters included within this estimation, no accrual has been made because a loss, although estimable, is believed to be reasonably possible, but not probable; in these cases, the estimate reflects the reasonably possible loss or range of loss. As of December 31, 2019, Citigroup estimates that the reasonably possible unaccrued loss for these matters ranges up to approximately $1.3 billion in the aggregate.

These estimates are based on currently available information. As available information changes, the matters for which Citigroup is able to estimate will change, and the estimates themselves will change. In addition, while many estimates presented in financial statements and other financial disclosures involve significant judgment and may be subject to significant uncertainty, estimates of the range of reasonably possible loss arising from litigation and regulatory proceedings are subject to particular uncertainties. For example, at the time of making an estimate, (i) Citigroup may have only preliminary, incomplete, or inaccurate information about the facts underlying the claim, (ii) its assumptions about the future rulings of the court, other tribunal or authority on significant issues, or the behavior and incentives of adverse parties, regulators or other authorities, may prove to be wrong and (iii) the outcomes it is attempting to predict are often not amenable to the use of statistical or other quantitative analytical tools. In addition, from time to time an outcome may occur that Citigroup had not accounted for in its estimate because it had deemed such an outcome to be remote. For all of these reasons, the amount of loss in excess of accruals ultimately incurred for the matters as to which an estimate has been made could be substantially higher or lower than the range of loss included in the estimate.

Matters as to Which an Estimate Cannot Be Made. For other matters disclosed below, Citigroup is not currently able to estimate the reasonably possible loss or range of loss. Many of these matters remain in very preliminary stages (even in some cases where a substantial period of time has passed since the commencement of the matter), with few or no substantive legal decisions by the court, tribunal or other authority defining the scope of the claims, the class (if any) or the potentially available damages or other exposure, and fact discovery is still in progress or has not yet begun. In many of these matters, Citigroup has not yet answered the complaint or statement of claim or asserted its defenses, nor has it engaged in any negotiations with the adverse party (whether a regulator, taxing authority or a private party). For all these reasons, Citigroup cannot at this time estimate the reasonably possible loss or range of loss, if any, for these matters.

Opinion of Management as to Eventual Outcome. Subject to the foregoing, it is the opinion of Citigroup's management, based on current knowledge and after taking into account its current legal or other accruals, that the eventual outcome of all matters described in this Note would not be likely to have a material adverse effect on the consolidated financial condition of Citigroup. Nonetheless, given the substantial or indeterminate amounts sought in certain of these matters, and the inherent unpredictability of such matters, an adverse outcome in certain of these matters could, from time to time, have a material adverse effect on Citigroup's consolidated results of operations or cash flows in particular quarterly or annual periods.

ANZ Underwriting Matter

In June 2018, the Australian Commonwealth Director of Public Prosecutions (CDPP) filed charges against Citigroup Global Markets Australia Pty Limited (CGMA) for alleged criminal cartel offenses following a referral by the Australian Competition and Consumer Commission. CDPP alleges that the cartel conduct took place following an institutional share placement by Australia and New Zealand Banking Group Limited (ANZ) in August 2015, where CGMA acted as joint underwriter and lead manager with other banks. CDPP also charged other banks and individuals, including current and former Citi employees. Separately, the Australian Securities and Investments Commission is conducting an investigation, and CGMA is cooperating with the investigation. Charges relating to CGMA are captioned R v. CITIGROUP GLOBAL MARKETS AUSTRALIA PTY LIMITED. The matter is before the Downing Centre Local Court in Sydney, Australia. Additional information concerning this action is publicly available in court filings under the docket number 2018/00175168.

Foreign Exchange Matters

Regulatory Actions: Government and regulatory agencies in the U.S. and in other jurisdictions are conducting investigations or making inquiries regarding Citigroup's foreign exchange business. Citigroup is cooperating with these and related investigations and inquiries.

Antitrust and Other Litigation: In 2018, a number of institutional investors who opted out of the previously disclosed August 2018 final settlement filed an action against Citigroup, Citibank, CGMI and other defendants, captioned ALLIANZ GLOBAL INVESTORS, ET AL. v. BANK OF AMERICA CORP., ET AL., in the United States District Court for the Southern District of New York. Plaintiffs allege that defendants manipulated, and colluded to manipulate, the foreign exchange markets. Plaintiffs assert claims under the Sherman Act and unjust enrichment claims, and seek consequential and punitive damages and other forms of relief. In July 2019, defendants moved to dismiss plaintiffs' second amended complaint. Additional information concerning this action is publicly available in court filings under the docket number 18 Civ. 10364 (S.D.N.Y.) (Schofield, J.).

In December 2018, a group of institutional investors issued a claim against Citibank, Citigroup and other defendants, captioned ALLIANZ GLOBAL INVESTORS GMBH AND OTHERS v. BARCLAYS BANK PLC AND OTHERS, in the High Court in London. Claimants allege that defendants manipulated, and colluded to manipulate, the foreign exchange market in violation of EU and U.K. competition laws. In July 2019, defendants responded to plaintiffs' claims, and in September 2019, claimants filed their reply. Additional information concerning this action is publicly available in court filings under the docket number CL-2018-000840.

In 2015, a putative class of consumers and businesses in the United States who directly purchased supracompetitive foreign currency at benchmark exchange rates filed an action against Citigroup and other defendants, captioned NYPL v. JPMORGAN CHASE & CO., ET AL., in the United States District Court for the Northern District of California. Subsequently, plaintiffs filed a third amended class action complaint, naming Citigroup, Citibank and Citicorp as defendants. Plaintiffs allege that they suffered losses as a result of defendants' alleged manipulation of, and collusion with respect to, the foreign exchange market. Plaintiffs assert claims under federal and California antitrust and consumer protection laws, and seek compensatory damages, treble damages and declaratory and injunctive relief. Additional information concerning this action is publicly available in court filings under the docket numbers 15 Civ. 2290 (N.D. Cal.) (Chhabria, J.) and 15 Civ. 9300 (S.D.N.Y.) (Schofield, J.).

In 2017, putative classes of indirect purchasers of certain foreign exchange instruments filed an action against Citigroup, Citibank, Citicorp, CGMI and other defendants, captioned CONTANT, ET AL. v. BANK OF AMERICA CORP., ET AL., in the United States District Court for the Southern District of New York. Plaintiffs allege that defendants engaged in a conspiracy to fix currency prices. Plaintiffs assert claims under the Sherman Act and various state antitrust laws, and seek compensatory damages and treble damages. In July 2019, the court granted preliminary approval of a settlement between plaintiffs and Citigroup, Citibank, Citicorp and CGMI. Additional information concerning this action is publicly available in court filings under the docket number 17 Civ. 3139 (S.D.N.Y.) (Schofield, J.).

On May 27, 2019, a putative class action was filed against Citibank and other defendants, captioned J WISBEY & ASSOCIATES PTY LTD v. UBS AG & ORS, in the Federal Court of Australia. Plaintiffs allege that defendants manipulated the foreign exchange markets. Plaintiffs assert claims under antitrust laws, and seek compensatory damages and declaratory and injunctive relief. Additional information concerning this action is publicly available in court filings under the docket number VID567/2019.

On July 29, 2019, an application, captioned MICHAEL O'HIGGINS FX CLASS REPRESENTATIVE LIMITED v. BARCLAYS BANK PLC AND OTHERS, was made to the U.K.'s Competition Appeal Tribunal requesting permission to commence collective proceedings against Citibank, Citigroup and other defendants. The application seeks compensatory damages for losses alleged to have arisen from the actions at issue in the European Commission's foreign exchange spot trading infringement decision (European Commission Decision of May 16, 2019 in Case AT.40135-FOREX (Three Way Banana Split) C(2019) 3631 final). Additional information concerning this action is publicly available in court filings under the docket number 1329/7/7/19.

On December 20, 2019, an application, captioned PHILLIP EVANS v. BARCLAYS BANK PLC AND OTHERS, was made to the U.K.'s Competition Appeal Tribunal requesting permission to commence collective proceedings against Citibank, Citigroup and other defendants. The application seeks compensatory damages similar to those in the Michael O'Higgins FX Class Representative Limited application. Additional information concerning this action is publicly available in court filings under the docket number 1336/7/7/19.

In September 2019, two motions for certification of class actions filed against Citibank, Citigroup and Citicorp and other defendants were consolidated, under the caption GERTLER, ET AL. v. DEUTSCHE BANK AG, in the Tel Aviv Central District Court in Israel. Plaintiffs allege that defendants manipulated the foreign exchange markets. The amended motion for certification has not yet been served on Citigroup or Citicorp. Additional information concerning this action is publicly available in court filings under the docket number CA 29013-09-18.

Interbank Offered Rates-Related Litigation and Other Matters

Antitrust and Other Litigation: In 2016, a putative class action was filed against Citibank, Citigroup and other defendants, now captioned FUND LIQUIDATION HOLDINGS LLC, AS ASSIGNOR AND SUCCESSOR-IN-INTEREST TO

FRONTPOINT ASIAN EVENT DRIVEN FUND L.P., ET AL. v. CITIBANK, N.A., ET AL., in the United States District Court for the Southern District of New York. Plaintiffs allege that defendants manipulated the Singapore Interbank Offered Rate and Singapore Swap Offer Rate. Plaintiffs assert claims under the Sherman Act, the Clayton Act, the RICO Act and state law. In May 2018, plaintiffs entered into a settlement with Citibank and Citigroup, under which Citibank and Citigroup agreed to pay approximately $10 million. In July 2019, the court found that it lacked subject-matter jurisdiction over the non-settling defendants and dismissed the case. The court also found that it lacked jurisdiction to approve the settlement and denied plaintiffs' motion for preliminary approval of the settlement. In August 2019, plaintiffs filed a notice of appeal with the United States Court of Appeals for the Second Circuit. Additional information concerning this action is publicly available in court filings under the docket numbers 16 Civ. 5263 (S.D.N.Y.) (Hellerstein, J.) and 19-2719 (2d Cir.).

In 2016, Banque Delubac filed an action against Citigroup, Citigroup Global Markets Limited (CGML) and Citigroup Europe Plc, captioned SCS BANQUE DELUBAC & CIE v. CITIGROUP INC., ET AL., in the Commercial Court of Aubenas in France. Plaintiff alleges that defendants suppressed LIBOR submissions between 2005 and 2012 and that Banque Delubac's EURIBOR-linked lending activity was negatively impacted as a result. Plaintiff asserts a claim under tort law, and seeks compensatory damages and consequential damages. In November 2018, the Commercial Court of Aubenas referred the case to the Commercial Court of Marseille. In March 2019, the Court of Appeal of Nîmes held that neither the Commercial Court of Aubenas nor any other court of France has territorial jurisdiction over Banque Delubac's claims. In May 2019, plaintiff filed an appeal before the *Cour de cassation* of France challenging the Court of Appeal of Nîmes's decision. Additional information concerning this action is publicly available in court filings under docket numbers RG no. 2018F02750 in the Commercial Court of Marseille and 19-16.931 in the *Cour de cassation*.

In May 2019, three putative class actions filed against Citigroup, Citibank, CGMI and other defendants were consolidated, under the caption IN RE ICE LIBOR ANTITRUST LITIGATION, in the United States District Court of the Southern District of New York. In July 2019, Plaintiffs filed a consolidated amended complaint. Plaintiffs allege that defendants suppressed ICE LIBOR. Plaintiffs assert claims under the Sherman Act, the Clayton Act and unjust enrichment, and seek compensatory damages, disgorgement and treble damages. In August 2019, defendants moved to dismiss the action. Additional information concerning this action is publicly available in court filings under the docket number 19 Civ. 439 (S.D.N.Y.) (Daniels, J.).

Interchange Fee Litigation

Beginning in 2005, several putative class actions were filed against Citigroup, Citibank and Citicorp, together with Visa, MasterCard and other banks and their affiliates, in various federal district courts and consolidated with other related individual cases in a multi-district litigation proceeding in the United States District Court for the Eastern District of New York. This proceeding is captioned IN RE PAYMENT CARD INTERCHANGE FEE AND MERCHANT DISCOUNT ANTITRUST LITIGATION.

The plaintiffs, merchants that accept Visa and MasterCard branded payment cards as well as various membership associations that claim to represent certain groups of merchants, allege, among other things, that defendants have engaged in conspiracies to set the price of interchange and merchant discount fees on credit and debit card transactions and to restrain trade unreasonably through various Visa and MasterCard rules governing merchant conduct, all in violation of Section 1 of the Sherman Act and certain California statutes. Plaintiffs further alleged violations of Section 2 of the Sherman Act. Supplemental complaints also were filed against defendants in the putative class actions alleging that Visa's and MasterCard's respective initial public offerings were anticompetitive and violated Section 7 of the Clayton Act, and that MasterCard's initial public offering constituted a fraudulent conveyance.

In 2014, the district court entered a final judgment approving the terms of a class settlement providing for, among other things, cash payment to the class of $6.05 billion; a rebate to merchants participating in the damages class settlement of 10 bps on interchange collected for a period of eight months by the Visa and MasterCard networks; and changes to certain network rules. Various objectors appealed from the final class settlement approval order to the United States Court of Appeals for the Second Circuit.

In 2016, the Court of Appeals reversed the district court's approval of the class settlement and remanded for further proceedings. The district court thereafter appointed separate interim counsel for a putative class seeking damages and a putative class seeking injunctive relief. Amended or new complaints on behalf of the putative classes and various individual merchants were subsequently filed, including a further amended complaint on behalf of a putative damages class and a new complaint on behalf of a putative injunctive class, both of which named Citigroup and Related Parties. In addition, numerous merchants have filed amended or new complaints against Visa, MasterCard, and in some instances one or more issuing banks. Three of these suits—7-ELEVEN, INC., ET AL. v. VISA INC., ET AL.; ROUNDY'S SUPERMARKETS, INC. v. VISA INC. ET AL.; and LUBY'S FUDDRUCKERS RESTAURANTS, LLC, v. VISA INC., ET AL—brought on behalf of numerous individual merchants, name Citigroup and affiliates as defendants.

On December 13, 2019, the district court granted the damages class plaintiffs' motion for final approval of a new settlement with the defendants. The settlement involves the damages class only and does not settle the claims of the injunctive relief class or any actions brought on a non-class basis by individual merchants. The settlement provides for a cash payment to the damages class of $6.24 billion, though that amount has been reduced by $700 million based on the transaction volume of class members that opted-out from the settlement. Several merchants and merchant groups have appealed the final approval order. Additional information concerning these consolidated actions is publicly available in court filings under the docket number MDL 05-1720 (E.D.N.Y.) (Brodie, J.).

Interest Rate and Credit Default Swap Matters

Regulatory Actions: The Commodity Futures Trading Commission (CFTC) is conducting an investigation into alleged anticompetitive conduct in the trading and clearing of interest rate swaps (IRS) by investment banks. Citigroup is cooperating with the investigation.

Antitrust and Other Litigation: Beginning in 2015, Citigroup, Citibank, CGMI, CGML, and numerous other parties were named as defendants in a number of industry-wide putative class actions related to IRS trading. These actions have been consolidated in the United States District Court for the Southern District of New York under the caption IN RE INTEREST RATE SWAPS ANTITRUST LITIGATION. The complaints allege that defendants colluded to prevent the development of exchange-like trading for IRS and assert federal and state antitrust claims and claims for unjust enrichment. Also consolidated under the same caption are individual actions filed by swap execution facilities, asserting federal and state antitrust claims, as well as claims for unjust enrichment and tortious interference with business relations. Plaintiffs in all of these actions seek treble damages, fees, costs, and injunctive relief. Lead plaintiffs in the class action moved for class certification in February 2019, and subsequently filed a fourth amended complaint. Additional information concerning these actions is publicly available in court filings under the docket numbers 18-CV-5361 (S.D.N.Y.) (Oetken, J.) and 16-MD-2704 (S.D.N.Y.) (Oetken, J.).

In 2017, Citigroup, Citibank, CGMI, CGML and numerous other parties were named as defendants in an action filed in the United States District Court for the Southern District of New York under the caption TERA GROUP, INC., ET AL. v. CITIGROUP, INC., ET AL. The complaint alleges that defendants colluded to prevent the development of exchange-like trading for credit default swaps and asserts federal and state antitrust claims and state law tort claims. In January 2020, plaintiffs filed an amended complaint. Additional information concerning this action is publicly available in court filings under the docket number 17-CV-4302 (S.D.N.Y.) (Sullivan, J.).

Parmalat Litigation

In 2004, an Italian commissioner appointed to oversee the administration of various Parmalat companies filed a complaint against Citigroup and Related Parties alleging that the defendants facilitated a number of frauds by Parmalat insiders. In 2008, a jury rendered a verdict in Citigroup's favor and awarded Citi $431 million. Citigroup has taken steps to enforce the judgment in Italian court. In April 2019, the Italian Supreme Court affirmed the decision in the full amount of $431 million. Additional information concerning this action is publicly available in court filings under the docket numbers 27618/2014 and 10540/2019.

In 2015, Parmalat filed a claim in an Italian civil court in Milan claiming damages of €1.8 billion against Citigroup and Related Parties. The Milan court dismissed Parmalat's claim on grounds that it was duplicative of Parmalat's previously unsuccessful claims. In May 2019, the Milan Court of Appeal rejected Parmalat's appeal against the decision of the Milan court. In June 2019, Parmalat filed a further appeal with the Italian Supreme Court. Additional information concerning this action is publicly available in court filings under the docket number 20598/2019.

On January 29, 2020, Parmalat, its three directors and its sole shareholder, Sofil S.a.s., as co-plaintiffs, filed a claim before the Italian civil court in Milan seeking a declaratory judgment that they do not owe compensatory damages of €990 million to Citibank.

Payment Protection Insurance

Regulators and courts in the U.K. have scrutinized the selling of payment protection insurance (PPI) by financial institutions for several years. Citibank continues to review customer claims relating to the sale of PPI in the U.K., to grant redress in accordance with the requirements of the Financial Conduct Authority and to defend claims filed in U.K. courts.

Sovereign Securities Matters

Regulatory Actions: Government and regulatory agencies in the U.S. and in other jurisdictions are conducting investigations or making inquiries regarding Citigroup's sales and trading activities in connection with sovereign and other government-related securities. Citigroup is cooperating with these investigations and inquiries.

Antitrust and Other Litigation: In 2015, putative class actions filed against CGMI and other defendants were consolidated, under the caption IN RE TREASURY SECURITIES AUCTION ANTITRUST LITIGATION, in the United States District Court for the Southern District of New York. In December 2017, a consolidated amended complaint was filed, alleging that defendants colluded to fix Treasury auction bids by sharing competitively sensitive information ahead of the auctions, and that defendants colluded to boycott and prevent the emergence of an anonymous, all-to-all electronic trading platform in the Treasuries secondary market. The complaint asserts claims under antitrust laws, and seeks damages, including treble damages where authorized by statute, and injunctive relief. In February 2018, defendants moved to dismiss the complaint. Additional information concerning this action is publicly available in court filings under the docket number 15-MD-2673 (S.D.N.Y.) (Gardephe, J.).

In 2016 and 2017, class actions by direct purchasers of supranational, sub-sovereign and agency (SSA) bonds filed against Citigroup, Citibank, CGMI, CGML and other defendants were consolidated, under the caption IN RE SSA BONDS ANTITRUST LITIGATION, in the United States District Court for the Southern District of New York. In November 2018, a second amended consolidated complaint was filed, alleging that defendants, as market makers and traders of SSA bonds, colluded to fix the price at which they bought and sold SSA bonds in the secondary market. The complaint asserts claims under the antitrust laws and unjust enrichment, and seeks damages, including treble damages where authorized by statute, and disgorgement. In September 2019, the court granted defendants' motion to dismiss certain defendants, including CGML. Additional information concerning this action is publicly available in court filings under the docket number 16 Civ. 3711 (S.D.N.Y.) (Ramos, J.).

On February 7, 2019, a putative class action, captioned STACHON v. BANK OF AMERICA N.A., ET AL., was filed against Citigroup, Citibank, CGMI, CGML and other defendants, captioned STACHON v. BANK OF AMERICA N.A., ET AL., in the United States District Court for the Southern District of New York. Plaintiffs assert claims under New York antitrust laws based on the same conduct alleged in IN RE SSA BONDS ANTITRUST LITIGATION and seek treble damages and injunctive relief. The action is currently stayed pending a decision on the remaining motion to dismiss in IN RE SSA BONDS ANTITRUST LITIGATION. Additional information concerning this action is publicly available in court filings under the docket number 19 Civ. 01205 (S.D.N.Y.) (Swain, J.).

In 2017, a class action related to the SSA bond market was filed in the Ontario Court of Justice in Canada, against Citigroup, Citibank, CGMI, CGML, Citibank Canada, Citigroup Global Markets Canada, Inc. and other defendants, asserting plaintiff claims under breach of contract, breach of the competition act, breach of foreign law, unjust enrichment and civil conspiracy. Plaintiffs seek compensatory and punitive damages and declaratory relief. Additional information concerning this action is publicly available in court filings under the docket number CV-17-586082-00CP (Ont. S.C.J.).

In 2017, purchasers of SSA bonds filed a similar action against Citigroup, Citibank, CGMI, CGML, Citibank Canada, Citigroup Global Markets Canada, Inc. and other defendants, captioned JOSEPH MANCINELLI, ET AL. v. BANK OF AMERICA CORPORATION, ET AL., in the Federal Court in Canada. In October 2019, plaintiffs filed an amended claim. Plaintiffs allege that defendants manipulated, and colluded to manipulate, the SSA bonds market. Plaintiffs assert claims under breach of the competition law, breach of foreign law, civil conspiracy, unjust enrichment, waiver of tort and breach of contract. Additional information concerning this action is publicly available in court filings under the docket number T-1871-17 (Fed. Ct.).

On September 10, 2019, plaintiffs filed a third consolidated amended complaint against CGMI and other defendants, under the caption IN RE GSE BONDS ANTITRUST LITIGATION, in the United States District Court for the Southern District of New York. Plaintiffs allege that defendants conspired to manipulate the market for bonds issued by U.S. government-sponsored agencies. Plaintiffs assert a claim under the Sherman Act, and seek treble damages and injunctive relief. In December 2019, plaintiffs moved for preliminary approval of a settlement with CGMI and 11 other defendants. Additional information concerning this action is publicly available in court filings under the docket number 19 Civ. 1704 (S.D.N.Y.) (Rakoff, J.).

On September 23, 2019, the State of Louisiana filed an action against CGMI and other defendants, captioned STATE OF LOUISIANA v. BANK OF AMERICA, N.A., ET AL., in the United States District Court for the Middle District of Louisiana. Plaintiff alleges that defendants conspired to manipulate the market for bonds issued by U.S. government-sponsored agencies. Plaintiff asserts a claim against defendants for a violation of the Sherman Act, and seeks treble damages and injunctive relief. Additional information concerning this action is publicly available in court filings under the docket number 19 Civ. 638 (M.D. La.) (Dick, C.J.).

On October 21, 2019, the City of Baton Rouge and related plaintiffs filed a substantially similar action against CGMI and other defendants, captioned CITY OF BATON ROUGE, ET AL. v. BANK OF AMERICA, N.A., ET AL., in the United States District Court for the Middle District of Louisiana. Plaintiffs allege that defendants conspired to manipulate the market for U.S. government-sponsored agencies bonds. Plaintiffs assert a claim under the Sherman Act, and seek treble damages and injunctive relief. Additional information concerning this action is publicly available in court filings under the docket number 19 Civ. 725 (M.D. La.) (Dick, C.J.).

In 2018, a putative class action was filed against Citigroup, CGMI, Citigroup Financial Products Inc., Citigroup Global Markets Holdings Inc., Citibanamex, Grupo Banamex and other banks, captioned IN RE MEXICAN GOVERNMENT BONDS ANTITRUST LITIGATION, in the United States District Court for the Southern District of New York. Plaintiffs allege that defendants colluded in the Mexican sovereign bond market. In September 2019, the court granted defendants' motion to dismiss. Subsequently, plaintiffs filed an amended complaint against Citibanamex and other market makers in the Mexican sovereign bond market. Plaintiffs no longer assert any claims against Citigroup and any other Citi affiliates. The amended complaint alleges a conspiracy to fix prices in the Mexican sovereign bond market from January 1, 2006 to April 19, 2017, and asserts antitrust and unjust enrichment claims, and seek treble damages, restitution and injunctive relief. Additional information concerning this consolidated action is publicly available in court filings under the docket number 18 Civ. 2830 (S.D.N.Y.) (Oetken, J.).

Transaction Tax Matters

Citigroup and Citibank are engaged in litigation or examinations with tax authorities in India and Germany concerning the payment of transaction taxes and other non-income tax matters.

Tribune Company Bankruptcy

Certain Citigroup affiliates (along with numerous other parties) have been named as defendants in adversary proceedings related to the Chapter 11 cases of Tribune Company (Tribune) filed in the United States Bankruptcy Court for the District of Delaware, asserting claims arising out of the approximately $11 billion leveraged buyout of Tribune in 2007. The actions were consolidated as IN RE TRIBUNE COMPANY FRAUDULENT CONVEYANCE LITIGATION and transferred to the United States District Court for the Southern District of New York.

In the adversary proceeding captioned KIRSCHNER v. FITZSIMONS, ET AL., the litigation trustee, as successor plaintiff to the unsecured creditors committee, seeks to avoid and recover as actual fraudulent transfers the transfers of Tribune stock that occurred as a part of the leveraged buyout.

Several Citigroup affiliates, along with numerous other parties, were named as shareholder defendants and were alleged to have tendered Tribune stock to Tribune as a part of the buyout. In 2017, the United States District Court for the Southern District of New York dismissed the actual fraudulent transfer claim against the shareholder defendants, including the Citigroup affiliates. In July 2019, the litigation trustee filed an appeal to the United States Court of Appeals for the Second Circuit.

Several Citigroup affiliates, along with numerous other parties, are named as defendants in certain actions brought by Tribune noteholders, which seek to recover the transfers of Tribune stock that occurred as a part of the leveraged buyout, as state-law constructive fraudulent conveyances. The noteholders' claims were previously dismissed and the dismissal was affirmed on appeal. In May 2018, the United States Court of Appeals for the Second Circuit withdrew its 2016 transfer of jurisdiction to the district court to reconsider its decision in light of a recent United States Supreme Court decision. In December 2019, the Court of Appeals issued an amended decision again affirming the dismissal. In January 2020, the noteholders filed a petition for rehearing.

Citigroup Global Markets Inc. (CGMI) was named as a defendant in a separate action in connection with its role as advisor to Tribune. In January 2019, the court dismissed the action, which the litigation trustee has appealed to the United States Court of Appeals for the Second Circuit.

Additional information concerning these actions is publicly available in court filings under the docket numbers 08-13141 (Bankr. D. Del.) (Carey, J.), 11 MD 02296 (S.D.N.Y.) (Cote, J.), 12 MC 2296 (S.D.N.Y.) (Cote, J.), 13-3992 (2d Cir.), 19-0449 (2d Cir.), 19-3049 (2d Cir.) and 16-317 (U.S.).

Variable Rate Demand Obligation Litigation

On May 31, 2019, plaintiffs in the consolidated actions CITY OF PHILADELPHIA v. BANK OF AMERICA CORP., ET AL. and MAYOR AND CITY COUNCIL OF BALTIMORE v. BANK OF AMERICA CORP., ET AL. filed a consolidated complaint naming as defendants Citigroup, Citibank, CGMI, CGML and numerous other industry participants. The consolidated complaint asserts violations of the Sherman Act, as well as claims for breach of contract, breach of fiduciary duty, and unjust enrichment, and seeks damages and injunctive relief based on allegations that defendants served as remarketing agents for municipal bonds called variable rate demand obligations (VRDOs) and colluded to set artificially high VRDO interest rates. In July 2019, defendants filed a motion to dismiss the consolidated complaint. Additional information concerning these actions is publicly available in court filings under the docket numbers 19-CV-1608 (S.D.N.Y.) (Furman, J.) and 19-CV-2667 (S.D.N.Y.) (Furman, J.).

Settlement Payments

Payments required in settlement agreements described above have been made or are covered by existing litigation accruals.

28. CONDENSED CONSOLIDATING FINANCIAL STATEMENTS

Citigroup amended its Registration Statement on Form S-3 on file with the SEC (File No. 33-192302) to add its wholly owned subsidiary, Citigroup Global Markets Holdings Inc. (CGMHI), as a co-registrant. Any securities issued by CGMHI under the Form S-3 will be fully and unconditionally guaranteed by Citigroup.

The following are the Condensed Consolidating Statements of Income and Comprehensive Income for the years ended December 31, 2019, 2018 and 2017, Condensed Consolidating Balance Sheet as of December 31, 2019 and 2018 and Condensed Consolidating Statement of Cash Flows for the years ended December 31, 2019, 2018 and 2017 for Citigroup Inc., the parent holding company (Citigroup parent company), CGMHI, other Citigroup subsidiaries and eliminations and total consolidating adjustments. “Other Citigroup subsidiaries and eliminations” includes all other subsidiaries of Citigroup, intercompany eliminations and income (loss) from discontinued operations. “Consolidating adjustments” includes Citigroup parent company elimination of distributed and undistributed income of subsidiaries and investment in subsidiaries.

These Condensed Consolidating Financial Statements have been prepared and presented in accordance with SEC Regulation S-X Rule 3-10, “Financial Statements of Guarantors and Issuers of Guaranteed Securities Registered or Being Registered.”

These Condensed Consolidating Financial Statements schedules are presented for purposes of additional analysis, but should be considered in relation to the Consolidated Financial Statements of Citigroup taken as a whole.

Condensed Consolidating Statements of Income and Comprehensive Income

	Year ended December 31, 2019				
In millions of dollars	Citigroup parent company	CGMHI	Other Citigroup subsidiaries and eliminations	Consolidating adjustments	Citigroup consolidated
Revenues					
Dividends from subsidiaries	$ 23,347	$ —	$ —	$ (23,347)	$ —
Interest revenue	—	10,661	65,849	—	76,510
Interest revenue—intercompany	5,091	1,942	(7,033)	—	—
Interest expense	4,949	7,010	17,204	—	29,163
Interest expense—intercompany	1,038	4,243	(5,281)	—	—
Net interest revenue	$ (896)	$ 1,350	$ 46,893	$ —	$ 47,347
Commissions and fees	$ —	$ 5,265	$ 6,481	$ —	$ 11,746
Commissions and fees—intercompany	(21)	354	(333)	—	—
Principal transactions	(2,537)	277	11,152	—	8,892
Principal transactions—intercompany	1,252	2,464	(3,716)	—	—
Other income	767	832	4,702	—	6,301
Other income—intercompany	(55)	102	(47)	—	—
Total non-interest revenues	$ (594)	$ 9,294	$ 18,239	$ —	$ 26,939
Total revenues, net of interest expense	$ 21,857	$ 10,644	$ 65,132	$ (23,347)	$ 74,286
Provisions for credit losses and for benefits and claims	$ —	$ —	$ 8,383	$ —	$ 8,383
Operating expenses					
Compensation and benefits	$ 32	$ 4,680	$ 16,721	$ —	$ 21,433
Compensation and benefits—intercompany	134	—	(134)	—	—
Other operating	(16)	2,326	18,259	—	20,569
Other operating—intercompany	20	2,410	(2,430)	—	—
Total operating expenses	$ 170	$ 9,416	$ 32,416	$ —	$ 42,002
Equity in undistributed income of subsidiaries	$ (3,620)	$ —	$ —	$ 3,620	$ —
Income (loss) from continuing operations before income taxes	$ 18,067	$ 1,228	$ 24,333	$ (19,727)	$ 23,901
Provision (benefit) for income taxes	(1,334)	176	5,588	—	4,430
Income (loss) from continuing operations	$ 19,401	$ 1,052	$ 18,745	$ (19,727)	$ 19,471
Income (loss) from discontinued operations, net of taxes	—	—	(4)	—	(4)
Net income before attribution of noncontrolling interests	$ 19,401	$ 1,052	$ 18,741	$ (19,727)	$ 19,467
Noncontrolling interests	—	—	66	—	66
Net income (loss)	$ 19,401	$ 1,052	$ 18,675	$ (19,727)	$ 19,401
Comprehensive income					
Add: Other comprehensive income (loss)	$ 852	$ (651)	$ 1,600	$ (949)	$ 852
Total Citigroup comprehensive income (loss)	$ 20,253	$ 401	$ 20,275	$ (20,676)	$ 20,253
Add: Other comprehensive income attributable to noncontrolling interests	$ —	$ —	$ —	$ —	$ —
Add: Net income attributable to noncontrolling interests	—	—	66	—	66
Total comprehensive income (loss)	$ 20,253	$ 401	$ 20,341	$ (20,676)	$ 20,319

Condensed Consolidating Statements of Income and Comprehensive Income

	Year ended December 31, 2018				
In millions of dollars	Citigroup parent company	CGMHI	Other Citigroup subsidiaries and eliminations	Consolidating adjustments	Citigroup consolidated
Revenues					
Dividends from subsidiaries	$ 22,854	$ —	$ —	$ (22,854)	$ —
Interest revenue	67	8,732	62,029	—	70,828
Interest revenue—intercompany	4,933	1,659	(6,592)	—	—
Interest expense	4,783	5,430	14,053	—	24,266
Interest expense—intercompany	1,198	3,539	(4,737)	—	—
Net interest revenue	$ (981)	$ 1,422	$ 46,121	$ —	$ 46,562
Commissions and fees	$ —	$ 5,146	$ 6,711	$ —	$ 11,857
Commissions and fees—intercompany	(2)	237	(235)	—	—
Principal transactions	(1,310)	1,599	8,616	—	8,905
Principal transactions—intercompany	(929)	1,328	(399)	—	—
Other income	1,373	710	3,447	—	5,530
Other income—intercompany	(107)	143	(36)	—	—
Total non-interest revenues	$ (975)	$ 9,163	$ 18,104	$ —	$ 26,292
Total revenues, net of interest expense	$ 20,898	$ 10,585	$ 64,225	$ (22,854)	$ 72,854
Provisions for credit losses and for benefits and claims	$ —	$ (22)	$ 7,590	$ —	$ 7,568
Operating expenses					
Compensation and benefits	$ 4	$ 4,484	$ 16,666	$ —	$ 21,154
Compensation and benefits—intercompany	115	—	(115)	—	—
Other operating	(192)	2,224	18,655	—	20,687
Other operating—intercompany	49	2,312	(2,361)	—	—
Total operating expenses	$ (24)	$ 9,020	$ 32,845	$ —	$ 41,841
Equity in undistributed income of subsidiaries	$ (2,163)	$ —	$ —	$ 2,163	$ —
Income (loss) from continuing operations before income taxes	$ 18,759	$ 1,587	$ 23,790	$ (20,691)	$ 23,445
Provision (benefit) for income taxes	714	1,123	3,520	—	5,357
Income (loss) from continuing operations	$ 18,045	$ 464	$ 20,270	$ (20,691)	$ 18,088
Income (loss) from discontinued operations, net of taxes	—	—	(8)	—	(8)
Net income (loss) before attribution of noncontrolling interests	$ 18,045	$ 464	$ 20,262	$ (20,691)	$ 18,080
Noncontrolling interests	—	—	35	—	35
Net income (loss)	$ 18,045	$ 464	$ 20,227	$ (20,691)	$ 18,045
Comprehensive income			$ —		
Add: Other comprehensive income (loss)	$ (2,499)	$ 257	$ 3,500	$ (3,757)	$ (2,499)
Total Citigroup comprehensive income (loss)	$ 15,546	$ 721	$ 23,727	$ (24,448)	$ 15,546
Add: Other comprehensive income attributable to noncontrolling interests	$ —	$ —	$ (43)	$ —	$ (43)
Add: Net income attributable to noncontrolling interests	—	—	35	—	35
Total comprehensive income (loss)	$ 15,546	$ 721	$ 23,719	$ (24,448)	$ 15,538

Condensed Consolidating Statements of Income and Comprehensive Income

	Year ended December 31, 2017				
In millions of dollars	Citigroup parent company	CGMHI	Other Citigroup subsidiaries and eliminations	Consolidating adjustments	Citigroup consolidated
Revenues					
Dividends from subsidiaries	$ 22,499	$ —	$ —	$ (22,499)	$ —
Interest revenue	1	5,279	56,299	—	61,579
Interest revenue—intercompany	3,972	1,178	(5,150)	—	—
Interest expense	4,766	2,340	9,412	—	16,518
Interest expense—intercompany	829	2,297	(3,126)	—	—
Net interest revenue	$ (1,622)	$ 1,820	$ 44,863	$ —	$ 45,061
Commissions and fees	$ —	$ 5,366	$ 7,341	$ —	$ 12,707
Commissions and fees—intercompany	(2)	182	(180)	—	—
Principal transactions	1,654	1,183	6,103	—	8,940
Principal transactions—intercompany	934	1,200	(2,134)	—	—
Other income	(2,581)	867	7,450	—	5,736
Other income—intercompany	5	170	(175)	—	—
Total non-interest revenues	$ 10	$ 8,968	$ 18,405	$ —	$ 27,383
Total revenues, net of interest expense	$ 20,887	$ 10,788	$ 63,268	$ (22,499)	$ 72,444
Provisions for credit losses and for benefits and claims	$ —	$ —	$ 7,451	$ —	$ 7,451
Operating expenses					
Compensation and benefits	$ (107)	$ 4,403	$ 16,885	$ —	$ 21,181
Compensation and benefits—intercompany	120	—	(120)	—	—
Other operating	(318)	2,184	19,185	—	21,051
Other operating—intercompany	(35)	2,231	(2,196)	—	—
Total operating expenses	$ (340)	$ 8,818	$ 33,754	$ —	$ 42,232
Equity in undistributed income of subsidiaries	$ (19,088)	$ —	$ —	$ 19,088	$ —
Income (loss) from continuing operations before income taxes	$ 2,139	$ 1,970	$ 22,063	$ (3,411)	$ 22,761
Provision (benefit) for income taxes	8,937	873	19,578	—	29,388
Income (loss) from continuing operations	$ (6,798)	$ 1,097	$ 2,485	$ (3,411)	$ (6,627)
Income (loss) from discontinued operations, net of taxes	—	—	(111)	—	(111)
Net income before attribution of noncontrolling interests	$ (6,798)	$ 1,097	$ 2,374	$ (3,411)	$ (6,738)
Noncontrolling interests	—	(1)	61	—	60
Net income (loss)	$ (6,798)	$ 1,098	$ 2,313	$ (3,411)	$ (6,798)
Comprehensive income			$ —		
Add: Other comprehensive income (loss)	$ (2,791)	$ (117)	$ (4,160)	$ 4,277	$ (2,791)
Total Citigroup comprehensive income (loss)	$ (9,589)	$ 981	$ (1,847)	$ 866	$ (9,589)
Add: Other comprehensive income attributable to noncontrolling interests	$ —	$ —	$ 114	$ —	$ 114
Add: Net income attributable to noncontrolling interests	—	(1)	61	—	60
Total comprehensive income (loss)	$ (9,589)	$ 980	$ (1,672)	$ 866	$ (9,415)

Condensed Consolidating Balance Sheet

	December 31, 2019				
In millions of dollars	Citigroup parent company	CGMHI	Other Citigroup subsidiaries and eliminations	Consolidating adjustments	Citigroup consolidated
Assets					
Cash and due from banks	$ —	$ 586	$ 23,381	$ —	$ 23,967
Cash and due from banks—intercompany	21	5,095	(5,116)	—	—
Deposits with banks	—	4,050	165,902	—	169,952
Deposits with banks—intercompany	3,000	6,710	(9,710)	—	—
Securities borrowed and purchased under resale agreements	—	195,537	55,785	—	251,322
Securities borrowed and purchased under resale agreements—intercompany	—	21,446	(21,446)	—	—
Trading account assets	286	152,115	123,739	—	276,140
Trading account assets—intercompany	426	5,858	(6,284)	—	—
Investments	1	541	368,021	—	368,563
Loans, net of unearned income	—	2,497	696,986	—	699,483
Loans, net of unearned income—intercompany	—	—	—	—	—
Allowance for loan losses	—	—	(12,783)	—	(12,783)
Total loans, net	$ —	$ 2,497	$ 684,203	$ —	$ 686,700
Advances to subsidiaries	$ 144,587	$ —	$ (144,587)	$ —	$ —
Investments in subsidiaries	202,116	—	—	(202,116)	—
Other assets[(1)]	12,377	54,784	107,353	—	174,514
Other assets—intercompany	2,799	45,588	(48,387)	—	—
Total assets	$ 365,613	$ 494,807	$ 1,292,854	$ (202,116)	$ 1,951,158
Liabilities and equity					
Deposits	$ —	$ —	$ 1,070,590	$ —	$ 1,070,590
Deposits—intercompany	—	—	—	—	—
Securities loaned and sold under repurchase agreements	—	145,473	20,866	—	166,339
Securities loaned and sold under repurchase agreements—intercompany	—	36,581	(36,581)	—	—
Trading account liabilities	1	80,100	39,793	—	119,894
Trading account liabilities—intercompany	379	5,109	(5,488)	—	—
Short-term borrowings	66	11,096	33,887	—	45,049
Short-term borrowings—intercompany	—	17,129	(17,129)	—	—
Long-term debt	150,477	39,578	58,705	—	248,760
Long-term debt—intercompany	—	66,791	(66,791)	—	—
Advances from subsidiaries	20,503	—	(20,503)	—	—
Other liabilities	937	51,777	53,866	—	106,580
Other liabilities—intercompany	8	8,414	(8,422)	—	—
Stockholders' equity	193,242	32,759	170,061	(202,116)	193,946
Total liabilities and equity	$ 365,613	$ 494,807	$ 1,292,854	$ (202,116)	$ 1,951,158

(1) *Other assets* for Citigroup parent company at December 31, 2019 included $35.1 billion of placements to Citibank and its branches, of which $24.9 billion had a remaining term of less than 30 days.

Condensed Consolidating Balance Sheet

	December 31, 2018				
In millions of dollars	Citigroup parent company	CGMHI	Other Citigroup subsidiaries and eliminations	Consolidating adjustments	Citigroup consolidated
Assets					
Cash and due from banks	$ 1	$ 689	$ 22,955	$ —	$ 23,645
Cash and due from banks—intercompany	19	3,545	(3,564)	—	—
Deposits with banks	—	4,915	159,545	—	164,460
Deposits with banks—intercompany	3,000	6,528	(9,528)	—	—
Securities borrowed and purchased under resale agreements	—	212,720	57,964	—	270,684
Securities borrowed and purchased under resale agreements—intercompany	—	20,074	(20,074)	—	—
Trading account assets	302	146,233	109,582	—	256,117
Trading account assets—intercompany	627	1,728	(2,355)	—	—
Investments	7	224	358,376	—	358,607
Loans, net of unearned income	—	1,292	682,904	—	684,196
Loans, net of unearned income—intercompany	—	—	—	—	—
Allowance for loan losses	—	—	(12,315)	—	(12,315)
Total loans, net	$ —	$ 1,292	$ 670,589	$ —	$ 671,881
Advances to subsidiaries	$ 143,119	$ —	$ (143,119)	$ —	$ —
Investments in subsidiaries	205,337	—	—	(205,337)	—
Other assets[1]	9,861	59,734	102,394	—	171,989
Other assets—intercompany	3,037	44,255	(47,292)	—	—
Total assets	$ 365,310	$ 501,937	$ 1,255,473	$ (205,337)	$ 1,917,383
Liabilities and equity					
Deposits	$ —	$ —	$ 1,013,170	$ —	$ 1,013,170
Deposits—intercompany	—	—	—	—	—
Securities loaned and sold under repurchase agreements	—	155,830	21,938	—	177,768
Securities loaned and sold under repurchase agreements—intercompany	—	21,109	(21,109)	—	—
Trading account liabilities	1	95,571	48,733	—	144,305
Trading account liabilities—intercompany	410	1,398	(1,808)	—	—
Short-term borrowings	207	3,656	28,483	—	32,346
Short-term borrowings—intercompany	—	11,343	(11,343)	—	—
Long-term debt	143,767	25,986	62,246	—	231,999
Long-term debt—intercompany	—	73,884	(73,884)	—	—
Advances from subsidiaries	21,471	—	(21,471)	—	—
Other liabilities	3,011	66,732	50,978	—	120,721
Other liabilities—intercompany	223	13,763	(13,986)	—	—
Stockholders' equity	196,220	32,665	173,526	(205,337)	197,074
Total liabilities and equity	$ 365,310	$ 501,937	$ 1,255,473	$ (205,337)	$ 1,917,383

(1) *Other assets* for Citigroup parent company at December 31, 2018 included $34.7 billion of placements to Citibank and its branches, of which $22.4 billion had a remaining term of less than 30 days.

Condensed Consolidating Statement of Cash Flows

	Year ended December 31, 2019				
In millions of dollars	Citigroup parent company	CGMHI	Other Citigroup subsidiaries and eliminations	Consolidating adjustments	Citigroup consolidated
Net cash provided by (used in) operating activities of continuing operations	$ 25,011	$ (35,396)	$ (2,452)	$ —	$ (12,837)
Cash flows from investing activities of continuing operations					
Purchases of investments	$ —	$ —	$ (274,491)	$ —	$ (274,491)
Proceeds from sales of investments	5	—	137,168	—	137,173
Proceeds from maturities of investments	—	—	119,051	—	119,051
Change in loans	—	—	(22,466)	—	(22,466)
Proceeds from sales and securitizations of loans	—	—	2,878	—	2,878
Change in securities borrowed and purchased under agreements to resell	—	15,811	3,551	—	19,362
Changes in investments and advances—intercompany	(1,847)	(870)	2,717	—	—
Other investing activities	—	(64)	(4,817)	—	(4,881)
Net cash provided by (used in) investing activities of continuing operations	$ (1,842)	$ 14,877	$ (36,409)	$ —	$ (23,374)
Cash flows from financing activities of continuing operations					
Dividends paid	$ (5,447)	$ —	$ —	$ —	$ (5,447)
Issuance of preferred stock	1,496	—	—	—	1,496
Redemption of preferred stock	(1,980)	—	—	—	(1,980)
Treasury stock acquired	(17,571)	—	—	—	(17,571)
Proceeds (repayments) from issuance of long-term debt, net	1,666	10,389	(3,950)	—	8,105
Proceeds (repayments) from issuance of long-term debt—intercompany, net	—	(7,177)	7,177	—	—
Change in deposits	—	—	57,420	—	57,420
Change in securities loaned and sold under agreements to repurchase	—	5,115	(16,544)	—	(11,429)
Change in short-term borrowings	—	7,440	5,263	—	12,703
Net change in short-term borrowings and other advances—intercompany	(968)	5,843	(4,875)	—	—
Capital contributions from (to) parent	—	(74)	74	—	—
Other financing activities	(364)	(253)	253	—	(364)
Net cash provided by (used in) financing activities of continuing operations	$ (23,168)	$ 21,283	$ 44,818	$ —	$ 42,933
Effect of exchange rate changes on cash and due from banks	$ —	$ —	$ (908)	$ —	$ (908)
Change in cash and due from banks and deposits with banks	$ 1	$ 764	$ 5,049	$ —	$ 5,814
Cash and due from banks and deposits with banks at beginning of period	3,020	15,677	169,408	—	188,105
Cash and due from banks and deposits with banks at end of period	$ 3,021	$ 16,441	$ 174,457	$ —	$ 193,919
Cash and due from banks	$ 21	$ 5,681	$ 18,265	$ —	$ 23,967
Deposits with banks	3,000	10,760	156,192	—	169,952
Cash and due from banks and deposits with banks at end of period	$ 3,021	$ 16,441	$ 174,457	$ —	$ 193,919
Supplemental disclosure of cash flow information for continuing operations					
Cash paid during the year for income taxes	$ (393)	$ 418	$ 4,863	$ —	$ 4,888
Cash paid during the year for interest	3,820	12,664	12,198	—	28,682
Non-cash investing activities					
Transfers to loans HFS from loans	$ —	$ —	$ 5,500	$ —	$ 5,500

Condensed Consolidating Statement of Cash Flows

In millions of dollars	Year ended December 31, 2018 Citigroup parent company	CGMHI	Other Citigroup subsidiaries and eliminations	Consolidating adjustments	Citigroup consolidated
Net cash provided by (used in) operating activities of continuing operations	$ 21,314	$ 13,287	$ 2,351	$ —	$ 36,952
Cash flows from investing activities of continuing operations					
Purchases of investments	$ (7,955)	$ (18)	$ (144,514)	$ —	$ (152,487)
Proceeds from sales of investments	7,634	3	53,854	—	61,491
Proceeds from maturities of investments	—	—	83,604	—	83,604
Change in loans	—	—	(29,002)	—	(29,002)
Proceeds from sales and securitizations of loans	—	—	4,549	—	4,549
Proceeds from significant disposals	—	—	314	—	314
Change in securities borrowed and purchased under agreements to resell	—	(34,018)	(4,188)	—	(38,206)
Changes in investments and advances—intercompany	(5,566)	(832)	6,398	—	—
Other investing activities	556	(59)	(3,878)	—	(3,381)
Net cash provided by (used in) investing activities of continuing operations	$ (5,331)	$ (34,924)	$ (32,863)	$ —	$ (73,118)
Cash flows from financing activities of continuing operations					
Dividends paid	$ (5,020)	$ —	$ —	$ —	$ (5,020)
Redemption of preferred stock	(793)	—	—	—	(793)
Treasury stock acquired	(14,433)	—	—	—	(14,433)
Proceeds from issuance of long-term debt, net	(5,099)	10,278	(2,656)	—	2,523
Proceeds (repayments) from issuance of long-term debt—intercompany, net	—	10,708	(10,708)	—	—
Change in deposits	—	—	53,348	—	53,348
Change in securities loaned and sold under agreements to repurchase	—	23,454	(1,963)	—	21,491
Change in short-term borrowings	32	88	(12,226)	—	(12,106)
Net change in short-term borrowings and other advances—intercompany	1,819	(19,111)	17,292	—	—
Capital contributions from parent	—	(798)	798	—	—
Other financing activities	(482)	—	—	—	(482)
Net cash provided by (used in) financing activities of continuing operations	$ (23,976)	$ 24,619	$ 43,885	$ —	$ 44,528
Effect of exchange rate changes on cash and due from banks	$ —	$ —	$ (773)	$ —	$ (773)
Change in cash and due from banks and deposits with banks	$ (7,993)	$ 2,982	$ 12,600	$ —	$ 7,589
Cash and due from banks and deposits with banks at beginning of period	11,013	12,695	156,808	—	180,516
Cash and due from banks and deposits with banks at end of period	$ 3,020	$ 15,677	$ 169,408	$ —	$ 188,105
Cash and due from banks	$ 20	$ 4,234	$ 19,391	$ —	$ 23,645
Deposits with banks	3,000	11,443	150,017	—	164,460
Cash and due from banks and deposits with banks at end of period	$ 3,020	$ 15,677	$ 169,408	$ —	$ 188,105
Supplemental disclosure of cash flow information for continuing operations					
Cash paid (received) during the year for income taxes	$ (783)	$ 458	$ 4,638	$ —	$ 4,313
Cash paid during the year for interest	3,854	8,671	10,438	—	22,963
Non-cash investing activities					
Transfers to loans HFS from loans	$ —	$ —	$ 4,200	$ —	$ 4,200

Condensed Consolidating Statements of Cash Flows

	Year ended December 31, 2017				
In millions of dollars	Citigroup parent company	CGMHI	Other Citigroup subsidiaries and eliminations	Consolidating adjustments	Citigroup consolidated
Net cash provided by (used in) operating activities of continuing operations	$ 25,270	$ (33,365)	$ (679)	$ —	$ (8,774)
Cash flows from investing activities of continuing operations					
Purchases of investments	$ —	$ (14)	$ (185,726)	$ —	$ (185,740)
Proceeds from sales of investments	132	18	107,218	—	107,368
Proceeds from maturities of investments	—	—	84,369	—	84,369
Change in loans	—	—	(58,062)	—	(58,062)
Proceeds from sales and securitizations of loans	—	—	8,365	—	8,365
Proceeds from significant disposals	—	—	3,411	—	3,411
Change in securities borrowed and purchased under agreements to resell	—	9,731	(5,396)	—	4,335
Changes in investments and advances—intercompany	(899)	9,755	(8,856)	—	—
Other investing activities	—	(24)	(2,773)	—	(2,797)
Net cash provided by (used in) investing activities of continuing operations	$ (767)	$ 19,466	$ (57,450)	$ —	$ (38,751)
Cash flows from financing activities of continuing operations					
Dividends paid	$ (3,797)	$ —	$ —	$ —	$ (3,797)
Issuance of preferred stock	—	—	—	—	—
Treasury stock acquired	(14,541)	—	—	—	(14,541)
Proceeds (repayments) from issuance of long-term debt, net	6,544	4,909	15,521	—	26,974
Proceeds (repayments) from issuance of long-term debt—intercompany, net	—	(2,031)	2,031	—	—
Change in deposits	—	—	30,416	—	30,416
Change in securities loaned and sold under agreements to repurchase	—	5,748	8,708	—	14,456
Change in short-term borrowings	49	2,212	11,490	—	13,751
Net change in short-term borrowings and other advances—intercompany	(22,152)	(8,615)	30,767	—	—
Capital contributions from parent	—	(748)	748	—	—
Other financing activities	(405)	—	—	—	(405)
Net cash provided by financing activities of continuing operations	$ (34,302)	$ 1,475	$ 99,681	$ —	$ 66,854
Effect of exchange rate changes on cash and due from banks	$ —	$ —	$ 693	$ —	$ 693
Change in cash and due from banks and deposits with banks	$ (9,799)	$ (12,424)	$ 42,245	$ —	$ 20,022
Cash and due from banks and deposits with banks at beginning of period	20,812	25,119	114,563	—	160,494
Cash and due from banks and deposits with banks at end of period	$ 11,013	$ 12,695	$ 156,808	$ —	$ 180,516
Cash and due from banks	$ 13	$ 4,128	$ 19,634	$ —	$ 23,775
Deposits with banks	11,000	8,567	137,174	—	156,741
Cash and due from banks and deposits with banks at end of period	$ 11,013	$ 12,695	$ 156,808	$ —	$ 180,516
Supplemental disclosure of cash flow information for continuing operations					
Cash paid during the year for income taxes	$ (3,730)	$ 678	$ 5,135	$ —	$ 2,083
Cash paid during the year for interest	4,151	4,513	7,011	—	15,675
Non-cash investing activities					
Transfers to loans held-for-sale from loans	$ —	$ —	$ 5,900	$ —	$ 5,900

29. SELECTED QUARTERLY FINANCIAL DATA (UNAUDITED)

	2019				2018			
In millions of dollars, except per share amounts	**Fourth**	**Third**	**Second**	**First**	**Fourth**	**Third**	**Second**	**First**
Revenues, net of interest expense	**$ 18,378**	**$ 18,574**	**$ 18,758**	**$ 18,576**	$ 17,124	$ 18,389	$ 18,469	$ 18,872
Operating expenses	**10,454**	**10,464**	**10,500**	**10,584**	9,893	10,311	10,712	10,925
Provisions for credit losses and for benefits and claims	**2,222**	**2,088**	**2,093**	**1,980**	1,925	1,974	1,812	1,857
Income from continuing operations before income taxes	**$ 5,702**	**$ 6,022**	**$ 6,165**	**$ 6,012**	$ 5,306	$ 6,104	$ 5,945	$ 6,090
Income taxes(1)	**703**	**1,079**	**1,373**	**1,275**	1,001	1,471	1,444	1,441
Income from continuing operations	**$ 4,999**	**$ 4,943**	**$ 4,792**	**$ 4,737**	$ 4,305	$ 4,633	$ 4,501	$ 4,649
Income (loss) from discontinued operations, net of taxes	**(4)**	**(15)**	**17**	**(2)**	(8)	(8)	15	(7)
Net income before attribution of noncontrolling interests	**$ 4,995**	**$ 4,928**	**$ 4,809**	**$ 4,735**	$ 4,297	$ 4,625	$ 4,516	$ 4,642
Noncontrolling interests	**16**	**15**	**10**	**25**	(16)	3	26	22
Citigroup's net income	**$ 4,979**	**$ 4,913**	**$ 4,799**	**$ 4,710**	$ 4,313	$ 4,622	$ 4,490	$ 4,620
Earnings per share(2)								
Basic								
Income from continuing operations	**$ 2.16**	**$ 2.09**	**$ 1.94**	**$ 1.88**	$ 1.65	$ 1.74	$ 1.62	$ 1.68
Net income	**2.16**	**2.09**	**1.95**	**1.88**	1.65	1.73	1.63	1.68
Diluted								
Income from continuing operations	**2.15**	**2.08**	**1.94**	**1.87**	1.65	1.74	1.62	1.68
Net income	**2.15**	**2.07**	**1.95**	**1.87**	1.64	1.73	1.63	1.68

This Note to the Consolidated Financial Statements is unaudited due to the Company's individual quarterly results not being subject to an audit.

(1) The fourth quarter of 2019 includes discrete tax items of roughly $540 million including an approximate $430 million benefit of a reduction in Citi's valuation allowance related to its DTAs. The third quarter of 2019 includes discrete tax items of roughly $230 million, including an approximate $180 million benefit of a reduction in Citi's valuation allowance related to its DTAs.

(2) Due to averaging of shares, quarterly earnings per share may not sum to the totals reported for the full year.

End of Consolidated Financial Statements and Notes to Consolidated Financial Statements

FINANCIAL DATA SUPPLEMENT

RATIOS

	2019	2018	2017
Citigroup's net income to average assets(1)	**0.98%**	0.94%	0.84%
Return on average common stockholders' equity(1)(2)	**10.3**	9.4	7.0
Return on average total stockholders' equity(1)(3)	**9.9**	9.1	7.0
Total average equity to average assets(4)	**9.9**	10.3	12.1
Dividend payout ratio(1)(5)	**23.9**	23.1	18.0

(1) 2017 excludes the one-time impact of Tax Reform. See "Significant Accounting Policies and Estimates—Income Taxes" above.
(2) Based on Citigroup's net income less preferred stock dividends as a percentage of average common stockholders' equity.
(3) Based on Citigroup's net income as a percentage of average total Citigroup stockholders' equity.
(4) Based on average Citigroup stockholders' equity as a percentage of average assets.
(5) Dividends declared per common share as a percentage of net income per diluted share.

AVERAGE DEPOSIT LIABILITIES IN OFFICES OUTSIDE THE U.S.(1)

	2019		2018		2017	
In millions of dollars at year end, except ratios	**Average interest rate**	**Average balance**	Average interest rate	Average balance	Average interest rate	Average balance
Banks	**1.71%**	**$ 52,235**	1.35%	$ 44,426	0.49%	$ 36,063
Other demand deposits	**1.05**	**300,101**	0.61	287,665	0.52	293,389
Other time and savings deposits(2)	**1.05**	**217,944**	1.31	209,410	1.23	191,363
Total	**1.11%**	**$ 570,280**	0.94%	$ 541,501	0.78%	$ 520,815

(1) Interest rates and amounts include the effects of risk management activities and also reflect the impact of the local interest rates prevailing in certain countries.
(2) Primarily consists of certificates of deposit and other time deposits in denominations of $100,000 or more.

MATURITY PROFILE OF TIME DEPOSITS IN U.S. OFFICES

In millions of dollars at December 31, 2019	**Under 3 months**	**Over 3 to 6 months**	**Over 6 to 12 months**	**Over 12 months**
Over $100,000				
Certificates of deposit	**$ 15,866**	**$ 8,152**	**$ 9,008**	**$ 694**
Other time deposits	**3,924**	**29**	**38**	**1,556**
Over $250,000				
Certificates of deposit	**$ 14,026**	**$ 5,008**	**$ 4,953**	**$ 539**
Other time deposits	**3,923**	**29**	**2**	**11**

SUPERVISION, REGULATION AND OTHER

SUPERVISION AND REGULATION

Citi is subject to regulation under U.S. federal and state laws, as well as applicable laws in the other jurisdictions in which it does business.

General

Citigroup is a registered bank holding company and financial holding company and is regulated and supervised by the Federal Reserve Board. Citigroup's nationally chartered subsidiary banks, including Citibank, are regulated and supervised by the Office of the Comptroller of the Currency (OCC). The Federal Deposit Insurance Corporation (FDIC) also has examination authority for banking subsidiaries whose deposits it insures. Overseas branches of Citibank are regulated and supervised by the Federal Reserve Board and OCC and overseas subsidiary banks by the Federal Reserve Board. These overseas branches and subsidiary banks are also regulated and supervised by regulatory authorities in the host countries. In addition, the Consumer Financial Protection Bureau (CFPB) regulates consumer financial products and services. Citi is also subject to laws and regulations concerning the collection, use, sharing and disposition of certain customer, employee and other personal and confidential information, including those imposed by the Gramm-Leach-Bliley Act, the Fair Credit Reporting Act and the EU General Data Protection Regulation. For more information on U.S. and foreign regulation affecting or potentially affecting Citi, see "Risk Factors" above.

Other Bank and Bank Holding Company Regulation

Citi, including its banking subsidiaries, is subject to regulatory limitations, including requirements for banks to maintain reserves against deposits, requirements as to liquidity, risk-based capital and leverage (see "Capital Resources" above and Note 18 to the Consolidated Financial Statements), restrictions on the types and amounts of loans that may be made and the interest that may be charged, and limitations on investments that can be made and services that can be offered. The Federal Reserve Board may also expect Citi to commit resources to its subsidiary banks in certain circumstances. Citi is also subject to anti-money laundering and financial transparency laws, including standards for verifying client identification at account opening and obligations to monitor client transactions and report suspicious activities.

Securities and Commodities Regulation

Citi conducts securities underwriting, brokerage and dealing activities in the U.S. through Citigroup Global Markets Inc. (CGMI), its primary broker-dealer, and other broker-dealer subsidiaries, which are subject to regulations of the U.S. Securities and Exchange Commission (SEC), the Financial Industry Regulatory Authority and certain exchanges. Citi conducts similar securities activities outside the U.S., subject to local requirements, through various subsidiaries and affiliates, principally Citigroup Global Markets Limited in London (CGML), which is regulated principally by the U.K. Financial Conduct Authority (FCA), and Citigroup Global Markets Japan Inc. in Tokyo, which is regulated principally by the Financial Services Agency of Japan.

Citi also has subsidiaries that are members of futures exchanges. In the U.S., CGMI is a member of the principal U.S. futures exchanges, and Citi has subsidiaries that are registered as futures commission merchants and commodity pool operators with the Commodity Futures Trading Commission (CFTC). Citibank, CGMI, Citigroup Energy Inc., Citigroup Global Markets Europe AG and CGML are also registered as swap dealers with the CFTC. CGMI is also subject to SEC and CFTC rules that specify uniform minimum net capital requirements. Compliance with these rules could limit those operations of CGMI that require the intensive use of capital and also limits the ability of broker-dealers to transfer large amounts of capital to parent companies and other affiliates. See "Capital Resources" and Note 18 to the Consolidated Financial Statements for a further discussion of capital considerations of Citi's non-banking subsidiaries.

Transactions with Affiliates

Transactions between Citi's U.S. subsidiary depository institutions and their non-bank affiliates are regulated by the Federal Reserve Board, and are generally required to be on arm's-length terms. See "Managing Global Risk—Liquidity Risk" above.

COMPETITION

The financial services industry is highly competitive. Citi's competitors include a variety of financial services and advisory companies. Citi competes for clients and capital (including deposits and funding in the short- and long-term debt markets) with some of these competitors globally and with others on a regional or product basis. Citi's competitive position depends on many factors, including, among others, the value of Citi's brand name, reputation, the types of clients and geographies served; the quality, range, performance, innovation and pricing of products and services; the effectiveness of and access to distribution channels, technology advances, customer service and convenience; the effectiveness of transaction execution, interest rates and lending limits; and regulatory constraints. Citi's ability to compete effectively also depends upon its ability to attract new employees and retain and motivate existing employees, while managing compensation and other costs. For additional information on competitive factors and uncertainties impacting Citi's businesses, see "Risk Factors—Operational Risks" above.

CLIMATE CHANGE

Climate change presents immediate and long-term risks to Citi and to its clients and customers, with the risks potentially increasing over time. Climate risk can arise from physical risks (risks related to the physical effects of climate change) and transition risks (risks related to regulatory, legal, technological and market changes from a transition to a low-carbon economy).

Citi's Environmental and Social Risk Management Policy incorporates climate risk assessment for credit underwriting purposes and reporting criteria for certain corporate obligors and transactions. 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 (GHG) emissions. Citi engages clients to support their low-carbon transition, including through Citi's growing environmental finance offerings.

To manage the risks of climate change to Citi's own operations and facilities, Citi assesses its exposure to climate hazards to inform business continuity and resilience planning. In addition, Citi has developed programs for its properties to achieve long-term energy efficiency objectives and reduce its GHG emissions to lessen its impact on climate change.

Citi has adopted the Taskforce on Climate-related Financial Disclosures (TCFD) recommendations and published its first TCFD report, Finance for a Climate Resilient Future, in 2018. As detailed in that report, Citi participated in the United Nations Environment Finance Initiative Banking Sector TCFD Project in 2017–2018 and piloted climate scenario analyses on Citi's *North America* oil and gas exploration and production and U.S. power portfolios, to understand their exposure to climate risk under select scenarios. Citi continues to participate in financial industry collaborations to develop and pilot new methodologies and approaches for measuring and assessing the potential financial risks of climate change. Citi is also closely monitoring regulatory developments on climate risk and sustainable finance, and actively engaging with regulators on these topics.

For information on Citi's environmental and social policies and priorities, see Citi's website at www.citigroup.com. Click on "About Us" and then "Corporate Governance" and "Citizenship Report" or "Environmental and Social Information." For information on Citi's citizenship and sustainability governance, see Citi's 2019 Annual Meeting Proxy Statement available at www.citigroup.com. Click on "Investors" and then "Annual Reports & Proxy Statements."

DISCLOSURE PURSUANT TO SECTION 219 OF THE IRAN THREAT REDUCTION AND SYRIA HUMAN RIGHTS ACT

Pursuant to Section 219 of the Iran Threat Reduction and Syria Human Rights Act of 2012 (Section 219), which added Section 13(r) to the Securities Exchange Act of 1934, as amended, Citi is required to disclose in its annual or quarterly reports, as applicable, whether it or any of its affiliates knowingly engaged in certain activities, transactions or dealings relating to Iran or with individuals or entities that are subject to sanctions under U.S. law. Disclosure is generally required even where the activities, transactions or dealings were conducted in compliance with applicable law. Citi, in its related quarterly reports on Form 10-Q, previously disclosed reportable activities pursuant to Section 219 for the first, second and third quarters of 2019.

Citi had no reportable activities pursuant to Section 219 for the fourth quarter of 2019.

UNREGISTERED SALES OF EQUITY SECURITIES, REPURCHASES OF EQUITY SECURITIES AND DIVIDENDS

Unregistered Sales of Equity Securities

None.

Equity Security Repurchases

The following table summarizes Citi's common stock repurchases during the three months ended December 31, 2019:

In millions, except per share amounts	Total shares purchased	Average price paid per share	Approximate dollar value of shares that may yet be purchased under the plan or programs
October 2019			
Open market repurchases[(1)]	**21.6**	**$ 69.77**	**$ 10,473**
Employee transactions[(2)]	**—**	**—**	**N/A**
November 2019			
Open market repurchases[(1)]	**21.0**	**74.80**	**8,902**
Employee transactions[(2)]	**—**	**—**	**N/A**
December 2019			
Open market repurchases[(1)]	**26.6**	**77.03**	**6,855**
Employee transactions[(2)]	**—**	**—**	**N/A**
Total for 4Q19 and remaining program balance as of December 31, 2019	**69.2**	**$ 74.09**	**$ 6,855**

(1) Represents repurchases under the $17.1 billion 2019 common stock repurchase program (2019 Repurchase Program) that was approved by Citigroup's Board of Directors and announced on June 27, 2019. The 2019 Repurchase Program was part of the planned capital actions included by Citi as part of the 2019 Comprehensive Capital Analysis and Review (CCAR). Shares repurchased under the 2019 Repurchase Program were added to treasury stock. The 2019 Repurchase Program expires on June 30, 2020.

(2) Consisted of shares added to 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 share rewards where shares are withheld to satisfy tax requirements.

N/A Not applicable

Dividends

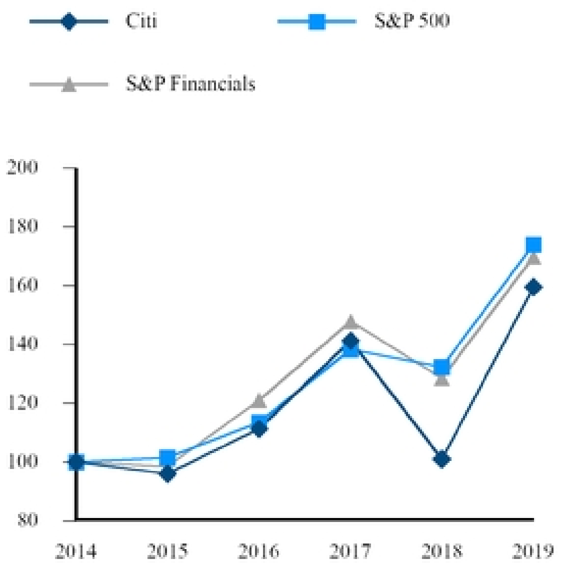
In addition to Board of Directors' approval, Citi's ability to pay common stock dividends substantially depends on regulatory approval, including an annual regulatory review of the results of the CCAR process required by the Federal Reserve Board and the supervisory stress tests required under the Dodd-Frank Act. For additional information regarding Citi's capital planning and stress testing, see "Capital Resources—Current Regulatory Capital Standards—Stress Testing Component of Capital Planning" and "Risk Factors—Strategic Risks" above. Any dividend on Citi's outstanding common stock would also need to be made in compliance with Citi's obligations on its outstanding preferred stock.

For information on the ability of Citigroup's subsidiary depository institutions to pay dividends, see Note 18 to the Consolidated Financial Statements.

PERFORMANCE GRAPH

Comparison of Five-Year Cumulative Total Return
The following graph and table compare the cumulative total return on Citi's common stock with the cumulative total return of the S&P 500 Index and the S&P Financials Index over the five-year period through December 31, 2019. The graph and table assume that $100 was invested on December 31, 2014 in Citi's common stock, the S&P 500 Index and the S&P Financials Index, and that all dividends were reinvested.

Comparison of Five-Year Cumulative Total Return
For the years ended



DATE	Citigroup	S&P 500 Index	S&P Financials Index
31-Dec-2014	100.0	100.0	100.0
31-Dec-2015	95.9	101.4	98.5
31-Dec-2016	111.2	113.5	120.9
31-Dec-2017	141.2	138.3	147.7
31-Dec-2018	101.0	132.2	128.5
31-Dec-2019	159.4	173.9	169.8

Note: Citi's common stock is listed on the NYSE under the ticker symbol "C" and held by 66,990 common stockholders of record as of January 31, 2020.

CORPORATE INFORMATION

EXECUTIVE OFFICERS

Citigroup's executive officers as of February 21, 2020 are:

Name	Age	Position and office held
Raja J. Akram	47	Controller and Chief Accounting Officer
Peter Babej	56	CEO, Asia Pacific
Michael L. Corbat	59	Chief Executive Officer
Jane Fraser	52	President; CEO, Global Consumer Banking
Bradford Hu	56	Chief Risk Officer
David Livingstone	56	CEO, Europe, Middle East and Africa
Mark A. L. Mason	50	Chief Financial Officer
Mary McNiff	49	CEO, Citibank, N.A.
Ernesto Torres Cantú	55	CEO, Latin America
Sara Wechter	39	Head of Human Resources
Rohan Weerasinghe	69	General Counsel and Corporate Secretary
Mike Whitaker	56	Head of Operations and Technology
Paco Ybarra	58	CEO, Institutional Clients Group

Each executive officer has held senior executive or management positions with Citigroup for at least five years, except that:

- Mr. Akram joined Citi in 2006 and assumed his current position in November 2017. Previously, he served as Deputy Controller since April 2017. He held a number of other roles in Citi Finance, including Lead Finance Officer for Treasury and Trade Solutions, Brazil Country Controller, Brazil Country Finance Officer and Head of the Corporate Accounting Policy team supporting M&A activities;
- Mr. Babej joined Citi in 2010 and assumed his current position in October 2019. Previously, he served as *ICG's* Global Head of the Financial Institutions Group (FIG) from January 2017 to October 2019 and Global Co-Head of FIG from 2010 to January 2017. Prior to joining Citi, Mr. Babej served as Co-Head, Financial Institutions— Americas at Deutsche Bank, among other roles;
- Ms. Fraser joined Citi in 2004 and assumed her current position in October 2019. Previously, she served as CEO of Citi Latin America from June 2015 to October 2019. She held a number of other roles across the organization, including CEO of U.S. Consumer and Commercial Banking and CitiMortgage, CEO of Citi's Global Private Bank and Global Head of Strategy and M&A;
- Mr. Livingstone joined Citi in 2016 and assumed his current position in March 2019. Previously, he served as Citi Country Officer for Australia and New Zealand since June 2016. Prior to joining Citi, he had a nine-year career at Credit Suisse, where he was Vice Chairman of the Investment Banking and Capital Markets Division for the *EMEA* region, Head of M&A and CEO of Credit Suisse Australia;
- Mr. Mason joined Citi in 2001 and assumed his current position in February 2019. Previously, he served as CFO of *ICG* since September 2014. He held a number of other senior operational, strategic and financial executive roles across the organization, including CEO of Citi Private Bank, CEO of Citi Holdings and CFO and Head of Strategy and M&A for Citi's Global Wealth Management Division;
- Ms. McNiff joined Citi in 2012 and assumed her current position in April 2019. Previously, she served as Chief Auditor since February 2017. She held a number of other roles across the organization, including Chief Auditor of *GCB*, Chief Administrative Officer for Citi Latin America & Mexico and interim Chief Auditor, *ICG*. She also previously led the Global Transformation initiative within Internal Audit;
- Mr. Torres Cantú joined Citi in 1989 and assumed his current position in October 2019. Previously, he served as CEO of Citibanamex since October 2014. He served as CEO of *GCB* in Mexico from 2006 to 2011 and CEO of Crédito Familiar from 2003 to 2006. In addition, he previously held roles in Citibanamex, including Regional Director and Divisional Director;
- Ms. Wechter joined Citi in 2004 and assumed her current position in July 2018. Previously, she served as Citi's Head of Talent and Diversity as well as Chief of Staff to Citi CEO Michael Corbat. She served as Chief of Staff to both Michael O'Neill and Richard Parsons during their terms as Chairman of Citi's Board of Directors. In addition, she held roles in Citi's *ICG*, including Corporate M&A and Strategy and Investment Banking;
- Mr. Whitaker joined Citi in 2009 and assumed his current position in November 2018. Previously, he served as Head of Operations & Technology for *ICG* since September 2014 and held various other roles at Citi, including Head of Securities & Banking Operations & Technology, Head of *ICG* Technology and Regional Chief Information Officer; and
- Mr. Ybarra joined Citi in 1987 and assumed his current position in May 2019. Previously, he served as *ICG*'s Global Head of Markets and Securities Services since November 2013. In addition, he has held a number of other roles across *ICG*, including Deputy Head of *ICG*, Global Head of Markets and Co-Head of Global Fixed Income.

Code of Conduct, Code of Ethics

Citi has a Code of Conduct that maintains its commitment to the highest standards of conduct. The Code of Conduct is supplemented by a Code of Ethics for Financial Professionals (including accounting, controllers, financial reporting operations, financial planning and analysis, treasury, tax, strategy and M&A, investor relations and regional/product finance professionals and administrative staff) that applies worldwide. The Code of Ethics for Financial Professionals applies to Citi's principal executive officer, principal financial officer and principal accounting officer. Amendments and waivers, if any, to the Code of Ethics for Financial

Professionals will be disclosed on Citi's website, www.citigroup.com.

Both the Code of Conduct and the Code of Ethics for Financial Professionals can be found on the Citi website by clicking on "About Us," and then "Corporate Governance." Citi's Corporate Governance Guidelines can also be found there, as well as the charters for the Audit Committee, the Ethics and Culture Committee, the Nomination, Governance and Public Affairs Committee, the Operations and Technology Committee, the Personnel and Compensation Committee and the Risk Management Committee of the Board. These materials are also available by writing to Citigroup Inc., Corporate Governance, 388 Greenwich Street, 17th Floor, New York, New York 10013.

CITIGROUP BOARD OF DIRECTORS

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Chief Executive Officer
Citigroup Inc.

Ellen M. Costello
Former President and CEO
BMO Financial Corporation and
Former U.S. Country Head
BMO Financial Group

Grace E. Dailey
Former Senior Deputy Comptroller
for Bank Supervision Policy and
Chief National Bank Examiner
Office of the Comptroller of the
Currency (OCC)

Barbara Desoer
Former Chief Executive Officer
Citibank, N.A.

John C. Dugan
Chair
Citigroup Inc.

Duncan P. Hennes
Co-Founder and Partner
Atrevida Partners, LLC

Peter Blair Henry
Dean Emeritus and W. R. Berkley
Professor of Economics and
Finance
New York University
Stern School of Business

S. Leslie Ireland
Former Assistant Secretary for
Intelligence and Analysis
U.S. Department of the Treasury

Lew W. (Jay) Jacobs, IV
Former President and Managing
Director
Pacific Investment Management
Company LLC (PIMCO)

Renée J. James
Chairman and CEO
Ampere Computing and
Operating Executive
The Carlyle Group

Eugene (Gene) M. McQuade
Former Chief Executive Officer
Citibank, N.A. and
Former Vice Chairman
Citigroup Inc.

Gary M. Reiner
Operating Partner
General Atlantic LLC

Diana L. Taylor
Former Superintendent of Banks
State of New York

James S. Turley
Former Chairman and CEO
Ernst & Young

Deborah C. Wright
Former Chairman
Carver Bancorp, Inc.

Alexander Wynaendts
Chief Executive Officer and
Chairman of the Management and
Executive Boards
Aegon N.V.

Ernesto Zedillo Ponce de Leon
Director, Center for the
Study of Globalization and
Professor in the Field
of International
Economics and Politics
Yale University

Signatures

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on the 21st day of February, 2020.

Citigroup Inc.
(Registrant)

/s/ Mark A. L. Mason

Mark A. L. Mason
Chief Financial Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities indicated on the 21st day of February, 2020.

Citigroup's Principal Executive Officer and a Director:

/s/ Michael L. Corbat

Michael L. Corbat

Citigroup's Principal Financial Officer:

/s/ Mark A. L. Mason

Mark A. L. Mason

Citigroup's Principal Accounting Officer:

/s/ Raja J. Akram

Raja J. Akram

The Directors of Citigroup listed below executed a power of attorney appointing Mark A. L. Mason their attorney-in-fact, empowering him to sign this report on their behalf.

Ellen M. Costello	Renée J. James
Grace E. Dailey	Eugene M. McQuade
Barbara Desoer	Gary M. Reiner
John C. Dugan	Diana L. Taylor
Duncan P. Hennes	James S. Turley
Peter Blair Henry	Deborah C. Wright
S. Leslie Ireland	Alexander Wynaendts
Lew W. (Jay) Jacobs, IV	Ernesto Zedillo Ponce de Leon

/s/ Mark A. L. Mason

Mark A. L. Mason

EXHIBIT INDEX

Exhibit Number		Description of Exhibit
3.01+		Restated Certificate of Incorporation of Citigroup, as amended, as in effect on the date hereof.
3.02		By-Laws of Citigroup, as amended, as in effect on the date hereof, incorporated by reference to the Company's Current Report on Form 8-K filed on December 18, 2019 (File No. 001-09924).
4.01		Form of Senior Indenture between Citigroup and The Bank of New York Mellon, as trustee, incorporated by reference to Exhibit 4.8 to the Company's Registration Statement on Form S-3 filed on November 13, 2013 (File No. 333-192302).
4.02		First Supplemental Indenture, dated as of February 1, 2016, between Citigroup and The Bank of New York Mellon, as trustee, incorporated by reference to Exhibit 4.01 to the Company's Current Report on Form 8-K filed on February 1, 2016 (File No. 001-9924).
4.03		Second Supplemental Indenture, dated as of December 29, 2016, between Citigroup and The Bank of New York Mellon, as trustee, incorporated by reference to Exhibit 4.01 to the Company's Current Report on Form 8-K filed on December 29, 2016 (File No. 001-9924).
4.04		Third Supplemental Indenture dated as of June 26, 2017 among Citigroup Global Markets Holdings Inc., the Company and The Bank of New York Mellon, as trustee, to Indenture dated as of November 13, 2013, incorporated by reference to Exhibit 4.01 to the Company's Quarterly Report on Form 10-Q filed on August 1, 2017 (File No. 001-09924).
4.05		Subordinated Debt Indenture, dated as of April 12, 2001, between the Company and The Bank of New York Mellon, as successor to JPMorgan Chase Bank (formerly Bank One Trust Company, N.A.), as trustee, incorporated by reference to Exhibit 4.1 to the Company's Registration Statement on Form S-3 filed on February 4, 2013 (No. 333-186425).
4.06		First Supplemental Indenture, dated as of August 2, 2004, between the Company and J.P. Morgan Trust Company, N.A. (formerly Bank One Trust Company, N.A.), as trustee, incorporated by reference to Exhibit 4.13 to the Company's Registration Statement on Form S-3/A filed on August 31, 2004 (No. 333-117615).
4.07		Second Supplemental Indenture, dated as of May 18, 2016, between Citigroup and The Bank of New York Mellon, as successor to J.P. Morgan Trust Company, N.A. (formerly Bank One Trust Company, N.A.), as trustee, incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K filed on May 20, 2016 (No. 001-9924).
4.08		Third Supplemental Indenture, dated as of March 1, 2017, between Citigroup and The Bank of New York Mellon, as successor to J.P. Morgan Trust Company, N.A. (formerly Bank One Trust Company, N.A.), as trustee, incorporated by reference to Exhibit 4.11 to the Company's Registration Statement on Form S-3 filed on March 1, 2017 (No. 333-216372).
4.09		Indenture, dated as of March 15, 1987, between Primerica Corporation, a New Jersey corporation, and The Bank of New York, as trustee, incorporated by reference to Exhibit 4.01 to the Company's Registration Statement on Form S-3 filed on December 8, 1992 (No. 03355542).
4.10		First Supplemental Indenture, dated as of December 15, 1988, among Primerica Corporation, Primerica Holdings, Inc. and The Bank of New York, as trustee, incorporated by reference to Exhibit 4.02 to the Company's Registration Statement on Form S-3 filed on December 8, 1992 (No. 03355542).

4.11		Second Supplemental Indenture, dated as of January 31, 1991, between Primerica Holdings, Inc. and The Bank of New York, as trustee, incorporated by reference to Exhibit 4.03 to the Company's Registration Statement on Form S-3 filed on December 8, 1992 (No. 03355542).
4.12		Third Supplemental Indenture, dated as of December 9, 1992, among Primerica Holdings, Inc., Primerica Corporation and The Bank of New York, as trustee, incorporated by reference to Exhibit 5 to the Company's Form 8-A dated December 21, 1992, with respect to its 7 3/4% Notes Due June 15, 1999 (No. 001-09924).
4.13		Fourth Supplemental Indenture, dated as of November 2, 1998, between the Company and The Bank of New York, as trustee, incorporated by reference to Exhibit 4.01 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 1998 (No. 001-09924).
4.14		Fifth Supplemental Indenture, dated as of December 9, 2008, between the Company and The Bank of New York Mellon, as trustee, incorporated by reference to Exhibit 4.04 to the Company's Current Report on Form 8-K filed on December 11, 2008 (No. 001-09924).
4.15		Sixth Supplemental Indenture, dated as of December 20, 2012, between the Company and The Bank of New York Mellon, as trustee, providing for the issuance of debt securities, incorporated by reference to Exhibit 4.5 to the Company's Current Report on Form 8-K filed on December 21, 2012 (No. 001-09924).
4.16		Seventh Supplemental Indenture, dated as of May 18, 2016, between Citigroup Inc. and The Bank of New York Mellon, as trustee, incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on May 20, 2016 (No. 001-9924).
4.17		Senior Debt Indenture, dated as of June 1, 2005, among Citigroup Funding Inc., the Company and The Bank of New York Mellon, as successor trustee to JPMorgan Chase Bank, N.A., incorporated by reference to Exhibit 4(b) to the Company's Registration Statement on Form S-3 filed on March 13, 2006 (No. 333-132370-01).
4.18		Second Supplemental Indenture, dated as of December 20, 2012, among Citigroup Funding Inc., the Company and The Bank of New York Mellon, as successor trustee to JPMorgan Chase Bank, N.A., incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K filed on December 21, 2012 (No. 001-09924).
4.19		Indenture, dated as of July 23, 2004, between the Company and The Bank of New York Mellon, as successor trustee to JPMorgan Chase Bank, as trustee, incorporated by reference to Exhibit 4.28 to the Company's Registration Statement on Form S-3 filed on July 23, 2004 (No. 333-117615).
4.20		Form of Indenture, between the Company and The Bank of New York Mellon, as successor trustee to JPMorgan Chase Bank, incorporated by reference to Exhibit 4.01 to the Company's Post-Effective Amendment No. 2 to the Registration Statement on Form S-3 filed on May 4, 2007 (File No. 333-135163).
4.21		Form of Indenture, between the Company and The Bank of New York Mellon, as successor trustee to JPMorgan Chase Bank (formerly known as The Chase Manhattan Bank), incorporated by reference to Exhibit 4.11 to the Travelers Group Inc. Registration Statement on Form S-3 filed on September 20, 1996 (File No. 333-12439).
4.22		Senior Debt Indenture, dated as of March 8, 2016, between Citigroup Global Markets Holdings Inc., the Company and The Bank of New York Mellon, as trustee, incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on March 9, 2016 (File No. 1-9924).
4.23		Form of Capital Securities Guarantee Agreement between the Company, as Guarantor, and The Bank of New York Mellon, as Guarantee Trustee, incorporated by reference to Exhibit 4.32 to the Company's Registration Statement on Form S-3 filed on July 2, 2004 (File No. 333-117615).
4.24		Amended and Restated Declaration of Trust for Citigroup Capital XIII, incorporated by reference to Exhibit 4.02 to the Company's Current Report on Form 8-K filed on September 30, 2010 (File No. 1-9924).

4.25		Form of Amended and Restated Declaration of Trust for Citigroup Capital XVIII, incorporated by reference to Exhibit 4.07 to the Registrant's Post-Effective Amendment No. 2 to the Registration Statement on Form S-3 (No. 333-135163).
4.26		Form of Amended and Restated Declaration of Trust for Citigroup Capital III (previously known as Travelers Capital III), incorporated by reference to Exhibit 4.8 to Travelers Group Inc.'s Registration Statement on Form S-3 (File No. 333-12439).
4.27		Specimen Physical Common Stock Certificate of Citigroup, incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on May 9, 2011 (File No. 001-09924).
4.28+		Description of Citigroup's Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934.
10.01*		Citi Discretionary Incentive and Retention Award Plan (as Amended and Restated Effective as of January 1, 2015), incorporated by reference to Exhibit 10.01 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2014 (File No. 001-09924) (the "Company's 2014 10-K").
10.02.1*		Citigroup 2009 Stock Incentive Plan (as amended and restated effective April 24, 2013), incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on April 26, 2013 (File No. 001-09924).
10.02.2*		Citigroup 2014 Stock Incentive Plan (as amended and restated effective April 24, 2018), incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on April 30, 2018 (File No. 001-09924).
10.02.3*		Citigroup 2019 Stock Incentive Plan, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on April 17, 2019 (File No. 001-09924).
10.03*		Citigroup Inc. Deferred Cash Award Plan (as Amended and Restated Effective as of January 1, 2015), incorporated by reference to Exhibit 10.03 to the Company's 2014 10-K.
10.04.1*		Form of Citigroup Inc. CAP/DCAP Agreement, incorporated by reference to Exhibit 10.01 to the Company's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2015 (File No. 001-09924).
10.04.2*		Form of Citigroup Inc. CAP/DCAP Agreement (for awards granted on February 14, 2019 and in future years), incorporated by reference to Exhibit 10.02 to the Company's Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2019 (File No. 001-09924).
10.05*		Form of Citigroup Inc. CAP Agreement, incorporated by reference to Exhibit 10.01 to the Company's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2019 (File No. 001-09924).
10.06*		The Amended and Restated 2011 Citigroup Executive Performance Plan (as amended and restated as of January 1, 2016, and as further amended on February 16, 2017), incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 10-Q filed for the quarterly period ended March 31, 2017 (File No. 001-09924).
10.07.1*		Form of Citigroup Inc. Performance Share Unit Award Agreement (awards dated February 16, 2017 and in future years), incorporated by reference to Exhibit 10.01 to the Company's Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2017 (File No. 001-09924).
10.07.2*		Form of Citigroup Inc. Performance Share Unit Award Agreement (awards dated February 14, 2019 and in future years), incorporated by reference to Exhibit 10.01 to the Company's Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2019 (File No. 001-09924).
10.08*		Citigroup Management Committee Termination Notice and Non-Solicitation Policy, effective October 2, 2006, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on October 6, 2006

		(File No. 001-09924).
10.09.1*		Citicorp Deferred Compensation Plan, effective October 1995, incorporated by reference to Exhibit 10 to Citicorp's Registration Statement on Form S-8 filed on February 15, 1996 (File No. 333-00983).

10.09.2*		Amendment to the Citicorp Deferred Compensation Plan, incorporated by reference to Exhibit 10.18.2 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 1999 (File No. 001-09924) (the "Company's 1999 10-K").
10.09.3*		Amendment to the Citicorp Deferred Compensation Plan, effective as of September 28, 2001, incorporated by reference to Exhibit 10.17.3 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2001 (File No. 001-09924).
10.09.4*		Amendment to the Citicorp Deferred Compensation Plan, effective November 22, 2009, incorporated by reference to Exhibit 10.01.5 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2009 (File No. 001-09924) (the "Company's 2009 10-K").
10.10.1*		Supplemental ERISA Compensation Plan of Citibank, N.A. and Affiliates, as amended and restated (the "Citibank Supplemental ERISA Plan"), incorporated by reference to Exhibit 10.(G) to Citicorp's Annual Report on Form 10-K for the fiscal year ended December 31, 1997 (File No. 001-05378).
10.10.2*		Amendment to the Citibank Supplemental ERISA Plan, effective January 1, 2000, incorporated by reference to Exhibit 10.21.2 to the Company's 1999 10-K.
10.10.3*		Resolution Amending the Citibank Supplemental ERISA Plan, incorporated by reference to Exhibit 10.04.1 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2005 (File No. 001-09924).
10.10.4*		Amendment to the Citibank Supplemental ERISA Plan, effective January 1, 2009, incorporated by reference to Exhibit 10.01.4 to the Company's 2009 10-K.
10.10.5*		Amendment to the Citibank Supplemental ERISA Plan, effective November 22, 2009, incorporated by reference to Exhibit 10.01.5 to the Company's 2009 10-K.
10.10.6*		Amendment to the Citibank Supplemental ERISA Plan, effective December 31, 2012, incorporated by reference to Exhibit 10.01.6 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2012 (File No. 001-09924).
10.10.7*		Amendment to the Citibank Supplemental ERISA Plan, effective December 31, 2018, incorporated by reference to Exhibit 10.09.7 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2018 (File No. 001-09924).
10.11*		Citigroup Inc. Omnibus Non-Qualified Plan Amendment, effective as of June 2, 2014, incorporated by reference to Exhibit 10.01 to the Company's Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2014 (File No. 001-09924).
10.12*		Letter Agreement, dated December 21, 2011, between Citigroup Inc. and Michael Corbat, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on December 22, 2011 (File No. 001-09924).
10.13*		Citigroup Inc. Non-Employee Directors Compensation Plan (effective as of January 1, 2008), incorporated by reference to Exhibit 10.01 to the Company's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2007 (File No. 001-09924).
10.14+*		Citigroup Inc. Off-Cycle Award Agreement for Deferred Stock Award and Deferred Cash Award granted to Jane Fraser (dated November 25, 2019).
10.15+*		Agreement between Stephen Bird and Citibank, N.A. (dated November 8, 2019).

21.01+		Subsidiaries of Citigroup.

23.01+		Consent of KPMG LLP, Independent Registered Public Accounting Firm.
24.01+		Powers of Attorney.
31.01+		Certification of principal executive officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.02+		Certification of principal financial officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.01+		Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
99.01+		List of Securities Registered Pursuant to Section 12(b) of the Securities Exchange Act of 1934, formatted in inline XBRL.
101.01+		Financial statements from the Annual Report on Form 10-K of Citigroup for the fiscal year ended December 31, 2019, filed on February 21, 2020, formatted in inline XBRL: (i) the Consolidated Statement of Income, (ii) the Consolidated Balance Sheet, (iii) the Consolidated Statement of Changes in Equity, (iv) the Consolidated Statement of Cash Flows and (v) the Notes to Consolidated Financial Statements.
104		The cover page of this Current Report on Form 10-K, formatted in inline XBRL.

The total amount of securities authorized pursuant to any instrument defining rights of holders of long-term debt of the Company does not exceed 10% of the total assets of the Company and its consolidated subsidiaries. The Company will furnish copies of any such instrument to the SEC upon request.

Copies of any of the exhibits referred to above will be furnished at a cost of $0.25 per page (although no charge will be made for the 2019 Annual Report on Form 10-K) to security holders who make written request to Citigroup Inc., Corporate Governance, 388 Greenwich Street, New York, NY 10013.

* Denotes a management contract or compensatory plan or arrangement.
+ Filed herewith.