45757097/£60

In accordance with Regulation 32 of the Overseas Companies Regulations 2009.

OS AA01

Statement of details of parent law and other information for an overseas company

Companies House

✓ **What this form is for**
You may use this form to accompany your accounts disclosed under parent law.

✗ **What this form is NOT fo**
You cannot use this form t
an alteration of manner of
with accounting requireme

THURSDAY

AAEMEWG8
A10 07/10/2021 #234
COMPANIES HOUSE

Part 1 Corporate company name

Corporate name of overseas company ❶	Citibank, N.A.
UK establishment number	B R 0 0 1 0 1 8

→ **Filling in this form**
Please complete in typescript or in bold black capitals.

All fields are mandatory unless specified or indicated by *

❶ This is the name of the company in its home state.

Part 2 Statement of details of parent law and other information for an overseas company

A1 Legislation

Please give the legislation under which the accounts have been prepared and, if applicable, the legislation under which the accounts have been audited.

Legislation ❷	Laws of the United States

❷ This means the relevant rules or legislation which regulates the preparation and, if applicable, the audit of accounts.

A2 Accounting principles

Accounts

Have the accounts been prepared in accordance with a set of generally accepted accounting principles?

Please tick the appropriate box.

☐ **No.** Go to **Section A3.**

☑ **Yes.** Please enter the name of the organisation or other body which issued those principles below, and then go to **Section A3.**

Name of organisation or body ❸	Generally accepted accounting principles of the United States

❸ Please insert the name of the appropriate accounting organisation or body.

A3 Accounts

Accounts

Have the accounts been audited? Please tick the appropriate box.

☐ **No.** Go to **Section A5.**

☑ **Yes.** Go to **Section A4.**

A4 Audited accounts

Audited accounts

Have the accounts been audited in accordance with a set of generally accepted auditing standards?

Please tick the appropriate box.

☐ **No.** Go to **Part 3 'Signature'**.

☑ **Yes.** Please enter the name of the organisation or other body which issued those standards below, and then go to **Part 3 'Signature'**.

Name of organisation or body ❶

American Institute of Certified Public Accountants

❶ Please insert the name of the appropriate accounting organisation or body.

A5 Unaudited accounts

Unaudited accounts

Is the company required to have its accounts audited?

Please tick the appropriate box.

☐ **No.**

☐ **Yes.**

Part 3 Signature

I am signing this form on behalf of the overseas company.

Signature

Signature

X X

This form may be signed by:
Director, Secretary, Permanent representative.

OS AA01

Statement of details of parent law and other information for an overseas company

Presenter information

You do not have to give any contact information, but if you do it will help Companies House if there is a query on the form. The contact information you give will be visible to searchers of the public record.

Contact name	Company Secretary's Department
Company name	Citi
Address	Citigroup Centre
	Canada Square
	Canary Wharf
Post town	London
County/Region	
Postcode	E 1 4 5 L B
Country	
DX	
Telephone	

Checklist

We may return forms completed incorrectly or with information missing.

Please make sure you have remembered the following:

- ☐ The company name and, if appropriate, the registered number, match the information held on the public Register.
- ☐ You have completed all sections of the form, if appropriate.
- ☐ You have signed the form.

Important information

Please note that all this information will appear on the public record.

Where to send

You may return this form to any Companies House address:

England and Wales:
The Registrar of Companies, Companies House, Crown Way, Cardiff, Wales, CF14 3UZ.
DX 33050 Cardiff.

Scotland:
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DX ED235 Edinburgh 1
or LP - 4 Edinburgh 2 (Legal Post).

Northern Ireland:
The Registrar of Companies, Companies House, Second Floor, The Linenhall, 32-38 Linenhall Street, Belfast, Northern Ireland, BT2 8BG.
DX 481 N.R. Belfast 1.

Further information

For further information, please see the guidance notes on the website at www.companieshouse.gov.uk or email enquiries@companieshouse.gov.uk

This form is available in an alternative format. Please visit the forms page on the website at www.companieshouse.gov.uk

CITIBANK, N.A.

(an indirect wholly owned subsidiary of Citigroup Inc.)

Audited Consolidated Financial Statements
and Notes to the Consolidated Financial Statements

For the Years Ended December 31, 2020 and 2019

Information about Citibank and Citigroup is available on the web at www.citigroup.com. Additional information about Citibank and Citigroup, including a discussion of what management currently believes could be Citibank's and Citigroup's most significant risks and uncertainties, is included in Citigroup's Annual Report on Form 10-K for the year ended December 31, 2020, filed with the U.S. Securities and Exchange Commission (SEC) on February 26, 2021.

COVID-19 Pandemic

In addition to the widespread public health implications, the COVID-19 pandemic has had an extraordinary impact on macroeconomic conditions in the U.S. and around the world. Citibank's businesses, results of operations and financial condition have been impacted by economic dislocations and trends caused by the pandemic. Citibank had builds to its allowance for credit losses (ACL) of approximately $9.0 billion during 2020, bringing its total ACL to approximately $24.6 billion at December 31, 2020, with an allowance for credit losses on loans (ACLL) reserve ratio of 3.44% on funded loans.

Despite these impacts, Citibank has maintained strong capital and liquidity positions with consistently strong business operations. At December 31, 2020, Citibank had a Common Equity Tier 1 Capital ratio of 13.9% and a Supplementary Leverage ratio of 6.7%, both well above regulatory minimums.

Governments and central banks globally have taken a series of aggressive actions to support their economies and mitigate the systemic impacts of the pandemic, and Citibank continues to proactively assess and utilize these measures where appropriate.

Citibank's Consent Order Compliance

Citigroup and Citibank are embarking on a multiyear transformation, with the target outcome to change Citi's business and operating models such that they simultaneously strengthen risk and controls and improve Citi's value to customers, clients and shareholders.

One part of the broader transformation effort involves Citi's compliance with the Federal Reserve Board and Office of the Comptroller of the Currency (OCC) consent orders issued with Citigroup and Citibank, respectively, in October 2020. The consent orders require that Citigroup and Citibank submit acceptable plans to the Federal Reserve Board and the OCC, on various timelines, relating principally to various aspects of risk management, compliance, data quality management and governance, and internal controls. The consent order with the OCC also required Citibank to pay a $400 million civil money penalty (included in *Other operating expenses* in the Consolidated Statement of Income).

As a part of its compliance actions, Citi has centralized its program management under the leadership of a Chief Administrative Officer and is making the strengthening of its risk and control environment a further strategic priority for the Company. The Citigroup and Citibank Boards of Directors each formed a Transformation Oversight Committee, an ad hoc committee of each Board, to provide oversight of management's remediation efforts under the consent orders.

For additional information about the consent orders, see Citigroup's Current Report on Form 8-K filed with the SEC on October 7, 2020.

CITIBANK, N.A.

AUDITED CONSOLIDATED FINANCIAL STATEMENTS AND NOTES
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INDEPENDENT AUDITORS' REPORT

KPMG

The Board of Directors
Citibank, N.A.:

Report on the Financial Statements

We have audited the accompanying consolidated financial statements of Citibank, N.A. and its subsidiaries (the Company), which comprise the consolidated balance sheet as of December 31, 2020 and 2019, and the related consolidated statements of income, comprehensive income, changes in stockholder's equity and cash flows for the years then ended and the related notes to the consolidated financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

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, 2020 and 2019, and the results of its operations and its cash flows for the years then ended in accordance with U.S. generally accepted accounting principles.

Report on Internal Control Over Financial Reporting

We also have audited, in accordance with auditing standards generally accepted in the United States of America, the Company's internal control over financial reporting as of December 31, 2020, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), and our report dated March 31, 2021 expressed an unmodified opinion on the effectiveness of the Company's internal control over financial reporting.

Change in Accounting Principle

As discussed in Note 2 to the consolidated financial statements, the Company has changed its method of accounting for the recognition and measurement of credit losses as of January 1, 2020 due to the adoption of ASC Topic 326, *Financial Instruments—Credit Losses.*

Report on Other Legal and Regulatory Requirements

We do not express an opinion or any other form of assurance on management's statement referring to compliance with laws and regulations.

KPMG LLP

New York, New York
March 31, 2021

CONSOLIDATED FINANCIAL STATEMENTS

CONSOLIDATED STATEMENT OF INCOME

In millions of dollars		Year ended December 31, 2020		2019
Revenues				
Interest revenue	$	**47,423**	$	59,379
Interest expense		**8,284**		17,331
Net interest revenue	$	**39,139**	$	42,048
Commissions and fees	$	**3,763**	$	4,821
Principal transactions		**8,704**		5,947
Administration and other fiduciary fees		**2,772**		2,659
Realized gains on sales of investments, net		**1,391**		1,287
Impairment losses on investments:				
Impairment losses on investments and other assets		**(76)**		(20)
Provision for credit losses on AFS debt securities[1]		**2**		—
Net impairment losses recognized in earnings	$	**(74)**	$	(20)
Other revenue	$	**449**	$	1,385
Total non-interest revenues	$	**17,005**	$	16,079
Total revenues, net of interest expense	$	**56,144**	$	58,127
Provisions for credit losses and for benefits and claims				
Provision for credit losses on loans	$	**14,335**	$	7,082
Provision for credit losses on held-to-maturity (HTM) debt securities		**(2)**		—
Provision for credit losses on other assets		**9**		—
Policyholder benefits and claims		**24**		20
Provision for credit losses on unfunded lending commitments		**1,393**		72
Total provisions for credit losses and for benefits and claims	$	**15,759**	$	7,174
Operating expenses				
Compensation and benefits	$	**15,506**	$	14,854
Premises and equipment		**1,766**		1,796
Other operating		**12,043**		11,936
Total operating expenses	$	**29,315**	$	28,586
Income from continuing operations before income taxes	$	**11,070**	$	22,367
Provision for income taxes		**2,174**		4,909
Income from continuing operations	$	**8,896**	$	17,458
Discontinued operations				
Loss from discontinued operations	$	**(20)**	$	(31)
Benefit for income taxes		**—**		(27)
Loss from discontinued operations, net of taxes	$	**(20)**	$	(4)
Net income before attribution of noncontrolling interests	$	**8,876**	$	17,454
Noncontrolling interests		**48**		49
Citibank, N.A.'s net income	$	**8,828**	$	17,405

(1) In accordance with ASC 326.

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

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

In millions of dollars	Year ended December 31, 2020	2019
Citibank, N.A.'s net income	**$ 8,828**	$ 17,405
Add: Citibank, N.A.'s other comprehensive income (loss)		
Net change in unrealized gains and losses on debt securities, net of taxes[1]	**$ 3,130**	$ 1,593
Net change in debt valuation adjustment (DVA), net of taxes[1]	**—**	(2)
Net change in cash flow hedges, net of taxes	**1,478**	855
Benefit plans liability adjustment, net of taxes[2]	**33**	(263)
Net change in foreign currency translation adjustment, net of taxes and hedges	**316**	(404)
Net change in excluded component of fair value hedges, net of taxes	**(29)**	(16)
Citibank, N.A.'s total other comprehensive income	**$ 4,928**	$ 1,763
Citibank, N.A.'s total comprehensive income	**$ 13,756**	$ 19,168
Add: Other comprehensive income attributable to noncontrolling interests	**26**	—
Add: Net income attributable to noncontrolling interests	**48**	49
Total comprehensive income	**$ 13,830**	$ 19,217

(1) See Note 2 to the Consolidated Financial Statements.
(2) See Note 8 to the Consolidated Financial Statements.

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

CONSOLIDATED BALANCE SHEET

In millions of dollars	December 31, 2020	2019
Assets		
Cash and due from banks (including segregated cash and other deposits)	$ **23,972**	$ 20,752
Deposits with banks, net of allowance	**273,000**	161,594
Securities borrowed and purchased under agreements to resell (including $244 and $353 at December 31, 2020 and 2019, respectively, at fair value), net of allowance	**69,949**	73,871
Trading account assets (including $156 and $262 pledged to creditors at December 31, 2020 and 2019, respectively)	**154,575**	116,915
Investments:		
Available-for-sale debt securities (including $5,281 and $4,648 pledged to creditors as of December 31, 2020 and 2019, respectively), net of allowance	**309,068**	255,206
Held-to-maturity debt securities, net of allowance	**102,080**	77,886
Equity securities (including $170 and $133 at fair value as of December 31, 2020 and 2019, respectively, at fair value)	**5,814**	6,064
Total investments	$ **416,962**	$ 339,156
Loans:		
Consumer (including $14 and $18 as of December 31, 2020 and 2019, respectively, at fair value)	**273,976**	291,636
Corporate (including $4,426 and $1,813 as of December 31, 2020 and 2019, respectively, at fair value)	**369,123**	368,080
Loans, net of unearned income	$ **643,099**	$ 659,716
Allowance for credit losses on loans (ACLL)	**(22,123)**	(11,049)
Total loans, net	$ **620,976**	$ 648,667
Goodwill	**10,641**	10,467
Intangible assets (including mortgage servicing rights (MSRs) of $336 and $495 at December 31, 2020 and 2019, respectively, at fair value)	**4,435**	4,458
Other assets (including $1,742 and $1,254 at December 31, 2020 and 2019, respectively, at fair value), net of allowance	**86,757**	78,118
Total assets	$ **1,661,267**	$ 1,453,998

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, 2020	2019
Assets of consolidated VIEs to be used to settle obligations of consolidated VIEs		
Cash and due from banks	$ **243**	$ 69
Trading account assets	**911**	1,570
Investments	**723**	1,161
Loans, net of unearned income		
Consumer	**37,539**	46,951
Corporate	**16,987**	16,041
Loans, net of unearned income	$ **54,526**	$ 62,992
Allowance for credit losses on loans (ACLL)	**(3,794)**	(1,840)
Total loans, net	$ **50,732**	$ 61,152
Other assets	**38**	69
Total assets of consolidated VIEs to be used to settle obligations of consolidated VIEs	$ **52,647**	$ 64,021

Statement continues on the next page.

CONSOLIDATED BALANCE SHEET
(Continued)

In millions of dollars, except shares and per share amounts	December 31, 2020	2019
Liabilities		
Non-interest-bearing deposits in U.S. offices	$ **129,427**	$ 100,426
Interest-bearing deposits in U.S. offices (including $879 and $1,624 as of December 31, 2020 and 2019, respectively, at fair value)	**532,115**	435,689
Non-interest-bearing deposits in offices outside the U.S.	**77,986**	65,417
Interest-bearing deposits in offices outside the U.S. (including $1,079 and $695 as of December 31, 2020 and 2019, respectively, at fair value)	**542,543**	478,308
Total deposits	$ **1,282,071**	$ 1,079,840
Trading account liabilities	**76,582**	50,564
Securities loaned and sold under agreements to repurchase	**11,655**	13,029
Short-term borrowings (including $597 and $882 at December 31, 2020 and 2019, respectively, at fair value)	**16,819**	32,540
Long-term debt (including $633 and $579 as of December 31, 2020 and 2019, respectively, at fair value)	**69,714**	83,183
Accrued taxes and other expenses	**7,671**	8,218
Other liabilities (including $1 and $0 as of December 2020 and 2019, respectively, at fair value), including allowance	**36,886**	35,888
Total liabilities	$ **1,501,398**	$ 1,303,262
Citibank, N.A. stockholder's equity		
Preferred stock ($1.00 par value; authorized share: 1, issued share: 1 as of December 31, 2020 and 2019)	$ **2,100**	$ 2,100
Capital stock ($20 par value; authorized shares: 41,500,000, outstanding shares: **37,534,553** at both December 31, 2020 and 2019)	**751**	751
Surplus	**146,590**	146,331
Retained earnings	**24,851**	20,974
Accumulated other comprehensive loss	**(15,106)**	(20,034)
Total Citibank, N.A. stockholder's equity	$ **159,186**	$ 150,122
Noncontrolling interests	**683**	614
Total equity	$ **159,869**	$ 150,736
Total liabilities and equity	$ **1,661,267**	$ 1,453,998

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 Citibank, N.A.

In millions of dollars	December 31, 2020	2019
Liabilities of consolidated VIEs for which creditors or beneficial interest holders do not have recourse to the general credit of Citibank, N.A.		
Short-term borrowings	$ **9,278**	$ 10,031
Long-term debt	**16,414**	20,629
Other liabilities	**326**	780
Total liabilities of consolidated VIEs for which creditors or beneficial interest holders do not have recourse to the general credit of Citibank, N.A.	$ **26,018**	$ 31,440

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

CONSOLIDATED STATEMENT OF CHANGES IN STOCKHOLDER'S EQUITY

In millions of dollars, except shares	Year ended December 31, 2020	2019
Preferred stock ($1 par value)		
Balance, beginning of year	$ 2,100	$ 2,100
Balance, end of year	$ 2,100	$ 2,100
Common stock ($20 par value)		
Balance, beginning of year—shares: 37,534,553 in 2020 and 2019	$ 751	$ 751
Balance, end of year—shares: 37,534,553 in 2020 and 2019	$ 751	$ 751
Surplus		
Balance, beginning of year	$ 146,331	$ 146,116
Capital contribution from parent company[1]	263	212
Employee benefit plans	—	12
Unearned compensation	(4)	(9)
Balance, end of year	$ 146,590	$ 146,331
Retained earnings		
Balance, beginning of year	$ 20,974	$ 20,805
Adjustments to opening balance, net of taxes[2]		
Financial instruments—credit losses (CECL adoption)	(2,879)	—
Variable post-charge-off third-party collection costs	301	—
Lease accounting	—	127
Adjusted balance, beginning of year	$ 18,396	$ 20,932
Citibank, N.A.'s net income	8,828	17,405
Dividends paid to parent company	(2,218)	(17,161)
Preferred dividends[3]	(32)	(126)
Mark-to-market on equity-related awards	(121)	(61)
Other	(2)	(15)
Balance, end of year	$ 24,851	$ 20,974
Accumulated other comprehensive loss		
Balance, beginning of year	$ (20,034)	$ (21,797)
Net change in Citibank, N.A.'s accumulated other comprehensive loss	4,928	1,763
Balance, end of year	$ (15,106)	$ (20,034)
Total Citibank, N.A. stockholder's equity	$ 159,186	$ 150,122
Noncontrolling interests		
Balance, beginning of year	$ 614	$ 608
Net income attributable to noncontrolling interest shareholders	48	49
Dividends paid to noncontrolling interest shareholders	(2)	(36)
Net change in accumulated other comprehensive income (loss)	26	—
All other	(3)	(7)
Net change in noncontrolling interests	$ 69	$ 6
Balance, end of year	$ 683	$ 614
Total equity	$ 159,869	$ 150,736

(1) Includes the impact of Citigroup affiliates transferred into Citibank, N.A.
(2) See "Accounting Changes" in Note 2 to the Consolidated Financial Statements.
(3) Represents preferred dividends declared and remitted to Citibank's parent, Citicorp.

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

CONSOLIDATED STATEMENT OF CASH FLOWS

In millions of dollars	Year ended December 31, 2020	2019
Cash flows from operating activities of continuing operations		
Net income before attribution of noncontrolling interests	**$ 8,876**	$ 17,454
Net income attributable to noncontrolling interests	**48**	49
Citibank, N.A.'s net income	**$ 8,828**	$ 17,405
Loss from discontinued operations, net of taxes	**(20)**	(4)
Income from continuing operations—excluding noncontrolling interests	**$ 8,848**	$ 17,409
Adjustments to reconcile net income to net cash provided by (used in) operating activities of continuing operations—excluding noncontrolling interests		
Depreciation and amortization	**3,504**	3,517
Deferred income taxes	**(3,012)**	$ (708)
Provision for credit losses on loans and unfunded lending commitments	**15,728**	7,154
Realized gains from sales of investments	**(1,391)**	(1,287)
Impairment losses on investments and other assets	**76**	20
Change in trading account assets	**(37,714)**	(10,032)
Change in trading account liabilities	**26,018**	(4,986)
Change in loans held-for-sale	**970**	(590)
Change in other assets	**(5,880)**	4,333
Change in other liabilities	**(395)**	(1,684)
Other, net	**(3,738)**	12,881
Total adjustments	**$ (5,834)**	$ 8,618
Net cash provided by operating activities of continuing operations—excluding noncontrolling interests	**$ 3,014**	$ 26,027
Cash flows from investing activities of continuing operations		
Change in securities borrowed and purchased under agreements to resell	**$ 3,922**	$ (13,546)
Change in loans, net	**8,407**	(20,675)
Proceeds from sales and securitizations of loans	**1,450**	2,676
Purchases of investments	**(320,393)**	(266,051)
Proceeds from sales of investments	**135,352**	136,554
Proceeds from maturities of investments	**124,539**	114,291
Capital expenditures on premises and equipment and capitalized software	**(3,107)**	(4,942)
Proceeds from sales of premises and equipment, subsidiaries and affiliates and repossessed assets	**45**	249
Other, net	**101**	175
Net cash used in investing activities of continuing operations	**$ (49,684)**	$ (51,269)
Cash flows from financing activities of continuing operations		
Dividends paid	**$ (2,250)**	$ (17,287)
Capital contributions from parent company	**263**	212
Change in securities loaned and sold under agreements to repurchase	**(1,374)**	142
Issuance of long-term debt	**20,554**	28,929
Payments and redemptions of long-term debt	**(40,885)**	(38,160)
Change in deposits	**202,231**	54,707
Change in short-term borrowings	**(15,721)**	4,294
Net cash provided by financing activities of continuing operations	**$ 162,818**	$ 32,837
Effect of exchange rate changes on cash and due from banks	**$ (1,522)**	$ (973)

Statement continues on the next page.

CONSOLIDATED STATEMENT OF CASH FLOWS
(Continued)

In millions of dollars	Year ended December 31, 2020	2019
Change in cash, due from banks and deposits with banks	**$ 114,626**	$ 6,622
Cash, due from banks and deposits with banks at beginning of year	**182,346**	175,724
Cash, due from banks and deposits with banks at end of year	**$ 296,972**	$ 182,346
Cash and due from banks (including segregated cash and other deposits)	**$ 23,972**	$ 20,752
Deposits with banks, net of allowance	**273,000**	161,594
Cash, due from banks and deposits with banks at end of year	**$ 296,972**	$ 182,346
Supplemental disclosure of cash flow information for continuing operations		
Cash paid during the year for income taxes	**$ 5,853**	$ 4,752
Cash paid during the year for interest	**7,482**	16,476
Non-cash investing activities		
Transfers to loans held-for-sale from loans	**$ 2,602**	$ 5,300

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

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

1. ORGANIZATION

Citibank, N.A. (together with its consolidated subsidiaries, "Citibank" or "the Company") is a direct, wholly owned subsidiary of Citicorp LLC (Citicorp), which is a direct, wholly owned subsidiary of Citigroup Inc., a Delaware corporation and a financial holding company under the Bank Holding Company Act (Citigroup and its consolidated subsidiaries are referred to herein as "Citigroup"). Citibank was originally organized in 1812 and is currently a national banking association organized under the National Bank Act of 1864. Citibank's principal offerings include consumer finance, credit cards, mortgage lending and retail banking products and services; investment banking, commercial banking, cash management, trade finance and e-commerce products and services; and private banking products and services.

At December 31, 2020, Citibank had 698 U.S. branches within 11 states and the District of Columbia and 213 non-U.S. branches in 52 countries and territories (including branches of subsidiaries in certain countries around the world).

Significant Citigroup legal entities that are not a part of Citibank include Banco Nacional de México (Citibanamex) and primary broker-dealer subsidiaries, including Citigroup Global Markets Inc. (CGMI) and Citigroup Global Markets Limited (CGML).

The Company is subject to regulation and examination primarily by the Office of the Comptroller of the Currency (OCC) and also by the Federal Deposit Insurance Corporation (FDIC) and the Federal Reserve Board (FRB). The foreign branches, representative offices and subsidiaries of Citibank are subject to regulation and examination by their respective country's financial regulators as well as by the OCC and the FRB.

In connection with the filing of Citigroup's 2017 Resolution Plan with the Board of Governors of the FRB and the FDIC pursuant to Title I of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, Citigroup executed an inter-affiliate agreement (the "Citi Support Agreement") with Citicorp, Citigroup's operating material legal entities (as identified in the public section of Citigroup's 2019 Resolution Plan, which can be found on the FRB's and FDIC's websites), 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. 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
- 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.

These Consolidated Financial Statements and Notes to the Consolidated Financial Statements have been prepared in conformity with generally accepted accounting principles in the United States (GAAP).

Certain reclassifications have been made to the prior period's financial statements and notes to conform to the current period's presentation.

The Company has evaluated subsequent events through March 31, 2021, which is the date its Consolidated Financial Statements were issued. See Note 28 to the Consolidated Financial Statements.

Additional information about Citibank and Citigroup is available in the Consolidated Financial Statements and Notes to the Consolidated Financial Statements of Citigroup in its Annual Report on Form 10-K for the year ended December 31, 2020, filed with the U.S. Securities and Exchange Commission on February 26, 2021.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Principles of Consolidation
The Consolidated Financial Statements include the accounts of Citibank and its subsidiaries prepared in accordance with U.S. 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 in which 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 18 to the Consolidated Financial Statements, Citibank consolidates entities deemed to be variable interest entities when Citibank 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*.

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, Citibank 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 18 to the Consolidated Financial Statements for more detailed information.

Foreign Currency Translation
Assets and liabilities of Citibank'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) (AOCI)*, a component of stockholder's 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 Citibank'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 (HTM) 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 (AFS) are carried at fair value with changes in fair value reported in *AOCI*, a component of stockholder's 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 include securities held in HTM or AFS, and equity securities accounted for under the Measurement Alternative or equity method. These securities are subject to evaluation for impairment as described in Note 13 to the Consolidated Financial Statements for HTM securities and in Note 11 for AFS, Measurement Alternative and equity method investments. 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 21 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 22 to the Consolidated Financial Statements, certain assets that Citibank 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 Citibank has elected to carry at fair value (as described in Note 22 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 22 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 19 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 21 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 22 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 21 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 22 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 21 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 22 to the Consolidated Financial Statements, Citibank 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 the investing activities category in the Consolidated Statement of Cash Flows in *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 in *Proceeds from sales and securitizations of loans*.

Consumer Loans

Consumer loans represent loans and leases managed primarily by the Company's consumer businesses.

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, Citibank generally accrues interest until payments are 180 days past due. As a result of OCC guidance, home equity loans 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 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. 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 (other than for loan modifications made through the CARES Act relief provisions or banking agency guidance for pandemic-related issues) 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

Citibank'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 Citibank's charge-off policy, whichever occurs earlier.
- Real estate-secured loans that were 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 Citibank's charge-off policy, whichever is earlier.

Corporate Loans

Corporate loans represent loans and leases managed by the Company's corporate banking businesses. 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 uncollectible. 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 (HFS)
Corporate and consumer loans that have been identified for sale are classified as loans HFS and included in *Other assets*. The practice of Citibank'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 in *Change in loans held-for-sale*.

Allowances for Credit Losses (ACL)
Commencing January 1, 2020, Citibank adopted Accounting Standards Update (ASC) 326, *Financial Instruments—Credit Losses*, using the methodologies described below. For information about Citibank's accounting for loan losses prior to January 1, 2020, see "Superseded Accounting Principles" below.

The current expected credit losses (CECL) methodology is based on relevant information about past events, including historical experience, current conditions and reasonable and supportable (R&S) forecasts that affect the collectability of the reported financial asset balances. If the asset's life extends beyond the R&S forecast period, then historical experience is considered over the remaining life of the assets in the ACL. The resulting ACL is adjusted in each subsequent reporting period through *Provisions for credit losses* in the Consolidated Statement of Income to reflect changes in history, current conditions and forecasts as well as changes in asset positions and portfolios. ASC 326 defines the ACL as a valuation account that is deducted from the amortized cost of a financial asset to present the net amount that management expects to collect on the financial asset over its expected life. All financial assets carried at amortized cost are in the scope of ASC 326, while assets measured at fair value are excluded. See Note 13 to the Consolidated Financial Statements for a discussion of impairment on AFS securities.

Increases and decreases to the allowances are recorded in *Provisions for credit losses*. The CECL methodology utilizes a lifetime expected credit loss (ECL) measurement objective for the recognition of credit losses for held-for-investment (HFI) loans, HTM debt securities, receivables and other financial assets measured at amortized cost at the time the financial asset is originated or acquired. Within the life of a loan or other financial asset, the methodology generally results in the earlier recognition of the provision for credit losses and the related ACL than prior U.S. GAAP.

Estimation of ECLs requires Citibank to make assumptions regarding the likelihood and severity of credit loss events and their impact on expected cash flows, which drive the probability of default (PD), loss given default (LGD) and exposure at default (EAD) models and, where Citibank discounts the ECL, using discounting techniques for certain products. Where the asset's life extends beyond the R&S forecast period, Citibank considers historical experience over the remaining life of the assets in estimating the ACL.

Citibank uses a multitude of variables in its macroeconomic forecast as part of its calculation of both the qualitative and quantitative components of the ACL, including both domestic and international variables for its global portfolios and exposures. Citibank's forecasts of the U.S. unemployment rate and U.S. Real GDP growth rate represent the key macroeconomic variables that most significantly affect its estimate of its consumer and corporate ACLs. Under the quantitative base scenario, Citibank's December 31, 2020 forecasts are for U.S. unemployment to continue to improve as the U.S. moves past the peak of the health and economic crisis. The downside scenario incorporates more adverse economic conditions and subsequently higher unemployment rates and slower GDP recovery.

The following are the main factors and interpretations that Citibank considers when estimating the ACL under the CECL methodology:

- The most important reasons for the 2020 change in the ACL since the adoption of CECL on January 1, 2020 are the pandemic and the resulting economic recessions, which led to higher unemployment and lower GDP forecasts than were expected at the beginning of the year; the impact of government stimulus and relief programs; and portfolio changes and lower loan balances resulting from changed customer spending patterns.
- CECL reserves are estimated over the contractual term of the financial asset, which is adjusted for expected prepayments. Expected extensions are generally not considered unless the option to extend the loan cannot be canceled unilaterally by Citibank. Modifications are also not considered, unless Citibank has a reasonable expectation that it will execute a troubled debt restructuring (TDR).
- Credit enhancements that are not freestanding (such as those that are included in the original terms of the contract or those executed in conjunction with the lending transaction) are considered loss mitigants for purposes of CECL reserve estimation.
- For unconditionally cancelable accounts such as credit cards, reserves are based on the expected life of the balance as of the evaluation date (assuming no further charges) and do not include any undrawn commitments that are unconditionally cancelable. Reserves are included for undrawn commitments for accounts that are not unconditionally cancelable (such as letters of credit and

corporate loan commitments, HELOCs (Home Equity Lines of Credit), undrawn mortgage loan commitments and financial guarantees).

- CECL models are designed to be economically sensitive. They utilize the macroeconomic forecasts provided by Citibank's economic forecasting team (EFT) that are approved by senior management. Analysis is performed and documented to determine the necessary qualitative management adjustment (QMA) to capture forward-looking macroeconomic expectations and model uncertainty.
- The portion of the forecast that reflects the EFT's reasonable and supportable (R&S) period indicates the maximum length of time its models can produce a R&S macroeconomic forecast, after which mean reversion reflecting historical loss experience is used for the remaining life of the loan to estimate expected credit losses. For the loss forecast, businesses consume the macroeconomic forecast as determined to be appropriate and justifiable.

Citibank's ability to forecast credit losses over the R&S period is based on the ability to forecast economic activity over a reasonable and supportable time window. The R&S period reflects the overall ability to have a reasonable and supportable forecast of credit loss based on economic forecasts.

- The loss models consume all or a portion of the R&S economic forecast and then revert to historical loss experience. The R&S forecast period for consumer loans is 13 quarters and, in most cases, reverts to historically based loss experience either immediately or using a straight-line approach thereafter, while the R&S period for wholesale is nine quarters with an additional straight-line reversion period of three quarters for ECL parameters.
- The ACL incorporates provisions for accrued interest on products that are not subject to a non-accrual and timely write-off policy (e.g., cards and Ready Credit, etc.).
- The reserves for TDRs are calculated using the discounted cash flow method and consider appropriate macroeconomic forecast data for the exposure type. For TDR loans that are collateral dependent, the ACL is based on the fair value of the collateral.
- Citibank uses the most recent available information to inform its macroeconomic forecasts, allowing sufficient time for analysis of the results and corresponding approvals. Key variables are reviewed for significant changes through year end and changes to portfolio positions are reflected in the ACL.
- Reserves are calculated at an appropriately granular level and on a pooled basis where financial assets share risk characteristics. At a minimum, reserves are calculated at a portfolio level (product and country). Where a financial asset does not share risk characteristics with any of the pools, it is evaluated for credit losses individually.

Quantitative and Qualitative Components of the ACL

The loss likelihood and severity models use both internal and external information and are sensitive to forecasts of different macroeconomic conditions. For the quantitative component, Citibank uses a single forward-looking macroeconomic forecast, complemented by the qualitative component that reflects economic uncertainty due to a different possible more adverse scenario for estimating the ACL. Estimates of these ECLs are based upon (i) Citibank's internal system of credit risk ratings; (ii) historical default and loss data, including comprehensive internal history and rating agency information regarding default rates and internal data on the severity of losses in the event of default; and (iii) a R&S forecast of future macroeconomic conditions. ECL is determined primarily by utilizing models for the borrowers' PD, LGD and EAD. 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.

Any adjustments needed to the modeled expected losses in the quantitative calculations are addressed through a qualitative adjustment. The qualitative adjustment considers, among other things: the uncertainty of forward-looking scenarios based on the likelihood and severity of a possible recession; the uncertainty of economic conditions related to an alternative downside scenario; certain portfolio characteristics and concentrations; collateral coverage; model limitations; idiosyncratic events; and other relevant criteria under banking supervisory guidance for loan loss reserves. The qualitative adjustment also reflects the estimated impact of the pandemic on the economic forecasts and the impact on credit loss estimates. The total ACL is composed of the quantitative and qualitative components.

Consumer Loans

For consumer loans, most portfolios including North America cards, mortgages and personal installment loans (PILs) are covered by the PD, LGD and EAD loss forecasting models. Some smaller international portfolios are covered by econometric models where the gross credit loss (GCL) rate is forecasted. The modeling of all retail products is performed by examining risk drivers for a given portfolio; these drivers relate to exposures with similar credit risk characteristics and consider past events, current conditions and R&S forecasts. Under the PD x LGD x EAD approach, GCLs and recoveries are captured on an undiscounted basis. Citibank incorporates expected recoveries on loans into its reserve estimate, including expected recoveries on assets previously written off.

CECL defines the exposure's expected life as the remaining contractual maturity including any expected prepayments. Subsequent changes to the contractual terms that are the result of a re-underwriting are not included in the loan's expected CECL life.

Citibank does not establish reserves for the uncollectible accrued interest on non-revolving consumer products, such as mortgages and installment loans, which are subject to a non-accrual and timely write-off policy. As such, only the principal balance is subject to the CECL reserve methodology and interest does not attract a further reserve. ASC 310-deferred origination costs and fees related to new account originations are amortized within a 12-month period, and an ACL is provided for components in the scope of the ASC.

Separate valuation allowances are determined for impaired smaller-balance homogeneous loans whose terms have been modified in a 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 ACL for TDRs is determined using a discounted cash flow (DCF) approach. When a DCF approach is used, the initial allowance for ECLs is calculated as the expected contractual cash flows discounted at the loan's original effective interest rate. DCF techniques are applied only for consumer loans classified as TDR loan exposures.

For cards, Citibank uses the payment rate approach, which leverages payment rate curves, to determine the payments that should be applied to liquidate the end-of-period balance (CECL balance) in the estimation of EAD. The payment rate approach uses customer payment behavior (payment rate) to establish the portion of the CECL balance that will be paid each month. These payment rates are defined as the percentage of principal payments received in the respective month divided by the prior month's billed principal balance. The liquidation (CECL payment) amount for each forecast period is determined by multiplying the CECL balance by that period's forecasted payment rate. The cumulative sum of these payments less the CECL balance produces the balance liquidation curve. Citibank does not apply a non-accrual policy to credit card receivables; rather, they are subject to full charge-off at 180 days past due. As such, the entire customer balance up until write-off, including accrued interest and fees, will be subject to the CECL reserve methodology.

Corporate Loans and HTM Securities

Citibank records allowances for credit losses on all financial assets carried at amortized cost that are in the scope of CECL, including corporate loans classified as HFI and HTM debt securities. Discounting techniques are applied for corporate loans classified as HFI and HTM securities and non-accrual/ TDR loan exposures. All cash flows are fully discounted to the reporting date. The ACL includes Citibank's estimate of all credit losses expected to be incurred over the estimated full contractual life of the financial asset. The contractual life of the financial asset does not include expected extensions, renewals or modifications, except for instances where the Company reasonably expects to extend the tenor of the financial asset pursuant to a future TDR. Where Citibank has an unconditional option to extend the contractual term, Citibank does not consider the potential extension in determining the contractual term; however, where the borrower has the sole right to exercise the extension option without Citibank's approval, Citibank does consider the potential extension in determining the contractual term. The decrease in credit losses under CECL at the date of adoption on January 1, 2020, compared with the prior incurred loss methodology, is largely due to more precise contractual maturities that result in shorter remaining tenors, the incorporation of recoveries and use of more specific historical loss data based on an increase in portfolio segmentation across industries and geographies.

The Company primarily bases its ACL on models that assess the likelihood and severity of credit events and their impact on cash flows under R&S forecasted economic scenarios. Allowances consider the probability of the borrower's default, the loss the Company would incur upon default and the borrower's exposure at default. Such models discount the present value of all future cash flows, using the asset's effective interest rate (EIR). Citibank applies a more simplified approach based on historical loss rates to certain exposures recorded in *Other assets* and certain loan exposures in the private bank.

The Company considers the risk of nonpayment to be zero for U.S. Treasuries and U.S. government-sponsored agency guaranteed mortgage-backed securities (MBS) and, as such, Citibank does not have an ACL for these securities. For all other HTM debt securities, ECLs are estimated using PD models and discounting techniques, which incorporate assumptions regarding the likelihood and severity of credit losses. For structured securities, specific models use relevant assumptions for the underlying collateral type. A discounting approach is applied to HTM direct obligations of a single issuer, similar to that used for corporate HFI loans.

Other Financial Assets with Zero Expected Credit Losses

For certain financial assets, zero expected credit losses will be recognized where the expectation of nonpayment of the amortized cost basis is zero, based on there being no history of loss and the nature of the receivables.

Secured Financing Transactions

Most of Citibank's reverse repurchase agreements, securities borrowing arrangements and margin loans require that the borrower continually adjust the amount of the collateral securing Citibank's interest, primarily resulting from changes in the fair value of such collateral. In such arrangements, ACLs are recorded based only on the amount by which the asset's amortized cost basis exceeds the fair value of the collateral. No ACLs are recorded where the fair value of the collateral is equal to or exceeds the asset's amortized cost basis, as Citibank does not expect to incur credit losses on such well-collateralized exposures. For certain margin loans presented in *Loans* on the Consolidated Balance Sheet, credit losses are estimated using the same approach as corporate loans.

Accrued Interest

CECL permits entities to make an accounting policy election not to reserve for interest, if the entity has a policy in place that will result in timely reversal or write-off of interest. However, when a non-accrual or timely charge-off policy is not applied, an ACL is recognized on accrued interest. For HTM debt securities, Citibank established a non-accrual policy that results in timely write-off of accrued interest. For corporate loans, where a timely charge-off policy is used, Citibank has elected to recognize an ACL on accrued interest receivable. The LGD models for corporate loans include an adjustment for estimated accrued interest.

Reasonably Expected TDRs
For corporate loans, the reasonable expectation of TDR concept requires that the contractual life over which ECLs are estimated be extended when a TDR that results in a tenor extension is reasonably expected. Reasonably expected TDRs are included in the life of the asset. A discounting technique or collateral-dependent practical expedient is used for non-accrual and TDR loan exposures that do not share risk characteristics with other loans and are individually assessed. Loans modified in accordance with the CARES Act and bank regulatory guidance are not classified as TDRs.

Purchased Credit Deteriorated (PCD) Assets
ASC 326 requires entities that have acquired financial assets (such as loans and HTM securities) with an intent to hold, to evaluate whether those assets have experienced a more-than-insignificant deterioration in credit quality since origination. These assets are subject to specialized accounting at initial recognition under CECL. Subsequent measurement of PCD assets will remain consistent with other purchased or originated assets, i.e., non-PCD assets. CECL introduces the notion of PCD assets, which replaces purchased credit impaired (PCI) accounting under prior U.S. GAAP.

CECL requires the estimation of credit losses to be performed on a pool basis unless a PCD asset does not share characteristics with any pool. If certain PCD assets do not meet the conditions for aggregation, those PCD assets should be accounted for separately. This determination must be made at the date the PCD asset is purchased. In estimating ECLs from day 2 onward, pools can potentially be reassembled based upon similar risk characteristics. When PCD assets are pooled, Citibank determines the amount of the initial ACL at the pool level. The amount of the initial ACL for a PCD asset represents the portion of the total discount at acquisition that relates to credit and is recognized as a "gross-up" of the purchase price to arrive at the PCD asset's (or pool's) amortized cost. Any difference between the unpaid principal balance and the amortized cost is considered to be related to non-credit factors and results in a discount or premium, which is amortized to interest income over the life of the individual asset (or pool). Direct expenses incurred related to the acquisition of PCD assets and other assets and liabilities in a business combination are expensed as incurred. Subsequent accounting for acquired PCD assets is the same as the accounting for originated assets; changes in the allowance are recorded in *Provisions for credit losses*.

Consumer
Citibank does not purchase whole portfolios of PCD assets in its retail businesses. However, there may be a small portion of a purchased portfolio that is identified as PCD at the purchase date. Interest income recognition does not vary between PCD and non-PCD assets. A consumer financial asset is considered to be more-than-insignificantly credit deteriorated if it is more than 30 days past due at the purchase date.

Corporate
Citibank generally classifies wholesale loans and debt securities classified HTM or AFS as PCD when both of the following criteria are met: (i) the purchase price discount is at least 10% of par and (ii) the purchase date is more than 90 days after the origination or issuance date. Citibank classifies HTM beneficial interests rated AA- and lower obtained at origination from certain securitization transactions as PCD when there is a significant difference (i.e., 10% or greater) between contractual cash flows, adjusted for prepayments, and expected cash flows at the date of recognition.

Reserve Estimates and Policies
Management provides reserves for an estimate of lifetime ECLs in the funded loan portfolio on the Consolidated Balance Sheet in the form of an ACL. These reserves are established in accordance with Citibank's credit reserve policies, as approved by the Audit Committee of the Board of Directors. Citibank's Chief Risk Officer and Chief Financial Officer review the adequacy of the credit loss reserves each quarter with risk management and finance representatives for each applicable business area. Applicable business areas include those having classifiably managed portfolios, where internal credit risk ratings are assigned 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 credit 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 ACL 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 *Provisions for credit losses*.

Estimated credit losses in the delinquency-managed portfolios for performing exposures.
In addition, risk management and finance representatives 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 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, size and diversity of individual large credits and 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
Credit loss reserves are recognized on all off-balance sheet commitments that are not unconditionally cancelable. Corporate loan EAD models include an incremental usage factor (or credit conversion factor) to estimate ECLs on amounts undrawn at the reporting date. Off-balance sheet commitments include unfunded exposures, revolving facilities, securities underwriting commitments, letters of credit, HELOCs and financial guarantees, which excludes performance guarantees. 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 credit losses on 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* and upon the adoption of ASU No. 2017-04 on January 1, 2020, 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 quantitative 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 quantitative test.

The quantitative test 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, an impairment loss is recognized in an amount equal to that excess, limited to the total amount of goodwill allocated to that reporting unit.

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 Citibank's goodwill impairment testing can be found in Note 14 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 payables.

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.

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 where the debt is in a fair value hedging relationship.

Securitizations
There are two key accounting determinations that must be made relating to securitizations. Citibank 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 U.S. 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 Citibank 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 Citibank 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 Citibank'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 Citibank 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 Citibank's Consolidated Balance Sheet.

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 18 to the Consolidated Financial Statements for further discussion.

Risk Management Activities—Derivatives Used for Hedging Purposes
The Company manages its exposures to market rate 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 19 to the Consolidated Financial Statements for a further discussion of the Company's hedging and derivative activities.

Instrument-Specific Credit Risk
Citibank 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 its 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 *AOCI* and periodic plan expense. The Company recognizes its proportionate share of Citigroup's benefit plans' assets, liabilities, *AOCI* and benefit 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 Citigroup 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 on 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 income tax provision and related income tax assets and liabilities.

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. See Note 26 to the Consolidated Financial Statements for details on the Company's related party transactions.

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 disclosure about credit risk. Citibank adopted the ASU as of January 1, 2020, which, as discussed below, resulted in an increase in Citibank'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 ACL 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 ACL than prior U.S. GAAP. For available-for-sale debt securities where fair value is less than cost, that Citibank intends to hold or more-likely-than-not will not be required to sell, credit-related impairment, if any, is recognized through an ACL 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 Citibank's view of the current state of the economy, forecasted macroeconomic conditions and Citibank'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 Citibank was an approximate $3.7 billion, or an approximate 31%, pretax increase in the *Allowance for credit losses*, along with a $2.9 billion after-tax decrease in *Retained earnings* and a deferred tax asset increase of $0.8 billion. This transition impact reflects (i) a $4.4 billion build to the *Allowance for credit losses* for Citibank'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 $0.7 billion of reserves, primarily related to Citibank'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. Citibank'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, Citibank'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.

Citibank'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.

Accounting for Variable Post-Charge-Off Third-Party Collection Costs

During 2020 Citibank changed its accounting for variable post-charge-off third-party collection costs, whereby these costs were accounted for as an increase in expenses as incurred rather than a reduction in expected credit recoveries. Citibank concluded that such a change in the method of accounting is preferable in Citibank's circumstances as it better reflects the nature of these collection costs. That is, these costs do not represent reduced payments from borrowers and are similar to Citibank's other executory third-party vendor contracts that are accounted for as operating expenses as incurred. Citibank considered this change to be a "change in accounting principle," which requires an adjustment to opening retained earnings, with retrospective application to the earliest period presented in accordance with ASC Topic 250, *Accounting Changes and Error Corrections*. Citibank believes that the effects of the revisions were not material to any previously reported annual period. As a result, Citibank's 2020 results reflect this change as if it were effective as of January 1, 2020 (impacts to 2019 were de minimis). Accordingly, Citibank recorded an increase to its beginning retained earnings on January 1, 2020 of $301 million and a decrease of $395 million to its ACL.

Reference Rate Reform

In March 2020, the FASB issued ASU No. 2020-04, *Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting*, which provides optional guidance to ease the potential burden in accounting for (or recognizing the effects of) reference rate reform on financial reporting. Specifically, the guidance permits an entity, when certain criteria are met, to consider amendments to contracts made to comply with reference rate reform to meet the definition of a modification under U.S. GAAP. It further allows hedge accounting to be maintained and permits a one-time transfer or sale of qualifying held-to-maturity securities. The expedients and exceptions provided by the amendments are permitted to be adopted any time through December 31, 2022 and do not apply to contract modifications made and hedging relationships entered into or evaluated after December 31, 2022, except for certain optional expedients elected for certain hedging relationships existing as of December 31, 2022. The ASU was adopted by Citibank as of June 30, 2020 with prospective application and did not impact financial results in 2020.

In January 2021, the FASB issued ASU No. 2021-01, *Reference Rate Reform (Topic 848): Scope*, which clarifies that the scope of the initial accounting relief issued by the FASB in March 2020 includes derivative instruments that do not reference a rate that is expected to be discontinued but that use an interest rate for margining, discounting or contract price alignment that is modified as a result of reference rate reform (commonly referred to as the "discounting transition"). The amendments do not apply to contract modifications made after December 31, 2022, new hedging relationships entered into after December 31, 2022, and existing hedging relationships evaluated for effectiveness in periods after December 31, 2022, except for hedging relationships existing as of December 31, 2022, that apply certain optional expedients in which the accounting effects are recorded through the end of the hedging relationship. The ASU was adopted by Citibank on a full retrospective basis upon issuance and did not impact financial results in 2020.

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, is largely unchanged.

Effective January 1, 2019, Citibank prospectively adopted the provisions of the ASU. At adoption, Citibank recognized a lease liability and a corresponding ROU asset of approximately $3.1 billion on the Consolidated Balance Sheet related to its future lease payments as a lessee under operating leases. In addition, Citibank recorded a $127 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 12 and 23 for additional details.

Citibank has elected not to separate lease and non-lease components in its lease contracts and accounts for them as a single lease component. Citibank 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 Citibank 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, Citibank 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. Citibank 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 Citibank is reasonably certain to exercise such options.

Lessor accounting
Lessor accounting is largely unchanged under the ASU. Citibank acts as a lessor for power, railcar, shipping and aircraft assets where Citibank has executed operating, direct financing and leveraged leasing arrangements. In a direct financing or a leveraged lease, Citibank derecognizes the leased asset and records a lease financing receivable at lease commencement in *Loans*. Upon lease termination, Citibank 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, Citibank subleases excess real estate space via operating lease arrangements.

FUTURE ACCOUNTING STANDARDS

Long-Duration Insurance Contracts

In August 2018, the FASB issued ASU No. 2018-12, *Financial Services—Insurance: Targeted Improvements to the Accounting for Long-Duration Contracts*, which changes the existing recognition, measurement, presentation and disclosures for long-duration contracts issued by an insurance entity. Specifically, the guidance (i) improves the timeliness of recognizing changes in the liability for future policy benefits and prescribes the rate used to discount future cash flows for long-duration insurance contracts, (ii) simplifies and improves the accounting for certain market-based options or guarantees associated with deposit (or account balance) contracts, (iii) simplifies the amortization of deferred acquisition costs and (iv) introduces additional quantitative and qualitative disclosures. Citibank has certain legacy insurance subsidiaries, primarily in the U.S., that issue or hold long-duration insurance contracts that will be impacted by the requirements of ASU 2018-12.

The effective date of ASU No. 2018-12 was deferred for all insurance entities by ASU No. 2019-09, *Finance Services —Insurance: Effective Date* (issued in October 2019) and by ASU No. 2020-11, *Financial Services—Insurance: Effective Date and Early Application* (issued November 2020). Citibank plans to adopt the targeted improvements in ASU 2018-12 on January 1, 2023 and is currently evaluating the impact of the standard on its insurance subsidiaries. Citibank does not expect a material impact to its results of operations as a result of adopting the standard.

SUPERSEDED ACCOUNTING PRINCIPLES

Accounting for Credit Losses

Prior to January 1, 2020, Citibank applied the incurred loss method for the allowance for credit losses on loans and the other-than-temporary impairment (OTTI) method for HTM securities as follows.

Allowance for Credit Losses

The allowance for credit losses on loans represents management's best estimate of probable credit losses inherent in the portfolio, including probable losses related to large individually evaluated impaired loans and troubled debt restructurings. Additions to the allowance are made through the *Provision for credit losses on loans*. 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.

Evaluating HTM Debt Securities for Other-Than-Temporary Impairment (OTTI)

The Company conducts periodic reviews of all HTM debt securities with unrealized losses to evaluate whether the impairment is other-than-temporary.

An unrealized loss exists when the current fair value of an individual debt security is lower than its adjusted amortized cost basis. 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.

3. DISCONTINUED OPERATIONS AND SIGNIFICANT DISPOSALS

The Company's results from *Discontinued operations* consisted of residual activities related to the sales of the Egg Banking plc credit card business in 2011 and the German retail banking business in 2008.

The following table summarizes financial information for all *Discontinued operations*:

In millions of dollars	2020	2019
Total revenues, net of interest expense	**$ —**	$ —
Loss from discontinued operations	**$ (20)**	$ (31)
Benefit for income taxes	**—**	(27)
Loss from discontinued operations, net of taxes	**$ (20)**	$ (4)

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

Significant Disposals

There were no significant disposals during 2020 and 2019.

4. INTEREST REVENUE AND EXPENSE

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

In millions of dollars	2020	2019
Interest revenue		
Loan interest, including fees	**$ 36,644**	$ 42,888
Deposits with banks	**823**	2,503
Securities borrowed and purchased under agreements to resell	**1,051**	1,986
Investments, including dividends	**6,749**	8,416
Trading account assets[1]	**1,933**	3,311
Other interest-bearing assets	**223**	275
Total interest revenue	**$ 47,423**	$ 59,379
Interest expense		
Deposits[2]	**$ 5,866**	$ 12,603
Securities loaned and sold under agreements to repurchase	**70**	341
Trading account liabilities[1]	**366**	953
Short-term borrowings and other interest-bearing liabilities	**411**	774
Long-term debt	**1,571**	2,660
Total interest expense	**$ 8,284**	$ 17,331
Net interest revenue	**$ 39,139**	$ 42,048
Provision for credit losses on loans	**14,335**	7,082
Net interest revenue after provision for credit losses on loans	**$ 24,804**	$ 34,966

(1) Interest expense on *Trading account liabilities* is reported as a reduction of *Interest revenue* from *Trading account assets*.

(2) Includes deposit insurance fees and charges of $1,033 million and $614 million for the years ended December 31, 2020 and 2019, respectively.

5. COMMISSIONS AND FEES; ADMINISTRATION AND OTHER FIDUCIARY FEES

Commissions and Fees

The primary components of *Commissions and fees* revenue are credit card and bank card income, deposit-related fees and loan financing and servicing fees.

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. Citibank's credit card programs have certain partner sharing agreements that vary by partner. These partner sharing agreements are subject to contractually based performance thresholds that if met, would require Citibank to make ongoing payments to the partner. The threshold is based on the profitability of a program and is generally calculated based on predefined program revenues less predefined program expenses. In most of Citibank's partner sharing agreements, program expenses include net credit losses and, to the extent that the increase in net credit losses reduces Citibank's liability for the partners' share for a given program year, it would generally result in lower payments to partners in total for that year and vice versa. Further, in some instances, other partner payments are based on program sales and new account acquisitions. Interchange revenues are recognized as earned on a daily basis when Citibank'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 Citibank.

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 $266 million and $287 million of revenue related to such variable consideration for the years ended December 31, 2020 and 2019, respectively. These amounts primarily relate to performance obligations in prior periods.

Insurance premiums consist of premium income from insurance policies that Citibank has underwritten and sold to policyholders.

The following table presents *Commissions and fees* revenue:

In millions of dollars	2020	2019
Credit card and bank card income		
Interchange fees	$ 7,760	$ 9,546
Card-related loan fees	426	516
Card rewards and partner payments	(8,604)	(9,441)
Deposit-related fees[1]	1,203	1,307
Transactional service fees	798	750
Corporate finance[2]	414	591
Insurance distribution revenue	506	572
Loan servicing	136	152
Other	1,124	828
Total commissions and fees[3]	$ 3,763	$ 4,821

(1) Includes overdraft fees of $97 million and $121 million for the years ended December 31, 2020 and 2019, 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 $(7,530) million and $(8,061) million not accounted for under ASC 606, *Revenue from Contracts with Customers*, for 2020 and 2019, 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, fiduciary fees and guarantee fees.

The custody product consists 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 Citibank.

Fiduciary fees consist of trust services and investment management services. As an escrow agent, Citibank receives, safe keeps, services and manages clients' escrowed assets, such as cash, securities, property (including intellectual property), contracts or other collateral. Citibank 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 Citibank'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:

In millions of dollars	**2020**	2019
Custody fees	**$ 1,680**	$ 1,569
Fiduciary fees	**569**	536
Guarantee fees	**523**	554
Total administration and other fiduciary fees[1]	**$ 2,772**	$ 2,659

(1) *Administration and other fiduciary fees* includes $523 million and $554 million for the years ended December 31, 2020 and 2019, respectively, that are not accounted for under ASC 606, *Revenue from Contracts with Customers*. These amounts include guarantee fees.

6. PRINCIPAL TRANSACTIONS

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 and characterized below based on the primary risk managed by each trading desk. 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 corporate loans. These adjustments are discussed further in Note 21 to the Consolidated Financial Statements.

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

In millions of dollars	**2020**	2019
Interest rate risks[1]	**$ 3,347**	$ 2,734
Foreign exchange risks[2]	**4,539**	3,447
Equity risks[3]	**523**	481
Commodity and other risks[4]	**518**	233
Credit products and risks[5]	**(223)**	(948)
Total	**$ 8,704**	$ 5,947

(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

Citibank participates in various Citigroup stock-based and other deferred incentive programs. 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, including employees of the Company.

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 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 Citigroup's Capital Accumulation Program (CAP), or a deferred cash stock unit award and/or a deferred cash award under Citigroup'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 Citigroup 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 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 Citibank 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.

Performance Share Units

Certain executive officers were awarded a target number of performance share units (PSUs) every February from 2017 to 2020, for performance in the year prior to the award date.

The PSUs granted each February from 2017 to 2020 were earned over the preceding three-year performance period, based half on Citigroup's return on tangible common equity performance in the last year of the three-year performance period, and the remaining half on Citigroup's 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 Citigroup 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.

Stock Option Programs

All outstanding stock options are fully vested, with the related expense recognized as a charge to income in prior periods.

Other Variable Incentive Compensation
Employees of Citibank participate in 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.

For a discussion of Citigroup's Incentive Plans, which includes Citibank, see Note 7 to the Consolidated Financial Statements in Citigroup's Annual Report on Form 10-K for the year ended December 31, 2020, filed with the U.S. Securities and Exchange Commission on February 26, 2021.

8. RETIREMENT BENEFITS

Pension and Postretirement Plans

The Company participates in several non-contributory defined benefit pension plans sponsored by Citigroup Inc. covering certain U.S. employees and has various defined benefit pension and termination indemnity plans covering employees outside the U.S.

Citigroup's 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 participates in postretirement health care and life insurance benefits offered by Citigroup to certain eligible U.S. retired employees, as well as to certain eligible employees outside the United States.

The Company also participates in 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 formula, the benefits under these plans were frozen in prior years.

The plan obligations, plan assets and periodic plan expense for Citigroup's most significant pension and postretirement benefit plans (Significant Plans) are measured quarterly, instead of annually. All other plans (All Other Plans) are measured annually with a December 31 measurement date.

The Company's allocated share of the related net funded status of the plans and net amount recognized in equity are recognized on the Company's Consolidated Balance Sheet and summarized in the table below:

	Pension plans				Postretirement benefit plans			
	U.S. plans[1]		Non-U.S. plans		U.S. plans		Non-U.S. plans	
In millions of dollars	**2020**	2019	**2020**	2019	**2020**	2019	**2020**	2019
Net funded status (liability)	**$ (374)**	$ (505)	**$ (988)**	$ (885)	**$ (114)**	$ (159)	**$ (261)**	$ (304)
Net amount recognized in equity	**$ (2,759)**	$ (2,703)	**$ (757)**	$ (728)	**$ 78**	$ 11	**$ —**	$ (39)

(1) The net funded status reported above for the U.S. plans is composed of $139 million for the qualified pension plan and $(513) million for the nonqualified pension plans for 2020. For 2019, the net funded status is composed of $(10) million for the qualified pension plan and $(495) million for the nonqualified pension plans.

The Company's allocated share of the related net (benefit) expense for the plans is recognized in the Company's Consolidated Statement of Income and summarized in the table below:

	Pension plans				Postretirement benefit plans			
	U.S. plans[1]		Non-U.S. plans		U.S. plans		Non-U.S. plans	
In millions of dollars	**2020**	2019	**2020**	2019	**2020**	2019	**2020**	2019
Net (benefit) expense[2]	**$ (123)**	$ (80)	**$ 125**	$ 120	**$ (1)**	$ 3	**$ 11**	$ 18

(1) The net (benefit) expense reported above for the U.S. plans is composed of $(148) million for the qualified pension plan and $25 million for the nonqualified pension plans for 2020. For 2019, the net (benefit) expense is composed of $(107) million for the qualified pension plan and $27 million for the nonqualified pension plans.

(2) The Company recognizes pension settlements gains and losses when the amount of annual settlements exceeds the sum of service cost and interest cost.

Plan Assumptions

Citigroup utilizes a number of assumptions to determine plan obligations and expense. Changes in one or a combination of these assumptions will have an impact on the Company's pension and postretirement projected benefit obligation (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).*

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 were compared with high-quality corporate bond indices for reasonableness.

Accordingly, at December 31, 2020, the discount rate was set at 2.45% for the qualified pension plan, 2.35% for the nonqualified pension plans and 2.20% for the postretirement plans. At December 31, 2019, the discount rate was set at 3.25% for the qualified pension plan, 3.25% for the nonqualified pension plans and 3.15% for the postretirement plans.

For Significant Plans, the 2020 rates were utilized to calculate the December 31, 2020 benefit obligation. The 2019 rates were utilized to calculate the December 31, 2019 benefit obligation.

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.

The established rounding convention is to the nearest 5 bps for all countries.

Expected Rate of Return on Assets

Citigroup determines its assumptions for the expected return on 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.

Citigroup considers the expected return on assets 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 return on assets for the U.S. pension and postretirement plans Trust was 5.80% at December 31, 2020 and 6.70% at December 31, 2019. The expected return on assets reflects the expected annual appreciation of the plan assets and reduces the annual pension expense of Citigroup. 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 return on assets used in determining Citigroup's pension expense compared to the actual return on assets during 2020 and 2019 for the U.S. pension and postretirement plans:

U.S. plans	2020	2019
Expected return on assets		
U.S. pension and postretirement trust	6.70%	6.70%
VEBA trust	3.00	3.00
Actual return on assets[1]		
U.S. pension and postretirement trust	12.84	15.20
VEBA trust	2.11	1.91 to 2.76

(1) Actual return on assets is presented net of fees.

Health Care Cost-Trend Rate

Assumed health care cost-trend rates were as follows:

	2020	2019
Health care cost increase rate for U.S. plans		
Following year	6.50%	6.75%
Ultimate rate to which cost increase is assumed to decline	5.00	5.00
Year in which the ultimate rate is reached	2027	2027

Interest Crediting Rate

Citigroup 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	2020	2019
U.S. plans	1.45%	2.25%
Non-U.S. plans	1.60	1.61

Plan Assets

Third-party investment managers and advisors provide their services to Citigroup's U.S. pension and postretirement plans. Assets are rebalanced as Citigroup's Pension Plan Investment Committee deems appropriate. Citigroup's investment strategy, with respect to its pension and postretirement 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.

Investment Strategy

Citigroup's global pension and postretirement funds' investment strategy is to invest in a prudent manner for the exclusive purpose of providing benefits to participants. 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 Citigroup's pension and postretirement 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, publicly traded equity, hedge funds 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 assets for Citigroup's largest non-U.S. plans are primarily invested in publicly traded fixed income and publicly traded equity securities.

Oversight and Risk Management Practices

The framework for Citigroup'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 Citigroup'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 Citigroup'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.

Post Employment Plans

Citigroup 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.

The following table summarizes the funded status and amounts recognized on the Company's Consolidated Balance Sheet:

In millions of dollars	2020	2019
Funded status of the plan at year end	$ (28)	$ (26)
Net amount recognized in *AOCI* (pretax)	$ (12)	$ (11)

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

In millions of dollars	2020	2019
Net expense	$ 7	$ 7

Defined Contribution Plans

The Company participates in several 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 sponsored by Citigroup 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 2020 and 2019, 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 Citigroup's contributions for the defined contribution plans:

	U.S. plans	
In millions of dollars	2020	2019
Company contributions	$ 414	$ 404

	Non-U.S. plans	
In millions of dollars	2020	2019
Company contributions	$ 304	$ 281

9. INCOME TAXES

The Company is included in the Citigroup consolidated federal tax return and is party to a tax sharing agreement with Citigroup. Under such agreement, the Company is entitled to a tax benefit for its losses and credits that are recognized in Citigroup's Consolidated Financial Statements. Settlements between the Company and Citigroup of current taxes occur throughout the year. The Company also files unitary, consolidated and nexus combined state income tax returns with Citigroup and its subsidiaries and files other separate state income tax returns.

Income Tax Provision

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

In millions of dollars	2020	2019
Current		
Federal	$ **1,568**	$ 1,872
Non-U.S.	**3,228**	3,571
State	**390**	174
Total current income taxes	$ **5,186**	$ 5,617
Deferred		
Federal	$ **(2,439)**	$ (733)
Non-U.S.	**(321)**	(104)
State	**(252)**	129
Total deferred income taxes	$ **(3,012)**	$ (708)
Provision for income taxes on continuing operations before noncontrolling interests[1]	$ **2,174**	$ 4,909
Benefit for income taxes on discontinued operations	—	(27)
Income tax expense (benefit) reported in stockholder's equity related to:		
Retained earnings[2]	**(759)**	37
Foreign currency translation	**103**	7
Securities AFS	**1,033**	505
Employee stock plans	**(4)**	(5)
Cash flow hedges	**457**	266
Pension liability adjustments	**(20)**	9
Excluded fair value hedges	**(10)**	(5)
Income taxes before noncontrolling interests	$ **2,974**	$ 5,696

(1) Includes the tax on realized investment gains and impairment losses resulting in a provision (benefit) of $364 million and $(1) million in 2020 and $270 million and $(4) million in 2019.

(2) 2020 reflects the tax effect of ASU 2016-13 for current expected credit losses (CECL). 2019 reflects the effect of the accounting change for ASU 2016-02 for lease transactions.

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) for each of the periods indicated is as follows:

	2020	2019
Federal statutory rate	**21.0%**	21.0%
State income taxes, net of federal benefit	**1.1**	0.8
Tax effects related to non-U.S. income	**(0.8)**	0.4
Tax advantaged investments	**(4.2)**	(1.3)
Nondeductible FDIC premiums	**1.6**	0.4
Intercompany transfer pricing adjustment	**1.1**	0.4
Effect of tax law changes	**(0.5)**	0.2
Audit settlements	**0.4**	0.2
Other, net	(0.1)	(0.2)
Effective income tax rate	**19.6%**	21.9%

As set forth in the table above, Citibank's effective tax rate for 2020 was 19.6%. The rate is lower than the 21.9% reported in 2019, primarily due to the higher relative impact of tax-advantaged investments and tax benefits for non-U.S. branch-related FTCs, on a lower level of earnings before taxes.

Deferred Income Taxes

Deferred income taxes at December 31 related to the following:

In millions of dollars	2020	2019
Deferred tax assets		
Credit loss deduction	$ 5,486	$ 2,927
Deferred compensation and employee benefits	385	323
Restructuring and settlement reserves	312	254
U.S. tax on non-U.S. earnings	1,742	1,673
Investment and loan basis differences	850	2,127
Tax credit and net operating loss carry-forwards	3,658	3,367
Fixed assets and leases	2,199	2,109
Other deferred tax assets	3,158	2,478
Gross deferred tax assets	$ 17,790	$ 15,258
Valuation allowance	$ (2,158)	$ (1,946)
Deferred tax assets after valuation allowance	$ 15,632	$ 13,312
Deferred tax liabilities		
Non-U.S. withholding taxes	$ (842)	$ (908)
Interest-related items	(556)	(567)
Other deferred tax liabilities	(609)	(663)
Cash flow hedges	(567)	(78)
Intangibles	(1,401)	(1,434)
Gross deferred tax liabilities	$ (3,975)	$ (3,650)
Net deferred tax assets	$ 11,657	$ 9,662

Unrecognized Tax Benefits

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

In millions of dollars	2020	2019
Total unrecognized tax benefits at January 1	$ 432	$ 321
Net amount of increases for current year's tax positions	33	45
Gross amount of increases for prior years' tax positions	126	134
Gross amount of decreases for prior years' tax positions	(58)	(30)
Amounts of decreases relating to settlements	(35)	(20)
Reductions due to lapse of statutes of limitation	(8)	(19)
Foreign exchange, acquisitions and dispositions	—	1
Total unrecognized tax benefits at December 31	$ 490	$ 432

The total amounts of unrecognized tax benefits at December 31, 2020 and 2019 that, if recognized, would affect Citibank's tax expense, are $415 million and $356 million, 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*.

	2020		2019	
In millions of dollars	Pretax	Net of tax	Pretax	Net of tax
Total interest and penalties on the Consolidated Balance Sheet at January 1	$ 86	$ 71	$ 77	$ 66
Total interest and penalties on the Consolidated Statement of Income	8	5	4	3
Total interest and penalties on the Consolidated Balance Sheet at December 31[(1)]	91	73	86	71

(1) Includes $4 million and $3 million for non-U.S. penalties in 2020 and 2019, respectively.

As of December 31, 2020, Citibank was under audit by the Internal Revenue Service and other major taxing jurisdictions around the world. It is therefore reasonably possible that significant changes in the gross balance of unrecognized tax benefits may occur within the next 12 months, although Citibank 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
New York State and City	2009
United Kingdom	2016
Ireland	2016
India	2016
Hong Kong	2014
Singapore	2011

Non-U.S. Earnings
Non-U.S. pretax earnings approximated $11.4 billion in 2020 and $14.3 billion in 2019. As a U.S. corporation, Citibank 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 non-U.S. entities or affiliates are effectively exempt from U.S. taxation. The Company provides income taxes on the book over tax basis differences of non-U.S. entities except to the extent that such differences are indefinitely reinvested outside the U.S.

At December 31, 2020, $7.8 billion of basis differences of non-U.S. entities was indefinitely invested. At the existing tax rates, additional taxes (net of U.S. FTCs) of $3.5 billion would have to be provided if such assertions were reversed.

Income taxes are not provided on 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, 2020, the amount of the base year reserves totaled approximately $358 million (subject to a tax of $75 million).

Deferred Tax Assets
At December 31, 2020, the Company had a valuation allowance of $2.2 billion, composed of valuation allowances of $1.5 billion on its U.S. residual DTA related to its non-U.S. branches, $0.3 billion of its FTC carry-forwards and $0.4 billion on its non-U.S. DTAs. The valuation allowance against U.S. residual DTAs on non-U.S. branches and FTC results from the impact of the lower tax rate and the new separate FTC basket for non-U.S. branches, as well as diminished ability under Tax Reform to generate income from sources outside the U.S. to support utilization. The absolute amount of the Company's post-Tax Reform-related valuation allowance may change in future years since the separate FTC basket for non-U.S. branches will 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%. Although it is not assured, the Company believes that the realization of the recognized net deferred tax asset of $11.9 billion at December 31, 2020 is more-likely-than-not to be realized, based on the recognition of its federal and certain state deferred tax assets in Citibank's financial statements and expectations as to future taxable income in jurisdictions in which the other deferred tax assets arise, and available tax planning strategies (as defined in ASC 740, *Income Taxes*) that would be implemented, if necessary, to prevent a carry-forward from expiring.

Foreign tax credit carry-forwards expire between 2020 and 2029 and state and local net operating loss (NOL) carry-forwards expire between 2021 and 2040. In addition, the Company has NOL carry-forwards related to non-consolidated tax return companies that are eventually expected to be utilized in Citigroup's consolidated tax return, and that expire between 2034 and 2037.

10. 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, 2020	2019
Securities purchased under agreements to resell	$ 69,872	$ 72,673
Deposits paid for securities borrowed	86	1,198
Total, net[1]	$ 69,958	$ 73,871
Allowance for credit losses on securities purchased and borrowed[2]	(9)	—
Total, net of allowance	$ 69,949	$ 73,871

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

In millions of dollars	December 31, 2020	2019
Securities sold under agreements to repurchase	$ 9,303	$ 10,573
Deposits received for securities loaned	2,352	2,456
Total, net[1]	$ 11,655	$ 13,029

(1) The above tables do not include securities-for-securities lending transactions 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 *Other liabilities*. There were no such amounts at December 31, 2020 or 2019.

(2) See Note 13 to the Consolidated Financial Statements for further information.

The resale and repurchase agreements represent collateralized financing transactions. The Company executes the transactions primarily to facilitate customer financing activity. Transactions executed by the Company primarily facilitate customer financing activity.

To maintain reliable funding under a wide range of market conditions, including under periods of stress, the Company manages these activities by taking into consideration the quality of the underlying collateral and stipulating financing tenor. The Company 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, the Company 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 liquidation of securities held) and the offsetting of obligations to return cash or securities, as the case may be, 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.

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 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 resale and repurchase agreements and securities borrowing and lending agreements is recorded at the amount of cash advanced or received. A small 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 22 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 a supportive legal opinion has been obtained from counsel of recognized standing, which provides the requisite level of certainty regarding the enforceability of these agreements and 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 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 amount 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 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, 2020				
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	$ 69,918	$ 46	$ 69,872	$ 6,489	$ 63,383
Deposits paid for securities borrowed	86	—	86	3	83
Total	$ 70,004	$ 46	$ 69,958	$ 6,492	$ 63,466

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	$ 9,349	$ 46	$ 9,303	$ 5,243	$ 4,060
Deposits received for securities loaned	2,352	—	2,352	—	2,352
Total	$ 11,701	$ 46	$ 11,655	$ 5,243	$ 6,412

	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	$ 75,398	$ 2,725	$ 72,673	$ 14,755	$ 57,918
Deposits paid for securities borrowed	1,198	—	1,198	1,098	100
Total	$ 76,596	$ 2,725	$ 73,871	$ 15,853	$ 58,018

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	$ 13,298	$ 2,725	$ 10,573	$ 89	$ 10,484
Deposits received for securities loaned	2,456	—	2,456	—	2,456
Total	$ 15,754	$ 2,725	$ 13,029	$ 89	$ 12,940

(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:

	December 31, 2020				
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	**$ 5,121**	**$ 3,761**	**$ —**	**$ 467**	**$ 9,349**
Deposits received for securities loaned	**2,352**	**—**	**—**	**—**	**2,352**
Total	**$ 7,473**	**$ 3,761**	**$ —**	**$ 467**	**$ 11,701**

	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	$ 7,972	$ 4,234	$ 1,030	$ 62	$ 13,298
Deposits received for securities loaned	2,456	—	—	—	2,456
Total	$ 10,428	$ 4,234	$ 1,030	$ 62	$ 15,754

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

	December 31, 2020		
In millions of dollars	**Repurchase agreements**	**Securities lending agreements**	**Total**
U.S. Treasury and federal agency	**$ 6,920**	**$ —**	**$ 6,920**
Foreign government	**984**	**—**	**984**
Equity securities	**80**	**2,352**	**2,432**
Mortgage-backed securities	**1,245**	**—**	**1,245**
Other	**120**	**—**	**120**
Total	**$ 9,349**	**$ 2,352**	**$ 11,701**

	December 31, 2019		
In millions of dollars	Repurchase agreements	Securities lending agreements	Total
U.S. Treasury and federal agency	$ 8,502	$ —	$ 8,502
Foreign government	3,763	—	3,763
Equity securities	82	2,456	2,538
Mortgage-backed securities	942	—	942
Other	9	—	9
Total	$ 13,298	$ 2,456	$ 15,754

11. INVESTMENTS

The following table presents the Company's investments by category:

In millions of dollars	December 31, 2020	2019
Debt securities available-for-sale (AFS)	$ 309,068	$ 255,206
Debt securities held-to-maturity (HTM)(1)	102,080	77,886
Marketable equity securities carried at fair value(2)	143	94
Non-marketable equity securities carried at fair value(2)	27	39
Non-marketable equity securities measured using the measurement alternative(3)	363	293
Non-marketable equity securities carried at cost(4)	5,281	5,638
Total investments	$ 416,962	$ 339,156

(1) Carried at adjusted amortized cost basis, net of any ACL.
(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. See "Non-Marketable Equity Securities Not Carried at Fair Value" below.
(4) Represents shares issued by the Federal Reserve Bank, Federal Home Loan Banks and certain exchanges of which Citibank is a member.

The following table presents interest and dividend income on investments:

In millions of dollars	2020	2019
Taxable interest	$ 6,360	$ 7,886
Interest exempt from U.S. federal income tax	263	358
Dividend income	126	172
Total interest and dividend income on investments	$ 6,749	$ 8,416

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

In millions of dollars	2020	2019
Gross realized investment gains	$ 1,448	$ 1,394
Gross realized investment losses	(57)	(107)
Net realized gains on sales of investments	$ 1,391	$ 1,287

Citibank from time to time may sell certain debt securities that were classified as HTM. These sales are 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, Citibank recorded impairment on the securities. There were no such activities during 2019 and 2020.

Debt Securities Available-for-Sale

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

In millions of dollars	December 31, 2020 Amortized cost	Gross unrealized gains	Gross unrealized losses	Allowance for credit losses	Fair value	December 31, 2019 Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value
Debt securities AFS									
Mortgage-backed securities[1]									
U.S. government-sponsored agency guaranteed	$ 35,198	$ 1,031	$ 18	$ —	$ 36,211	$ 25,772	$ 385	$ 37	$ 26,120
Non-U.S. residential	567	3	—	—	570	787	3	—	790
Total mortgage-backed securities	$ 35,765	$ 1,034	$ 18	$ —	$ 36,781	$ 26,559	$ 388	$ 37	$ 26,910
U.S. Treasury and federal agency securities									
U.S. Treasury	$ 143,732	$ 2,108	$ 49	$ —	$ 145,791	$ 106,377	$ 50	$ 380	$ 106,047
Agency obligations	50	1	—	—	51	5,336	3	20	5,319
Total U.S. Treasury and federal agency securities	$ 143,782	$ 2,109	$ 49	$ —	$ 145,842	$ 111,713	$ 53	$ 400	$ 111,366
State and municipal	$ 3,368	$ —	$ 30	$ —	$ 3,338	$ 4,613	$ 36	$ 71	$ 4,578
Foreign government	107,662	1,030	58	—	108,634	98,132	453	167	98,418
Corporate	9,253	130	34	—	9,349	9,059	36	38	9,057
Asset-backed securities[1]	247	4	3	—	248	437	—	2	435
Other debt securities	4,871	5	—	—	4,876	4,441	1	—	4,442
Total debt securities AFS	$ 304,948	$ 4,312	$ 192	$ —	$ 309,068	$ 254,954	$ 967	$ 715	$ 255,206

(1) The Company invests in mortgage- and asset-backed securities, which are typically issued by VIEs through securitization transactions. 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 18 to the Consolidated Financial Statements.

At December 31, 2020, the amortized cost of fixed income securities exceeded their fair value by $192 million. Of the $192 million, $189 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, 61% were rated investment grade; and $3 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. All of the $3 million represents U.S. government-sponsored agency guaranteed 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 Fair value	Less than 12 months Gross unrealized losses	12 months or longer Fair value	12 months or longer Gross unrealized losses	Total Fair value	Total Gross unrealized losses
December 31, 2020						
Debt securities AFS						
Mortgage-backed securities						
U.S. government-sponsored agency guaranteed	**$ 2,480**	**$ 15**	**$ 261**	**$ 3**	**$ 2,741**	**$ 18**
Non-U.S. residential	**1**	**—**	**—**	**—**	**1**	**—**
Total mortgage-backed securities	**$ 2,481**	**$ 15**	**$ 261**	**$ 3**	**$ 2,742**	**$ 18**
U.S. Treasury and federal agency securities						
U.S. Treasury	**$ 25,030**	**$ 49**	**$ —**	**$ —**	**$ 25,030**	**$ 49**
Agency obligations	**50**	**—**	**—**	**—**	**50**	**—**
Total U.S. Treasury and federal agency securities	**$ 25,080**	**$ 49**	**$ —**	**$ —**	**$ 25,080**	**$ 49**
State and municipal	**$ 2,979**	**$ 30**	**$ 24**	**$ —**	**$ 3,003**	**$ 30**
Foreign government	**28,932**	**58**	**828**	**—**	**29,760**	**58**
Corporate	**584**	**34**	**—**	**—**	**584**	**34**
Asset-backed securities	**189**	**3**	**39**	**—**	**228**	**3**
Other debt securities	**182**	**—**	**—**	**—**	**182**	**—**
Total debt securities AFS	**$ 60,427**	**$ 189**	**$ 1,152**	**$ 3**	**$ 61,579**	**$ 192**
December 31, 2019						
Debt securities AFS						
Mortgage-backed securities						
U.S. government-sponsored agency guaranteed	$ 3,731	$ 16	$ 1,838	$ 21	$ 5,569	$ 37
Non-U.S. residential	208	—	—	—	208	—
Total mortgage-backed securities	$ 3,939	$ 16	$ 1,838	$ 21	$ 5,777	$ 37
U.S. Treasury and federal agency securities						
U.S. Treasury	$ 45,456	$ 248	$ 26,907	$ 132	$ 72,363	$ 380
Agency obligations	782	2	3,896	18	4,678	20
Total U.S. Treasury and federal agency securities	$ 46,238	$ 250	$ 30,803	$ 150	$ 77,041	$ 400
State and municipal	$ 360	$ 62	$ 22	$ 9	$ 382	$ 71
Foreign government	34,876	147	2,634	20	37,510	167
Corporate	2,098	36	78	2	2,176	38
Asset-backed securities	100	1	164	1	264	2
Other debt securities	1,114	—	—	—	1,114	—
Total debt securities AFS	$ 88,725	$ 512	$ 35,539	$ 203	$ 124,264	$ 715

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

	December 31,			
	2020		2019	
In millions of dollars	Amortized cost	Fair value	Amortized cost	Fair value
Mortgage-backed securities[1]				
Due within 1 year	$ 27	$ 27	$ 20	$ 20
After 1 but within 5 years	566	570	571	573
After 5 but within 10 years	674	742	575	607
After 10 years[2]	34,498	35,442	25,393	25,710
Total	$ 35,765	$ 36,781	$ 26,559	$ 26,910
U.S. Treasury and federal agencies securities				
Due within 1 year	$ 34,473	$ 34,590	$ 40,706	$ 40,637
After 1 but within 5 years	108,160	110,089	70,128	69,850
After 5 but within 10 years	1,149	1,163	854	851
After 10 years[2]	—	—	25	28
Total	$ 143,782	$ 145,842	$ 111,713	$ 111,366
State and municipal				
Due within 1 year	$ 404	$ 405	$ 915	$ 915
After 1 but within 5 years	169	178	669	678
After 5 but within 10 years	272	263	189	210
After 10 years[2]	2,523	2,492	2,840	2,775
Total	$ 3,368	$ 3,338	$ 4,613	$ 4,578
Foreign government				
Due within 1 year	$ 44,871	$ 44,961	$ 41,094	$ 41,148
After 1 but within 5 years	56,063	56,918	49,818	50,053
After 5 but within 10 years	5,006	5,034	6,382	6,381
After 10 years[2]	1,722	1,721	838	836
Total	$ 107,662	$ 108,634	$ 98,132	$ 98,418
All other[3]				
Due within 1 year	$ 6,071	$ 6,093	$ 6,461	$ 6,466
After 1 but within 5 years	7,270	7,362	6,871	6,893
After 5 but within 10 years	974	986	543	537
After 10 years[2]	56	32	62	38
Total	$ 14,371	$ 14,473	$ 13,937	$ 13,934
Total debt securities AFS	$ 304,948	$ 309,068	$ 254,954	$ 255,206

(1) Includes mortgage-backed securities of U.S. government-sponsored agencies. The Company invests in mortgage- and asset-backed securities, which are typically issued by VIEs through securitization transactions.
(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	Amortized cost, net[1]	Gross unrealized gains	Gross unrealized losses	Fair value
December 31, 2020				
Debt securities HTM				
Mortgage-backed securities[2]				
U.S. government-sponsored agency guaranteed	$ 49,004	$ 2,162	$ 15	$ 51,151
Non-U.S. residential	1,124	3	1	1,126
Commercial	641	1	1	641
Total mortgage-backed securities	$ 50,769	$ 2,166	$ 17	$ 52,918
U.S. Treasury securities[3]	$ 21,293	$ 4	$ 55	$ 21,242
State and municipal	8,657	698	5	9,350
Asset-backed securities[2]	21,361	1	91	21,271
Total debt securities HTM, net	$ 102,080	$ 2,869	$ 168	$ 104,781
December 31, 2019				
Debt securities HTM				
Mortgage-backed securities[2][4]				
U.S. government-sponsored agency guaranteed	$ 46,637	$ 1,046	$ 20	$ 47,663
Non-U.S. residential	1,039	6	—	1,045
Commercial	418	—	—	418
Total mortgage-backed securities	$ 48,094	$ 1,052	$ 20	$ 49,126
State and municipal[5]	$ 8,472	$ 405	$ 14	$ 8,863
Asset-backed securities[2]	21,320	8	60	21,268
Total debt securities HTM	$ 77,886	$ 1,465	$ 94	$ 79,257

(1) Amortized cost is reported net of ACL of $50 million at December 31, 2020. There was no allowance as of December 31, 2019 due to CECL not being adopted until January 1, 2020.

(2) 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 18 to the Consolidated Financial Statements.

(3) In 2020, Citibank transferred $13.1 billion of investments in U.S. Treasury securities from AFS classification to HTM classification in accordance with ASC 320. At the time of transfer, the securities were in an unrealized gain position of $144 million. The gain amounts will remain in *AOCI* and will be amortized over the remaining life of the securities.

(4) In 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.

(5) In 2019, Citibank transferred $147 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 $4 million. The gain amounts will remain in *AOCI* and be amortized over the remaining life of the securities.

Citibank 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 at December 31, 2019:

In millions of dollars	Less than 12 months Fair value	Less than 12 months Gross unrealized losses	12 months or longer Fair value	12 months or longer Gross unrealized losses	Total Fair value	Total Gross unrealized losses
December 31, 2019						
Debt securities HTM						
Mortgage-backed securities	$ 3,590	$ 10	$ 1,098	$ 10	$ 4,688	$ 20
State and municipal	—	—	1,018	14	1,018	14
Asset-backed securities	7,809	10	765	50	8,574	60
Total debt securities HTM	$ 11,399	$ 20	$ 2,881	$ 74	$ 14,280	$ 94

Note: Excluded from the gross unrecognized losses presented in the table above are $(567) million of net unrealized losses recorded in *AOCI* as of December 31, 2019, 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.

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

	December 31,			
	2020		2019	
In millions of dollars	**Amortized cost[1]**	**Fair value**	Amortized cost	Fair value
Mortgage-backed securities				
Due within 1 year	$ **78**	$ **78**	$ 14	$ 14
After 1 but within 5 years	**463**	**477**	458	463
After 5 but within 10 years	**1,687**	**1,861**	1,662	1,729
After 10 years[2]	**48,541**	**50,502**	45,960	46,920
Total	$ **50,769**	$ **52,918**	$ 48,094	$ 49,126
U.S. Treasury securities				
Due within 1 year	$ **—**	$ **—**	$ —	$ —
After 1 but within 5 years	**18,955**	**19,127**	—	—
After 5 but within 10 years	**2,338**	**2,115**	—	—
After 10 years[2]	**—**	**—**	—	—
Total	$ **21,293**	$ **21,242**	$ —	$ —
State and municipal				
Due within 1 year	$ **7**	$ **7**	$ 25	$ 25
After 1 but within 5 years	**112**	**116**	109	111
After 5 but within 10 years	**771**	**820**	541	568
After 10 years[2]	**7,767**	**8,407**	7,797	8,159
Total	$ **8,657**	$ **9,350**	$ 8,472	$ 8,863
All other[3]				
Due within 1 year	$ **—**	$ **—**	$ —	$ —
After 1 but within 5 years	**—**	**—**	—	—
After 5 but within 10 years	**11,795**	**15,020**	8,545	8,543
After 10 years[2]	**9,566**	**6,251**	12,775	12,725
Total	$ **21,361**	$ **21,271**	$ 21,320	$ 21,268
Total debt securities HTM	$ **102,080**	$ **104,781**	$ 77,886	$ 79,257

(1) Amortized cost is reported net of ACL of $50 million at December 31, 2020. There was no allowance as of December 31, 2019 due to CECL not being adopted until January 1, 2020.
(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 and asset-backed securities.

HTM Debt Securities Delinquency and Non-Accrual Details

Citibank did not have any HTM securities that were delinquent or on non-accrual status at December 31, 2020.

There were no purchased credit-deteriorated HTM debt securities held by the Company as of December 31, 2020.

Evaluating Investments for Impairment

AFS Debt Securities

Overview—AFS Debt Securities

The Company conducts periodic reviews of all AFS debt securities with unrealized losses to evaluate whether the impairment resulted from expected credit losses or from other factors and to evaluate the Company's intent to sell such securities.

An AFS debt security is impaired when the current fair value of an individual AFS debt security is less than its amortized cost basis.

The Company recognizes the entire difference between amortized cost basis and fair value in earnings for impaired AFS debt securities that Citibank has an intent to sell or for which Citibank believes it will more-likely-than-not be required to sell prior to recovery of the amortized cost basis. However, for those AFS 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 by recording an ACL. Any remaining fair value decline for such securities is recorded in *AOCI*. The Company does not consider the length of time that the fair value of a security is below its amortized cost when determining if a credit loss exists.

For AFS debt securities, credit losses exist where Citibank does not expect to receive contractual principal and interest cash flows sufficient to recover the entire amortized cost basis of a security. The ACL is limited to the amount by which the AFS debt security's amortized cost basis exceeds its fair value. The allowance is increased or decreased if credit conditions subsequently worsen or improve. Reversals of credit losses are recognized in earnings.

The Company's review for impairment of AFS debt securities generally entails:

- identification and evaluation of impaired investments;
- consideration of evidential matter, including an evaluation of factors or triggers that could cause individual positions to qualify as credit impaired and those that would not support credit impairment; and
- documentation of the results of these analyses, as required under business policies.

The sections below describe the Company's process for identifying expected credit impairments for debt security types that have the most significant unrealized losses as of December 31, 2020.

Mortgage-Backed Securities

Citibank records no allowances for credit losses on U.S. government-agency-guaranteed mortgage-backed securities, because the Company expects to incur no credit losses in the event of default due to a history of incurring no credit losses and due to the nature of the counterparties.

State and Municipal Securities

The process for estimating credit losses in Citibank's AFS state and municipal bonds is primarily based on a credit analysis that incorporates third-party credit ratings. Citibank 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 Aa2/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 AFS state and municipal bonds with unrealized losses that Citibank plans to sell, or would more-likely-than-not be required to sell, the full impairment is recognized in earnings. For AFS state and municipal bonds where Citibank has no intent to sell and it is more-likely-than-not that the Company will not be required to sell, Citibank records an allowance for expected credit losses for the amount it expects not to collect, capped at the difference between the bond's amortized cost basis and fair value.

Equity Method Investments

Management assesses equity method investments that have fair values that are lower than their respective carrying values for other-than-temporary impairment (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 21 to the Consolidated Financial Statements).

For impaired equity method investments that Citibank 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 Impairment

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

In millions of dollars	Year ended December 31, 2020 AFS	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 impairment 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 more-likely-than-not be required to sell or will be subject to an issuer call deemed probable of exercise	71	—	71
Total impairment losses recognized in earnings	**$ 71**	**$ —**	**$ 71**

In millions of dollars	Year ended December 31, 2019 AFS	HTM	Total
Impairment losses related to debt securities that the Company does not intend to sell nor will likely be required to sell:			
Total impairment 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 more-likely-than-not be required to sell or will be subject to an issuer call deemed probable of exercise	20	—	20
Total impairment losses recognized in earnings	$ 20	$ —	$ 20

There was no allowance for credit losses for AFS debt securities as of December 31, 2020, and a provision for credit losses of $(2) million for the year ended December 31, 2020.

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 or Federal Home Loan Bank stock or certain exchange seats that continue to be carried at cost.

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 Citibank.

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, 2020 and 2019:

	December 31,	
In millions of dollars	2020	2019
Measurement alternative:		
Carrying value	$ 363	$ 293

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

	Year ended December 31,	
In millions of dollars	2020	2019
Measurement alternative[(1)]:		
Impairment losses	$ 5	$ —
Downward changes for observable prices	—	—
Upward changes for observable prices	45	74

(1) See Note 21 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, 2020
Measurement alternative:	
Impairment losses	$ 6
Downward changes for observable prices	2
Upward changes for observable prices	190

A similar impairment analysis is performed for non-marketable equity securities carried at cost. For the years ended December 31, 2020 and 2019, there was no impairment loss recognized in earnings for non-marketable equity securities carried at cost.

12. LOANS

Citibank 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 consumer businesses.

Citibank 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 below 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 Banking 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 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 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 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 tables provide Citibank's consumer loans by type:

Consumer Loans, Delinquencies and Non-Accrual Status at December 31, 2020

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]	Non-accrual loans for which there are no loan loss reserves	Non-accrual loans for which there are loan loss reserves	Total non-accrual	90 days past due and accruing[5]
In North America offices[6]									
Residential first mortgages[7]	$ 46,288	$ 386	$ 366	$ 524	$ 47,564	$ 122	$ 481	$ 603	$ 332
Home equity loans[8][9]	6,826	78	220	—	7,124	72	306	378	—
Credit cards	127,835	1,228	1,330	—	130,393	—	—	—	1,330
Personal, small business and other	4,464	27	10	—	4,501	2	33	35	—
Total	$ 185,413	$ 1,719	$ 1,926	$ 524	$ 189,582	$ 196	$ 820	$ 1,016	$ 1,662
In offices outside North America[6]									
Residential first mortgages[7]	$ 35,700	$ 141	$ 97	$ —	$ 35,938	$ —	$ 140	$ 140	$ —
Credit cards	17,310	260	311	—	17,881	—	81	81	—
Personal, small business and other	30,300	170	105	—	30,575	—	87	87	—
Total	$ 83,310	$ 571	$ 513	$ —	$ 84,394	$ —	$ 308	$ 308	$ 350
Total Citibank[10]	$ 268,723	$ 2,290	$ 2,439	$ 524	$ 273,976	$ 196	$ 1,128	$ 1,324	$ 2,012

Consumer Loans, Delinquencies and Non-Accrual Status 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[5]
In North America offices[6]							
Residential first mortgages[7]	$ 45,733	$ 390	$ 206	$ 434	$ 46,763	$ 431	$ 289
Home equity loans[8][9]	8,850	174	188	—	9,212	404	—
Credit cards	145,477	1,759	1,927	—	149,163	—	1,927
Personal, small business and other	3,641	44	14	—	3,699	23	—
Total	$ 203,701	$ 2,367	$ 2,335	$ 434	$ 208,837	$ 858	$ 2,216
In offices outside North America[6]							
Residential first mortgages[7]	$ 33,105	$ 127	$ 93	$ —	$ 33,325	$ 130	$ —
Credit cards	19,462	266	207	—	19,935	62	—
Personal, small business and other	29,271	176	92	—	29,539	86	—
Total	$ 81,838	$ 569	$ 392	$ —	$ 82,799	$ 278	$ 242
Total Citibank[10]	$ 285,539	$ 2,936	$ 2,727	$ 434	$ 291,636	$ 1,136	$ 2,458

(1) Loans less than 30 days past due are presented as current.
(2) Includes $14 million and $18 million at December 31, 2020 and 2019, 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 $0.2 billion and $0.1 billion, and 90 days or more past due of $0.3 billion and $0.3 billion at December 31, 2020 and 2019, respectively.
(5) Loans 90 days past due and accruing in offices outside of North America are largely credit card loans.
(6) North America includes the U.S., Canada and Puerto Rico. Mexico is included in offices outside North America.
(7) Includes approximately $0.1 billion and $0.1 billion at December 31, 2020 and 2019, respectively, of residential first mortgage loans in process of foreclosure.
(8) Includes approximately $0.1 billion and $0.1 billion at December 31, 2020 and 2019, respectively, of home equity loans in process of foreclosure.
(9) Fixed-rate home equity loans and loans extended under home equity lines of credit, which are typically in junior lien positions.
(10) Consumer loans are net of unearned income of $723 million and $779 million at December 31, 2020 and 2019, respectively. Unearned income on consumer loans primarily represents unamortized origination fees and costs, premiums and discounts.

Interest Income Recognized for Non-Accrual Consumer Loans

In millions of dollars		For the year ended December 31, 2020
In North America offices[1]		
Residential first mortgages	$	12
Home equity loans		8
Credit cards		—
Personal, small business and other		—
Total	**$**	**20**
In offices outside North America[1]		
Residential first mortgages	$	1
Credit cards		—
Personal, small business and other		—
Total	**$**	**1**
Total Citibank	**$**	**21**

(1) North America includes the U.S., Canada and Puerto Rico. Mexico is included in offices outside North America.

During the years ended December 31, 2020 and 2019, the Company sold and/or reclassified to HFS $402 million and $2,658 million, 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 Fair Isaac Corporation (FICO) credit score. These scores are continually updated by the agencies based on 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 Citibank's U.S. consumer loan portfolio based on end-of-period receivables by year of origination. 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]	**December 31, 2020**				
In millions of dollars	**Less than 680**	**680 to 760**	**Greater than 760**	**FICO not available**	**Total loans**
Residential first mortgages					
2020	$ 187	$ 3,741	$ 9,052		
2019	150	1,857	5,384		
2018	246	655	1,227		
2017	298	846	1,829		
2016	323	1,368	3,799		
Prior	1,583	4,077	9,072		
Total residential first mortgages	**$ 2,787**	**$ 12,544**	**$ 30,363**	**$ 1,870**	**$ 47,564**
Credit cards[2]	**$ 26,227**	**$ 52,778**	**$ 49,767**	**$ 1,041**	**$ 129,813**
Home equity loans (pre-reset)	$ 292	$ 1,014	$ 1,657		
Home equity loans (post-reset)	1,053	1,568	1,524		
Total home equity loans	**$ 1,345**	**$ 2,582**	**$ 3,181**	**$ 16**	**$ 7,124**
Installment and other					
2020	$ 23	$ 58	$ 95		
2019	79	106	134		
2018	82	80	84		
2017	26	27	30		
2016	10	9	8		
Prior	214	393	529		
Personal, small business and other	**$ 434**	**$ 673**	**$ 880**	**$ 2,522**	**$ 4,509**
Total	**$ 30,793**	**$ 68,577**	**$ 84,191**	**$ 5,449**	**$ 189,010**

(1) The FICO bands in the tables are consistent with general industry peer presentations.
(2) Excludes $572 million of balances related to Canada.

FICO score distribution in U.S. portfolio[1]	December 31, 2019				
In millions of dollars	Less than 680	680 to 760	Greater than 760	FICO not available	Total loans
Residential first mortgages	$ 3,459	$ 13,206	$ 28,406	$ 1,692	$ 46,763
Home equity loans	1,897	3,527	3,731	57	9,212
Credit cards[2]	33,290	59,536	52,935	2,773	148,534
Personal, small business and other	564	907	1,473	755	3,699
Total	$ 39,210	$ 77,176	$ 86,545	$ 5,277	$ 208,208

(1) The FICO bands in the tables are consistent with general industry peer presentations.
(2) Excludes $629 million of balances related to Canada.

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 Citibank'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	**December 31, 2020**				
In millions of dollars	**Less than or equal to 80%**	**> 80% but less than or equal to 100%**	**Greater than 100%**	**LTV not available**	**Total**
Residential first mortgages					
2020	**$ 11,447**	**$ 1,543**	**$ —**		
2019	**7,029**	**376**	**2**		
2018	**1,617**	**507**	**11**		
2017	**2,711**	**269**	**4**		
2016	**5,423**	**84**	**2**		
Prior	**14,756**	**65**	**16**		
Total residential first mortgages	**$ 42,983**	**$ 2,844**	**$ 35**	**$ 1,702**	**$ 47,564**
Home equity loans (pre-reset)	**$ 2,876**	**$ 50**	**$ 16**		
Home equity loans (post-reset)	**3,781**	**290**	**57**		
Total home equity loans	**$ 6,657**	**$ 340**	**$ 73**	**$ 54**	**$ 7,124**
Total	**$ 49,640**	**$ 3,184**	**$ 108**	**$ 1,756**	**$ 54,688**

LTV distribution in U.S. portfolio	December 31, 2019				
In millions of dollars	Less than or equal to 80%	> 80% but less than or equal to 100%	Greater than 100%	LTV not available	Total
Residential first mortgages	$ 41,756	$ 3,309	$ 97	$ 1,601	$ 46,763
Home equity loans	8,098	828	236	50	9,212
Total	$ 49,854	$ 4,137	$ 333	$ 1,651	$ 55,975

Impaired Consumer Loans

A loan is considered impaired when Citibank 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 Citibank 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 total impaired consumer loans and interest income recognized on impaired consumer loans:

	At and for the year ended December 31, 2020				
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	**$ 1,532**	**$ 1,678**	**$ 126**	**$ 1,415**	**$ 53**
Home equity loans	**477**	**650**	**60**	**526**	**13**
Credit cards	**1,965**	**2,118**	**914**	**1,910**	**102**
Personal, small business and other	**437**	**437**	**188**	**385**	**27**
Total	**$ 4,411**	**$ 4,883**	**$ 1,288**	**$ 4,236**	**$ 195**

	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	$ 1,386	$ 1,528	$ 136	$ 1,640	$ 50
Home equity loans	591	823	123	636	9
Credit cards	1,909	2,246	762	1,868	99
Personal, small business and other	351	384	119	341	13
Total	$ 4,237	$ 4,981	$ 1,140	$ 4,485	$ 171

(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) For December 31, 2020, $183 million of residential first mortgages and $147 million of home equity loans do not have a specific allowance. For December 31, 2019, $360 million of residential first mortgages and $212 million of home equity loans do not have a specific allowance.
(3) Included in *Allowance for credit losses on loans.*
(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.

Consumer Troubled Debt Restructurings[1]

In millions of dollars, except number of loans modified	For the year ended December 31, 2020[1] Number of loans modified	Post-modification recorded investment[2][3]	Deferred principal[4]	Contingent principal forgiveness[5]	Principal forgiveness[6]	Average interest rate reduction
North America						
Residential first mortgages	887	$ 152	$ —	$ —	$ —	1 %
Home equity loans	210	18	1	—	—	3
Credit cards	215,466	1,038	—	—	—	17
Personal, small business and other	2,452	28	—	—	—	5
Total[7]	219,015	$ 1,236	$ 1	$ —	$ —	
International						
Residential first mortgages	388	$ 95	$ 3	$ —	$ —	1 %
Credit cards	69,414	361	—	—	12	11
Personal, small business and other	35,468	266	—	—	8	10
Total[7]	105,270	$ 722	$ 3	$ —	$ 20	

In millions of dollars, except number of loans modified	For the year ended December 31, 2019 Number of loans modified	Post-modification recorded investment[2][8]	Deferred principal[4]	Contingent principal forgiveness[5]	Principal forgiveness[6]	Average interest rate reduction
North America						
Residential first mortgages	1,238	$ 191	$ —	$ —	$ —	— %
Home equity loans	564	60	2	—	—	3
Credit cards	268,778	1,165	—	—	—	17
Personal, small business and other	1,719	15	—	—	—	5
Total[7]	272,299	$ 1,431	$ 2	$ —	$ —	
International						
Residential first mortgages	186	$ 27	$ —	$ —	$ —	— %
Credit cards	51,921	250	—	—	10	12
Personal, small business and other	23,473	161	—	—	6	9
Total[7]	75,580	$ 438	$ —	$ —	$ 16	

(1) The above tables do not include loan modifications that meet the TDR relief criteria in the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) or the interagency guidance.
(2) Post-modification balances include past due amounts that are capitalized at the modification date.
(3) Post-modification balances in *North America* include $18 million of residential first mortgages and $2 million of home equity loans to borrowers who have gone through Chapter 7 bankruptcy in the year ended December 31, 2020. These amounts include $10 million of residential first mortgages and $2 million of home equity loans that were newly classified as TDRs in the year ended December 31, 2020.
(4) 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.
(5) Represents portion of contractual loan principal that is non-interest bearing and, depending upon borrower performance, eligible for forgiveness.
(6) Represents portion of contractual loan principal that was forgiven at the time of permanent modification.
(7) The above tables reflect activity for restructured loans that were considered TDRs during the year.
(8) Post-modification balances in *North America* include $30 million of residential first mortgages and $9 million of home equity loans to borrowers who have gone through Chapter 7 bankruptcy in the year ended December 31, 2019. These amounts include $15 million of residential first mortgages and $8 million of home equity loans that were newly classified as TDRs during 2019, 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.

In millions of dollars	Year ended December 31, 2020	2019
North America		
Residential first mortgages	**$ 69**	$ 91
Home equity loans	**10**	13
Credit cards	**317**	301
Personal, small business and other	**4**	4
Total	**$ 400**	$ 409
International		
Residential first mortgages	**$ 6**	$ 2
Credit cards	**178**	141
Personal, small business and other	**76**	71
Total	**$ 260**	$ 214

Purchased Credit-Deteriorated Assets

In millions of dollars	Year ended December 31, 2020 Credit cards	Mortgages[1]	Installment and other
Purchase price	$ 4	$ 49	$ —
Allowance for credit losses at acquisition date	4	—	—
Discount or premium attributable to non-credit factors	—	—	—
Par value (amortized cost basis)	$ 8	$ 49	$ —

(1) Includes loans sold to agencies that were bought back at par due to repurchase agreements.

Corporate Loans

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

	December 31,	
In millions of dollars	**2020**	2019
In North America offices[1]		
Commercial and industrial	**$ 56,626**	$ 54,904
Financial institutions	**55,806**	52,846
Mortgage and real estate[2]	**60,596**	53,288
Installment and other	**26,466**	30,878
Lease financing	**633**	1,157
Total	**$ 200,127**	$ 193,073
In offices outside North America[1]		
Commercial and industrial	**$ 93,339**	$ 99,303
Financial institutions	**31,060**	38,316
Mortgage and real estate[2]	**9,872**	8,804
Installment and other	**31,785**	25,678
Lease financing	**11**	19
Governments and official institutions	**2,929**	2,887
Total	**$ 168,996**	$ 175,007
Corporate loans, net of unearned income[3]	**$ 369,123**	$ 368,080

(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 $(817) million and $(776) million at December 31, 2020 and 2019, respectively. Unearned income on corporate loans primarily represents interest received in advance, but not yet earned, on loans originated on a discounted basis.

Citibank sold and/or reclassified to held-for-sale $2.2 billion and $2.6 billion of corporate loans during the years ended December 31, 2020 and 2019, respectively. Citibank did not have significant purchases of corporate loans classified as held-for-investment for the years ended December 31, 2020 or 2019.

Lease financing

Citibank is a lessor in the power, railcars, shipping and aircraft sectors, where the Company has executed operating, direct financing and leveraged leases. Citibank's $0.6 billion of lease financing receivables, as of December 31, 2020, was composed of approximately equal balances of direct financing lease receivables and net investments in leveraged leases. Citibank 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, 2020 was not material.

The Company's leases have an average remaining maturity of approximately three years. In certain cases, Citibank 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 was $0.3 billion as of December 31, 2020, while the amount covered by residual value guarantees was $0.2 billion.

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

Delinquency Status

Citibank 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, 2020

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	$ 386	$ 109	$ 495	$ 2,489	$ 143,079	$ 146,063
Financial institutions	668	65	733	89	85,589	86,411
Mortgage and real estate	450	247	697	474	69,292	70,463
Lease financing	62	12	74	23	547	644
Other	112	19	131	95	60,891	61,117
Loans at fair value						4,425
Total	$ 1,678	$ 452	$ 2,130	$ 3,170	$ 359,398	$ 369,123

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	$ 649	$ 93	$ 742	$ 1,558	$ 150,956	$ 153,256
Financial institutions	791	3	794	50	89,119	89,963
Mortgage and real estate	534	4	538	187	61,376	62,101
Lease financing	58	9	67	40	1,069	1,176
Other	190	22	212	81	59,478	59,771
Loans at fair value						1,813
Total	$ 2,222	$ 131	$ 2,353	$ 1,916	$ 361,998	$ 368,080

(1) Corporate loans that are greater than 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) Citibank generally does not manage corporate loans on a delinquency basis. Non-accrual loans generally include those loans that are 90 days or more past due or those loans for which Citibank 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.

Citibank has a risk management process to monitor, evaluate and manage the principal risks associated with its corporate loan portfolio. As part of this process, Citibank 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)								
	Term loans by year of origination							Totals as of	
In millions of dollars	2020	2019	2018	2017	2016	Prior	Revolving line of credit arrangements(2)	December 31, 2020	December 31, 2019
Investment grade(3)									
Commercial and industrial(4)	$ 38,034	$ 6,862	$ 5,531	$ 3,462	$ 2,082	$ 8,155	$ 24,802	$ 88,928	$ 104,008
Financial institutions(4)	10,558	2,956	1,949	590	675	1,838	55,926	74,492	78,833
Mortgage and real estate	6,678	6,649	5,029	2,550	1,132	1,632	1,543	25,213	26,788
Other(5)	10,458	3,521	4,130	952	654	5,040	31,447	56,202	55,818
Total investment grade	$ 65,728	$ 19,988	$ 16,639	$ 7,554	$ 4,543	$ 16,665	$ 113,718	$ 244,835	$ 265,447
Non-investment grade(3)									
Accrual									
Commercial and industrial(4)	$ 18,612	$ 3,850	$ 4,085	$ 2,092	$ 1,092	$ 3,844	$ 21,071	$ 54,646	$ 47,690
Financial institutions(4)	7,372	639	651	273	41	190	2,664	11,830	11,081
Mortgage and real estate	1,550	1,760	1,969	1,317	601	759	427	8,383	3,537
Other(5)	1,337	861	698	260	109	492	1,684	5,441	5,006
Non-accrual									
Commercial and industrial(4)	243	216	175	139	62	155	1,499	2,489	1,558
Financial institutions	1	—	—	—	—	—	88	89	50
Mortgage and real estate	4	4	3	10	8	26	419	474	187
Other(5)	3	—	14	28	2	67	4	118	121
Total non-investment grade	$ 29,122	$ 7,330	$ 7,595	$ 4,119	$ 1,915	$ 5,533	$ 27,856	$ 83,470	$ 69,230
Non-rated private bank loans managed on a delinquency basis(3)(6)	$ 9,823	$ 7,121	$ 3,533	$ 3,674	$ 4,300	$ 7,942	$ —	$ 36,393	$ 31,590
Loans at fair value(7)								4,425	1,813
Corporate loans, net of unearned income	$ 104,673	$ 34,439	$ 27,767	$ 15,347	$ 10,758	$ 30,140	$ 141,574	$ 369,123	$ 368,080

(1) Recorded investment in a loan includes net deferred loan fees and costs, unamortized premium or discount, less any direct write-downs.
(2) There were no significant revolving line of credit arrangements that converted to term loans during the year.
(3) Held-for-investment loans are accounted for on an amortized cost basis.
(4) Includes certain short-term loans with less than one year in tenor.
(5) Other includes installment and other, lease financing and loans to government and official institutions.
(6) Non-rated private bank loans mainly include mortgage and real estate loans to private banking clients.
(7) Loans at fair value include loans to commercial and industrial, financial institutions, mortgage and real estate and other.

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 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:

	At and for the year ended December 31, 2020				
In millions of dollars	Recorded investment[1]	Unpaid principal balance	Related specific allowance	Average carrying value[2]	Interest income recognized
Non-accrual corporate loans					
Commercial and industrial	$ 2,489	$ 3,066	$ 423	$ 2,327	$ 11
Loans to financial institutions	89	175	17	130	—
Mortgage and real estate	474	771	38	393	—
Lease financing	23	23	—	34	—
Other	95	218	19	151	16
Total non-accrual corporate loans	$ 3,170	$ 4,253	$ 497	$ 3,035	$ 27

	At and for the year ended December 31, 2019				
In millions of dollars	Recorded investment[1]	Unpaid principal balance	Related specific allowance	Average carrying value[2]	Interest income recognized
Non-accrual corporate loans					
Commercial and industrial	$ 1,558	$ 1,656	$ 276	$ 1,329	$ 28
Loans to financial institutions	50	117	2	54	—
Mortgage and real estate	187	359	10	185	—
Lease financing	40	41	—	10	—
Other	81	202	2	77	9
Total non-accrual corporate loans	$ 1,916	$ 2,375	$ 290	$ 1,655	$ 37

	December 31, 2020		December 31, 2019	
In millions of dollars	Recorded investment[1]	Related specific allowance	Recorded investment[1]	Related specific allowance
Non-accrual corporate loans with specific allowances				
Commercial and industrial	$ 1,457	$ 423	$ 692	$ 276
Loans to financial institutions	89	17	40	2
Mortgage and real estate	246	38	48	10
Lease financing	—	—	—	—
Other	68	19	7	2
Total non-accrual corporate loans with specific allowance	$ 1,860	$ 497	$ 787	$ 290
Non-accrual corporate loans without specific allowance				
Commercial and industrial	$ 1,032		$ 866	
Loans to financial institutions	—		10	
Mortgage and real estate	228		139	
Lease financing	23		40	
Other	27		74	
Total non-accrual corporate loans without specific allowance	$ 1,310	N/A	$ 1,129	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.
N/A Not applicable

Corporate Troubled Debt Restructurings[1]

In millions of dollars	Carrying value of TDRs modified during the period	TDRs involving changes in the amount and/or timing of principal payments[2]	TDRs involving changes in the amount and/or timing of interest payments[3]	TDRs involving changes in the amount and/or timing of both principal and interest payments
	For the year ended December 31, 2020			
Commercial and industrial	$ 247	$ —	$ —	$ 247
Mortgage and real estate	19	—	—	19
Other	19	6	—	13
Total	**$ 285**	**$ 6**	**$ —**	**$ 279**

In millions of dollars	Carrying value of TDRs modified during the period	TDRs involving changes in the amount and/or timing of principal payments[2]	TDRs involving changes in the amount and/or timing of interest payments[3]	TDRs involving changes in the amount and/or timing of both principal and interest payments
	For the year ended December 31, 2019			
Commercial and industrial	$ 262	$ 19	$ —	$ 243
Mortgage and real estate	16	—	—	16
Other	—	—	—	—
Total	$ 278	$ 19	$ —	$ 259

(1) The above tables do not include loan modifications that meet the TDR relief criteria in the CARES Act or the interagency guidance.
(2) 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 commercial 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 loan. Charge-offs for amounts deemed uncollectible 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.
(3) 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, 2020**	**TDR loans that re-defaulted in 2020 within one year of modification**	TDR balances at December 31, 2019	TDR loans that re-defaulted in 2019 within one year of modification
Commercial and industrial	$ 314	$ —	$ 426	$ 28
Financial institutions	—	—	—	—
Mortgage and real estate	89	—	79	—
Lease financing	—	—	—	—
Other	33	—	3	—
Total[1]	**$ 436**	**$ —**	$ 508	$ 28

(1) The above table reflects activity for loans outstanding that were considered TDRs as of the end of the reporting period.

13. ALLOWANCE FOR CREDIT LOSSES

In millions of dollars		2020		2019
Allowance for credit losses on loans (ACLL) at beginning of year	$	**11,049**	$	10,652
Adjustments to opening balance[1]:				
Financial instruments—credit losses (CECL adoption)		**3,779**		—
Variable post-charge-off third-party collection costs		**(395)**		—
Adjusted ACLL at beginning of year	$	**14,433**	$	10,652
Gross credit losses on loans	$	**(8,216)**	$	(8,065)
Gross recoveries on loans		**1,520**		1,426
Net credit losses on loans (NCLs)	$	**(6,696)**	$	(6,639)
NCLs	$	**6,696**	$	6,639
Net reserve builds for loans		**6,990**		352
Net specific reserve builds (releases) for loans		**649**		91
Total provision for credit losses on loans (PCLL)	$	**14,335**	$	7,082
Initial allowance for credit losses on newly purchased credit-deteriorated assets during the year		**4**		—
Other, net (see table below)		**47**		(46)
ACLL at end of year	$	**22,123**	$	11,049
Allowance for credit losses on unfunded lending commitments (ACLUC) at beginning of year[2]	$	**1,314**	$	1,249
Adjustment to opening balance for CECL adoption[1]		**(130)**		—
Provision (release) for credit losses on unfunded lending commitments	$	**1,393**	$	72
Other, net[3]		**(55)**		(7)
ACLUC at end of year[2]	$	**2,522**	$	1,314
Total allowance for credit losses on loans, leases and unfunded lending commitments	$	**24,645**	$	12,363

Other, net details

In millions of dollars		2020		2019
Sales or transfers of various consumer loan portfolios to HFS				
Transfer of real estate loan portfolios	$	**2**	$	(42)
Transfer of other loan portfolios		**—**		—
Sales or transfers of various consumer loan portfolios to HFS	$	**2**	$	(42)
FX translation		**52**		4
Other		**(7)**		(8)
Other, net	$	**47**	$	(46)

(1) See "Accounting Changes" in Note 2 to the Consolidated Financial Statements for additional details.
(2) Represents additional credit loss reserves for unfunded lending commitments and letters of credit recorded in *Other liabilities* on the Consolidated Balance Sheet.
(3) 2020 includes a non-provision transfer of $66 million, representing reserves on performance guarantees. The reserves on these contracts have been reclassified out of the allowance for credit losses on unfunded lending commitments and into *Other liabilities* on the Consolidated Balance Sheet beginning in 2020.

Allowance for Credit Losses on Loans and End-of-Period Loans at December 31, 2020

In millions of dollars	Corporate	Consumer	Total
ACLL at beginning of year	$ 2,538	$ 8,511	$ 11,049
Adjustments to opening balance:			
Financial instruments—credit losses (CECL)[1]	(589)	4,368	3,779
Variable post-charge-off third-party collection costs[1]	—	(395)	(395)
Adjusted ACLL at beginning of year	$ 1,949	$ 12,484	$ 14,433
Charge-offs	$ (1,016)	$ (7,200)	$ (8,216)
Recoveries	82	1,438	1,520
Replenishment of net charge-offs	934	5,762	6,696
Net reserve builds (releases)	2,548	4,442	6,990
Net specific reserve builds (releases)	272	377	649
Initial allowance for credit losses on newly purchased credit-deteriorated assets during the year	—	4	4
Other	(18)	65	47
Ending balance	$ 4,751	$ 17,372	$ 22,123
Allowance for credit losses on loans			
Collectively evaluated	$ 4,254	$ 16,082	$ 20,336
Individually evaluated	497	1,288	1,785
Purchased credit deteriorated	—	2	2
Total allowance for credit losses on loans	$ 4,751	$ 17,372	$ 22,123
Loans, net of unearned income			
Collectively evaluated	$ 361,528	$ 269,410	$ 630,938
Individually evaluated	3,170	4,411	7,581
Purchased credit deteriorated	—	141	141
Held at fair value	4,425	14	4,439
Total loans, net of unearned income	$ 369,123	$ 273,976	$ 643,099

(1) See "Accounting Changes" in Note 2 to the Consolidated Financial Statements for additional details.

Allowance for Credit Losses on Loans and End-of-Period Loans at December 31, 2019

In millions of dollars	Corporate	Consumer	Total
ACLL at beginning of year	$ 2,520	$ 8,132	$ 10,652
Charge-offs	(463)	(7,602)	(8,065)
Recoveries	89	1,337	1,426
Replenishment of net charge-offs	374	6,265	6,639
Net reserve builds (releases)	44	308	352
Net specific reserve builds (releases)	(16)	107	91
Other	(10)	(36)	(46)
Ending balance	$ 2,538	$ 8,511	$ 11,049
Allowance for credit losses on loans			
Collectively evaluated	$ 2,248	$ 7,370	$ 9,618
Individually evaluated	290	1,140	1,430
Purchased credit deteriorated	—	1	1
Total allowance for credit losses on loans	$ 2,538	$ 8,511	$ 11,049
Loans, net of unearned income			
Collectively evaluated	$ 364,351	$ 287,253	$ 651,604
Individually evaluated	1,916	4,237	6,153
Purchased credit deteriorated	—	128	128
Held at fair value	1,813	18	1,831
Total loans, net of unearned income	$ 368,080	$ 291,636	$ 659,716

HTM debt securities had an allowance for credit losses of $50 million and a provision for credit losses of $(2) million as of and for the year ended December 31, 2020.

Citibank also recorded an allowance for credit losses of $39 million and a provision for credit losses of $9 million as of and for the year ended December 31, 2020, on receivables and other financial assets carried at amortized costs that are in the scope of CECL. There was no allowance as of December 31, 2019 due to CECL not being adopted until January 1, 2020. For ACL on AFS debt securities, see Note 11 to the Consolidated Financial Statements.

14. GOODWILL AND INTANGIBLE ASSETS

Goodwill

The changes in *Goodwill* were as follows:

In millions of dollars		
Balance at December 31, 2018	$	10,523
Foreign exchange translation	$	(56)
Balance at December 31, 2019	$	10,467
Foreign exchange translation	$	174
Balance at December 31, 2020	**$**	**10,641**

The Company performed its annual goodwill impairment test as of July 1, 2020. Similar to 2019, the Company engaged an independent valuation specialist in 2020 to assist in Citibank's valuation for all the reporting units with goodwill balances, employing both the market approach and the discounted cash flow (DCF) method. The resulting fair values were relatively consistent and appropriate weighting was given to outputs from both methods. The fair values of the Company's reporting units exceeded their carrying values by approximately 45% to 58% and no reporting unit was at risk of impairment.

For additional information regarding the Company's goodwill impairment testing process, see Note 2 to the Consolidated Financial Statements for the accounting policy for goodwill, including the adoption of a new accounting standard regarding the subsequent measurement of goodwill.

Intangible Assets

The components of intangible assets were as follows:

In millions of dollars	December 31, 2020 Gross carrying amount	December 31, 2020 Accumulated amortization	December 31, 2020 Net carrying amount	December 31, 2019 Gross carrying amount	December 31, 2019 Accumulated amortization	December 31, 2019 Net carrying amount
Purchased credit card relationships	$ 5,589	$ 4,171	$ 1,418	$ 5,614	$ 3,998	$ 1,616
Credit card contract-related intangibles(1)	3,929	1,276	2,653	5,393	3,069	2,324
Core deposit intangibles	45	45	—	43	42	1
Other customer relationships	33	18	15	25	16	9
Indefinite-lived intangible assets	7	—	7	7	—	7
Other	70	64	6	64	58	6
Intangible assets (excluding MSRs)	$ 9,673	$ 5,574	$ 4,099	$ 11,146	$ 7,183	$ 3,963
Mortgage servicing rights (MSRs)(2)	336	—	336	495	—	495
Total intangible assets	$ 10,009	$ 5,574	$ 4,435	$ 11,641	$ 7,183	$ 4,458

(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, 2020.

(2) For additional information on Citibank's MSRs, see Note 18 to the Consolidated Financial Statements.

Intangible assets amortization expense was $399 million and $540 million for 2020 and 2019, respectively. Intangible assets amortization expense is estimated to be $190 million in 2021, $208 million in 2022, $221 million in 2023, $243 million in 2024 and $252 million in 2025.

The changes in intangible assets were as follows:

In millions of dollars	Net carrying amount at December 31, 2019	Acquisitions/ renewals/ divestitures	Amortization	Impairments	FX translation and other	Net carrying amount at December 31, 2020
Purchased credit card relationships(1)	$ 1,616	$ 11	$ (200)	$ (10)	$ 1	$ 1,418
Credit card contract-related intangibles(2)	2,324	509	(183)	—	3	2,653
Core deposit intangibles	1	—	(1)	—	—	—
Other customer relationships	9	—	(3)	—	9	15
Indefinite-lived intangible assets	7	—	—	—	—	7
Other	6	7	(12)	—	5	6
Intangible assets (excluding MSRs)	$ 3,963	$ 527	$ (399)	$ (10)	$ 18	$ 4,099
Mortgage servicing rights (MSRs)(3)	495					336
Total intangible assets	$ 4,458					$ 4,435

(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 as of December 31, 2020 and 2019. During 2020, Citibank renewed its contract with American Airlines.

(3) For additional information on Citibank's MSRs, including the rollforward from 2019 to 2020, see Note 18 to the Consolidated Financial Statements.

15. DEBT

Short-Term Borrowings

In millions of dollars at December 31,	2020 Balance	2020 Weighted average rates	2019 Balance	2019 Weighted average rates
Commercial paper	$ **10,022**	**0.23%**	$ 10,155	1.91%
Other borrowings[1]	**6,797**	**0.48**	22,385	2.60
Total	$ **16,819**		$ 32,540	

(1) Includes borrowings from the Federal Home Loan Banks and other market participants. At December 31, 2020 and 2019, collateralized short-term advances from the Federal Home Loan Banks were $4.0 billion and $17.6 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 banks. Citibank pays commitment fees for its lines of credit.

Citibank has credit facilities with some of Citigroup's non-bank subsidiaries. Borrowings under these facilities must be secured in accordance with Section 23A of the Federal Reserve Act.

Long-Term Debt

In millions of dollars	Weighted average coupon[1]	Maturities	Balances at December 31, 2020	Balances at December 31, 2019
Citibank head office				
Senior notes[2][3]	**1.51 %**	**2021-2037**	$ **38,135**	$ 47,111
Subordinated notes[3][4]	**3.10**	**2021-2029**	**12,000**	12,000
Domestic subsidiaries				
Senior notes	**1.77**	**2021-2037**	**15,376**	19,669
Citibank Overseas Investment Corp.				
Senior notes	**1.60**	**2021-2049**	**3,426**	3,669
Other Citibank subsidiaries and branches				
Senior notes	**1.67**	**2021-2024**	**777**	734
Total	**1.85 %**		$ **69,714**	$ 83,183
Senior notes			$ **57,714**	$ 71,183
Subordinated notes[4]			**12,000**	12,000
Total			$ **69,714**	$ 83,183

(1) The weighted-average coupon excludes structured notes accounted for at fair value.
(2) Includes borrowings from the Federal Home Loan Banks and other market participants. At December 31, 2020 and 2019, collateralized advances from the Federal Home Loan Banks were $10.9 billion and $5.5 billion, respectively.
(3) Predominately includes floating-rate debt.
(4) Includes notes that are subordinated within certain countries, regions or subsidiaries.

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, 2020, the Company's overall weighted-average interest rate for long-term debt, excluding structured notes accounted for at fair value, was 1.85% on a contractual basis and 1.62% including the effects of derivative contracts.

Aggregate annual maturities of long-term debt obligations (based on final maturity dates) are as follows:

In millions of dollars	2021	2022	2023	2024	2025	Thereafter	Total
Citibank head office	$ 10,794	$ 12,240	$ 3,394	$ 2,758	$ 2,860	$ 18,090	$ 50,136
Domestic subsidiaries	7,023	2,097	2,347	1,094	374	2,441	15,376
Citibank Overseas Investment Corp.	680	1,013	183	376	122	1,050	3,424
Other Citibank subsidiaries and branches	3	402	16	357	—	—	778
Total	$ 18,500	$ 15,752	$ 5,940	$ 4,585	$ 3,356	$ 21,581	$ 69,714

16. CAPITAL RESOURCES

Overview

Capital is used principally to support assets in Citibank's businesses and to absorb credit, market and operational losses. Citibank primarily generates capital through earnings from its operating businesses. Citibank may augment its capital through capital contributions from Citicorp and, in the case of regulatory capital, also through the issuance of qualifying noncumulative perpetual preferred stock and qualifying subordinated debt. Further, Citibank'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 Citibank's business results, such as changes in interest and foreign exchange rates, as well as business and asset dispositions.

During 2020, Citibank returned a total of $2.3 billion of regulatory capital in the form of dividends on common and preferred stock to its parent company, Citicorp, a direct subsidiary of Citigroup. The payment of dividends by Citibank is limited by federal banking laws and regulations.

Capital Management

Citibank's capital management framework is designed to ensure that Citibank and its principal subsidiaries maintain sufficient capital consistent with each entity's respective risk profile, management targets and all applicable regulatory standards and guidelines, as well as external rating agency considerations.

Senior management is responsible for Citibank's capital management process mainly through the Citigroup Capital Committee and Citibank's Asset and Liability Management Committee (ALCO), with oversight from the Risk Management Committee of Citibank's Board of Directors.

The Citigroup Capital Committee has broad capital structure and monitoring responsibilities across Citigroup. As Citigroup's largest subsidiary, Citibank is subject to certain activities overseen by the Citigroup Capital Committee, which include Citigroup's Capital Policy, overall Capital Adequacy Assessment Framework and oversight and approval of Citibank's Recovery and Resolution Plans. Citibank's Chief Executive Officer (CEO) is a member of the Citigroup Capital Committee and holds veto power over all Capital Committee decisions or recommendations related to Citibank.

ALCO membership includes senior managers and treasurers of Citibank for the purpose of decision-making and related discussions on balance sheet management, including oversight of capital adequacy. Among other activities, ALCO's responsibilities include monitoring Citibank's assets, liabilities and commitment trends and forecasts; identifying Citibank's liquidity risks and ensuring those risks are adequately monitored and controlled; and ensuring prudent interest rate and foreign exchange risk positions for Citibank's accrual portfolios.

Current Regulatory Capital Standards

Citibank is subject to regulatory capital standards issued by the Office of the Comptroller of the Currency (OCC), 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.

Under the U.S. Basel III rules, Citibank is required to maintain stated minimum Common Equity Tier 1 Capital, Tier 1 Capital and Total Capital ratios of 4.5%, 6.0% and 8.0%, respectively. 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.

Tier 1 Leverage Ratio

Under the U.S. Basel III rules, Citibank 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

Citibank 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%.

Temporary Supplementary Leverage Ratio Relief

In June 2020, the U.S. banking agencies issued an interim final rule permitting depository institutions, including Citibank, to elect to temporarily exclude U.S. Treasuries and deposits at Federal Reserve Banks from Total Leverage Exposure through March 31, 2021, subject to the condition that the depository institution receive approval from its primary federal banking regulator prior to paying dividends or making certain other capital distributions while the exclusion is in effect. Citibank did not elect to temporarily exclude U.S. Treasuries and deposits at Federal Reserve Banks from Total Leverage Exposure. Accordingly, the calculation methodology of Citibank's Supplementary Leverage ratio was unchanged.

Regulatory Capital Treatment—Modified Transition of the Current Expected Credit Losses Methodology

In September 2020, the U.S. banking agencies issued a final rule (substantially unchanged from a March 2020 interim final rule) that modifies the regulatory capital transition provision related to the current expected credit losses (CECL) methodology. The final rule does not have any impact on U.S. GAAP accounting.

The final rule permits banks to delay for two years the "Day One" adverse regulatory capital effects resulting from adoption of the CECL methodology on January 1, 2020 until January 1, 2022, followed by a three-year transition to phase out the regulatory capital benefit provided by the delay.

In addition, for the ongoing impact of CECL, the agencies utilize a 25% scaling factor as an approximation of the increased reserve build under CECL compared to the previous incurred loss model and, therefore, allow banks to add back to Common Equity Tier 1 Capital an amount equal to 25% of the change in CECL-based allowances recognized through earnings in each quarter between January 1, 2020 and December 31, 2021. Beginning January 1, 2022, the cumulative 25% change in CECL-based allowances recognized through earnings between January 1, 2020 and December 31, 2021 will be phased in to regulatory capital at 25% per year on January 1 of each year over the three-year transition period, along with the delayed "Day One" impact.

Citibank has elected the modified CECL transition provision provided by the rule beginning with the quarter ended March 31, 2020. Accordingly, the Day One regulatory capital effects resulting from adoption of the CECL methodology, as well as the ongoing adjustments for 25% of the change in CECL-based allowances recognized through earnings in each quarter between January 1, 2020 and December 31, 2021, will now commence phase-in on January 1, 2022 and will be fully reflected in Citibank's regulatory capital as of January 1, 2025.

Regulatory Capital Buffers

Citibank is subject to a fixed 2.5% Capital Conservation Buffer above stated minimum capital requirements, under both the Advanced Approaches and the Standardized Approach. In addition, Advanced Approaches banking organizations, such as Citibank, are subject to a discretionary Countercyclical Capital Buffer, which is currently set at 0%. Any breach of the buffers would result in restrictions on earnings distributions (e.g., dividends, share repurchases and discretionary executive bonuses), with the degree of such restrictions based on the extent to which the buffers are breached.

Use of Regulatory Capital Buffers

In March 2020, the U.S. banking agencies issued a statement encouraging banking organizations to use their regulatory capital buffers as they respond to the challenges presented by the effects of the COVID-19 pandemic.

Consistent with the statement, in October 2020, the U.S. banking agencies issued a final rule (substantially unchanged from two previous interim final rules in March 2020) that eases capital distribution limitations in the original U.S. Basel III rules, in an effort to reduce the impact of using regulatory capital buffers. The changes in the rule have the potential to prevent a complete and sudden cessation of capital distributions due to a breach of regulatory capital buffers, which include the Capital Conservation Buffer and any Countercyclical Capital Buffer (currently 0%). The rule became effective in March 2020, and applies to risk-based capital ratios and the Supplementary Leverage ratio.

More specifically, under the U.S. Basel III rules, banking organizations that fall below their regulatory capital buffers are subject to limitations on capital distributions and discretionary bonus payments to executive officers based on a percentage of "Eligible Retained Income" (ERI), with increasing restrictions based on the severity of the breach. The original definition of ERI in the U.S. Basel III rules was equal to the bank's net income for the four calendar quarters preceding the current calendar quarter, net of any distributions and tax effects not already reflected in net income. The final rule revises the definition of ERI to equal the greater of (i) the bank's net income for the four calendar quarters preceding the current calendar quarter, net of any distributions and tax effects not already reflected in net income, and (ii) the average of the bank's net income for the four calendar quarters preceding the current calendar quarter.

As of December 31, 2020, Citibank's regulatory capital ratios exceeded effective regulatory minimum requirements. Citibank is not subject to payout limitations as a result of Basel III requirements.

The impact of the final rule on Citibank is limited, because the minimum requirements to be considered "well-capitalized" under the Prompt Corrective Action (PCA) framework are unchanged.

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. global systemically important bank holding companies (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, 2020.

Dodd-Frank Act Stress Test (DFAST)
Citibank is required to conduct the annual DFAST, which 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. The DFAST program serves to inform senior management and the OCC 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.

Citibank's Capital Resources
Citibank is required to maintain stated minimum Common Equity Tier 1 Capital, Tier 1 Capital and Total Capital ratios of 4.5%, 6.0% and 8.0%, respectively. Citibank's effective minimum capital requirements are presented in the table below.

The following tables set forth the capital tiers, total risk-weighted assets and underlying risk components, risk-based capital ratios, quarterly adjusted average total assets, Total Leverage Exposure and leverage ratios for Citibank as of December 31, 2020 and 2019.

Citibank Capital Components and Ratios

		Advanced Approaches		Standardized Approach	
In millions of dollars, except ratios	**Effective Minimum Requirement**[1]	**December 31, 2020**	December 31, 2019	**December 31, 2020**	December 31, 2019
Common Equity Tier 1 Capital[2]		**$ 142,854**	$ 130,720	**$ 142,854**	$ 130,720
Tier 1 Capital		**144,962**	132,847	**144,962**	132,847
Total Capital (Tier 1 Capital + Tier 2 Capital)[2][3]		**161,257**	145,918	**169,192**	157,253
Total Risk-Weighted Assets		**1,011,062**	938,735	**1,029,068**	1,022,607
Credit Risk[2]		**$ 706,096**	$ 671,131	**$ 968,403**	$ 993,010
Market Risk		**59,815**	29,167	**60,665**	29,597
Operational Risk		**245,151**	238,437	**—**	—
Common Equity Tier 1 Capital ratio[4]	7.0 %	**14.13 %**	13.93 %	**13.88 %**	12.78 %
Tier 1 Capital ratio[4]	**8.5**	**14.34**	14.15	**14.09**	12.99
Total Capital ratio[4]	**10.5**	**15.95**	15.54	**16.44**	15.38

In millions of dollars, except ratios	**Effective Minimum Requirement**	**December 31, 2020**	December 31, 2019
Quarterly Adjusted Average Total Assets[2][5]		**$ 1,680,026**	$ 1,459,780
Total Leverage Exposure[2][6]		**2,167,939**	1,958,173
Tier 1 Leverage ratio	5.0 %	**8.63 %**	9.10 %
Supplementary Leverage ratio	**6.0**	**6.69**	6.78

(1) Citibank's effective minimum risk-based capital requirements during 2020 and 2019 are inclusive of the 2.5% Capital Conservation Buffer (all of which must be composed of Common Equity Tier 1 Capital).
(2) Citibank has elected to apply the modified transition provision related to the impact of the CECL accounting standard on regulatory capital, as provided by the U.S. banking agencies' September 2020 final rule. Under the modified CECL transition provision, the changes in retained earnings (after-tax), deferred tax assets (DTAs) arising from temporary differences and the ACL upon the January 1, 2020 CECL adoption date have been deferred and will phase in to regulatory capital at 25% per year commencing January 1, 2022. For the ongoing impact of CECL, Citibank is allowed to adjust retained earnings and the ACL in an amount equal to 25% of the change in the ACL recognized through earnings (pretax) for each period between January 1, 2020 and December 31, 2021. The cumulative adjustments to retained earnings and the ACL between January 1, 2020 and December 31, 2021 will also phase in to regulatory capital at 25% per year commencing January 1, 2022, along with the deferred impacts related to the January 1, 2020 CECL adoption date. Corresponding adjustments to average on-balance sheet assets are reflected in quarterly adjusted average total assets and Total Leverage Exposure. In addition, the increase in DTAs arising from temporary differences upon the January 1, 2020 adoption date has been deducted from risk-weighted assets (RWA) and will phase in to RWA at 25% per year commencing January 1, 2022.
(3) 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 ACL is eligible for inclusion in Tier 2 Capital up to 1.25% of credit risk-weighted assets, with any excess ACL being deducted in arriving at credit risk-weighted assets.
(4) Citibank's reportable Total Capital ratio was derived under the Basel III Advanced Approaches framework as of December 31, 2020 and the Basel III Standardized Approach as of December 31, 2019, whereas Citibank's reportable Common Equity Tier 1 Capital and Tier 1 Capital ratios were the lower derived under the Basel III Standardized Approach framework for both periods presented.
(5) Tier 1 Leverage ratio denominator. Represents quarterly average total assets less amounts deducted from Tier 1 Capital.
(6) Supplementary Leverage ratio denominator. Citibank did not elect to temporarily exclude U.S. Treasuries and deposits at Federal Reserve Banks from Total Leverage Exposure. For additional information, see "Temporary Supplementary Leverage Ratio Relief" above.

As indicated in the table above, Citibank's capital ratios at December 31, 2020 and 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, 2020 and 2019.

Regulatory Capital Standards Developments

Total Loss-Absorbing Capacity (TLAC) Holdings

In January 2021, the U.S. banking agencies issued a final rule that creates a new regulatory capital deduction applicable to Advanced Approaches banking organizations for certain investments in covered debt instruments issued by GSIBs. The final rule is substantially consistent with an April 2019 proposal, and is intended to reduce interconnectedness and systemic risk by creating an incentive for Advanced Approaches banking organizations to limit their exposure to GSIBs.

The final rule will become effective for Citibank on April 1, 2021. Citibank estimates that the final rule will not significantly impact its regulatory capital upon adoption.

Standardized Approach for Counterparty Credit Risk

In January 2020, the U.S. banking agencies issued a final rule to introduce the Standardized Approach for Counterparty Credit Risk (SA-CCR) in the U.S. The mandatory compliance date of the SA-CCR final rule is January 1, 2022, and early adoption was originally permitted beginning April 1, 2020.

In March 2020, the U.S. banking agencies issued an interim final rule permitting banks to early adopt the SA-CCR final rule beginning with the quarter ended March 31, 2020.

Citibank has not early adopted the SA-CCR final rule. Citibank intends to implement SA-CCR upon the mandatory compliance date of January 1, 2022.

17. CHANGES IN ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS) (AOCI)

Changes in each component of Citibank'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 plan liability adjustment[3]	Foreign currency translation adjustment, net of hedges[4]	Excluded component of fair value hedges	Accumulated other comprehensive income (loss)
Balance at December 31, 2018	$ (1,877)	$ (1)	$ (579)	$ (2,551)	$ (16,836)	$ 47	$ (21,797)
Other comprehensive income before reclassifications	2,532	(2)	600	(367)	(404)	(16)	2,343
Increase (decrease) due to amounts reclassified from *AOCI*	(939)	—	255	104	—	—	(580)
Change, net of taxes	$ 1,593	$ (2)	$ 855	$ (263)	$ (404)	$ (16)	$ 1,763
Balance at December 31, 2019	$ (284)	$ (3)	$ 276	$ (2,814)	$ (17,240)	$ 31	$ (20,034)
Other comprehensive income before reclassifications	**$ 4,128**	**$ —**	**$ 2,053**	**$ (92)**	**$ 316**	**$ (29)**	**$ 6,376**
Increase (decrease) due to amounts reclassified from *AOCI*	**(998)**	**—**	**(575)**	**125**	**—**	**—**	**(1,448)**
Change, net of taxes	**$ 3,130**	**$ —**	**$ 1,478**	**$ 33**	**$ 316**	**$ (29)**	**$ 4,928**
Balance at December 31, 2020	**$ 2,846**	**$ (3)**	**$ 1,754**	**$ (2,781)**	**$ (16,924)**	**$ 2**	**$ (15,106)**

(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 Citibank's pay fixed/receive floating interest rate swap programs that hedge the floating rates on liabilities.
(3) Primarily reflects adjustments based on the 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 Brazilian real, South Korean won, Australian dollar and Chinese yuan against the U.S. dollar and changes in related tax effects and hedges for the year ended December 31, 2020. Primarily reflects the movements in (by order of impact) the South Korean won, Chilean peso, Indian rupee and Brazilian real against the U.S. dollar and changes in related tax effects and hedges for the year ended December 31, 2019. 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.

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 at December 31, 2018	$ (26,528)	$ 4,731	$ (21,797)
Change in net unrealized gains (losses) on investment securities	2,098	(505)	1,593
Debt valuation adjustment (DVA)	(2)	—	(2)
Cash flow hedges	1,121	(266)	855
Benefit plans	(254)	(9)	(263)
Foreign currency translation adjustment	(397)	(7)	(404)
Excluded component of fair value hedges	(21)	5	(16)
Change	$ 2,545	$ (782)	$ 1,763
Balance at December 31, 2019	$ (23,983)	$ 3,949	$ (20,034)
Change in net unrealized gains (losses) on investment securities	**4,163**	**(1,033)**	**3,130**
Debt valuation adjustment (DVA)	**—**	**—**	**—**
Cash flow hedges	**1,935**	**(457)**	**1,478**
Benefit plans	**13**	**20**	**33**
Foreign currency translation adjustment	**419**	**(103)**	**316**
Excluded component of fair value hedges	**(39)**	**10**	**(29)**
Change	**$ 6,491**	**$ (1,563)**	**$ 4,928**
Balance at December 31, 2020	**$ (17,492)**	**$ 2,386**	**$ (15,106)**

(1) Includes the impact of ASU 2018-02, which transferred amounts from *AOCI* to *Retained earnings*. See Note 2 to the Consolidated Financial Statements. Citibank 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 2 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	2020	2019
Realized (gains) losses on sales of investments	$ **(1,391)**	$ (1,287)
Gross impairment losses	**71**	20
Subtotal, pretax	$ **(1,320)**	$ (1,267)
Tax effect	**322**	328
Net realized (gains) losses on investments, after-tax[1]	$ **(998)**	$ (939)
Realized DVA (gains) losses on fair value option liabilities, pretax	$ **—**	$ —
Tax effect	**—**	—
Net realized DVA, after-tax	$ **—**	$ —
Interest rate contracts	$ **(754)**	$ 337
Foreign exchange contracts	**—**	—
Subtotal, pretax	$ **(754)**	$ 337
Tax effect	**179**	(82)
Amortization of cash flow hedges, after-tax[2]	$ **(575)**	$ 255
Amortization of unrecognized:		
Prior service cost (benefit)	$ **11**	$ —
Net actuarial loss	**161**	124
Curtailment/settlement impact[3]	**(7)**	9
Subtotal, pretax	$ **165**	$ 133
Tax effect	**(40)**	(29)
Amortization of benefit plans, after-tax[3]	$ **125**	$ 104
Excluded component of fair value hedges, pretax	$ **—**	$ —
Tax effect	**—**	—
Excluded component of fair value hedges, after-tax	$ **—**	$ —
Foreign currency translation adjustment, pretax	$ **—**	$ —
Tax effect	**—**	—
Foreign currency translation adjustment, after-tax	$ **—**	$ —
Total amounts reclassified out of *AOCI*, pretax	$ **(1,909)**	$ (797)
Total tax effect	**461**	217
Total amounts reclassified out of *AOCI*, after-tax	$ **(1,448)**	$ (580)

(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 11 to the Consolidated Financial Statements for additional details.
(2) See Note 19 to the Consolidated Financial Statements for additional details.
(3) See Note 8 to the Consolidated Financial Statements for additional details.

18. 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 Citibank 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. Citibank may be the provider of certain credit enhancements as well as the counterparty to any related derivative contracts.

Most of Citibank'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. Citibank 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 therefore not an indicator of power or potentially significant benefits or losses.

Citibank'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, 2020							
				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	$ 32,420	$ 32,420	$ —	$ —	$ —	$ —	$ —	$ —
Mortgage securitizations(4)								
U.S. agency-sponsored	40,420	—	40,420	305	—	—	61	366
Non-agency-sponsored	13,050	918	12,132	1,768	—	2	1	1,771
Citibank-administered asset-backed commercial paper conduits	16,730	16,730	—	—	—	—	—	—
Collateralized loan obligations (CLOs)	9,785	—	9,785	4,147	—	—	—	4,147
Asset-based financing(5)	205,892	986	204,906	24,612	302	8,594	—	33,508
Municipal securities tender option bond trusts (TOBs)	3,349	835	2,514	—	—	1,611	—	1,611
Municipal investments	19,988	—	19,988	2,492	4,045	3,041	—	9,578
Client intermediation	1,088	758	330	84	—	—	—	84
Other	—	—	—	—	—	—	—	—
Total	**$ 342,722**	**$ 52,647**	**$ 290,075**	**$ 33,408**	**$ 4,347**	**$ 13,248**	**$ 62**	**$ 51,065**

	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	43,891	—	43,891	475	—	—	72	547
Non-agency-sponsored	9,504	1,161	8,343	269	—	—	1	270
Citibank-administered asset-backed commercial paper conduits	15,622	15,622	—	—	—	—	—	—
Collateralized loan obligations (CLOs)	9,372	—	9,372	3,928	—	—	—	3,928
Asset-based financing(5)	182,664	1,015	181,649	23,047	85	8,783	—	31,915
Municipal securities tender option bond trusts (TOBs)	6,950	1,458	5,492	—	—	3,544	—	3,544
Municipal investments	19,693	—	19,693	2,556	4,256	3,032	—	9,844
Client intermediation	1,230	1,230	—	—	—	—	—	—
Other	352	1	351	169	—	39	—	208
Total	$ 332,812	$ 64,021	$ 268,791	$ 30,444	$ 4,341	$ 15,398	$ 73	$ 50,256

(1) The definition of maximum exposure to loss is included in the text that follows this table.
(2) Included on Citibank's 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) Included within this line are loans to third-party sponsored private equity funds, which represent $78 billion and $69 billion in unconsolidated VIE assets and $425 million and $711 million in maximum exposure to loss as of December 31, 2020 and 2019, respectively.

The previous tables do not include:

- 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. As of December 31, 2020 and 2019, the Company's maximum exposure to loss related to these deals was $57 billion and $52.5 billion, respectively (for more information on these positions, see Notes 12 and 23 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 11 and 21 to the Consolidated Financial Statements); and
- certain representations and warranties exposures in Citibank residential mortgage securitizations, in which the original mortgage loan balances are no longer outstanding.

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 table above:

	December 31, 2020		December 31, 2019	
In millions of dollars	**Liquidity facilities**	**Loan/equity commitments**	Liquidity facilities	Loan/equity commitments
Non-agency-sponsored mortgage securitizations	$ —	$ 2	$ —	$ —
Asset-based financing	—	**8,594**	—	8,783
Municipal securities tender option bond trusts (TOBs)	**1,611**	—	3,544	—
Municipal investments	—	**3,041**	—	3,032
Other	—	—	—	39
Total funding commitments	**$ 1,611**	**$ 11,637**	$ 3,544	$ 11,854

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 the Company's Consolidated Balance Sheet, and any proceeds received are recognized as secured liabilities. The consolidated VIEs represent fewer than one 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 the Company has provided a guarantee to the investors or is the counterparty to certain derivative transactions involving the VIE. Thus, the Company'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 Citibank'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 the Company'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:

	December 31,	
In billions of dollars	**2020**	2019
Cash	$ —	$ —
Trading account assets	**0.2**	0.1
Investments	**8.6**	8.3
Total loans, net of allowance	**28.7**	25.9
Other	**0.3**	0.5
Total assets	**$ 37.8**	$ 34.8

Credit Card Securitizations

The Company securitizes credit card receivables through trusts established to purchase the receivables. Citibank 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, Citibank has the power to direct the activities that most significantly impact the economic performance of the trusts. Citibank 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 Citibank's Consolidated Balance Sheet with no gain or loss recognized. The debt issued by the trusts to third parties is included on Citibank's Consolidated Balance Sheet.

The Company 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, 2020	December 31, 2019
Ownership interests in principal amount of trust credit card receivables		
Sold to investors via trust-issued securities	$ **15.7**	$ 19.7
Retained by Citibank as trust-issued securities	**7.9**	6.2
Retained by Citibank via non-certificated interests	**11.1**	17.8
Total	$ **34.7**	$ 43.7

The following table summarizes selected cash flow information related to Citibank's credit card securitizations:

In billions of dollars	2020	2019
Proceeds from new securitizations	$ **0.3**	$ —
Pay down of maturing notes	**(4.3)**	(7.6)

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 Citibank consolidates the credit card trusts, all managed securitized card receivables are on-balance sheet.

Funding, Liquidity Facilities and Subordinated Interests

As noted above, Citibank 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 Citibank.

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 2.9 years as of December 31, 2020 and 3.1 years as of December 31, 2019.

In billions of dollars	December 31, 2020	December 31, 2019
Term notes issued to third parties	$ **13.9**	$ 18.2
Term notes retained by Citibank affiliates	**2.7**	4.3
Total Master Trust liabilities	$ **16.6**	$ 22.5

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 1.1 years as of December 31, 2020 and 1.6 years as of December 31, 2019.

In billions of dollars	December 31, 2020	December 31, 2019
Term notes issued to third parties	$ **1.8**	$ 1.5
Term notes retained by Citibank affiliates	**5.2**	1.9
Total Omni Trust liabilities	$ **7.0**	$ 3.4

Mortgage Securitizations

The Company 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 the Company'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.

The Company'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 Citibank businesses.

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. The Company is not the primary beneficiary of its U.S. agency-sponsored mortgage securitization entities because Citibank does not have the power to direct the activities of the VIEs that most significantly impact the entities' economic performance. Therefore, Citibank 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 Citibank 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 Citibank's Consolidated Balance Sheet.

The Company does not consolidate certain non-agency-sponsored mortgage securitization entities because Citibank is either not the servicer with the power to direct the significant activities of the entity or Citibank is the servicer, but the servicing relationship is deemed to be a fiduciary relationship; therefore, Citibank 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 table summarizes selected cash flow information related to Citibank's mortgage securitizations:

In billions of dollars	2020	2019
Principal securitized	$ **18.5**	$ 22.1
Proceeds from new securitizations	**19.2**	22.7
Contractual servicing fees received	**0.1**	0.1
Purchases of previously transferred financial assets	**0.4**	0.2

For non-consolidated mortgage securitization entities where the transfer of loans to the VIE meets the conditions for sale accounting, the Company 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).

Gains recognized on the securitization of mortgages for the years ended December 31, 2020 and 2019 were $183 million and $41 million, respectively.

Key assumptions used in measuring the fair value of retained interests at the date of sale or securitization of mortgage receivables were as follows:

	2020	2019
Weighted-average discount rate	**4.6 %**	8.9 %
Weighted-average constant prepayment rate	**22.2**	12.9
Weighted-average anticipated net credit losses	**0.4**	5.3
Weighted-average life	**4.5 years**	6.6 years

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 in securitizations of mortgage receivables at year end were as follows:

	December 31,	
In millions of dollars	**2020**	2019
Weighted-average discount rate	**5.9 %**	9.8 %
Weighted-average constant prepayment rate	**22.7**	10.1
Weighted-average anticipated net credit losses[1]	**NM**	NM
Weighted-average life	**4.5 years**	6.6 years
Carrying value of retained interests[2]	**$ 1,232**	$ 1,184
Discount rate		
Adverse change of 10%	**$ (8)**	$ (18)
Adverse change of 20%	**(15)**	(35)
Constant prepayment rate		
Adverse change of 10%	**$ (21)**	$ (18)
Adverse change of 20%	**(40)**	(35)
Anticipated net credit losses		
Adverse change of 10%	**NM**	NM
Adverse change of 20%	**NM**	NM

(1) The majority of retained interests are U.S. agency sponsored.
(2) Retained interests consist of Level 2 or Level 3 assets depending on the observability of significant inputs. See Note 21 for more information about fair value measurements.
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 is presented in the tables above. 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 above.

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	**2020**	2019	**2020**	2019	**2020**	2019
Securitized assets						
Residential mortgages[1]	**$ 16.9**	$ 2.2	**$ 0.5**	$ 0.2	**$ 26.2**	$ 48.9
Commercial and other	**23.9**	16.8	**—**	—	**—**	—
Total	**$ 40.8**	$ 19.0	**$ 0.5**	$ 0.2	**$ 26.2**	$ 48.9

(1) Securitized assets include $0.2 billion of personal loan securitizations as of December 31, 2020.

Mortgage Servicing Rights (MSRs)
In connection with the securitization of mortgage loans, the Company'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 Citibank's Consolidated Balance Sheet. The fair value of Citibank's capitalized MSRs was $336 million and $495 million at December 31, 2020 and 2019, respectively. The MSRs correspond to principal loan balances of $53 billion and $58 billion as of December 31, 2020 and 2019, respectively.

The following table summarizes the changes in capitalized MSRs:

In millions of dollars	2020	2019
Balance, beginning of year	$ 495	$ 584
Originations	123	70
Changes in fair value of MSRs due to changes in inputs and assumptions	(204)	(84)
Other changes(1)	(78)	(75)
Sale of MSRs	—	—
Balance, as of December 31	$ 336	$ 495

(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, the Company 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	2020	2019
Servicing fees	$ 142	$ 148
Late fees	5	8
Ancillary fees	—	1
Total MSR fees	$ 147	$ 157

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*.

Citibank-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.

Citibank'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 the Company. The funding of the conduits is facilitated by the liquidity support and credit enhancements provided by the Company.

As administrator, 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 the Company 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 the Company's internal risk ratings. At December 31, 2020 and 2019, the commercial paper conduits administered by Citibank had approximately $16.7 billion and $15.6 billion of purchased assets outstanding, respectively, and had incremental funding commitments with clients of approximately $17.1 billion and $16.3 billion, respectively.

Substantially all of the funding of the conduits is in the form of short-term commercial paper. At December 31, 2020 and 2019, the weighted-average remaining lives of the commercial paper issued by the conduits were approximately 54 and 49 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 $1.5 billion as of December 31, 2020 and $1.4 billion as of December 31, 2019. The net result across multi-seller conduits administered by the Company is that, in the event 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.

The Company 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, an affiliate of the Company 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, the Company purchases commercial paper, including commercial paper issued by the Company's conduits. At December 31, 2020 and 2019, the Company owned $6.6 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 the Company. 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 of the Company's involvement described above, it was concluded that the Company has an economic interest that could potentially be significant. However, the assets and liabilities of the conduits are separate and apart from those of Citibank. No assets of any conduit are available to satisfy the creditors of Citibank or any of its other subsidiaries.

Collateralized Loan Obligations (CLOs)

A 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.

A Citibank affiliate 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 Citibank entities may purchase some portion of a CLO's liabilities for investment purposes. In addition, an affiliate of the Company 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 Citibank CLOs:

In billions of dollars	**2020**	2019
Principal securitized	**$ 0.1**	$ —
Proceeds from new securitizations	**0.1**	—
Cash flows received on retained interests and other net cash flows	**—**	—

In millions of dollars	**Dec. 31, 2020**	Dec. 31, 2019
Carrying value of retained interests	**$ 1,238**	$ 1,404

All of Citibank's retained interests were held-to-maturity securities as of December 31, 2020 and 2019.

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 Citibank's asset-based financings, total assets of the unconsolidated VIEs with significant involvement and Citibank's maximum exposure to loss are shown below. For Citibank to realize the maximum loss, the VIE (borrower) would have to default with no recovery from the assets held by the VIE.

	December 31, 2020	
In millions of dollars	**Total unconsolidated VIE assets**	**Maximum exposure to unconsolidated VIEs**
Type		
Commercial and other real estate	$ **34,570**	$ **7,758**
Corporate loans	**12,022**	**7,654**
Other (including investment funds, airlines and shipping)	**158,314**	**18,096**
Total	$ **204,906**	$ **33,508**

	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)	143,184	18,624
Total	$ 181,649	$ 31,915

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 the Company'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, the Company 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, the Company 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, the Company 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, 2020, the Company had no outstanding voluntary advances to customer TOB trusts.

For certain non-customer trusts, the Company also provides credit enhancement. At December 31, 2020 and 2019, none of the municipal bonds owned by non-customer TOB trusts were subject to a credit guarantee provided by the Company.

The Company 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, the Company 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, the Company 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, 2020 and 2019, liquidity agreements provided with respect to customer TOB trusts totaled $1.6 billion and $3.5 billion, respectively, of which $0.8 billion and $1.6 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.

The Company 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 accordingly 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 $3.6 billion as of December 31, 2020 and $7.0 billion as of December 31, 2019. 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. The Company 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 the Company.

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- 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. The Company does not have the power to direct the activities of the VIEs that most significantly impact their economic performance and therefore does not consolidate them.

The Company'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 the Company 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.

19. DERIVATIVES

In the ordinary course of business, Citibank 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. Citibank enters into derivative contracts relating to interest rate, foreign currency, commodity and other market/credit risks for the following reasons:

- *Trading Purposes*: Citibank trades derivatives as an active market maker. Citibank 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. Citibank also manages its derivative risk positions through offsetting trade activities, controls focused on price verification and daily reporting of positions to senior managers.
- *Hedging*: Citibank 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, Citibank 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 Citibank 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 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 derivative transactions. Citibank 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, Citibank generally transacts much lower volumes of derivatives under master netting agreements in which Citibank 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.

Information pertaining to Citibank's derivative activities, based on notional amounts, is presented in the following table. Derivative notional amounts are reference amounts from which contractual payments are derived and do not represent a complete measure of Citibank's exposure to derivative transactions. Citibank'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 Citibank 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 Citibank'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

In millions of dollars	Hedging instruments under ASC 815		Trading derivative instruments	
	December 31, 2020	December 31, 2019	**December 31, 2020**	December 31, 2019
Interest rate contracts				
Swaps	$ **161,459**	$ 173,849	$ **19,792,214**	$ 19,101,930
Futures and forwards	**—**	—	**3,007,807**	2,563,329
Written options	**—**	—	**1,570,716**	2,135,386
Purchased options	**—**	—	**1,441,037**	1,919,155
Total interest rate contracts	$ **161,459**	$ 173,849	$ **25,811,774**	$ 25,719,800
Foreign exchange contracts				
Swaps	$ **32,101**	$ 34,054	$ **6,833,456**	$ 6,252,034
Futures, forwards and spot	**32,634**	33,319	**3,901,677**	3,942,898
Written options	**—**	—	**912,350**	892,475
Purchased options	**—**	—	**904,403**	921,004
Total foreign exchange contracts	$ **64,735**	$ 67,373	$ **12,551,886**	$ 12,008,411
Equity contracts				
Swaps	$ **—**	$ —	$ **315,444**	$ 228,379
Futures and forwards	**—**	—	**7,009**	8,407
Written options	**—**	—	**305,024**	355,913
Purchased options	**—**	—	**259,693**	292,697
Total equity contracts	$ **—**	$ —	$ **887,170**	$ 885,396
Commodity and other contracts				
Swaps	$ **—**	$ —	$ **84,875**	$ 75,711
Futures and forwards	**—**	—	**79,591**	76,941
Written options	**—**	—	**69,191**	81,573
Purchased options	**—**	—	**65,493**	79,927
Total commodity and other contracts	$ **—**	$ —	$ **299,150**	$ 314,152
Credit derivatives[1]				
Protection sold	$ **—**	$ —	$ **475,405**	$ 891,210
Protection purchased	**—**	—	**534,904**	968,246
Total credit derivatives	$ **—**	$ —	$ **1,010,309**	$ 1,859,456
Total derivative notionals	$ **226,194**	$ 241,222	$ **40,560,289**	$ 40,787,215

(1) Credit derivatives are arrangements designed to allow one party (protection purchaser) 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, 2020 and 2019. 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 certain 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 $260 billion and $160 billion as of December 31, 2020 and 2019, 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, 2020	Derivatives classified in Trading account assets/liabilities(1)(2)	
Derivatives instruments designated as ASC 815 hedges	**Assets**	**Liabilities**
Over-the-counter	$ 1	$ 149
Cleared	—	191
Interest rate contracts	**$ 1**	**$ 340**
Over-the-counter	$ 969	$ 1,489
Foreign exchange contracts	**$ 969**	**$ 1,489**
Total derivatives instruments designated as ASC 815 hedges	**$ 970**	**$ 1,829**
Derivatives instruments not designated as ASC 815 hedges		
Over-the-counter	$ 313,295	$ 305,892
Cleared	6,046	5,448
Exchange traded	37	19
Interest rate contracts	**$ 319,378**	**$ 311,359**
Over-the-counter	$ 158,804	$ 156,899
Cleared	824	1,144
Exchange traded	—	1
Foreign exchange contracts	**$ 159,628**	**$ 158,044**
Over-the-counter	$ 35,934	$ 41,728
Exchange traded	3,813	4,958
Equity contracts	**$ 39,747**	**$ 46,686**
Over-the-counter	$ 8,218	$ 7,783
Exchange traded	583	833
Commodity and other contracts	**$ 8,801**	**$ 8,616**
Over-the-counter	$ 9,179	$ 9,130
Cleared	27	24
Credit derivatives	**$ 9,206**	**$ 9,154**
Total derivatives instruments not designated as ASC 815 hedges	**$ 536,760**	**$ 533,859**
Total derivatives	**$ 537,730**	**$ 535,688**
Cash collateral paid/received(3)	$ 39,225	$ 3,778
Less: Netting agreements(4)	(450,004)	(450,004)
Less: Netting cash collateral received/paid(5)	(49,556)	(28,834)
Net receivables/payables included on the Consolidated Balance Sheet(6)	**$ 77,395**	**$ 60,628**
Additional amounts subject to an enforceable master netting agreement but not offset on the Consolidated Balance Sheet		
Less: Cash collateral received/paid	**$ (1,489)**	**$ (432)**
Less: Non-cash collateral received/paid	**(4,536)**	**(11,816)**
Total net receivables/payables(6)	**$ 71,370**	**$ 48,380**

(1) The derivatives fair values are also presented in Note 21 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 $68,059 million and $53,334 million of gross cash collateral paid and received, respectively. Of the gross cash collateral paid, $28,834 million was used to offset trading derivative liabilities. Of the gross cash collateral received, $49,556 million was used to offset trading derivative assets.

(4) Represents the netting of balances with the same counterparty under enforceable netting agreements. Approximately $444 billion, $2 billion and $4 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 is against OTC derivative assets and liabilities, respectively.

(6) The net receivables/payables include approximately $5 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, 2019	Derivatives classified in Trading account assets/liabilities[1][2]	
Derivatives instruments designated as ASC 815 hedges	**Assets**	**Liabilities**
Over-the-counter	$ 7	$ 56
Cleared	41	111
Interest rate contracts	$ 48	$ 167
Over-the-counter	$ 1,732	$ 1,612
Foreign exchange contracts	$ 1,732	$ 1,612
Total derivatives instruments designated as ASC 815 hedges	$ 1,780	$ 1,779
Derivatives instruments not designated as ASC 815 hedges		
Over-the-counter	$ 251,700	$ 241,770
Cleared	1,949	3,183
Exchange traded	155	176
Interest rate contracts	$ 253,804	$ 245,129
Over-the-counter	$ 107,646	$ 110,365
Cleared	654	805
Exchange traded	3	—
Foreign exchange contracts	$ 108,303	$ 111,170
Over-the-counter	$ 22,483	$ 25,706
Exchange traded	1,363	1,477
Equity contracts	$ 23,846	$ 27,183
Over-the-counter	$ 7,955	$ 7,058
Exchange traded	579	521
Commodity and other contracts	$ 8,534	$ 7,579
Over-the-counter	$ 21,875	$ 22,077
Cleared	—	32
Credit derivatives	$ 21,875	$ 22,109
Total derivatives instruments not designated as ASC 815 hedges	$ 416,362	$ 413,170
Total derivatives	$ 418,142	$ 414,949
Cash collateral paid/received[3]	$ 29,072	$ 2,685
Less: Netting agreements[4]	(352,444)	(352,444)
Less: Netting cash collateral received/paid[5]	(40,959)	(23,647)
Net receivables/payables included on the Consolidated Balance Sheet[6]	$ 53,811	$ 41,543
Additional amounts subject to an enforceable master netting agreement, but not offset on the Consolidated Balance Sheet		
Less: Cash collateral received/paid	$ (846)	$ (125)
Less: Non-cash collateral received/paid	(10,401)	(5,707)
Total net receivables/payables[6]	$ 42,564	$ 35,711

(1) The derivatives fair values are also presented in Note 21 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 $52,719 million and $43,644 million of gross cash collateral paid and received, respectively. Of the gross cash collateral paid, $23,647 million was used to offset trading derivative liabilities. Of the gross cash collateral received, $40,959 million was used to offset trading derivative assets.

(4) Represents the netting of balances with the same counterparty under enforceable netting agreements. Approximately $348 billion, $2 billion and $2 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 is against OTC derivative assets and liabilities, respectively.

(6) The net receivables/payables include approximately $5 billion of derivative asset and $3 billion of derivative liability fair values not subject to enforceable master netting agreements, respectively.

For the years ended December 31, 2020 and 2019, the amounts recognized in *Principal transactions* in the Consolidated Statement of Income include certain derivatives not designated in a qualifying hedging relationship. Citibank 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	**2020**	2019
Interest rate contracts	$ 12	$ 55
Foreign exchange	**(61)**	47
Total	**$ (49)**	$ 102

Accounting for Derivative Hedging

Citibank 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 hedge relationship must be formally documented, 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 are recognized in current earnings for the hedging derivative, while changes in the value of a hedged item that are not related to the hedged risk are not recorded. Upon adoption of ASC 2017-12, Citibank 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 hedge 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
Citibank'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.

Citibank has 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
Citibank 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, which may be within or outside the U.S. The hedging instrument may be a forward foreign exchange contract or a cross-currency swap contract. Citibank 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 reflected directly in earnings over the life of the hedge. Citibank 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
Citibank hedges the change in fair value attributable to spot price movements in physical commodities inventories. 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, Citibank excludes the differential between the spot and the contractual forward rates under the futures contract from the assessment of hedge effectiveness, and it is generally reflected directly in earnings over the life of the hedge. Citibank also excludes changes in forward rates from the assessment of hedge effectiveness and records it in *Other comprehensive income*.

The following table summarizes the gains (losses) on the Company's fair value hedges:

In millions of dollars	Gains (losses) on fair value hedges[1] Year ended December 31, 2020 Other revenue	2020 Net interest revenue	2019 Other revenue	2019 Net interest revenue
Gain (loss) on the hedging derivatives included in assessment of the effectiveness of fair value hedges				
Interest rate hedges	$ —	$ 131	$ —	$ (411)
Foreign exchange hedges	(872)	—	561	—
Total gain (loss) on the hedging derivatives included in assessment of the effectiveness of fair value hedges	$ (872)	$ 131	$ 561	$ (411)
Gain (loss) on the hedged item in designated and qualifying fair value hedges				
Interest rate hedges	$ —	$ (219)	$ —	$ 513
Foreign exchange hedges	872	—	(561)	—
Total gain (loss) on the hedged item in designated and qualifying fair value hedges	$ 872	$ (219)	$ (561)	$ 513
Net gain (loss) on the hedging derivatives excluded from assessment of the effectiveness of fair value hedges				
Interest rate hedges	$ —	$ (23)	$ —	$ 3
Foreign exchange hedges[2]	(71)	—	(76)	—
Total net gain (loss) on the hedging derivatives excluded from assessment of the effectiveness of fair value hedges	$ (71)	$ (23)	$ (76)	$ 3

(1) Gain (loss) amounts for interest rate risk hedges are included in *Interest income/Interest expense*. The accrued interest income on fair value hedges is recorded in *Net interest revenue* and is excluded from this table.

(2) 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. Amounts related to cross-currency basis, which are recognized in *AOCI*, are not reflected in the table above.

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. This cumulative hedge basis adjustment becomes part of the carrying value of the hedged item until the hedged item is derecognized from the balance sheet. The table below presents the carrying amount of Citibank's hedged assets and liabilities under qualifying fair value hedges at December 31, 2020 and 2019, 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, 2020			
Debt securities AFS[1][3]	**$ 71,820**	**$ 115**	**$ 331**
Long-term debt	**13,576**	**94**	**139**
As of December 31, 2019			
Debt securities AFS[2][3]	$ 83,150	$ (22)	$ 682
Long-term debt	23,120	(15)	139

(1) These amounts include a cumulative basis adjustment of $(18) million for active hedges and $52 million for de-designated hedges as of December 31, 2020 related to certain prepayable financial assets previously designated as the hedged item in a fair value hedge using the last-of-layer approach. The Company designated approximately $2 billion as the hedged amount (from a closed portfolio of prepayable financial assets with a carrying value of $18 billion as of December 31, 2020) in a last-of-layer hedging relationship.

(2) These amounts include a cumulative basis adjustment of $(4) million for active hedges and $95 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 $300 million as the hedged amount (from a closed portfolio of prepayable financial assets with a carrying value of $14 billion as of December 31, 2019) in a last-of-layer hedging relationship.

(3) Carrying amount represents the amortized cost.

Cash Flow Hedges

Citibank 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.

Citibank 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*. 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	Year ended December 31, 2020	2019
Amount of gain (loss) recognized in *AOCI* on derivatives		
Interest rate contracts	**$ 2,689**	$ 784
Total gain (loss) recognized in *AOCI*	**$ 2,689**	$ 784
Amount of gain (loss) reclassified from *AOCI* to earnings[1]	**Net interest revenue**	Net interest revenue
Interest rate contracts	**$ 754**	$ (337)
Total gain (loss) reclassified from *AOCI* into earnings	**$ 754**	$ (337)
Net pretax change in cash flow hedges included within *AOCI*	**$ 1,935**	$ 1,121

(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, 2020 is approximately $924 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 17 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. Citibank uses foreign currency forwards, cross-currency swaps, options and foreign currency-denominated debt instruments to manage the foreign exchange risk associated with Citibank's equity investments in several non-U.S.-dollar-functional-currency foreign subsidiaries. Citibank 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, if any, is immediately recorded in earnings.

For derivatives designated as net investment hedges, Citibank 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 Citibank. 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 Citibank'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, was $(298) million and $(225) million for the years ended December 31, 2020 and 2019, respectively.

Economic Hedges

Citibank 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.

Citibank 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. The Company 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

Citibank is a market maker and trades a range of credit derivatives. Through these contracts, Citibank either purchases or writes protection on either a single name or a portfolio of reference credits. Citibank 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.

Citibank monitors its counterparty credit risk in credit derivative contracts. As of both December 31, 2020 and 2019, approximately 98% of the gross receivables are from counterparties with which Citibank maintains collateral agreements. A majority of Citibank's top 15 counterparties (by receivable balance owed to Citibank) 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 Citibank 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. 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. Therefore, 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 the Company's credit derivative portfolio as protection seller:

In millions of dollars at December 31, 2020		**Maximum potential amount of future payments**(1)
By instrument		
Credit default swaps and options	$	**470,882**
Total return swaps and other		**4,523**
Total by instrument	$	**475,405**
By rating		
Investment grade	$	**356,120**
Non-investment grade(2)		**119,285**
Total by rating	$	**475,405**
By maturity		
Within 1 year	$	**120,213**
From 1 to 5 years		**332,212**
After 5 years		**22,980**
Total by maturity	$	**475,405**

(1) The fair value amounts payable under credit derivatives sold was $1,562 million. In addition, fair value amounts receivable under credit derivatives sold was $7,055 million.

(2) Also includes credit derivatives sold that are not rated.

In millions of dollars at December 31, 2019		Maximum potential amount of future payments(1)
By instrument		
Credit default swaps and options	$	885,575
Total return swaps and other		5,635
Total by instrument	$	891,210
By rating		
Investment grade	$	719,072
Non-investment grade(2)		172,138
Total by rating	$	891,210
By maturity		
Within 1 year	$	201,032
From 1 to 5 years		652,834
After 5 years		37,344
Total by maturity	$	891,210

(1) The fair value amounts payable under credit derivatives sold was $2,951 million. In addition, fair value amounts receivable under credit derivatives sold was $18,422 million.

(2) Also includes credit derivatives sold that are not rated.

Fair values included in the above tables are prior to application of any netting agreements and cash collateral. For notional amounts, Citibank 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 referenced 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. Citibank's internal ratings are in line with the related external rating system.

Citibank 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 referenced 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 in which the underlying referenced 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 tables 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 December 31, 2020 and 2019 was $16 billion and $21 billion, respectively. The Company posted $15 billion and $22 billion as collateral for this exposure in the normal course of business as of December 31, 2020 and 2019, respectively.

A downgrade could trigger additional collateral or cash settlement requirements for the Company and certain affiliates. In the event that Citibank was downgraded a single notch by all three major rating agencies as of December 31, 2020, the Company could be required to post an additional $0.4 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 event of a single notch downgrade, resulting in immaterial aggregate cash obligations and collateral requirements.

20. 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 Citibank's total credit exposure. Although Citibank'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, 2020, Citibank's most significant concentration of credit risk was with the U.S. government and its agencies, as well as foreign governments. The Company's exposure, which primarily results from trading assets and investments issued by the U.S. government and its agencies, amounted to $282 billion and $198 billion at December 31, 2020 and 2019, respectively. The Company's exposure to foreign governments (primarily trading assets and investments) amounted to $139 billion and $125 billion at December 31, 2020 and 2019, respectively.

The Company's exposure to states and municipalities amounted to $13.4 billion and $15.5 billion at December 31, 2020 and 2019, respectively, and was composed of trading assets and investment securities.

21. 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 Citibank'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 from active markets 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 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 on 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. As a result, 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. Citibank 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 Citibank 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 the overnight indexed swap (OIS) rate) 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 Citibank's (liabilities) non-performance risk.

The FVA represents 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. Citibank'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.

Citibank's CVA and FVA methodology consists of the following 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. Citibank's own credit CVA is determined using Citibank-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, 2020 and 2019:

	Credit and funding valuation adjustments contra-liability (contra-asset)	
In millions of dollars	**December 31, 2020**	December 31, 2019
Counterparty CVA	**$ (667)**	$ (558)
Asset FVA	**(466)**	(474)
Citibank (own credit) CVA	**166**	132
Liability FVA	**31**	51
Total CVA—derivative instruments[1]	**$ (936)**	$ (849)

(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 Citibank's own fair value option (FVO) liabilities for the years indicated:

	Credit/funding/debt valuation adjustments gain (loss)	
In millions of dollars	**2020**	2019
Counterparty CVA	**$ (116)**	$ 141
Asset FVA	**(93)**	9
Own credit CVA	**127**	(64)
Liability FVA	**(21)**	(40)
Total CVA—derivative instruments	**$ (103)**	$ 46
DVA related to own FVO liabilities[1]	**$ —**	$ (2)
Total CVA and DVA[2]	**$ (103)**	$ 44

(1) See Note 17 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, and 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 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 collateralized debt obligation (CDO), that is not receiving any principal or interest and is not expected to receive any in the future.

When the Company's principal exit market for a portfolio of loans is through securitization, the Company uses the securitization price as a key input into the fair value of the loan portfolio. The securitization price is determined from the assumed proceeds of a hypothetical securitization within the current market environment, with adjustments made to account for various costs associated with the process of securitization. Where such a price verification is possible, loan portfolios are typically classified as Level 2 in the fair value hierarchy.

For most of the subprime mortgage-backed security (MBS) exposures, fair value is determined utilizing observable transactions where available, or other valuation techniques such as discounted cash flow analysis utilizing valuation assumptions derived from similar, more observable securities as market proxies. The valuation of certain asset-backed security (ABS) CDO positions is inferred through the net asset value of 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 do not generally trade. 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 guideline public company analysis and comparable transactions. 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.

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, 2020 and 2019. 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, 2020	Level 1	Level 2	Level 3	Gross inventory	Netting[1]	Net balance
Assets						
Securities borrowed and purchased under agreements to resell	$ —	$ 244	$ —	$ 244	$ —	$ 244
Trading non-derivative assets						—
Trading mortgage-backed securities						—
U.S. government-sponsored agency guaranteed	—	76	—	76	—	76
Residential	—	—	—	—	—	—
Commercial	—	—	—	—	—	—
Total trading mortgage-backed securities	$ —	$ 76	$ —	$ 76	$ —	$ 76
U.S. Treasury and federal agency securities	$ 29,304	$ 643	$ —	$ 29,947	$ —	$ 29,947
State and municipal	—	595	55	650	—	650
Foreign government	20,437	9,619	10	30,066	—	30,066
Corporate	264	1,185	2	1,451	—	1,451
Equity securities	5,664	201	—	5,865	—	5,865
Asset-backed securities	—	149	—	149	—	149
Other trading assets[2]	—	8,550	426	8,976	—	8,976
Total trading non-derivative assets	$ 55,669	$ 21,018	$ 493	$ 77,180	$ —	$ 77,180
Trading derivatives						
Interest rate contracts	$ 26	$ 314,548	$ 4,805	$ 319,379		
Foreign exchange contracts	—	159,604	993	160,597		
Equity contracts	8	37,679	2,060	39,747		
Commodity contracts	—	8,305	496	8,801		
Credit derivatives	—	8,100	1,106	9,206		
Total trading derivatives	$ 34	$ 528,236	$ 9,460	$ 537,730		
Cash collateral paid[3]				$ 39,225		
Netting agreements					$ (450,004)	
Netting of cash collateral received					(49,556)	
Total trading derivatives	$ 34	$ 528,236	$ 9,460	$ 576,955	$ (499,560)	$ 77,395
Investments						
Mortgage-backed securities						
U.S. government-sponsored agency guaranteed	$ —	$ 36,201	$ 10	$ 36,211	$ —	$ 36,211
Residential	—	570	—	570	—	570
Commercial	—	—	—	—	—	—
Total investment mortgage-backed securities	$ —	$ 36,771	$ 10	$ 36,781	$ —	$ 36,781
U.S. Treasury and federal agency securities	$ 145,670	$ 172	$ —	$ 145,842	$ —	$ 145,842
State and municipal	—	2,831	507	3,338	—	3,338
Foreign government	64,197	44,171	266	108,634	—	108,634
Corporate	6,332	3,009	8	9,349	—	9,349
Marketable equity securities	69	74	—	143	—	143
Asset-backed securities	—	248	—	248	—	248
Other debt securities	—	4,876	—	4,876	—	4,876
Non-marketable equity securities[4]	—	—	14	14	—	14
Total investments	$ 216,268	$ 92,152	$ 805	$ 309,225	$ —	$ 309,225

Table continues on the next page.

In millions of dollars at December 31, 2020	Level 1	Level 2	Level 3	Gross inventory	Netting[1]	Net balance
Loans	$ —	$ 2,472	$ 1,968	$ 4,440	$ —	$ 4,440
Mortgage servicing rights	—	—	336	336	—	336
Non-trading derivatives and other financial assets measured on a recurring basis	$ —	$ 1,742	$ —	$ 1,742	$ —	$ 1,742
Total assets	$271,971	$ 645,864	$13,062	$ 970,122	$ (499,560)	$ 470,562
Total as a percentage of gross assets[5]	29.2 %	69.4 %	1.4 %			
Liabilities						
Interest-bearing deposits	$ —	$ 1,752	$ 206	$ 1,958	$ —	$ 1,958
Securities loaned and sold under agreements to repurchase	—	—	—	—	—	—
Trading account liabilities						
Securities sold, not yet purchased	15,301	627	—	15,928	—	15,928
Other trading liabilities	—	—	26	26	—	26
Total trading liabilities	$ 15,301	$ 627	$ 26	$ 15,954	$ —	$ 15,954
Trading derivatives						
Interest rate contracts	$ 12	$ 308,790	$ 2,897	$ 311,699		
Foreign exchange contracts	2	158,682	849	159,533		
Equity contracts	7	41,724	4,955	46,686		
Commodity contracts	—	8,231	385	8,616		
Credit derivatives	—	8,106	1,048	9,154		
Total trading derivatives	$ 21	$ 525,533	$10,134	$ 535,688		
Cash collateral received[6]				$ 3,778		
Netting agreements					$ (450,004)	
Netting of cash collateral paid					(28,834)	
Total trading derivatives	$ 21	$ 525,533	$10,134	$ 539,466	$ (478,838)	$ 60,628
Short-term borrowings	$ —	$ 586	$ 11	$ 597	$ —	$ 597
Long-term debt	—	373	260	633	—	633
Total non-trading derivatives and other financial liabilities measured on a recurring basis	$ —	$ —	$ 1	$ 1	$ —	$ 1
Total liabilities	$ 15,322	$ 528,871	$10,638	$ 558,609	$ (478,838)	$ 79,771
Total as a percentage of gross liabilities[5]	2.8 %	95.3 %	1.9 %			

(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 22 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 $68,059 million of gross cash collateral paid, of which $28,834 million was used to offset trading derivative liabilities.

(4) Amounts exclude $13 million 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 Levels 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 $53,334 million of gross cash collateral received, of which $49,556 million was used to offset trading derivative assets.

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	$ —	$ 353	$ —	$ 353	$ —	$ 353
Trading non-derivative assets						
Trading mortgage-backed securities						
U.S. government-sponsored agency guaranteed	—	72	—	72	—	72
Residential	—	—	—	—	—	—
Commercial	—	—	—	—	—	—
Total trading mortgage-backed securities	$ —	$ 72	$ —	$ 72	$ —	$ 72
U.S. Treasury and federal agency securities	$ 13,429	$ 465	$ —	$ 13,894	$ —	$ 13,894
State and municipal	—	498	55	553	—	553
Foreign government	14,308	13,352	40	27,700	—	27,700
Corporate	733	1,334	102	2,169	—	2,169
Equity securities	9,815	158	—	9,973	—	9,973
Other trading assets[2]	74	8,506	163	8,743	—	8,743
Total trading non-derivative assets	$ 38,359	$ 24,385	$ 360	$ 63,104	$ —	$ 63,104
Trading derivatives						
Interest rate contracts	$ 1	$ 251,982	$ 1,869	$ 253,852		
Foreign exchange contracts	1	109,401	633	110,035		
Equity contracts	4	23,493	349	23,846		
Commodity contracts	—	8,398	136	8,534		
Credit derivatives	—	21,445	430	21,875		
Total trading derivatives	$ 6	$ 414,719	$ 3,417	$ 418,142		
Cash collateral paid[3]				$ 29,072		
Netting agreements					$ (352,444)	
Netting of cash collateral received					(40,959)	
Total trading derivatives	$ 6	$ 414,719	$ 3,417	$ 447,214	$ (393,403)	$ 53,811
Investments						
Mortgage-backed securities						
U.S. government-sponsored agency guaranteed	$ —	$ 26,109	$ 11	$ 26,120	$ —	$ 26,120
Residential	—	790	—	790	—	790
Commercial	—	—	—	—	—	—
Total investment mortgage-backed securities	$ —	$ 26,899	$ 11	$ 26,910	$ —	$ 26,910
U.S. Treasury and federal agency securities	$ 106,047	$ 5,319	$ —	$ 111,366	$ —	$111,366
State and municipal	—	4,283	295	4,578	—	4,578
Foreign government	61,620	36,704	94	98,418	—	98,418
Corporate	5,149	3,908	—	9,057	—	9,057
Equity securities	—	94	—	94	—	94
Asset-backed securities	—	416	19	435	—	435
Other debt securities	—	4,442	—	4,442	—	4,442
Non-marketable equity securities[4]	—	—	22	22	—	22
Total investments	$ 172,816	$ 82,065	$ 441	$ 255,322	$ —	$255,322

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	$ —	$ 1,433	$ 398	$ 1,831	$ —	$ 1,831
Mortgage servicing rights	—	—	495	495	—	495
Non-trading derivatives and other financial assets measured on a recurring basis	$ —	$ 1,253	$ 1	$ 1,254	$ —	$ 1,254
Total assets	$211,181	$ 524,208	$ 5,112	$ 769,573	$ (393,403)	$376,170
Total as a percentage of gross assets[5]	28.5 %	70.8 %	0.7 %			
Liabilities						
Interest-bearing deposits	$ —	$ 2,104	$ 215	$ 2,319	$ —	$ 2,319
Securities loaned and sold under agreements to repurchase	—	—	—	—	—	—
Trading account liabilities						
Securities sold, not yet purchased	8,031	980	10	9,021	—	9,021
Other trading liabilities	—	—	—	—	—	—
Total trading liabilities	$ 8,031	$ 980	$ 10	$ 9,021	$ —	$ 9,021
Trading account derivatives						
Interest rate contracts	$ —	$ 243,907	$ 1,389	$ 245,296		
Foreign exchange contracts	—	112,123	659	112,782		
Equity contracts	143	25,246	1,794	27,183		
Commodity contracts	—	7,310	269	7,579		
Credit derivatives	—	21,603	506	22,109		
Total trading derivatives	$ 143	$ 410,189	$ 4,617	$ 414,949		
Cash collateral received[6]				$ 2,685		
Netting agreements					$ (352,444)	
Netting of cash collateral paid					(23,647)	
Total trading derivatives	$ 143	$ 410,189	$ 4,617	$ 417,634	$ (376,091)	$ 41,543
Short-term borrowings	$ —	$ 882	$ —	$ 882	$ —	$ 882
Long-term debt	—	579	—	579	—	579
Non-trading derivatives and other financial liabilities measured on a recurring basis	$ —	$ —	$ —	$ —	$ —	$ —
Total liabilities	$ 8,174	$ 414,734	$ 4,842	$ 430,435	$ (376,091)	$ 54,344
Total as a percentage of gross liabilities[5]	1.9 %	97.0 %	1.1 %			

(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 22 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 $52,719 million of gross cash collateral paid, of which $23,647 million was used to offset trading derivative liabilities.
(4) Amounts exclude $17 million 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 Levels 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 $43,644 million of gross cash collateral received, of which $40,959 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, 2020 and 2019. As discussed above, the Company classifies financial instruments as Level 3 of the fair value hierarchy when there is reliance on at least one significant unobservable input to the valuation model. In addition to these unobservable inputs, the valuation models for Level 3 financial instruments typically also rely on a number of inputs that are readily observable either directly or indirectly. 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 have been classified by the Company 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[1]		Transfers							
In millions of dollars	Dec. 31, 2019	Principal transactions	Other[1][2]	into Level 3	out of Level 3	Purchases	Issuances	Sales	Settlements	Dec. 31, 2020	Unrealized gains (losses) still held[3]
Assets											
Securities borrowed and purchased under agreements to resell	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —
Trading non-derivative assets											
Trading mortgage-backed securities											
U.S. government-sponsored agency guaranteed	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —
Commercial	—	—	—	—	—	—	—	—	—	—	—
Total trading mortgage-backed securities	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —
State and municipal	$ 55	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ 55	$ —
Foreign government	40	(30)	—	—	—	56	—	(56)	—	10	(1)
Corporate	102	—	—	—	(30)	32	—	(102)	—	2	(6)
Marketable equity securities	—	—	—	—	—	—	—	—	—	—	—
Asset-backed securities	—	—	—	—	—	—	—	—	—	—	—
Other trading assets	163	(21)	—	289	(56)	259	19	(223)	(4)	426	(6)
Total trading non-derivative assets	$ 360	$ (51)	$ —	$ 289	$ (86)	$ 347	$ 19	$ (381)	$ (4)	$ 493	$ (13)
Interest rate contracts	$ 480	$ (93)	$ —	$ 990	$ 411	$ 31	$ 134	$ (33)	$ (12)	$ 1,908	$ 250
Foreign exchange contracts	(26)	21	—	39	29	76	—	(64)	69	144	(321)
Equity contracts	(1,445)	(399)	—	(414)	176	—	—	(861)	48	(2,895)	(3,728)
Commodity contracts	(133)	130	—	177	(108)	3	—	—	42	111	84
Credit derivatives	(76)	106	—	218	(384)	36	—	(36)	194	58	(111)
Total trading derivatives, net[4]	$ (1,200)	$ (235)	$ —	$ 1,010	$ 124	$ 146	$ 134	$ (994)	$ 341	$ (674)	$ (3,826)
Investments											
Mortgage-backed securities											
U.S. government-sponsored agency guaranteed	$ 11	$ —	$ (1)	$ —	$ —	$ —	$ —	$ —	$ —	$ 10	$ (1)
Residential	—	—	—	—	—	—	—	—	—	—	—
Commercial	—	—	—	—	—	—	—	—	—	—	—
Total investment mortgage-backed securities	$ 11	$ —	$ (1)	$ —	$ —	$ —	$ —	$ —	$ —	$ 10	$ (1)

		Net realized/unrealized gains (losses) included in[1]		Transfers							
In millions of dollars	Dec. 31, 2019	Principal transactions	Other[1][2]	into Level 3	out of Level 3	Purchases	Issuances	Sales	Settlements	Dec. 31, 2020	Unrealized gains (losses) still held[3]
U.S. Treasury and federal agency securities	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —
State and municipal	295	—	(6)	322	(131)	121	—	(94)	—	507	—
Foreign government	94	—	12	27	(64)	380	—	(183)	—	266	(20)
Corporate	—	—	1	49	(149)	157	—	(50)	—	8	(4)
Equity securities	—	—	—	—	—	—	—	—	—	—	—
Asset-backed securities	19	—	1	—	—	—	—	(20)	—	—	—
Other debt securities	—	—	—	—	—	—	—	—	—	—	(4)
Non-marketable equity securities	22	—	5	—	—	—	—	—	(13)	14	(2)
Total investments	$ 441	$ —	$ 12	$ 398	$ (344)	$ 658	$ —	$ (347)	$ (13)	$ 805	$ (31)
Loans	$ 398	$ —	$ 1,131	$ 446	$ (2)	$ —	$ —	$ —	$ (5)	$ 1,968	$ 1,412
Mortgage servicing rights	495	—	(204)	—	—	—	123	—	(78)	336	(180)
Other financial assets measured on a recurring basis	1	—	16	19	—	—	—	(10)	(26)	—	—
Liabilities											
Interest-bearing deposits	$ 215	$ —	$ 11	$ 277	$ (152)	$ —	$ 34	$ —	$ (157)	$ 206	$ (12)
Trading account liabilities											
Securities sold, not yet purchased	10	41	—	54	(13)	—	—	—	(10)	—	(7)
Other trading liabilities	—	9	—	35	—	—	—	—	—	26	23
Short-term borrowings	—	(1)	—	10	—	—	—	—	—	11	(44)
Long-term debt	—	(13)	—	—	—	—	247	—	—	260	(13)
Other financial liabilities measured on a recurring basis	—	—	—	—	—	—	2	—	(1)	1	—

(1) Net realized/unrealized gains (losses) are presented as increase (decrease) to Level 3 assets and as (increase) decrease to Level 3 liabilities. Changes in fair value of available-for-sale debt securities are recorded in *AOCI*, unless related to credit 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 for available-for-sale debt securities and DVA on fair value option liabilities), attributable to the change in fair value relating to assets and liabilities classified as Level 3 that are still held at December 31, 2020.

(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, 2018	Net realized/unrealized gains (losses) included in[1] Principal transactions	Other[1][2]	Transfers into Level 3	Transfers 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	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —
Trading non-derivative assets											
Trading mortgage-backed securities											
U.S. government-sponsored agency guaranteed	$ —	$ (1)	$ —	$ —	$ (5)	$ 11	$ —	$ (5)	$ —	$ —	$ (5)
Residential	—	—	—	—	—	—	—	—	—	—	—
Commercial	—	—	—	—	—	—	—	—	—	—	—
Total trading mortgage-backed securities	$ —	$ (1)	$ —	$ —	$ (5)	$ 11	$ —	$ (5)	$ —	$ —	$ (5)
State and municipal	$ 168	$ —	$ —	$ —	$ —	$ —	$ —	$ (113)	$ —	$ 55	$ —
Foreign government	—	27	—	3	—	76	—	(66)	—	40	—
Corporate	—	(2)	—	143	—	1	—	(40)	—	102	(1)
Marketable equity securities	20	(14)	—	(1)	2	24	—	(31)	—	—	—
Other trading assets	389	25	—	46	(156)	313	36	(461)	(29)	163	(10)
Total trading non-derivative assets	$ 577	$ 35	$ —	$ 191	$ (159)	$ 425	$ 36	$ (716)	$ (29)	$ 360	$ (16)
Interest rate contracts	$ 1,324	$ (1,184)	$ —	$ (326)	$ 407	$ 141	$ (20)	$ (2)	$ 140	$ 480	$ 1,518
Foreign exchange contracts	239	(352)	—	106	(27)	115	—	(89)	(18)	(26)	(154)
Equity contracts	(713)	(64)	—	(179)	36	(130)	(126)	1	(270)	(1,445)	(120)
Commodity contracts	(277)	383	—	13	(27)	(31)	—	—	(194)	(133)	399
Credit derivatives	59	(320)	—	(28)	212	—	—	—	1	(76)	307
Total trading derivatives, net[4]	$ 632	$ (1,537)	$ —	$ (414)	$ 601	$ 95	$ (146)	$ (90)	$ (341)	$ (1,200)	$ 1,950
Investments											
Mortgage-backed securities											
U.S. government-sponsored agency guaranteed	$ 10	$ —	$ —	$ —	$ —	$ 1	$ —	$ —	$ —	$ 11	$ —
Residential	—	—	—	—	—	—	—	—	—	—	—
Commercial	—	—	—	—	—	—	—	—	—	—	—
Total investment mortgage-backed securities	$ 10	$ —	$ —	$ —	$ —	$ 1	$ —	$ —	$ —	$ 11	$ —
U.S. Treasury and federal agency securities	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —
State and municipal	378	—	70	—	(303)	429	—	(279)	—	295	64
Foreign government	67	—	1	—	—	145	—	(119)	—	94	2
Corporate	98	—	(2)	—	(94)	—	—	(2)	—	—	—
Equity securities	—	—	—	—	—	—	—	—	—	—	—
Asset-backed securities	183	—	(12)	121	(612)	550	—	(211)	—	19	13
Other debt securities	—	—	—	—	—	—	—	—	—	—	—
Non-marketable equity securities	44	—	4	—	—	—	—	(7)	(19)	22	1
Total investments	$ 780	$ —	$ 61	$ 121	$ (1,009)	$ 1,125	$ —	$ (618)	$ (19)	$ 441	$ 80
Loans	$ 263	$ —	$ 194	$ 144	$ (177)	$ 16	$ —	$ (40)	$ (2)	$ 398	$ 183
Mortgage servicing rights	584	—	(84)	—	—	—	70	—	(75)	495	19
Other financial assets measured on a recurring basis	—	—	69	6	(2)	—	34	(20)	(86)	1	(19)

In millions of dollars	Dec. 31, 2018	Net realized/unrealized gains (losses) included in[1] Principal transactions	Other[1][2]	Transfers into Level 3	Transfers out of Level 3	Purchases	Issuances	Sales	Settlements	Dec. 31, 2019	Unrealized gains (losses) still held[3]
Liabilities											
Interest-bearing deposits	$ 495	$ —	$ (16)	$ 10	$ (783)	$ —	$ 842	$ —	$ (365)	$ 215	$ (105)
Trading account liabilities											
Securities sold, not yet purchased	17	5	—	32	4	22	—	(29)	(31)	10	(1)
Other trading liabilities	—	—	—	—	—	—	—	—	—	—	—
Short-term borrowings	—	—	—	—	—	—	—	—	—	—	—
Long-term debt	3	(1)	—	—	—	—	—	(2)	(2)	—	—
Other financial liabilities measured on a recurring basis	—	—	4	5	(1)	—	4	—	(4)	—	(8)

(1) Net realized/unrealized gains (losses) are presented as increase (decrease) to Level 3 assets and as (increase) decrease to Level 3 liabilities. Changes in fair value of available-for-sale debt securities are recorded in *AOCI*, unless related to credit 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 for available-for-sale debt securities and DVA on fair value option liabilities), 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.

Level 3 Fair Value Rollforward

There were no significant Level 3 transfers for the years ended December 31, 2020 and December 31, 2019.

Valuation Techniques and Inputs for Level 3 Fair Value Measurements

As of December 31, 2020	Fair value[1] *(in millions)*	Methodology	Input	Low[2][3]	High[2][3]	Weighted average[4]
Assets						
Mortgage-backed securities	$ 10	Price-based	Price	$ 111	$ 111	$ 111
State and municipal, foreign government, corporate and other debt securities	$ 664	Price-based	Price	$ 19	$ 118	$ 94
	551	Model-based	Credit spread	95 bps	375 bps	247 bps
Equity securities[5]	$ —	Price-based	Price	$ 0.10	$ 0.10	$ 0.10
Asset-backed securities	$ —	Price-based	Price	$ 100	$ 100	$ 100
Non-marketable equity	$ 12	Comparables analysis	Illiquidity discount	45.00 %	59.60 %	48.40 %
			Yield	13.50 %	13.50 %	13.50 %
			EBITDA multiples	3.30x	5.30x	4.30x
			Equity volatility	46.50 %	46.50 %	46.50 %
			Revenue multiple	2.70x	3.30x	3.00x
Derivatives—gross[6]						
Interest rate contracts (gross)	$ 7,690	Model-based	IR normal volatility	0.11 %	0.73 %	0.51 %
			Inflation volatility	0.27 %	2.36 %	0.78 %
Foreign exchange contracts (gross)	$ 1,842	Model-based	FX volatility	1.70 %	12.63 %	7.25 %
			Contingent event	100.00 %	100.00 %	100.00 %
			Interest rate	0.59 %	84.09 %	17.42 %
			IR normal volatility	0.11 %	0.52 %	0.46 %
			IR-FX correlation	(31.90)%	73.77 %	48.53 %
			IR-IR correlation	(10.00)%	56.13 %	39.39 %
Equity contracts (gross)[7]	$ 6,966	Model-based	Equity volatility	5.00 %	76.42 %	43.72 %
			Forward price	65.88 %	105.20 %	95.87 %
Commodity contracts (gross)	$ 878	Model-based	Commodity Correlation	(44.92)%	95.91 %	70.60 %
			Commodity volatility	0.16 %	80.17 %	23.72 %
			Forward price	15.40 %	262.00 %	92.91 %
Credit derivatives (gross)	$ 1,763	Model-based	Credit spread	3 bps	354 bps	86 bps
	391	Price-based	Recovery rate	20.00 %	60.00 %	41.25 %
			Credit correlation	25.00 %	80.00 %	43.34 %
			Upfront points	— %	107.20 %	63.00 %
Loans and leases	$ 1,790	Model-based	Equity volatility	24.65 %	83.09 %	58.23 %
Mortgage servicing rights	$ 258	Cash flow	Yield	2.86 %	16.00 %	6.32 %
	78	Model-based	WAL	2.66 years	5.4 years	4.46 years
Liabilities						
Interest-bearing deposits	$ 206	Model-based	IR Normal volatility	0.11 %	0.73 %	0.54 %
Securities sold not yet purchased	$ 25	Price-based	Price	$ 99	$ 105	$ 101
Short-term borrowings and long-term debt	$ 271	Model-based	Credit spread	947 bps	947 bps	947 bps

As of December 31, 2019	Fair value[1] (in millions)	Methodology	Input	Low[2][3]	High[2][3]	Weighted average[4]
Assets						
Mortgage-backed securities	$ 11	Price-based	Price	$ 116	$ 116	$ 116
State and municipal, foreign government, corporate and other debt securities	$ 452	Model-based	Price	$ 60	$ 108	$ 96
	146	Price-based	Credit spread	90 bps	295 bps	218 bps
	75	Cash flow	Yield	2.00 %	16.00 %	12.00 %
			WAL	4.07 years	8.13 years	6.61 years
Equity securities[5]	$ —			$ —	$ —	$ —
Asset-backed securities	$ 19	Cash flow	Interest rate	9.96 %	9.98 %	9.97 %
Non-marketable equity	22	Comparables analysis	Yield	14.00 %	14.00 %	14.00 %
			Revenue multiple	3.00x	3.30x	3.10x
			EBITDA multiples	7.80x	8.20x	7.90x
Derivatives—gross[6]						
Interest rate contracts (gross)	$ 3,045	Model-based	Mean reversion	1.00 %	20.00 %	10.50 %
			Inflation volatility	0.21 %	2.74 %	0.79 %
			IR normal volatility	0.09 %	0.56 %	0.51 %
Foreign exchange contracts (gross)	$ 1,292	Model-based	FX volatility	1.27 %	12.16 %	9.52 %
			IR normal volatility	0.27 %	0.66 %	0.58 %
			IR-IR correlation	(51.00)%	40.00 %	34.33 %
			FX rate	$ 37	$ 776	$ 97
			Interest rate	3.00 %	56.00 %	14.00 %
			IR-FX correlation	40.00 %	60.00 %	50.00 %
Equity contracts (gross)[7]	$ 2,143	Model-based	Equity volatility	3.16 %	52.80 %	28.80 %
			Forward price	62.60 %	112.69 %	98.86 %
			WAL	1.48 years	1.48 years	1.48 years
			Recovery (in millions)	$ 5,450	$ 5,450	$ 5,450
Commodity contracts (gross)	$ 405	Model-based	Forward price	37.62 %	362.57 %	116.73 %
			Commodity volatility	5.25 %	93.63 %	23.55 %
			Commodity correlation	(39.65)%	87.81 %	41.80 %
Credit derivatives (gross)	$ 624	Model-based	Credit spread	6 bps	283 bps	77 bps
	312	Price-based	Price	$ 9	$ 100	$ 88
			Upfront points	7.16 %	99.94 %	74.94 %
			Credit correlation	25.00 %	87.00 %	48.56 %
			Recovery rate	20.00 %	65.00 %	48.00 %
Loans and leases	$ 375	Model-based	Equity volatility	32.00 %	32.00 %	32.00 %
			Credit spread	9 bps	52 bps	48 bps
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 %
Trading account liabilities						
Securities sold, not yet purchased	$ 8	Price-based	Price	$ 100	$ 101	$ 100
Short-term borrowings and long-term debt	—			— %	— %	— %

(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 and fund NAV 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 on 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 that represents 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 (HFS) 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, 2020			
Loans HFS[1]	$ 3,261	$ 413	$ 2,848
Other real estate owned	8	4	4
Loans[2]	979	643	336
Non-marketable equity securities measured using the measurement alternative	138	137	1
Total assets at fair value on a nonrecurring basis	$ 4,386	$ 1,197	$ 3,189

In millions of dollars	Fair value	Level 2	Level 3
December 31, 2019			
Loans HFS[1]	$ 4,266	$ 3,249	$ 1,017
Other real estate owned	16	6	10
Loans[2]	285	91	194
Non-marketable equity securities measured using the measurement alternative	107	107	—
Total assets at fair value on a nonrecurring basis	$ 4,674	$ 3,453	$ 1,221

(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 Citibank.

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, 2020	**Fair value[1]** *(in millions)*	**Methodology**	**Input**	**Low[2]**	**High**	**Weighted average[3]**
Loans HFS	$ 2,604	Price-based	Price	$ 79	$ 100	$ 98
Other real estate owned	$ 4	Recovery analysis	Appraised value[4]	$ 184,545	$ 4,241,357	$ 4,072,201
Loans[5]	$ 147	Price-based	Price	$ 2	$ 49	$ 23
	73	Recovery analysis	Recovery rate	0.99 %	78.00 %	13.37 %
			Appraised value[4]	$ 34	$ 43,646,426	$ 17,762,950

As of December 31, 2019	Fair value[1] *(in millions)*	Methodology	Input	Low[2]	High	Weighted average[3]
Loans HFS	$ 730	Price-based	Price	$ 86	$ 100	$ 99
Other real estate owned	$ 6	Price-based	Appraised value[4]	$ 2,316,729	$ 8,394,102	$ 7,079,580
	5	Recovery analysis				
Loans[5]	$ 86	Recovery analysis	Recovery rate	0.57 %	100.00 %	65.00 %
	54	Cash flow	Price	$ 2	$ 54	$ 27
	47	Price-based	Cost of capital	0.10 %	100 %	54.84 %
	29	Price-based	Appraised value[4]	$ 17,521,218	$ 43,646,426	$ 30,583,822

(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) 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.

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:

	Year ended December 31,	
In millions of dollars	**2020**	2019
Loans HFS	$ (70)	$ —
Other real estate owned	—	(2)
Loans[1]	(138)	(56)
Non-marketable equity securities measured using the measurement alternative	40	74
Total nonrecurring fair value gains (losses)	$ (168)	$ 16

(1) Represents loans held for investment whose carrying amount is based on the fair value of the underlying collateral less costs to sell, 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 Citibank'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 Citibank'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, 2020		Estimated fair value		
In billions of dollars	Carrying value	Estimated fair value	Level 1	Level 2	Level 3
Assets					
Investments	$ 107.4	$ 110.1	$ 22.6	$ 84.7	$ 2.8
Securities borrowed and purchased under agreements to resell	69.7	69.7	—	69.7	—
Loans[1][2]	615.9	634.4	—	0.7	633.7
Other financial assets[2][3]	331.2	331.2	279.5	17.4	34.3
Liabilities					
Deposits	$ 1,280.1	$ 1,280.3	$ —	$ 1,094.5	$ 185.8
Securities loaned and sold under agreements to repurchase	11.7	11.7	—	11.7	—
Long-term debt[4]	69.1	71.2	—	56.7	14.5
Other financial liabilities[5]	34.7	34.7	—	11.1	23.6

	December 31, 2019		Estimated fair value		
In billions of dollars	Carrying value	Estimated fair value	Level 1	Level 2	Level 3
Assets					
Investments	$ 83.5	$ 84.9	$ 1.9	$ 81.0	$ 2.0
Securities borrowed and purchased under agreements to resell	73.5	73.5	—	73.5	—
Loans[1][2]	645.7	642.8	—	4.6	638.2
Other financial assets[2][3]	218.4	218.4	167.5	14.9	36.0
Liabilities					
Deposits	$ 1,077.5	$ 1,076.7	$ —	$ 884.3	$ 192.4
Securities loaned and sold under agreements to repurchase	13.0	13.0	—	13.0	—
Long-term debt[4]	82.6	82.3	—	73.1	9.2
Other financial liabilities[5]	52.0	52.0	—	29.4	22.6

(1) The carrying value of loans is net of the *Allowance for credit losses on loans* of $22.1 billion for December 31, 2020 and $11.0 billion for December 31, 2019. In addition, the carrying values exclude $0.6 billion and $1.2 billion of lease finance receivables at December 31, 2020 and 2019, 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, 2020 and 2019 were liabilities of $5.5 billion and $3.6 billion, respectively, which are substantially 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.

22. 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. Movements in DVA are reported as a component of *AOCI*. Additional discussion regarding the applicable areas in which fair value elections were made is presented in Note 21 to the Consolidated Financial Statements.

The Company has elected fair value accounting for its mortgage servicing rights (MSRs). See Notes 2 and 18 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—gains (losses) for the year ended December 31,	
In millions of dollars	**2020**	2019
Assets		
Securities borrowed and purchased under agreements to resell	**$ (10)**	$ (10)
Trading account assets	**(129)**	52
Loans		
Certain corporate loans	**1,479**	410
Certain consumer loans	**1**	—
Total loans	**$ 1,480**	$ 410
Other assets		
MSRs	**$ (204)**	$ (84)
Certain mortgage loans HFS[1]	**299**	91
Total other assets	**$ 95**	$ 7
Total assets	**$ 1,436**	$ 459
Liabilities		
Interest-bearing deposits	**$ (82)**	$ (205)
Securities loaned and sold under agreements to repurchase	**—**	—
Trading account liabilities	**(40)**	(26)
Short-term borrowings[2]	**64**	(7)
Long-term debt[2]	**(52)**	(48)
Total liabilities	**$ (110)**	$ (286)

(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 the Company's liabilities for which the fair value option has been elected using the Company's credit spreads observed in the bond market. Changes in fair value of fair value option liabilities related to changes in the Company's own credit spreads (DVA) are reflected as a component of *AOCI*.

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 $0 million and $2 million for the years ended December 31, 2020 and 2019, 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
Citibank 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 Citibank'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. Citibank 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, 2020		December 31, 2019	
In millions of dollars	**Trading assets**	**Loans**	Trading assets	Loans
Carrying amount reported on the Consolidated Balance Sheet	**$ 7,381**	**$ 4,440**	$ 7,164	$ 1,831
Aggregate unpaid principal balance in excess of (less than) fair value	**(397)**	**70**	167	(99)
Balance of non-accrual loans or loans more than 90 days past due	**—**	**4**	—	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, $1,068 million and $1,062 million of unfunded commitments related to certain credit products selected for fair value accounting were outstanding as of December 31, 2020 and 2019, respectively.

Changes in the fair value of funded and unfunded credit products are classified in *Principal transactions* in the Company'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, 2020 and 2019 due to instrument-specific credit risk totaled to a loss of $(4) million and a gain of $31 million, respectively.

Certain Investments in Unallocated Precious Metals
Citibank 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. Citibank 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 $0.5 billion and $0.2 billion at December 31, 2020 and 2019, respectively. The amounts are expected to fluctuate based on trading activity in future periods.

As part of its commodity and foreign currency trading activities, Citibank trades unallocated precious metals investments and executes forward purchase (sale) derivative contracts with trading counterparties. When Citibank sells an unallocated precious metals investment, Citibank's receivable from its depository bank is repaid and Citibank 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, 2020, there were approximately $7.4 billion and $6.3 billion notional amounts of such forward purchase and forward sale derivative contracts outstanding, respectively.

Certain Mortgage Loans Held-for-Sale (HFS)
Citibank 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, 2020	December 31, 2019
Carrying amount reported on the Consolidated Balance Sheet	$ **1,742**	$ 1,254
Aggregate fair value in excess of (less than) unpaid principal balance	**91**	31
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, 2020 and 2019 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 portion of the changes in fair value attributable to changes in Citibank'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 Citibank'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:

	December 31,	
In millions of dollars	**2020**	2019
Carrying amount reported on the Consolidated Balance Sheet	**$ 629**	$ 579
Aggregate unpaid principal balance in excess of (less than) fair value	**(39)**	(43)

The following table provides information about short-term borrowings carried at fair value:

	December 31,	
In millions of dollars	**2020**	2019
Carrying amount reported on the Consolidated Balance Sheet	**$ 597**	$ 882
Aggregate unpaid principal balance in excess of (less than) fair value	**—**	57

23. PLEDGED ASSETS, COLLATERAL, GUARANTEES AND COMMITMENTS

Pledged Assets

In connection with the Company's financing and trading activities, the Company 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 the Company's Consolidated Balance Sheet included the following:

	December 31,	
In millions of dollars	**2020**	2019
Investment securities	$ **230,259**	$ 145,831
Loans	**239,699**	236,033
Trading account assets	**1,482**	2,579
Total	$ **471,440**	$ 384,443

Restricted Cash

Citibank 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 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.

Restricted cash is included on the Consolidated Balance Sheet within the following balance sheet lines:

	December 31,	
In millions of dollars	**2020**	2019
Cash and due from banks	$ **3,600**	$ 3,662
Deposits with banks	**11,769**	23,348
Total	$ **15,369**	$ 27,010

In response to the COVID-19 pandemic, the Federal Reserve Bank and certain other central banks eased regulations related to minimum required cash deposited with central banks. This resulted in a decrease in Citibank's restricted cash amount at December 31, 2020.

Collateral

At December 31, 2020 and 2019, the approximate fair value of collateral received by Citibank that may be resold or repledged, excluding the impact of allowable netting, was $31.2 billion and $34.5 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, 2020 and 2019, a substantial portion of the collateral received by Citibank had been sold or repledged in connection with repurchase agreements, securities sold, not yet purchased, securities lendings, pledges to clearing organizations, segregation requirements under securities laws and regulations, derivative transactions and bank loans.

In addition, at December 31, 2020 and 2019, Citibank had pledged $466.0 billion and $379.5 billion, respectively, of collateral that may not be sold or repledged by the secured parties.

Leases

The Company's operating leases, where Citibank is a lessee, include real estate, such as office space and branches, and various types of equipment. These leases may contain renewal and extension options and early termination features. However, these options do not impact the lease term unless the Company is reasonably certain that it will exercise the options. These leases have a weighted-average remaining lease term of approximately six years as of December 31, 2020 and 2019. The operating lease ROU assets were $2.4 billion and $2.6 billion as of December 31, 2020 and 2019, respectively. The operating lease ROU liabilities were $2.7 billion and $2.9 billion as of December 31, 2020 and 2019, respectively.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 expenses (principally for offices, branches and equipment), net of $22 million and $42 million of sublease income, were $873 million and $905 million for the years ended December 31, 2020 and 2019, respectively.

The table below provides supplemental information to the Consolidated Statement of Cash Flows:

	December 31,	
In millions of dollars	**2020**	2019
Cash paid for amounts included in the measurement of lease liabilities	$ **696**	$ 777
Right-of-use assets obtained in exchange for new operating lease liabilities(1)(2)	**447**	465

(1) Represents non-cash activity and accordingly is not reflected in the Consolidated Statement of Cash Flows.

(2) Excludes the decrease in the right-of-use assets related to the purchase of previously leased property.

Citibank's future lease payments are as follows:

In millions of dollars

2021	$	702
2022		600
2023		482
2024		379
2025		291
Thereafter		630
Total future lease payments	$	3,084
Less imputed interest (based on weighted-average discount rate of 3.2%)	$	(433)
Lease liability	$	2,651

Guarantees

The Company 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, the Company believes such amounts bear no relationship to the anticipated losses, if any, on these guarantees.

The following tables present information about the Company's guarantees:

In billions of dollars at December 31, 2020	Maximum potential amount of future payments			Carrying value (in millions of dollars)
	Expire within 1 year	**Expire after 1 year**	**Total amount outstanding**	
Financial standby letters of credit	$ 24.9	$ 67.6	$ 92.5	$ 1,366
Performance guarantees	6.8	5.6	12.4	71
Derivative instruments considered to be guarantees	16.1	50.9	67.0	389
Loans sold with recourse	—	1.2	1.2	9
Securities lending indemnifications[1]	114.9	—	114.9	—
Credit card merchant processing[1][2]	94.8	—	94.8	—
Credit card arrangements with partners	0.2	0.8	1.0	7
Custody indemnifications and other	—	36.9	36.9	35
Total	$ 257.7	$ 163.0	$ 420.7	$ 1,877

In billions of dollars at December 31, 2019	Maximum potential amount of future payments			Carrying value (in millions of dollars)
	Expire within 1 year	Expire after 1 year	Total amount outstanding	
Financial standby letters of credit	$ 31.3	$ 60.8	$ 92.1	$ 535
Performance guarantees	6.4	5.0	11.4	35
Derivative instruments considered to be guarantees	29.9	51.1	81.0	224
Loans sold with recourse	—	1.2	1.2	7
Securities lending indemnifications[1]	90.7	—	90.7	—
Credit card merchant processing[1][2]	83.5	—	83.5	—
Credit card arrangements with partners	0.2	0.4	0.6	23
Custody indemnifications and other	—	21.7	21.7	41
Total	$ 242.0	$ 140.2	$ 382.2	$ 865

(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, 2020 and 2019, this maximum potential exposure was estimated to be $95 billion and $84 billion, respectively. However, Citibank 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

Citibank issues standby letters of credit that substitute its own credit for that of the borrower. If a letter of credit is drawn down, the borrower is obligated to repay Citibank. 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 Citibank's derivatives activities, see Note 19 to the Consolidated Financial Statements.

Derivative instruments considered to be guarantees include only those instruments that require Citibank to make payments to the counterparty based on changes in an underlying instrument that is related to an asset, liability or 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 Citibank are excluded from the tables above as they are disclosed separately in Note 19 to the Consolidated Financial Statements. In instances where Citibank's maximum potential future payment is unlimited, the notional amount of the contract is disclosed.

Loans Sold with Recourse

Loans sold with recourse represent Citibank'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's taking back any loans that become delinquent.

In addition to the amounts shown in the tables above, Citibank 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 $31 million and $37 million at December 31, 2020 and 2019, 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, the Company 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 Citibank and the merchant are settled on a net basis and Citibank has the right to offset any payments with cash flows otherwise due to the merchant. To further mitigate this risk, Citibank may delay settlement, require a merchant to make an escrow deposit, include event triggers to provide Citibank 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, Citibank is contingently liable to credit or refund cardholders.

With regard to (ii) above, the Company has a potential liability for bank card transactions in which Citibank provides the transaction processing services, as well as those in which a third party provides the services and Citibank acts as a secondary guarantor should that processor fail to perform.

The Company'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, 2020 and 2019, this maximum potential exposure was estimated to be $ 94.8 billion and $83.5 billion, respectively.

However, the Company 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. The Company 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, 2020 and 2019, the losses incurred and the carrying amounts of the Company's contingent obligations related to merchant processing activities were immaterial.

Credit Card Arrangements with Partners

Citibank, in one 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

The Company, 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 the Company'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. The Company 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, 2020 and 2019, the actual and estimated losses incurred and the carrying value of the Company's obligations related to these programs were immaterial.

Other Representation and Warranty Indemnifications
In the normal course of business, the Company 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 the Company 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 the Company'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)
The Company is a member of, or shareholder in, hundreds of value-transfer networks (VTNs) (payment clearing and settlement systems as well as securities 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. The Company'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, the Company believes the risk of loss is remote given historical experience with the VTNs. Accordingly, the Company'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, 2020 and 2019 for potential obligations that could arise from the Company's involvement with VTN associations.

Carrying Value—Guarantees and Indemnifications
At December 31, 2020 and 2019, the total carrying amounts of the liabilities related to the guarantees and indemnifications included in the tables above amounted to approximately $1.9 billion and $0.9 billion, respectively. The carrying values of financial and performance guarantees and loans sold with recourse are included in *Other liabilities*.

Collateral
Cash collateral available to the Company to reimburse losses realized under these guarantees and indemnifications amounted to $52.8 billion and $47.7 billion at December 31, 2020 and 2019, respectively. Securities and other marketable assets held as collateral amounted to $80.6 billion and $58.7 billion at December 31, 2020 and 2019, respectively. The majority of collateral is held to reimburse losses realized under securities lending indemnifications. In addition, letters of credit in favor of the Company held as collateral amounted to $6.6 billion and $4.4 billion at December 31, 2020 and 2019, respectively. Other property may also be available to the Company to cover losses under certain guarantees and indemnifications; however, the value of such property has not been determined.

Performance Risk
Citibank evaluates the performance risk of its guarantees based on the assigned referenced counterparty's 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. Citibank'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 table below are the maximum potential amounts of future payments that are classified based on 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, Citibank believes such amounts bear no relationship to the anticipated losses, if any, on these guarantees.

In billions of dollars at December 31, 2020	Maximum potential amount of future payments Investment grade	 Non-investment grade	 Not rated	 Total
Financial standby letters of credit	$ 78.3	$ 13.7	$ 0.5	$ 92.5
Performance guarantees	8.9	3.0	0.5	12.4
Derivative instruments deemed to be guarantees	—	—	67.0	67.0
Loans sold with recourse	—	—	1.2	1.2
Securities lending indemnifications	—	—	114.9	114.9
Credit card merchant processing	—	—	94.8	94.8
Credit card arrangements with partners	—	—	1.0	1.0
Custody indemnifications and other	24.5	12.4	—	36.9
Total	$ 111.7	$ 29.1	$ 279.9	$ 420.7

In billions of dollars at December 31, 2019	Maximum potential amount of future payments Investment grade	 Non-investment grade	 Not rated	 Total
Financial standby letters of credit	$ 80.9	$ 10.6	$ 0.6	$ 92.1
Performance guarantees	8.6	2.3	0.5	11.4
Derivative instruments deemed to be guarantees	—	—	81.0	81.0
Loans sold with recourse	—	—	1.2	1.2
Securities lending indemnifications	—	—	90.7	90.7
Credit card merchant processing	—	—	83.5	83.5
Credit card arrangements with partners	—	—	0.6	0.6
Custody indemnifications and other	21.3	0.4	—	21.7
Total	$ 110.8	$ 13.3	$ 258.1	$ 382.2

Credit Commitments and Lines of Credit

The table below summarizes Citibank's credit commitments:

In millions of dollars	U.S.	Outside of U.S.	December 31, 2020	December 31, 2019
Commercial and similar letters of credit	$ 655	$ 4,485	$ 5,140	$ 4,483
One- to four-family residential mortgages	2,654	2,348	5,002	3,721
Revolving open-end loans secured by one- to four-family residential properties	8,326	1,300	9,626	10,798
Commercial real estate, construction and land development	11,200	1,329	12,529	12,703
Credit card lines	606,805	89,220	696,025	693,099
Commercial and other consumer loan commitments	188,681	113,962	302,643	294,226
Other commitments and contingencies	1,228	523	1,751	1,135
Total	$ 819,549	$ 213,167	$ 1,032,716	$ 1,020,165

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 Citibank substitutes its credit for that of a customer to enable the customer to finance the purchase of goods or to incur other commitments. Citibank 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 Citibank.

One- to Four-Family Residential Mortgages

A one- to four-family residential mortgage commitment is a written confirmation from Citibank 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

Citibank 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, to purchase third-party receivables, to provide note issuance or revolving underwriting facilities and to 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 Lending Agreements and Unsettled Repurchase and Securities Borrowing Agreements

In addition, in the normal course of business, Citibank 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, 2020 and 2019, Citibank had $68 million and $126 million of unsettled reverse repurchase and securities borrowing agreements, respectively, and no unsettled repurchase and securities lending agreements. 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 10 to the Consolidated Financial Statements.

24. REGIONAL DETAILS

The following is a geographic distribution of Citibank's operations on a managed geography basis—that is, based on the domicile region where the activity is managed, not necessarily the region where the transaction is recorded. The accounting policies of these regions are the same as those disclosed in Note 2 to the Consolidated Financial Statements. The prior-period balances reflect reclassifications to conform the presentation to the current period's presentation.

	Revenues, net of interest expense		Operating expenses		Provision for credit losses and for benefits and claims		Citibank net income		Assets at year end	
In millions of dollars, except assets in billions	**2020**	2019	**2020**	2019	**2020**	2019	**2020**	2019	**2020**	2019
North America[1]	**$ 30,854**	$ 31,403	**$ 16,483**	$ 15,960	**$ 12,464**	$ 6,211	**$ 2,127**	$ 7,672	**$ 648**	$ 559
EMEA[2]	**8,475**	8,611	**4,069**	4,038	**1,256**	211	**2,295**	3,342	**422**	367
Latin America[3]	**3,241**	3,684	**1,484**	1,533	**463**	7	**957**	1,528	**108**	108
Asia[4]	**13,574**	14,429	**7,279**	7,055	**1,576**	745	**3,449**	4,863	**483**	420
Total	**$ 56,144**	$ 58,127	**$ 29,315**	$ 28,586	**$ 15,759**	$ 7,174	**$ 8,828**	$ 17,405	**$ 1,661**	$ 1,454

(1) North America includes the United States, Canada and Puerto Rico.
(2) Europe, Middle East and Africa.
(3) Citibanamex is not included in Citibank; therefore, Mexico is not a significant part of Citibank Latin America. See Note 1 to the Consolidated Financial Statements.
(4) Asia includes Japan.

25. COUNTRY RISK

Overview

Generally, country risk is the risk that an event in a country (precipitated by developments internal or external to a country) could directly or indirectly impair the value of Citibank's franchise or adversely affect the ability of obligors within that country to honor their obligations to Citibank, any of which could negatively impact Citibank's results of operations or financial condition. Country risk events could include sovereign volatility or defaults, banking failures or defaults and/or redenomination events that could be accompanied by either devaluation or appreciation of the affected currency. While there is some overlap, cross-border risk is generally the risk that actions taken by a non-U.S. government may prevent the conversion of local currency into non-local currency (i.e., exchange controls) and/or the transfer of funds outside the country, among other risks, thereby impacting the ability of Citibank and its customers to transact business across borders.

Certain of the events described above could result in mandatory loan loss and other reserve requirements imposed by U.S. regulators due to a particular country's economic situation. While Citibank continues to work to mitigate its exposures to potential country and cross-border risk events, the impact of any such event is highly uncertain and will ultimately be based on the specific facts and circumstances. As a result, there can be no assurance that the various steps Citibank has taken to mitigate its exposures and risks and/or protect its businesses, results of operations and financial condition against these events will be sufficient. In addition, there could be negative impacts to Citibank's businesses, results of operations or financial condition that are currently unknown to Citibank and therefore cannot be mitigated as part of its ongoing contingency planning.

Cross-Border Risk Overview

Cross-border risk is the risk that actions taken by a non-U.S. government may prevent the conversion of local currency into non-local currency and/or the transfer of funds outside the country, among other risks, thereby impacting the ability of Citibank and its customers to transact business across borders. Examples of cross-border risk include actions taken by foreign governments such as exchange controls and restrictions on the remittance of funds. These actions might restrict the transfer of funds or the ability of Citibank to obtain payment from customers on their contractual obligations. Management of cross-border risk is performed through a formal review process that includes annual setting of cross-border limits and ongoing monitoring of cross-border exposures, as well as monitoring of economic conditions globally through Citibank's independent risk management.

Argentina

Citibank operates in Argentina through its corporate businesses. As of December 31, 2020, Citibank's net investment in its Argentine operations was approximately $1.0 billion. Citibank 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 August 2020, the Argentine government announced the successful restructuring of almost all of its foreign currency debt issued under foreign law, for which it had previously postponed principal and interest payments. However, during September 2020, the Argentine government tightened its existing capital and currency controls, which continue to restrict Citibank's ability to access U.S. dollars in Argentina and remit earnings from its Argentine operations. Citibank's net investment in its Argentine operations is likely to increase as Citibank generates net income in its Argentine franchise and its earnings are unable to be remitted.

Citibank 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 primarily executed outside of Argentina. As of December 31, 2020, the international NDF market had very limited liquidity, resulting in Citibank being unable to economically hedge nearly all of its Argentine peso exposure. As a result, and to the extent that Citibank does not execute NDF contracts for this unhedged exposure in the future, Citibank would record devaluations on its net Argentine peso-denominated assets in earnings, without any benefit from a change in the fair value of derivative positions used to economically hedge the exposure.

Citibank continually evaluates its economic exposure to its Argentine counterparties and reserves for changes in credit risk and sovereign risk associated with its Argentine assets. Citibank believes it has established appropriate allowances for credit losses 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, 2020. However, U.S. regulatory agencies may require Citibank to record additional reserves in the future, increasing Citibank's cost of credit, based on the perceived country risk associated with its Argentine exposures.

26. RELATED PARTY TRANSACTIONS

Citicorp, a direct, wholly owned subsidiary of Citigroup, owns 100% of the outstanding common stock of the Company. Pursuant to various intercompany agreements, a number of significant transactions are carried out between the Company and Citigroup and/or their affiliates, including the Citigroup parent company.

Detailed below is a summary of the Company's transactions with other Citigroup affiliates, which are included in the accompanying Consolidated Statement of Income and Consolidated Balance Sheet. These amounts exclude intra-Citibank balances that eliminate in consolidation.

INCOME STATEMENT ITEMS

		Year ended December 31,	
In millions of dollars		**2020**	2019
Revenues			
Net interest revenue (expense)	$	**(653)** $	(1,101)
Commissions and fees	$	**(164)** $	(254)
Principal transactions[1]		**(9,427)**	(3,561)
Other revenue		**246**	290
Total non-interest revenue	$	**(9,345)** $	(3,525)
Total revenues, net of interest expense	$	**(9,998)** $	(4,626)
Operating expenses (benefits)[2]			
Compensation and benefits	$	**(386)** $	(332)
Premises and equipment		**(182)**	(165)
Other operating		**(2,589)**	(2,343)
Total operating expenses (benefits)	$	**(3,157)** $	(2,840)

(1) Includes mark-to-market valuation adjustments for derivatives or hedges executed with non-consolidated Citibank affiliates, but does not include mark-to-market valuation adjustments related to any offsetting derivatives or hedges executed with third parties external to Citibank.
(2) Includes reimbursements from Citigroup affiliates for shared services and charges that Citibank provides to those affiliates.

BALANCE SHEET ITEMS

In millions of dollars	December 31, 2020	2019
Assets		
Cash and due from banks	$ **69**	$ 53
Deposits with banks	**79**	337
Securities purchased under agreements to resell	**32,792**	34,861
Trading account assets	**15,969**	8,522
Loans, net of unearned income	**193**	184
Other assets	**14,327**	7,571
Total assets	$ **63,429**	$ 51,528
Liabilities		
Non-interest-bearing deposits in U.S. offices	$ **2,485**	$ 1,615
Interest-bearing deposits in U.S. offices	**28,902**	34,271
Non-interest-bearing deposits in offices outside the U.S.	**1,606**	930
Interest-bearing deposits in offices outside the U.S.	**15,641**	13,267
Total deposits	$ **48,634**	$ 50,083
Trading account liabilities	$ **17,130**	$ 9,675
Securities loaned and sold under agreements to repurchase	**2,411**	2,603
Short-term borrowings	**223**	219
Subordinated notes and other long-term debt	**25,157**	30,357
Other liabilities	**3,391**	3,764
Total liabilities	$ **96,946**	$ 96,701

Stock-Based Compensation
As discussed in Note 7 to the Consolidated Financial Statements, the Company participates in various Citigroup stock-based compensation programs under which Citigroup stock or stock options are granted to certain of the Company's employees. Citibank has no stock-based compensation programs in which its own stock is granted. Citibank pays Citigroup directly for participation in certain of its stock-based compensation programs, but receives a capital contribution for those awards related to participation in the employee incentive stock option program.

Retirement Benefits
As discussed in Note 8 to the Consolidated Financial Statements, Citibank participates in several non-contributory defined-benefit pension plans and a defined-contribution plan sponsored by Citigroup covering certain eligible employees.

Citibank Tax-Sharing Agreement
As discussed in Note 9 to the Consolidated Financial Statements, Citibank is included in the Citigroup consolidated federal tax return and is a party to a tax-sharing agreement with Citigroup. Under such agreement, Citibank is entitled to a tax benefit for its losses and credits that are recognized in Citigroup's Consolidated Financial Statements. Settlements between Citibank and Citigroup of current taxes occur throughout the year. Citibank also files its consolidated and combined state income tax returns with Citigroup and/or others of its subsidiaries.

Other Intercompany Agreements
Citigroup and its subsidiaries engage in other transactions and servicing activities with Citibank, including cash management, data processing, telecommunications, payroll processing and administration, facilities procurement, underwriting and others.

Section 23A of the Federal Reserve Act
Section 23A of the Federal Reserve Act provides a limited capacity for Citibank to lend to Citigroup and Citigroup's non-bank subsidiaries. As of December 31, 2020, the maximum amount of 23A capacity for Citibank to lend to Citigroup and Citigroup's non-bank subsidiaries was approximately $35.3 billion, provided the funds are appropriately collateralized.

27. CONTINGENCIES

Overview

In the ordinary course of business, Citibank, its indirect parent Citigroup, and their affiliates and subsidiaries, as well as their respective current and former officers, directors and employees (for purposes of this section, sometimes collectively referred to as Citibank 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, 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, Citibank 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, disgorgements, injunctions or other relief. In addition, Citigroup is a financial holding company, Citibank is a bank, and certain affiliates and subsidiaries of Citibank are banks, registered broker-dealers, futures commission merchants, investment advisers or other regulated entities and, in those capacities, are subject to regulation by various U.S., state and foreign securities, banking, commodity futures and other regulators. In connection with formal and informal inquiries by these regulators, Citibank and Related Parties 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, Citibank 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 Citibank and its customers.

Because of the global scope of Citibank's operations, and its presence in countries around the world, Citibank 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 litigation, regulatory and tax regimes that may differ substantially, and present substantially different risks, from those Citibank and Related Parties are subject to in the United States. In some instances Citibank 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 and Citibank seek to resolve all litigation and regulatory matters in the manner management believes is in the best interests of Citigroup and its shareholders and Citibank and its depositors, and contest 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.

In accordance with ASC 450, Citibank establishes accruals for contingencies, including litigation, regulatory and tax matters, when Citibank believes it is probable that a loss has been incurred and the amount of the loss can be reasonably estimated. Once established, accruals are adjusted from time to time, as appropriate, in light of additional information. In view of the inherent unpredictability of litigation, regulatory and tax matters, particularly where the damages sought are substantial or indeterminate, the investigations or proceedings are in the early stages, or the matters involve novel legal theories or a large number of parties, Citibank cannot predict the timing or ultimate resolution of litigation and regulatory matters and the actual costs of resolving litigation, regulatory and tax matters may be substantially higher or lower than the amounts accrued for those matters.

Subject to the foregoing, it is the opinion of Citibank's management, based on current knowledge and after taking into account its current legal accruals, that the eventual outcome of all matters would not be likely to have a material adverse effect on the consolidated financial condition of Citibank. 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 Citibank's consolidated results of operations or cash flows in particular periods.

For a discussion of Citigroup's material legal, regulatory and tax matters, which includes Citibank, see Note 27 to the Consolidated Financial Statements in Citigroup's Annual Report on Form 10-K for the year ended December 31, 2020, filed with the U.S. Securities and Exchange Commission on February 26, 2021.

28. SUBSEQUENT EVENT

As a result of new information Citibank received subsequent to December 31, 2020, Citibank adjusted downward its 2020 financial results due to a \$390 million increase in operating expenses (\$323 million after-tax) resulting from operational losses related to certain legal matters. Citibank's results of operations and financial condition for the full year 2020, as reported in these Audited Consolidated Financial Statements for the year ended December 31, 2020, reflect the impact of this adjustment.