

Financial Statements and Notes

Table of Contents

	<u>Page</u>
Consolidated Statement of Income	137
Consolidated Statement of Comprehensive Income	137
Consolidated Balance Sheet	138
Consolidated Statement of Changes in Shareholders' Equity	139
Consolidated Statement of Cash Flows	140
Note 1 – Summary of Significant Accounting Principles	141
Note 2 – Net Interest Income and Noninterest Income	150
Note 3 – Derivatives	151
Note 4 – Securities	158
Note 5 – Outstanding Loans and Leases and Allowance for Credit Losses	161
Note 6 – Securitizations and Other Variable Interest Entities	171
Note 7 – Goodwill and Intangible Assets	175
Note 8 – Leases	176
Note 9 – Deposits	177
Note 10 – Securities Financing Agreements, Short-term Borrowings, Collateral and Restricted Cash	177
Note 11 – Long-term Debt	179
Note 12 – Commitments and Contingencies	180
Note 13 – Shareholders' Equity	184
Note 14 – Accumulated Other Comprehensive Income	186
Note 15 – Earnings Per Common Share	186
Note 16 – Regulatory Requirements and Restrictions	187
Note 17 – Employee Benefit Plans	188
Note 18 – Stock-based Compensation Plans	193
Note 19 – Income Taxes	193
Note 20 – Fair Value Measurements	195
Note 21 – Fair Value Option	204
Note 22 – Fair Value of Financial Instruments	206
Note 23 – Business Segment Information	207
Note 24 – Parent Company Information	210
Note 25 – Performance by Geographical Area	212
Glossary	213
Acronyms	215

Report of Management on Internal Control Over Financial Reporting

Bank of America Corporation and Subsidiaries

The management of Bank of America Corporation is responsible for establishing and maintaining adequate internal control over financial reporting.

The Corporation's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America. The Corporation's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Corporation; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with accounting principles generally accepted in the United States of America, and that receipts and expenditures of the Corporation are being made only in accordance with authorizations of management and directors of the Corporation; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Corporation's assets that could have a material effect on the financial statements.


Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management assessed the effectiveness of the Corporation's internal control over financial reporting as of December 31, 2022 based on the framework set forth by the Committee of Sponsoring Organizations of the Treadway Commission in *Internal Control - Integrated Framework (2013)*. Based on that assessment, management concluded that, as of December 31, 2022, the Corporation's internal control over financial reporting is effective.

The Corporation's internal control over financial reporting as of December 31, 2022 has been audited by PricewaterhouseCoopers, LLP, an independent registered public accounting firm, as stated in their accompanying report which expresses an unqualified opinion on the effectiveness of the Corporation's internal control over financial reporting as of December 31, 2022.



Brian T. Moynihan
Chair, Chief Executive Officer and President



Alastair M. Borthwick
Chief Financial Officer

Report of Independent Registered Public Accounting Firm

Bank of America Corporation and Subsidiaries

To the Board of Directors and Shareholders of Bank of America Corporation

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Bank of America Corporation and its subsidiaries (the "Corporation") as of December 31, 2022 and 2021, and the related consolidated statements of income, comprehensive income, changes in shareholders' equity and cash flows for each of the three years in the period ended December 31, 2022, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Corporation's internal control over financial reporting as of December 31, 2022, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Corporation as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Corporation maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Corporation changed the manner in which it accounts for credit losses on certain financial instruments in 2020.

Basis for Opinions

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

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

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

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

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

Allowance for Loan and Lease Losses - Commercial and Consumer Card Loans

As described in Notes 1 and 5 to the consolidated financial statements, the allowance for loan and lease losses represents management's estimate of the expected credit losses in the

Corporation's loan and lease portfolio, excluding loans and unfunded lending commitments accounted for under the fair value option. As of December 31, 2022, the allowance for loan and lease losses was \$12.7 billion on total loans and leases of \$1,040.0 billion, which excludes loans accounted for under the fair value option. For commercial and consumer card loans, the expected credit loss is typically estimated using quantitative methods that consider a variety of factors such as historical loss experience, the current credit quality of the portfolio as well as an economic outlook over the life of the loan. In its loss forecasting framework, the Corporation incorporates forward looking information through the use of macroeconomic scenarios applied over the forecasted life of the assets. These macroeconomic scenarios include variables that have historically been key drivers of increases and decreases in credit losses. These variables include, but are not limited to, unemployment rates, real estate prices, gross domestic product levels and corporate bond spreads. The scenarios that are chosen and the weighting given to each scenario depend on a variety of factors including recent economic events, leading economic indicators, views of internal as well as third-party economists and industry trends. Also included in the allowance for loan and lease losses are qualitative reserves to cover losses that are expected but, in the Corporation's assessment, may not be adequately reflected in the quantitative methods or the economic assumptions. Factors that the Corporation considers include changes in lending policies and procedures, business conditions, the nature and size of the portfolio, portfolio concentrations, the volume and severity of past due loans and nonaccrual loans, the effect of external factors such as competition, and legal and regulatory requirements, among others. Further, the Corporation considers the inherent uncertainty in quantitative models that are built on historical data.

The principal considerations for our determination that performing procedures relating to the allowance for loan and lease losses for the commercial and consumer card portfolios is a critical audit matter are (i) the significant judgment and estimation by management in developing lifetime economic forecast scenarios, related weightings to each scenario and certain qualitative reserves, which in turn led to a high degree of auditor judgment, subjectivity and effort in performing procedures and in evaluating audit evidence obtained, and (ii) the audit effort involved professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the allowance for loan and lease losses, including controls over the evaluation and approval of models, forecast scenarios and related weightings, and qualitative reserves. These procedures also included, among others, testing management's process for estimating the allowance for loan and lease losses, including (i) evaluating the appropriateness of the loss forecast models and methodology, (ii) evaluating the reasonableness of certain macroeconomic variables, (iii) evaluating the reasonableness of management's development, selection and weighting of lifetime economic forecast scenarios used in the loss forecast models, (iv) testing the completeness and accuracy of data used in the estimate, and (v) evaluating the reasonableness of certain qualitative reserves made to the

model output results to determine the overall allowance for loan and lease losses. The procedures also included the involvement of professionals with specialized skill and knowledge to assist in evaluating the appropriateness of certain loss forecast models, the reasonableness of economic forecast scenarios and related weightings and the reasonableness of certain qualitative reserves.

Valuation of Certain Level 3 Financial Instruments

As described in Notes 1 and 20 to the consolidated financial statements, the Corporation carries certain financial instruments at fair value, which includes \$10.7 billion of assets and \$7.1 billion of liabilities classified as Level 3 fair value measurements that are valued on a recurring basis and \$3.4 billion of assets classified as Level 3 fair value measurements that are valued on a nonrecurring basis, for which the determination of fair value requires significant management judgment or estimation. The Corporation determines the fair value of Level 3 financial instruments using pricing models, discounted cash flow methodologies, or similar techniques that require inputs that are both unobservable and are significant to the overall fair value measurement. Unobservable inputs, such as volatility or implied yield, may be determined using quantitative-based extrapolations, pricing models or other internal methodologies which incorporate management estimates and available market information.

The principal considerations for our determination that performing procedures relating to the valuation of certain Level 3 financial instruments is a critical audit matter are the significant judgment and estimation used by management to determine the fair value of these financial instruments, which in turn led to a high degree of auditor judgment, subjectivity and effort in performing procedures and in evaluating audit evidence obtained, including the involvement of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the valuation of financial instruments, including controls related to valuation models, significant unobservable inputs, and data. These procedures also included, among others, the involvement of professionals with specialized skill and knowledge to assist in developing an independent estimate of fair value for a sample of these certain financial instruments and comparison of management's estimate to the independently developed estimate of fair value. Developing the independent estimate involved testing the completeness and accuracy of data provided by management and evaluating the reasonableness of management's significant unobservable inputs.



Charlotte, North Carolina
February 22, 2023

We have served as the Corporation's auditor since 1958.

Bank of America Corporation and Subsidiaries

Consolidated Statement of Income

(In millions, except per share information)

	2022	2021	2020
Net interest income			
Interest income	\$ 72,565	\$ 47,672	\$ 51,585
Interest expense	20,103	4,738	8,225
Net interest income	52,462	42,934	43,360
Noninterest income			
Fees and commissions	33,212	39,299	34,551
Market making and similar activities	12,075	8,691	8,355
Other income	(2,799)	(1,811)	(738)
Total noninterest income	42,488	46,179	42,168
Total revenue, net of interest expense	94,950	89,113	85,528
Provision for credit losses	2,543	(4,594)	11,320
Noninterest expense			
Compensation and benefits	36,447	36,140	32,725
Occupancy and equipment	7,071	7,138	7,141
Information processing and communications	6,279	5,769	5,222
Product delivery and transaction related	3,653	3,881	3,433
Professional fees	2,142	1,775	1,694
Marketing	1,825	1,939	1,701
Other general operating	4,021	3,089	3,297
Total noninterest expense	61,438	59,731	55,213
Income before income taxes	30,969	33,976	18,995
Income tax expense	3,441	1,998	1,101
Net income	\$ 27,528	\$ 31,978	\$ 17,894
Preferred stock dividends and other	1,513	1,421	1,421
Net income applicable to common shareholders	\$ 26,015	\$ 30,557	\$ 16,473
Per common share information			
Earnings	\$ 3.21	\$ 3.60	\$ 1.88
Diluted earnings	3.19	3.57	1.87
Average common shares issued and outstanding	8,113.7	8,493.3	8,753.2
Average diluted common shares issued and outstanding	8,167.5	8,558.4	8,796.9

Consolidated Statement of Comprehensive Income

(Dollars in millions)

	2022	2021	2020
Net income	\$ 27,528	\$ 31,978	\$ 17,894
Other comprehensive income (loss), net-of-tax:			
Net change in debt securities	(6,028)	(2,077)	4,799
Net change in debit valuation adjustments	755	356	(498)
Net change in derivatives	(10,055)	(2,306)	826
Employee benefit plan adjustments	(667)	624	(98)
Net change in foreign currency translation adjustments	(57)	(45)	(52)
Other comprehensive income (loss)	(16,052)	(3,448)	4,977
Comprehensive income (loss)	\$ 11,476	\$ 28,530	\$ 22,871

See accompanying Notes to Consolidated Financial Statements.

Bank of America Corporation and Subsidiaries

Consolidated Balance Sheet

	December 31	
	2022	2021
(Dollars in millions)		
Assets		
Cash and due from banks	\$ 30,334	\$ 29,222
Interest-bearing deposits with the Federal Reserve, non-U.S. central banks and other banks	199,869	318,999
Cash and cash equivalents	230,203	348,221
Time deposits placed and other short-term investments	7,259	7,144
Federal funds sold and securities borrowed or purchased under agreements to resell (includes \$146,999 and \$150,665 measured at fair value)	267,574	250,720
Trading account assets (includes \$115,505 and \$103,434 pledged as collateral)	296,108	247,080
Derivative assets	48,642	35,344
Debt securities:		
Carried at fair value	229,994	308,073
Held-to-maturity, at cost (fair value – \$524,267 and \$665,890)	632,825	674,554
Total debt securities	862,819	982,627
Loans and leases (includes \$5,771 and \$7,819 measured at fair value)	1,045,747	979,124
Allowance for loan and lease losses	(12,682)	(12,387)
Loans and leases, net of allowance	1,033,065	966,737
Premises and equipment, net	11,510	10,833
Goodwill	69,022	69,022
Loans held-for-sale (includes \$1,115 and \$4,455 measured at fair value)	6,871	15,635
Customer and other receivables	67,543	72,263
Other assets (includes \$9,594 and \$12,144 measured at fair value)	150,759	163,869
Total assets	\$ 3,051,375	\$ 3,169,495
Liabilities		
Deposits in U.S. offices:		
Noninterest-bearing	\$ 640,745	\$ 784,189
Interest-bearing (includes \$311 and \$408 measured at fair value)	1,182,590	1,165,914
Deposits in non-U.S. offices:		
Noninterest-bearing	20,480	27,457
Interest-bearing	86,526	86,886
Total deposits	1,930,341	2,064,446
Federal funds purchased and securities loaned or sold under agreements to repurchase (includes \$151,708 and \$139,641 measured at fair value)	195,635	192,329
Trading account liabilities	80,399	100,690
Derivative liabilities	44,816	37,675
Short-term borrowings (includes \$832 and \$4,279 measured at fair value)	26,932	23,753
Accrued expenses and other liabilities (includes \$9,752 and \$11,489 measured at fair value and \$1,540 and \$1,456 of reserve for unfunded lending commitments)	224,073	200,419
Long-term debt (includes \$33,070 and \$29,708 measured at fair value)	275,982	280,117
Total liabilities	2,778,178	2,899,429
Commitments and contingencies (Note 6 – Securitizations and Other Variable Interest Entities and Note 12 – Commitments and Contingencies)		
Shareholders' equity		
Preferred stock, \$0.01 par value; authorized – 100,000,000 shares; issued and outstanding – 4,088,101 and 3,939,686 shares	28,397	24,708
Common stock and additional paid-in capital, \$0.01 par value; authorized – 12,800,000,000 shares; issued and outstanding – 7,996,777,943 and 8,077,831,463 shares	58,953	62,398
Retained earnings	207,003	188,064
Accumulated other comprehensive income (loss)	(21,156)	(5,104)
Total shareholders' equity	273,197	270,066
Total liabilities and shareholders' equity	\$ 3,051,375	\$ 3,169,495
Assets of consolidated variable interest entities included in total assets above (isolated to settle the liabilities of the variable interest entities)		
Trading account assets	\$ 2,816	\$ 5,004
Loans and leases	16,738	17,135
Allowance for loan and lease losses	(797)	(958)
Loans and leases, net of allowance	15,941	16,177
All other assets	116	189
Total assets of consolidated variable interest entities	\$ 18,873	\$ 21,370
Liabilities of consolidated variable interest entities included in total liabilities above		
Short-term borrowings (includes \$42 and \$51 of non-recourse short-term borrowings)	\$ 42	\$ 247
Long-term debt (includes \$4,581 and \$3,587 of non-recourse debt)	4,581	3,587
All other liabilities (includes \$13 and \$7 of non-recourse liabilities)	13	7
Total liabilities of consolidated variable interest entities	\$ 4,636	\$ 3,841

See accompanying Notes to Consolidated Financial Statements.

Bank of America Corporation and Subsidiaries

Consolidated Statement of Changes in Shareholders' Equity

(In millions)	Preferred Stock	Common Stock and Additional Paid-in Capital		Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total Shareholders' Equity
		Shares	Amount			
Balance, December 31, 2019	\$ 23,401	8,836.1	\$ 91,723	\$ 156,319	\$ (6,633)	\$ 264,810
Cumulative adjustment for adoption of credit loss accounting standard				(2,406)		(2,406)
Net income				17,894		17,894
Net change in debt securities					4,799	4,799
Net change in debit valuation adjustments					(498)	(498)
Net change in derivatives					826	826
Employee benefit plan adjustments					(98)	(98)
Net change in foreign currency translation adjustments					(52)	(52)
Dividends declared:						
Common				(6,289)		(6,289)
Preferred				(1,421)		(1,421)
Issuance of preferred stock	2,181					2,181
Redemption of preferred stock	(1,072)					(1,072)
Common stock issued under employee plans, net, and other		41.7	1,284	(9)		1,275
Common stock repurchased		(227.0)	(7,025)			(7,025)
Balance, December 31, 2020	\$ 24,510	8,650.8	\$ 85,982	\$ 164,088	\$ (1,656)	\$ 272,924
Net income				31,978		31,978
Net change in debt securities					(2,077)	(2,077)
Net change in debit valuation adjustments					356	356
Net change in derivatives					(2,306)	(2,306)
Employee benefit plan adjustments					624	624
Net change in foreign currency translation adjustments					(45)	(45)
Dividends declared:						
Common				(6,575)		(6,575)
Preferred				(1,421)		(1,421)
Issuance of preferred stock	2,169					2,169
Redemption of preferred stock	(1,971)					(1,971)
Common stock issued under employee plans, net, and other		42.3	1,542	(6)		1,536
Common stock repurchased		(615.3)	(25,126)			(25,126)
Balance, December 31, 2021	\$ 24,708	8,077.8	\$ 62,398	\$ 188,064	\$ (5,104)	\$ 270,066
Net income				27,528		27,528
Net change in debt securities					(6,028)	(6,028)
Net change in debit valuation adjustments					755	755
Net change in derivatives					(10,055)	(10,055)
Employee benefit plan adjustments					(667)	(667)
Net change in foreign currency translation adjustments					(57)	(57)
Dividends declared:						
Common				(6,963)		(6,963)
Preferred				(1,596)		(1,596)
Issuance of preferred stock	4,426					4,426
Redemption of preferred stock	(737)		83			(654)
Common stock issued under employee plans, net, and other		44.9	1,545	(30)		1,515
Common stock repurchased		(125.9)	(5,073)			(5,073)
Balance, December 31, 2022	\$ 28,397	7,996.8	\$ 58,953	\$ 207,003	\$ (21,156)	\$ 273,197

See accompanying Notes to Consolidated Financial Statements.

Bank of America Corporation and Subsidiaries

Consolidated Statement of Cash Flows

(Dollars in millions)	2022	2021	2020
Operating activities			
Net income	\$ 27,528	\$ 31,978	\$ 17,894
Adjustments to reconcile net income to net cash provided by operating activities:			
Provision for credit losses	2,543	(4,594)	11,320
Gains on sales of debt securities	(32)	(22)	(411)
Depreciation and amortization	1,978	1,898	1,843
Net amortization of premium/discount on debt securities	2,072	5,837	4,101
Deferred income taxes	739	(838)	(1,737)
Stock-based compensation	2,862	2,768	2,031
Loans held-for-sale:			
Originations and purchases	(24,862)	(43,635)	(19,657)
Proceeds from sales and paydowns of loans originally classified as held for sale and instruments from related securitization activities	31,567	34,684	19,049
Net change in:			
Trading and derivative assets/liabilities	(95,772)	(22,104)	16,942
Other assets	20,799	(34,455)	(12,883)
Accrued expenses and other liabilities	23,029	16,639	(4,385)
Other operating activities, net	1,222	4,651	3,886
Net cash provided by (used in) operating activities	(6,327)	(7,193)	37,993
Investing activities			
Net change in:			
Time deposits placed and other short-term investments	(115)	(598)	561
Federal funds sold and securities borrowed or purchased under agreements to resell	(16,854)	53,338	(29,461)
Debt securities carried at fair value:			
Proceeds from sales	69,114	6,893	77,524
Proceeds from paydowns and maturities	110,195	159,616	91,084
Purchases	(134,962)	(238,398)	(194,877)
Held-to-maturity debt securities:			
Proceeds from paydowns and maturities	63,852	124,880	93,835
Purchases	(24,096)	(362,736)	(257,535)
Loans and leases:			
Proceeds from sales of loans originally classified as held for investment and instruments from related securitization activities	26,757	10,396	13,351
Purchases	(5,798)	(5,164)	(5,229)
Other changes in loans and leases, net	(86,010)	(58,039)	36,571
Other investing activities, net	(4,612)	(3,479)	(3,489)
Net cash used in investing activities	(2,529)	(313,291)	(177,665)
Financing activities			
Net change in:			
Deposits	(134,190)	268,966	360,677
Federal funds purchased and securities loaned or sold under agreements to repurchase	3,306	22,006	5,214
Short-term borrowings	3,179	4,432	(4,893)
Long-term debt:			
Proceeds from issuance	65,910	76,675	57,013
Retirement	(34,055)	(46,826)	(47,948)
Preferred stock:			
Proceeds from issuance	4,426	2,169	2,181
Redemption	(654)	(1,971)	(1,072)
Common stock repurchased	(5,073)	(25,126)	(7,025)
Cash dividends paid	(8,576)	(8,055)	(7,727)
Other financing activities, net	(312)	(620)	(601)
Net cash provided by (used in) financing activities	(106,039)	291,650	355,819
Effect of exchange rate changes on cash and cash equivalents	(3,123)	(3,408)	2,756
Net increase (decrease) in cash and cash equivalents	(118,018)	(32,242)	218,903
Cash and cash equivalents at January 1	348,221	380,463	161,560
Cash and cash equivalents at December 31	\$ 230,203	\$ 348,221	\$ 380,463
Supplemental cash flow disclosures			
Interest paid	\$ 18,526	\$ 4,506	\$ 8,662
Income taxes paid, net	2,288	2,760	2,894

See accompanying Notes to Consolidated Financial Statements.

Bank of America Corporation and Subsidiaries

Notes to Consolidated Financial Statements

NOTE 1 Summary of Significant Accounting Principles

Bank of America Corporation, a bank holding company and a financial holding company, provides a diverse range of financial services and products throughout the U.S. and in certain international markets. The term “the Corporation” as used herein may refer to Bank of America Corporation, individually, Bank of America Corporation and its subsidiaries, or certain of Bank of America Corporation’s subsidiaries or affiliates.

Principles of Consolidation and Basis of Presentation

The Consolidated Financial Statements include the accounts of the Corporation and its majority-owned subsidiaries and those variable interest entities (VIEs) where the Corporation is the primary beneficiary. Intercompany accounts and transactions have been eliminated. Results of operations of acquired companies are included from the dates of acquisition, and for VIEs, from the dates that the Corporation became the primary beneficiary. Assets held in an agency or fiduciary capacity are not included in the Consolidated Financial Statements. The Corporation accounts for investments in companies for which it owns a voting interest and for which it has the ability to exercise significant influence over operating and financing decisions using the equity method of accounting. These investments, which include the Corporation’s interests in affordable housing and renewable energy partnerships, are recorded in other assets. Equity method investments are subject to impairment testing, and the Corporation’s proportionate share of income or loss is included in other income.

The preparation of the Consolidated Financial Statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect reported amounts and disclosures. Actual results could materially differ from those estimates and assumptions. Certain prior-period amounts have been reclassified to conform to current period presentation.

New Accounting Standards

Hedge Accounting

The FASB issued a new accounting standard that makes targeted improvements to the application of the fair value hedge accounting guidance for closed portfolios of financial assets. The targeted improvements were effective January 1, 2023 on a prospective basis.

Financial Instruments – Credit Losses

The FASB amended the accounting and disclosure requirements for expected credit losses (ECL) by removing the recognition and measurement guidance on troubled debt restructurings (TDRs) and adding disclosures on the financial effect and subsequent performance of certain types of modifications made to borrowers experiencing financial difficulties. The effects of these changes on the Corporation’s consolidated financial position, results of operations or disclosures in the Notes to the Consolidated Financial Statements are not significant. The amendments were effective on January 1, 2023, which the Corporation adopted using a modified retrospective approach.

Significant Accounting Principles

Cash and Cash Equivalents

Cash and cash equivalents include cash on hand, cash items in the process of collection, cash segregated under federal and other brokerage regulations, and amounts due from correspondent banks, the Federal Reserve Bank and certain non-U.S. central banks. Certain cash balances are restricted as to withdrawal or usage by legally binding contractual agreements or regulatory requirements.

Securities Financing Agreements

Securities borrowed or purchased under agreements to resell and securities loaned or sold under agreements to repurchase (securities financing agreements) are treated as collateralized financing transactions except in instances where the transaction is required to be accounted for as individual sale and purchase transactions. Generally, these agreements are recorded at acquisition or sale price plus accrued interest. In instances where the interest is negative, the Corporation’s policy is to present negative interest on financial assets as interest income and negative interest on financial liabilities as interest expense. For securities financing agreements that are accounted for under the fair value option, the changes in the fair value of these securities financing agreements are recorded in market making and similar activities in the Consolidated Statement of Income.

The Corporation’s policy is to monitor the market value of the principal amount loaned under resale agreements and obtain collateral from or return collateral pledged to counterparties when appropriate. Securities financing agreements do not create material credit risk due to these collateral provisions; therefore, an allowance for loan losses is not necessary.

In transactions where the Corporation acts as the lender in a securities lending agreement and receives securities that can be pledged or sold as collateral, it recognizes an asset on the Consolidated Balance Sheet at fair value, representing the securities received, and a liability, representing the obligation to return those securities.

Trading Instruments

Financial instruments utilized in trading activities are carried at fair value. Fair value is generally based on quoted market prices for the same or similar assets and liabilities. If these market prices are not available, fair values are estimated based on dealer quotes, pricing models, discounted cash flow methodologies, or similar techniques where the determination of fair value may require significant management judgment or estimation. Realized gains and losses are recorded on a trade-date basis. Realized and unrealized gains and losses are recognized in market making and similar activities.

Derivatives and Hedging Activities

Derivatives are entered into on behalf of customers, for trading or to support risk management activities. Derivatives used in risk management activities include derivatives that are both designated in qualifying accounting hedge relationships and derivatives used to hedge market risks in relationships that are not designated in qualifying accounting hedge relationships (referred to as other risk management activities). The Corporation manages interest rate and foreign currency exchange rate sensitivity predominantly through the use of derivatives. Derivatives utilized by the Corporation include swaps, futures and forward settlement contracts, and option contracts.

All derivatives are recorded on the Consolidated Balance Sheet at fair value, taking into consideration the effects of legally enforceable master netting agreements that allow the Corporation to settle positive and negative positions and offset cash collateral held with the same counterparty on a net basis. For exchange-traded contracts, fair value is based on quoted market prices in active or inactive markets or is derived from observable market-based pricing parameters, similar to those applied to over-the-counter (OTC) derivatives. For non-exchange traded contracts, fair value is based on dealer quotes, pricing models, discounted cash flow methodologies or similar techniques for which the determination of fair value may require significant management judgment or estimation.

Valuations of derivative assets and liabilities reflect the value of the instrument including counterparty credit risk. These values also take into account the Corporation's own credit standing.

Trading Derivatives and Other Risk Management Activities

Derivatives held for trading purposes are included in derivative assets or derivative liabilities on the Consolidated Balance Sheet with changes in fair value included in market making and similar activities.

Derivatives used for other risk management activities are included in derivative assets or derivative liabilities. Derivatives used in other risk management activities have not been designated in qualifying accounting hedge relationships because they did not qualify or the risk that is being mitigated pertains to an item that is reported at fair value through earnings so that the effect of measuring the derivative instrument and the asset or liability to which the risk exposure pertains will offset in the Consolidated Statement of Income to the extent effective. The changes in the fair value of derivatives that serve to mitigate certain risks associated with mortgage servicing rights (MSRs), interest rate lock commitments (IRLCs) and first-lien mortgage loans held-for-sale (LHFS) that are originated by the Corporation are recorded in other income. Changes in the fair value of derivatives that serve to mitigate interest rate risk and foreign currency risk are included in market making and similar activities. Credit derivatives are also used by the Corporation to mitigate the risk associated with various credit exposures. The changes in the fair value of these derivatives are included in market making and similar activities and other income.

Derivatives Used For Hedge Accounting Purposes (Accounting Hedges)

For accounting hedges, the Corporation formally documents at inception all relationships between hedging instruments and hedged items, as well as the risk management objectives and strategies for undertaking various accounting hedges. Additionally, the Corporation primarily uses regression analysis at the inception of a hedge and for each reporting period thereafter to assess whether the derivative used in an accounting hedge transaction is expected to be and has been highly effective in offsetting changes in the fair value or cash flows of a hedged item or forecasted transaction. The Corporation discontinues hedge accounting when it is determined that a derivative is not expected to be or has ceased to be highly effective as a hedge, and then reflects changes in fair value of the derivative in earnings after termination of the hedge relationship.

Fair value hedges are used to protect against changes in the fair value of the Corporation's assets and liabilities that are attributable to interest rate or foreign exchange volatility. Changes in the fair value of derivatives designated as fair value

hedges are recorded in earnings, together and in the same income statement line item with changes in the fair value of the related hedged item. If a derivative instrument in a fair value hedge is terminated or the hedge designation removed, the previous adjustments to the carrying value of the hedged asset or liability are subsequently accounted for in the same manner as other components of the carrying value of that asset or liability. For interest-earning assets and interest-bearing liabilities, such adjustments are amortized to earnings over the remaining life of the respective asset or liability.

Cash flow hedges are used primarily to minimize the variability in cash flows of assets and liabilities or forecasted transactions caused by interest rate or foreign exchange rate fluctuations. The Corporation also uses cash flow hedges to hedge the price risk associated with deferred compensation. Changes in the fair value of derivatives used in cash flow hedges are recorded in accumulated other comprehensive income (OCI) and are reclassified into the line item in the income statement in which the hedged item is recorded in the same period the hedged item affects earnings. Components of a derivative that are excluded in assessing hedge effectiveness are recorded in the same income statement line item as the hedged item.

Net investment hedges are used to manage the foreign exchange rate sensitivity arising from a net investment in a foreign operation. Changes in the spot prices of derivatives that are designated as net investment hedges of foreign operations are recorded as a component of accumulated OCI. The remaining components of these derivatives are excluded in assessing hedge effectiveness and are recorded in market making and similar activities.

Securities

Debt securities are reported on the Consolidated Balance Sheet at their trade date. Their classification is dependent on the purpose for which the securities were acquired. Debt securities purchased for use in the Corporation's trading activities are reported in trading account assets at fair value with unrealized gains and losses included in market making and similar activities. Substantially all other debt securities purchased are used in the Corporation's asset and liability management (ALM) activities and are reported on the Consolidated Balance Sheet as either debt securities carried at fair value or as held-to-maturity (HTM) debt securities. Debt securities carried at fair value are either available-for-sale (AFS) securities with unrealized gains and losses net-of-tax included in accumulated OCI or carried at fair value with unrealized gains and losses reported in market making and similar activities. HTM debt securities are debt securities that management has the intent and ability to hold to maturity and are reported at amortized cost.

The Corporation evaluates each AFS security where the value has declined below amortized cost. If the Corporation intends to sell or believes it is more likely than not that it will be required to sell the debt security, it is written down to fair value through earnings. For AFS debt securities the Corporation intends to hold, the Corporation evaluates the debt securities for ECL, except for debt securities that are guaranteed by the U.S. Treasury, U.S. government agencies or sovereign entities of high credit quality where the Corporation applies a zero credit loss assumption. For the remaining AFS debt securities, the Corporation considers qualitative parameters such as internal and external credit ratings and the value of underlying collateral. If an AFS debt security fails any of the qualitative parameters, a discounted cash flow analysis is used by the Corporation to

determine if a portion of the unrealized loss is a result of an ECL. The Corporation will then recognize either credit loss expense or a reversal of credit loss expense in other income for the amount necessary to adjust the debt securities valuation allowance to its current estimate of expected credit losses. Cash flows expected to be collected are estimated using all relevant information available such as remaining payment terms, prepayment speeds, the financial condition of the issuer, expected defaults and the value of the underlying collateral. If any of the decline in fair value is related to market factors, that amount is recognized in accumulated OCI. In certain instances, the credit loss may exceed the total decline in fair value, in which case, the allowance recorded is limited to the difference between the amortized cost and the fair value of the asset.

The Corporation separately evaluates its HTM debt securities for any credit losses, of which substantially all qualify for the zero loss assumption. For the remaining securities, the Corporation performs a discounted cash flow analysis to estimate any credit losses which are then recognized as part of the allowance for credit losses.

Interest on debt securities, including amortization of premiums and accretion of discounts, is included in interest income. Premiums and discounts are amortized or accreted to interest income at a constant effective yield over the contractual lives of the securities. Realized gains and losses from the sales of debt securities are determined using the specific identification method.

Equity securities with readily determinable fair values that are not held for trading purposes are carried at fair value with unrealized gains and losses included in other income. Equity securities that do not have readily determinable fair values are recorded at cost less impairment, if any, plus or minus qualifying observable price changes. These securities are reported in other assets.

Loans and Leases

Loans, with the exception of loans accounted for under the fair value option, are measured at historical cost and reported at their outstanding principal balances net of any unearned income, charge-offs, unamortized deferred fees and costs on originated loans, and for purchased loans, net of any unamortized premiums or discounts. Loan origination fees and certain direct origination costs are deferred and recognized as adjustments to interest income over the lives of the related loans. Unearned income, discounts and premiums are amortized to interest income using a level yield methodology. The Corporation elects to account for certain consumer and commercial loans under the fair value option with interest reported in interest income and changes in fair value reported in market making and similar activities or other income.

Under applicable accounting guidance, for reporting purposes, the loan and lease portfolio is categorized by portfolio segment and, within each portfolio segment, by class of financing receivable. A portfolio segment is defined as the level at which an entity develops and documents a systematic methodology to determine the allowance for credit losses, and a class of financing receivable is defined as the level of disaggregation of portfolio segments based on the initial measurement attribute, risk characteristics and methods for assessing risk. The Corporation's three portfolio segments are Consumer Real Estate, Credit Card and Other Consumer, and Commercial. The classes within the Consumer Real Estate portfolio segment are residential mortgage and home equity. The classes within the Credit Card and Other Consumer portfolio segment are credit card, direct/indirect consumer and other

consumer. The classes within the Commercial portfolio segment are U.S. commercial, non-U.S. commercial, commercial real estate, commercial lease financing and U.S. small business commercial.

Leases

The Corporation provides equipment financing to its customers through a variety of lessor arrangements. Direct financing leases and sales-type leases are carried at the aggregate of lease payments receivable plus the estimated residual value of the leased property less unearned income, which is accreted to interest income over the lease terms using methods that approximate the interest method. Operating lease income is recognized on a straight-line basis. The Corporation's lease arrangements generally do not contain non-lease components.

Allowance for Credit Losses

On January 1, 2020, the Corporation adopted the new accounting standard that requires the measurement of the allowance for credit losses, which includes both the allowance for loan and lease losses and the reserve for unfunded lending commitments, to be based on management's best estimate of the ECL in the Corporation's loan and lease portfolio, excluding loans and unfunded lending commitments accounted for under the fair value option. Upon adoption, a \$3.3 billion, or 32 percent, increase in the allowance for credit losses was recorded on January 1, 2020, which was comprised of a net increase of \$2.9 billion in the allowance for loan and lease losses and a \$310 million increase in the reserve for unfunded lending commitments. The ECL on funded consumer and commercial loans and leases is referred to as the allowance for loan and lease losses and is reported separately as a contra-asset to loans and leases on the Consolidated Balance Sheet. The ECL for unfunded lending commitments, including home equity lines of credit (HELOCs), standby letters of credit (SBLCs) and binding unfunded loan commitments is reported on the Consolidated Balance Sheet in accrued expenses and other liabilities. The provision for credit losses related to the loan and lease portfolio and unfunded lending commitments is reported in the Consolidated Statement of Income at the amount necessary to adjust the allowance for credit losses to the current estimate of ECL.

For loans and leases, the ECL is typically estimated using quantitative methods that consider a variety of factors such as historical loss experience, the current credit quality of the portfolio as well as an economic outlook over the life of the loan. The life of the loan for closed-ended products is based on the contractual maturity of the loan adjusted for any expected prepayments. The contractual maturity includes any extension options that are at the sole discretion of the borrower. For open-ended products (e.g., lines of credit), the ECL is determined based on the maximum repayment term associated with future draws from credit lines unless those lines of credit are unconditionally cancellable (e.g., credit cards) in which case the Corporation does not record any allowance.

In its loss forecasting framework, the Corporation incorporates forward-looking information through the use of macroeconomic scenarios applied over the forecasted life of the assets. These macroeconomic scenarios include variables that have historically been key drivers of increases and decreases in credit losses. These variables include, but are not limited to, unemployment rates, real estate prices, gross domestic product levels and corporate bond spreads. As any one economic outlook is inherently uncertain, the Corporation leverages multiple scenarios. The scenarios that are chosen each quarter

and the weighting given to each scenario depend on a variety of factors including recent economic events, leading economic indicators, views of internal and third-party economists and industry trends.

The estimate of credit losses includes expected recoveries of amounts previously charged off (i.e., negative allowance). If a loan has been charged off, the expected cash flows on the loan are not limited by the current amortized cost balance. Instead, expected cash flows can be assumed up to the unpaid principal balance immediately prior to the charge-off.

The allowance for loan and lease losses for TDRs is measured based on the present value of projected future lifetime principal and interest cash flows discounted at the loan's original effective interest rate, or in cases where foreclosure is probable or the loan is collateral dependent, at the loan's collateral value or its observable market price, if available. The measurement of ECL for the renegotiated consumer credit card TDR portfolio is based on the present value of projected cash flows discounted using the average TDR portfolio contractual interest rate, excluding promotionally priced loans, in effect prior to restructuring. Projected cash flows for TDRs use the same economic outlook as discussed above. For purposes of computing this specific loss component of the allowance, larger impaired loans are evaluated individually and smaller impaired loans are evaluated as a pool.

Also included in the allowance for loan and lease losses are qualitative reserves to cover losses that are expected but, in the Corporation's assessment, may not be adequately reflected in the quantitative methods or the economic assumptions described above. For example, factors that the Corporation considers include changes in lending policies and procedures, business conditions, the nature and size of the portfolio, portfolio concentrations, the volume and severity of past due loans and nonaccrual loans, the effect of external factors such as competition, and legal and regulatory requirements, among others. Further, the Corporation considers the inherent uncertainty in quantitative models that are built on historical data.

With the exception of the Corporation's credit card portfolio, the Corporation does not include reserves for interest receivable in the measurement of the allowance for credit losses as the Corporation generally classifies consumer loans as nonperforming at 90 days past due and reverses interest income for these loans at that time. For credit card loans, the Corporation reserves for interest and fees as part of the allowance for loan and lease losses. Upon charge-off of a credit card loan, the Corporation reverses the interest and fee income against the income statement line item where it was originally recorded.

The Corporation has identified the following three portfolio segments and measures the allowance for credit losses using the following methods.

Consumer Real Estate

To estimate ECL for consumer loans secured by residential real estate, the Corporation estimates the number of loans that will default over the life of the existing portfolio, after factoring in estimated prepayments, using quantitative modeling methodologies. The attributes that are most significant in estimating the Corporation's ECL include refreshed loan-to-value (LTV) or, in the case of a subordinated lien, refreshed combined LTV (CLTV), borrower credit score, months since origination and geography, all of which are further broken down by present collection status (whether the loan is current, delinquent, in default, or in bankruptcy). The estimates are based on the

Corporation's historical experience with the loan portfolio, adjusted to reflect the economic outlook. The outlook on the unemployment rate and consumer real estate prices are key factors that impact the frequency and severity of loss estimates. The Corporation does not reserve for credit losses on the unpaid principal balance of loans insured by the Federal Housing Administration (FHA) and long-term standby loans, as these loans are fully insured. The Corporation records a reserve for unfunded lending commitments for the ECL associated with the undrawn portion of the Corporation's HELOCs, which can only be canceled by the Corporation if certain criteria are met. The ECL associated with these unfunded lending commitments is calculated using the same models and methodologies noted above and incorporate utilization assumptions at time of default.

For loans that are more than 180 days past due and collateral-dependent TDRs, the Corporation bases the allowance on the estimated fair value of the underlying collateral as of the reporting date less costs to sell. The fair value of the collateral securing these loans is generally determined using an automated valuation model (AVM) that estimates the value of a property by reference to market data including sales of comparable properties and price trends specific to the Metropolitan Statistical Area in which the property being valued is located. In the event that an AVM value is not available, the Corporation utilizes publicized indices or if these methods provide less reliable valuations, the Corporation uses appraisals or broker price opinions to estimate the fair value of the collateral. While there is inherent imprecision in these valuations, the Corporation believes that they are representative of this portfolio in the aggregate.

For loans that are more than 180 days past due and collateral-dependent TDRs, with the exception of the Corporation's fully insured portfolio, the outstanding balance of loans that is in excess of the estimated property value after adjusting for costs to sell is charged off. If the estimated property value decreases in periods subsequent to the initial charge-off, the Corporation will record an additional charge-off; however, if the value increases in periods subsequent to the charge-off, the Corporation will adjust the allowance to account for the increase but not to a level above the cumulative charge-off amount.

Credit Cards and Other Consumer

Credit cards are revolving lines of credit without a defined maturity date. The estimated life of a credit card receivable is determined by estimating the amount and timing of expected future payments (e.g., borrowers making full payments, minimum payments or somewhere in between) that it will take for a receivable balance to pay off. The ECL on the future payments incorporates the spending behavior of a borrower through time using key borrower-specific factors and the economic outlook described above. The Corporation applies all expected payments in accordance with the Credit Card Accountability Responsibility and Disclosure Act of 2009 (i.e., paying down the highest interest rate bucket first). Then forecasted future payments are prioritized to pay off the oldest balance until it is brought to zero or an expected charge-off amount. Unemployment rate outlook, borrower credit score, delinquency status and historical payment behavior are all key inputs into the credit card receivable loss forecasting model. Future draws on the credit card lines are excluded from the ECL as they are unconditionally cancellable.

The ECL for the consumer vehicle lending portfolio is also determined using quantitative methods supplemented with

qualitative analysis. The quantitative model estimates ECL giving consideration to key borrower and loan characteristics such as delinquency status, borrower credit score, LTV ratio, underlying collateral type and collateral value.

Commercial

The ECL on commercial loans is forecasted using models that estimate credit losses over the loan's contractual life at an individual loan level. The models use the contractual terms to forecast future principal cash flows while also considering expected prepayments. For open-ended commitments such as revolving lines of credit, changes in funded balance are captured by forecasting a borrower's draw and payment behavior over the remaining life of the commitment. For loans collateralized with commercial real estate and for which the underlying asset is the primary source of repayment, the loss forecasting models consider key loan and customer attributes such as LTV ratio, net operating income and debt service coverage, and captures variations in behavior according to property type and region. The outlook on the unemployment rate, gross domestic product, and forecasted real estate prices are utilized to determine indicators such as rent levels and vacancy rates, which impact the ECL estimate. For all other commercial loans and leases, the loss forecasting model determines the probabilities of transition to different credit risk ratings or default at each point over the life of the asset based on the borrower's current credit risk rating, industry sector, size of the exposure and the geographic market. The severity of loss is determined based on the type of collateral securing the exposure, the size of the exposure, the borrower's industry sector, any guarantors and the geographic market. Assumptions of expected loss are conditioned to the economic outlook, and the model considers key economic variables such as unemployment rate, gross domestic product, corporate bond spreads, real estate and other asset prices and equity market returns.

In addition to the allowance for loan and lease losses, the Corporation also estimates ECL related to unfunded lending commitments such as letters of credit, financial guarantees, unfunded bankers acceptances and binding loan commitments, excluding commitments accounted for under the fair value option. Reserves are estimated for the unfunded exposure using the same models and methodologies as the funded exposure and are reported as reserves for unfunded lending commitments.

Nonperforming Loans and Leases, Charge-offs and Delinquencies

Nonperforming loans and leases generally include loans and leases that have been placed on nonaccrual status. Loans accounted for under the fair value option and LHFS are not reported as nonperforming. When a nonaccrual loan is deemed uncollectible, it is charged off against the allowance for credit losses. If the charged-off amount is later recovered, the amount is reversed through the allowance for credit losses at the recovery date. Charge-offs are reported net of recoveries (net charge-offs). If recoveries for the period are greater than charge-offs, net charge-offs are reported as a negative amount.

In accordance with the Corporation's policies, consumer real estate-secured loans, including residential mortgages and home equity loans, are generally placed on nonaccrual status and classified as nonperforming at 90 days past due unless repayment of the loan is insured by the FHA or through individually insured long-term standby agreements with Fannie Mae (FNMA) or Freddie Mac (FHLMC) (the fully-insured portfolio). Residential mortgage loans in the fully-insured portfolio are not

placed on nonaccrual status and, therefore, are not reported as nonperforming. Junior-lien home equity loans are placed on nonaccrual status and classified as nonperforming when the underlying first-lien mortgage loan becomes 90 days past due even if the junior-lien loan is current. The outstanding balance of real estate-secured loans that is in excess of the estimated property value less costs to sell is charged off no later than the end of the month in which the loan becomes 180 days past due unless the loan is fully insured, or for loans in bankruptcy, within 60 days of receipt of notification of filing, with the remaining balance classified as nonperforming.

Credit card and other unsecured consumer loans are charged off when the loan becomes 180 days past due, within 60 days after receipt of notification of death or bankruptcy or upon confirmation of fraud. These loans continue to accrue interest until they are charged off and, therefore, are not reported as nonperforming loans. Consumer vehicle loans are placed on nonaccrual status when they become 90 days past due, within 60 days after receipt of notification of bankruptcy or death or upon confirmation of fraud. These loans are charged off to their collateral values when the loans become 120 days past due, upon repossession of the collateral, within 60 days after receipt of notification of bankruptcy or death or upon confirmation of fraud. If repossession of the collateral is not expected, the loans are fully charged off.

Commercial loans and leases, excluding business card loans, that are past due 90 days or more as to principal or interest, or where reasonable doubt exists as to timely collection, including loans that are individually identified as being impaired, are generally placed on nonaccrual status and classified as nonperforming unless well-secured and in the process of collection.

Business card loans are charged off in the same manner as consumer credit card loans. Other commercial loans and leases are generally charged off when all or a portion of the principal amount is determined to be uncollectible.

The entire balance of a consumer loan or commercial loan or lease is contractually delinquent if the minimum payment is not received by the specified due date on the customer's billing statement. Interest and fees continue to accrue on past due loans and leases until the date the loan is placed on nonaccrual status, if applicable. Accrued interest receivable is reversed when loans and leases are placed on nonaccrual status. Interest collections on nonaccruing loans and leases for which the ultimate collectability of principal is uncertain are applied as principal reductions; otherwise, such collections are credited to income when received. Loans and leases may be restored to accrual status when all principal and interest is current and full repayment of the remaining contractual principal and interest is expected.

Troubled Debt Restructurings

Consumer and commercial loans and leases whose contractual terms have been restructured in a manner that grants a concession to a borrower experiencing financial difficulties are classified as TDRs. Concessions could include a reduction in the interest rate to a rate that is below market on the loan, payment extensions, forgiveness of principal, forbearance or other actions designed to maximize collections. Loans that are carried at fair value and LHFS are not classified as TDRs.

Loans and leases whose contractual terms have been modified in a TDR and are current at the time of restructuring may remain on accrual status if there is demonstrated performance prior to the restructuring and payment in full under the restructured terms is expected. Otherwise, the loans are

placed on nonaccrual status and reported as nonperforming, except for fully-insured consumer real estate loans, until there is sustained repayment performance for a reasonable period, generally six months. If accruing TDRs cease to perform in accordance with their modified contractual terms, they are placed on nonaccrual status and reported as nonperforming TDRs.

Secured consumer loans that have been discharged in Chapter 7 bankruptcy and have not been reaffirmed by the borrower are classified as TDRs at the time of discharge. Such loans are placed on nonaccrual status and written down to the estimated collateral value less costs to sell no later than at the time of discharge. If these loans are contractually current, interest collections are generally recorded in interest income on a cash basis. Consumer real estate-secured loans for which a binding offer to restructure has been extended are also classified as TDRs. Credit card and other unsecured consumer loans that have been renegotiated in a TDR generally remain on accrual status until the loan is either paid in full or charged off, which occurs no later than the end of the month in which the loan becomes 180 days past due or, for loans that have been placed on a fixed payment plan, 120 days past due.

A loan that had previously been modified in a TDR and is subsequently refinanced under current underwriting standards at a market rate with no concessionary terms is accounted for as a new loan and is no longer reported as a TDR.

Loans Held-for-sale

Loans that the Corporation intends to sell in the foreseeable future, including residential mortgages, loan syndications, and to a lesser degree, commercial real estate, consumer finance and other loans, are reported as LHFS and are carried at the lower of aggregate cost or fair value. The Corporation accounts for certain LHFS, including residential mortgage LHFS, under the fair value option. Loan origination costs for LHFS carried at the lower of cost or fair value are capitalized as part of the carrying value of the loans and, upon the sale of a loan, are recognized as part of the gain or loss in noninterest income. LHFS that are on nonaccrual status and are reported as nonperforming, as defined in the policy herein, are reported separately from nonperforming loans and leases.

Premises and Equipment

Premises and equipment are carried at cost less accumulated depreciation and amortization. Depreciation and amortization are recognized using the straight-line method over the estimated useful lives of the assets. Estimated lives range up to 40 years for buildings, up to 12 years for furniture and equipment, and the shorter of lease term or estimated useful life for leasehold improvements.

Other Assets

For the Corporation's financial assets that are measured at amortized cost and are not included in debt securities or loans and leases on the Consolidated Balance Sheet, the Corporation evaluates these assets for ECL using various techniques. For assets that are subject to collateral maintenance provisions, including federal funds sold and securities borrowed or purchased under agreements to resell, where the collateral consists of daily margining of liquid and marketable assets where the margining is expected to be maintained into the foreseeable future, the expected losses are assumed to be zero. For all other assets, the Corporation performs qualitative analyses, including consideration of historical losses and current economic conditions, to estimate any ECL which are

then included in a valuation account that is recorded as a contra-asset against the amortized cost basis of the financial asset.

Lessee Arrangements

Substantially all of the Corporation's lessee arrangements are operating leases. Under these arrangements, the Corporation records right-of-use assets and lease liabilities at lease commencement. Right-of-use assets are reported in other assets on the Consolidated Balance Sheet, and the related lease liabilities are reported in accrued expenses and other liabilities. All leases are recorded on the Consolidated Balance Sheet except leases with an initial term less than 12 months for which the Corporation made the short-term lease election. Lease expense is recognized on a straight-line basis over the lease term and is recorded in occupancy and equipment expense in the Consolidated Statement of Income.

The Corporation made an accounting policy election not to separate lease and non-lease components of a contract that is or contains a lease for its real estate and equipment leases. As such, lease payments represent payments on both lease and non-lease components. At lease commencement, lease liabilities are recognized based on the present value of the remaining lease payments and discounted using the Corporation's incremental borrowing rate. Right-of-use assets initially equal the lease liability, adjusted for any lease payments made prior to lease commencement and for any lease incentives.

Goodwill and Intangible Assets

Goodwill is the purchase premium after adjusting for the fair value of net assets acquired. Goodwill is not amortized but is reviewed for potential impairment on an annual basis, or when events or circumstances indicate a potential impairment, at the reporting unit level. A reporting unit is a business segment or one level below a business segment.

The Corporation assesses the fair value of each reporting unit against its carrying value, including goodwill, as measured by allocated equity. For purposes of goodwill impairment testing, the Corporation utilizes allocated equity as a proxy for the carrying value of its reporting units. Allocated equity in the reporting units is comprised of allocated capital plus capital for the portion of goodwill and intangibles specifically assigned to the reporting unit.

In performing its goodwill impairment testing, the Corporation first assesses qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value. Qualitative factors include, among other things, macroeconomic conditions, industry and market considerations, financial performance of the respective reporting unit and other relevant entity- and reporting-unit specific considerations.

If the Corporation concludes it is more likely than not that the fair value of a reporting unit is less than its carrying value, a quantitative assessment is performed. The Corporation has an unconditional option to bypass the qualitative assessment for any reporting unit in any period and proceed directly to performing the quantitative goodwill impairment test. The Corporation may resume performing the qualitative assessment in any subsequent period.

When performing the quantitative assessment, if the fair value of the reporting unit exceeds its carrying value, goodwill of the reporting unit would not be considered impaired. If the carrying value of the reporting unit exceeds its fair value, a goodwill impairment loss would be recognized for the amount by

which the reporting unit's allocated equity exceeds its fair value. An impairment loss recognized cannot exceed the amount of goodwill assigned to a reporting unit. An impairment loss establishes a new basis in the goodwill, and subsequent reversals of goodwill impairment losses are not permitted under applicable accounting guidance.

For intangible assets subject to amortization, an impairment loss is recognized if the carrying value of the intangible asset is not recoverable and exceeds fair value. The carrying value of the intangible asset is considered not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the use of the asset. Intangible assets deemed to have indefinite useful lives are not subject to amortization. An impairment loss is recognized if the carrying value of the intangible asset with an indefinite life exceeds its fair value.

Variable Interest Entities

A VIE is an entity that lacks equity investors or whose equity investors do not have a controlling financial interest in the entity through their equity investments. The Corporation consolidates a VIE if it has both the power to direct the activities of the VIE that most significantly impact the VIE's economic performance and an obligation to absorb losses or the right to receive benefits that could potentially be significant to the VIE. On a quarterly basis, the Corporation reassesses its involvement with the VIE and evaluates the impact of changes in governing documents and its financial interests in the VIE. The consolidation status of the VIEs with which the Corporation is involved may change as a result of such reassessments.

The Corporation primarily uses VIEs for its securitization activities, in which the Corporation transfers whole loans or debt securities into a trust or other vehicle. When the Corporation is the servicer of whole loans held in a securitization trust, including non-agency residential mortgages, home equity loans, credit cards, and other loans, the Corporation has the power to direct the most significant activities of the trust. The Corporation generally does not have the power to direct the most significant activities of a residential mortgage agency trust except in certain circumstances in which the Corporation holds substantially all of the issued securities and has the unilateral right to liquidate the trust. The power to direct the most significant activities of a commercial mortgage securitization trust is typically held by the special servicer or by the party holding specific subordinate securities which embody certain controlling rights. The Corporation consolidates a whole-loan securitization trust if it has the power to direct the most significant activities and also holds securities issued by the trust or has other contractual arrangements, other than standard representations and warranties, that could potentially be significant to the trust.

The Corporation may also transfer trading account securities and AFS securities into municipal bond or resecuritization trusts. The Corporation consolidates a municipal bond or resecuritization trust if it has control over the ongoing activities of the trust such as the remarketing of the trust's liabilities or, if there are no ongoing activities, sole discretion over the design of the trust, including the identification of securities to be transferred in and the structure of securities to be issued, and also retains securities or has liquidity or other commitments that could potentially be significant to the trust. The Corporation does not consolidate a municipal bond or resecuritization trust if one or a limited number of third-party investors share responsibility for the design of the trust or have control over the significant activities of the trust through liquidation or other substantive rights.

Other VIEs used by the Corporation include collateralized debt obligations (CDOs), investment vehicles created on behalf of customers and other investment vehicles. The Corporation does not routinely serve as collateral manager for CDOs and, therefore, does not typically have the power to direct the activities that most significantly impact the economic performance of a CDO. However, following an event of default, if the Corporation is a majority holder of senior securities issued by a CDO and acquires the power to manage its assets, the Corporation consolidates the CDO.

The Corporation consolidates a customer or other investment vehicle if it has control over the initial design of the vehicle or manages the assets in the vehicle and also absorbs potentially significant gains or losses through an investment in the vehicle, derivative contracts or other arrangements. The Corporation does not consolidate an investment vehicle if a single investor controlled the initial design of the vehicle or manages the assets in the vehicles or if the Corporation does not have a variable interest that could potentially be significant to the vehicle.

Retained interests in securitized assets are initially recorded at fair value. In addition, the Corporation may invest in debt securities issued by unconsolidated VIEs. Fair values of these debt securities, which are classified as trading account assets, debt securities carried at fair value or HTM securities, are based primarily on quoted market prices in active or inactive markets. Generally, quoted market prices for retained residual interests are not available; therefore, the Corporation estimates fair values based on the present value of the associated expected future cash flows.

Fair Value

The Corporation measures the fair values of its assets and liabilities, where applicable, in accordance with accounting guidance that requires an entity to base fair value on exit price. Under this guidance, an entity is required to maximize the use of observable inputs and minimize the use of unobservable inputs in measuring fair value. Under applicable accounting standards, fair value measurements are categorized into one of three levels based on the inputs to the valuation technique with the highest priority given to unadjusted quoted prices in active markets and the lowest priority given to unobservable inputs. The Corporation categorizes its fair value measurements of financial instruments based on this three-level hierarchy.

Level 1 Unadjusted quoted prices in active markets for identical assets or liabilities. Level 1 assets and liabilities include debt and equity securities and derivative contracts that are traded in an active exchange market, as well as certain U.S. Treasury securities that are highly liquid and are actively traded in OTC markets.

Level 2 Observable inputs other than Level 1 prices, such as quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities. Level 2 assets and liabilities include debt securities with quoted prices that are traded less frequently than exchange-traded instruments and derivative contracts where fair value is determined using a pricing model with inputs that are observable in the market or can be derived principally from or corroborated by observable market data. This category generally includes U.S. government and

agency mortgage-backed (MBS) and asset-backed securities (ABS), corporate debt securities, derivative contracts, certain loans and LHFS.

Level 3 Unobservable inputs that are supported by little or no market activity and that are significant to the overall fair value of the assets or liabilities. Level 3 assets and liabilities include financial instruments for which the determination of fair value requires significant management judgment or estimation. The fair value for such assets and liabilities is generally determined using pricing models, discounted cash flow methodologies or similar techniques that incorporate the assumptions a market participant would use in pricing the asset or liability. This category generally includes retained residual interests in securitizations, consumer MSRs, certain ABS, highly structured, complex or long-dated derivative contracts, certain loans and LHFS, IRLCs and certain CDOs where independent pricing information cannot be obtained for a significant portion of the underlying assets.

Income Taxes

There are two components of income tax expense: current and deferred. Current income tax expense reflects taxes to be paid or refunded for the current period. Deferred income tax expense results from changes in deferred tax assets and liabilities between periods. These gross deferred tax assets and liabilities represent decreases or increases in taxes expected to be paid in the future because of future reversals of temporary differences in the bases of assets and liabilities as measured by tax laws and their bases as reported in the financial statements. Deferred tax assets are also recognized for tax attributes such as net operating loss carryforwards and tax credit carryforwards. Valuation allowances are recorded to reduce deferred tax assets to the amounts management concludes are more likely than not to be realized.

Income tax benefits are recognized and measured based upon a two-step model: first, a tax position must be more likely than not to be sustained based solely on its technical merits in order to be recognized, and second, the benefit is measured as the largest dollar amount of that position that is more likely than not to be sustained upon settlement. The difference between the benefit recognized and the tax benefit claimed on a tax return is referred to as an unrecognized tax benefit. The Corporation records income tax-related interest and penalties, if applicable, within income tax expense.

Revenue Recognition

The following summarizes the Corporation's revenue recognition accounting policies for certain noninterest income activities.

Card Income

Card income includes annual, late and over-limit fees as well as interchange, cash advances and other miscellaneous items from credit and debit card transactions and from processing card transactions for merchants. Card income is presented net of direct costs. Interchange fees are recognized upon settlement of the credit and debit card payment transactions and are generally determined on a percentage basis for credit cards and fixed rates for debit cards based on the corresponding payment network's rates. Substantially all card fees are recognized at the transaction date, except for certain time-based fees such as annual fees, which are recognized over 12 months. Fees charged to cardholders and merchants that are estimated to be uncollectible are reserved in the allowance

for loan and lease losses. Included in direct cost are rewards and credit card partner payments. Rewards paid to cardholders are related to points earned by the cardholder that can be redeemed for a broad range of rewards including cash, travel and gift cards. The points to be redeemed are estimated based on past redemption behavior, card product type, account transaction activity and other historical card performance. The liability is reduced as the points are redeemed. The Corporation also makes payments to credit card partners. The payments are based on revenue-sharing agreements that are generally driven by cardholder transactions and partner sales volumes. As part of the revenue-sharing agreements, the credit card partner provides the Corporation exclusive rights to market to the credit card partner's members or customers on behalf of the Corporation.

Service Charges

Service charges include deposit and lending-related fees. Deposit-related fees consist of fees earned on consumer and commercial deposit activities and are generally recognized when the transactions occur or as the service is performed. Consumer fees are earned on consumer deposit accounts for account maintenance and various transaction-based services, such as ATM transactions, wire transfer activities, check and money order processing and insufficient funds/overdraft transactions. Commercial deposit-related fees are from the Corporation's Global Transaction Services business and consist of commercial deposit and treasury management services, including account maintenance and other services, such as payroll, sweep account and other cash management services. Lending-related fees generally represent transactional fees earned from certain loan commitments, financial guarantees and SBLCs.

Investment and Brokerage Services

Investment and brokerage services consist of asset management and brokerage fees. Asset management fees are earned from the management of client assets under advisory agreements or the full discretion of the Corporation's financial advisors (collectively referred to as assets under management (AUM)). Asset management fees are earned as a percentage of the client's AUM and generally range from 50 basis points (bps) to 150 bps of the AUM. In cases where a third party is used to obtain a client's investment allocation, the fee remitted to the third party is recorded net and is not reflected in the transaction price, as the Corporation is an agent for those services.

Brokerage fees include income earned from transaction-based services that are performed as part of investment management services and are based on a fixed price per unit or as a percentage of the total transaction amount. Brokerage fees also include distribution fees and sales commissions that are primarily in the *Global Wealth & Investment Management (GWIM)* segment and are earned over time. In addition, primarily in the *Global Markets* segment, brokerage fees are earned when the Corporation fills customer orders to buy or sell various financial products or when it acknowledges, affirms, settles and clears transactions and/or submits trade information to the appropriate clearing broker. Certain customers pay brokerage, clearing and/or exchange fees imposed by relevant regulatory bodies or exchanges in order to execute or clear trades. These fees are recorded net and are not reflected in the transaction price, as the Corporation is an agent for those services.

Investment Banking Income

Investment banking income includes underwriting income and financial advisory services income. Underwriting consists of fees

earned for the placement of a customer's debt or equity securities. The revenue is generally earned based on a percentage of the fixed number of shares or principal placed. Once the number of shares or notes is determined and the service is completed, the underwriting fees are recognized. The Corporation incurs certain out-of-pocket expenses, such as legal costs, in performing these services. These expenses are recovered through the revenue the Corporation earns from the customer and are included in operating expenses. Syndication fees represent fees earned as the agent or lead lender responsible for structuring, arranging and administering a loan syndication.

Financial advisory services consist of fees earned for assisting clients with transactions related to mergers and acquisitions and financial restructurings. Revenue varies depending on the size of the transaction and scope of services performed and is generally contingent on successful completion of the transaction. Revenue is typically recognized once the transaction is completed and all services have been rendered. Additionally, the Corporation may earn a fixed fee in merger and acquisition transactions to provide a fairness opinion, with the fees recognized when the opinion is delivered to the client.

Other Revenue Measurement and Recognition Policies

The Corporation did not disclose the value of any open performance obligations at December 31, 2022, as its contracts with customers generally have a fixed term that is less than one year, an open term with a cancellation period that is less than one year, or provisions that allow the Corporation to recognize revenue at the amount it has the right to invoice.

Earnings Per Common Share

Earnings per common share (EPS) is computed by dividing net income allocated to common shareholders by the weighted-average common shares outstanding, excluding unvested

common shares subject to repurchase or cancellation. Net income allocated to common shareholders is net income adjusted for preferred stock dividends including dividends declared, accretion of discounts on preferred stock including accelerated accretion when preferred stock is repaid early, and cumulative dividends related to the current dividend period that have not been declared as of period end, less income allocated to participating securities. Diluted EPS is computed by dividing income allocated to common shareholders plus dividends on dilutive convertible preferred stock and preferred stock that can be tendered to exercise warrants, by the weighted-average common shares outstanding plus amounts representing the dilutive effect of stock options outstanding, restricted stock, restricted stock units (RSUs), outstanding warrants and the dilution resulting from the conversion of convertible preferred stock, if applicable.

Foreign Currency Translation

Assets, liabilities and operations of foreign branches and subsidiaries are recorded based on the functional currency of each entity. When the functional currency of a foreign operation is the local currency, the assets, liabilities and operations are translated, for consolidation purposes, from the local currency to the U.S. dollar reporting currency at period-end rates for assets and liabilities and generally at average rates for results of operations. The resulting unrealized gains and losses are reported as a component of accumulated OCI, net-of-tax. When the foreign entity's functional currency is the U.S. dollar, the resulting remeasurement gains or losses on foreign currency-denominated assets or liabilities are included in earnings.

NOTE 2 Net Interest Income and Noninterest Income

The table below presents the Corporation's net interest income and noninterest income disaggregated by revenue source for 2022, 2021 and 2020. For more information, see Note 1 – Summary of Significant Accounting Principles. For a disaggregation of noninterest income by business segment and All Other, see Note 23 – Business Segment Information.

(Dollars in millions)	2022	2021	2020
Net interest income			
Interest income			
Loans and leases	\$ 37,919	\$ 29,282	\$ 34,029
Debt securities	17,127	12,376	9,790
Federal funds sold and securities borrowed or purchased under agreements to resell ⁽¹⁾	4,560	(90)	903
Trading account assets	5,521	3,770	4,128
Other interest income	7,438	2,334	2,735
Total interest income	72,565	47,672	51,585
Interest expense			
Deposits	4,718	537	1,943
Short-term borrowings ⁽¹⁾	6,978	(358)	987
Trading account liabilities	1,538	1,128	974
Long-term debt	6,869	3,431	4,321
Total interest expense	20,103	4,738	8,225
Net interest income	\$ 52,462	\$ 42,934	\$ 43,360
Noninterest income			
Fees and commissions			
Card income			
Interchange fees ⁽²⁾	\$ 4,096	\$ 4,560	\$ 3,954
Other card income	1,987	1,658	1,702
Total card income	6,083	6,218	5,656
Service charges			
Deposit-related fees	5,190	6,271	5,991
Lending-related fees	1,215	1,233	1,150
Total service charges	6,405	7,504	7,141
Investment and brokerage services			
Asset management fees	12,152	12,729	10,708
Brokerage fees	3,749	3,961	3,866
Total investment and brokerage services	15,901	16,690	14,574
Investment banking fees			
Underwriting income	1,970	5,077	4,698
Syndication fees	1,070	1,499	861
Financial advisory services	1,783	2,311	1,621
Total investment banking fees	4,823	8,887	7,180
Total fees and commissions	33,212	39,299	34,551
Market making and similar activities	12,075	8,691	8,355
Other income (loss)	(2,799)	(1,811)	(738)
Total noninterest income	\$ 42,488	\$ 46,179	\$ 42,168

⁽¹⁾ For more information on negative interest, see Note 1 – Summary of Significant Accounting Principles.

⁽²⁾ Gross interchange fees and merchant income were \$12.9 billion, \$11.5 billion and \$9.2 billion for 2022, 2021, and 2020, respectively, and are presented net of \$8.8 billion, \$6.9 billion and \$5.5 billion of expenses for rewards and partner payments as well as certain other card costs for the same periods.

NOTE 3 Derivatives

Derivative Balances

Derivatives are entered into on behalf of customers, for trading or to support risk management activities. Derivatives used in risk management activities include derivatives that may or may not be designated in qualifying hedge accounting relationships. Derivatives that are not designated in qualifying hedge accounting relationships are referred to as other risk management derivatives. For more information on the

Corporation's derivatives and hedging activities, see Note 1 – Summary of Significant Accounting Principles. The following tables present derivative instruments included on the Consolidated Balance Sheet in derivative assets and liabilities at December 31, 2022 and 2021. Balances are presented on a gross basis, prior to the application of counterparty and cash collateral netting. Total derivative assets and liabilities are adjusted on an aggregate basis to take into consideration the effects of legally enforceable master netting agreements and have been reduced by cash collateral received or paid.

	December 31, 2022							
	Gross Derivative Assets				Gross Derivative Liabilities			
	Contract/ Notional ⁽¹⁾	Trading and Other Risk Management Derivatives	Qualifying Accounting Hedges	Total	Trading and Other Risk Management Derivatives	Qualifying Accounting Hedges	Total	
(Dollars in billions)								
Interest rate contracts								
Swaps	\$ 18,285.9	\$ 138.2	\$ 20.7	\$ 158.9	\$ 120.3	\$ 36.7	\$ 157.0	
Futures and forwards	2,796.3	8.6	—	8.6	7.8	—	7.8	
Written options ⁽²⁾	1,657.9	—	—	—	41.4	—	41.4	
Purchased options ⁽³⁾	1,594.7	42.4	—	42.4	—	—	—	
Foreign exchange contracts								
Swaps	1,509.0	44.0	0.3	44.3	43.3	0.4	43.7	
Spot, futures and forwards	4,159.3	59.9	0.1	60.0	62.1	0.6	62.7	
Written options ⁽²⁾	392.2	—	—	—	8.1	—	8.1	
Purchased options ⁽³⁾	362.6	8.3	—	8.3	—	—	—	
Equity contracts								
Swaps	394.0	10.8	—	10.8	12.2	—	12.2	
Futures and forwards	114.6	3.3	—	3.3	1.0	—	1.0	
Written options ⁽²⁾	746.8	—	—	—	45.0	—	45.0	
Purchased options ⁽³⁾	671.6	40.9	—	40.9	—	—	—	
Commodity contracts								
Swaps	56.0	5.1	—	5.1	5.3	—	5.3	
Futures and forwards	157.3	3.0	—	3.0	2.3	0.8	3.1	
Written options ⁽²⁾	59.5	—	—	—	3.3	—	3.3	
Purchased options ⁽³⁾	61.8	3.6	—	3.6	—	—	—	
Credit derivatives ⁽⁴⁾								
Purchased credit derivatives:								
Credit default swaps	319.9	2.8	—	2.8	1.6	—	1.6	
Total return swaps/options	71.5	0.7	—	0.7	3.0	—	3.0	
Written credit derivatives:								
Credit default swaps	295.2	1.2	—	1.2	2.4	—	2.4	
Total return swaps/options	85.3	4.4	—	4.4	0.9	—	0.9	
Gross derivative assets/liabilities		\$ 377.2	\$ 21.1	\$ 398.3	\$ 360.0	\$ 38.5	\$ 398.5	
Less: Legally enforceable master netting agreements				(315.9)			(315.9)	
Less: Cash collateral received/paid				(33.8)			(37.8)	
Total derivative assets/liabilities				\$ 48.6			\$ 44.8	

⁽¹⁾ Represents the total contract/notional amount of derivative assets and liabilities outstanding.

⁽²⁾ Includes certain out-of-the-money purchased options that have a liability amount primarily due to the deferral of the option premiums to the end of the contract.

⁽³⁾ Includes certain out-of-the-money written options that have an asset amount primarily due to the deferral of the option premiums to the end of the contract.

⁽⁴⁾ The net derivative asset (liability) and notional amount of written credit derivatives for which the Corporation held purchased credit derivatives with identical underlying referenced names were \$(1.2) billion and \$276.9 billion at December 31, 2022.

December 31, 2021

	Gross Derivative Assets				Gross Derivative Liabilities			
	Contract/ Notional ⁽¹⁾	Trading and Other Risk Management Derivatives	Qualifying Accounting Hedges	Total	Trading and Other Risk Management Derivatives	Qualifying Accounting Hedges	Total	
(Dollars in billions)								
Interest rate contracts								
Swaps	\$ 18,068.1	\$ 150.5	\$ 8.9	\$ 159.4	\$ 156.4	\$ 4.4	\$ 160.8	
Futures and forwards	2,243.2	1.1	—	1.1	1.0	—	1.0	
Written options ⁽²⁾	1,616.1	—	—	—	28.8	—	28.8	
Purchased options ⁽³⁾	1,673.6	33.1	—	33.1	—	—	—	
Foreign exchange contracts								
Swaps	1,420.9	28.6	0.2	28.8	30.5	0.2	30.7	
Spot, futures and forwards	4,087.2	37.1	0.3	37.4	37.7	0.2	37.9	
Written options ⁽²⁾	287.2	—	—	—	4.1	—	4.1	
Purchased options ⁽³⁾	267.6	4.1	—	4.1	—	—	—	
Equity contracts								
Swaps	443.8	12.3	—	12.3	14.5	—	14.5	
Futures and forwards	113.3	0.5	—	0.5	1.7	—	1.7	
Written options ⁽²⁾	737.7	—	—	—	58.5	—	58.5	
Purchased options ⁽³⁾	657.0	55.9	—	55.9	—	—	—	
Commodity contracts								
Swaps	47.7	3.1	—	3.1	6.0	—	6.0	
Futures and forwards	101.5	2.3	—	2.3	0.3	1.1	1.4	
Written options ⁽²⁾	44.4	—	—	—	2.6	—	2.6	
Purchased options ⁽³⁾	38.3	3.2	—	3.2	—	—	—	
Credit derivatives ⁽⁴⁾								
Purchased credit derivatives:								
Credit default swaps	297.0	1.9	—	1.9	4.3	—	4.3	
Total return swaps/options	85.3	0.2	—	0.2	1.1	—	1.1	
Written credit derivatives:								
Credit default swaps	279.8	4.2	—	4.2	1.6	—	1.6	
Total return swaps/options	85.3	0.9	—	0.9	0.5	—	0.5	
Gross derivative assets/liabilities		\$ 339.0	\$ 9.4	\$ 348.4	\$ 349.6	\$ 5.9	\$ 355.5	
Less: Legally enforceable master netting agreements				(282.3)			(282.3)	
Less: Cash collateral received/paid				(30.8)			(35.5)	
Total derivative assets/liabilities				\$ 35.3			\$ 37.7	

⁽¹⁾ Represents the total contract/notional amount of derivative assets and liabilities outstanding.

⁽²⁾ Includes certain out-of-the-money purchased options that have a liability amount primarily due to the deferral of the option premiums to the end of the contract.

⁽³⁾ Includes certain out-of-the-money written options that have an asset amount primarily due to the deferral of the option premiums to the end of the contract.

⁽⁴⁾ The net derivative asset (liability) and notional amount of written credit derivatives for which the Corporation held purchased credit derivatives with identical underlying referenced names were \$2.3 billion and \$258.4 billion at December 31, 2021.

Offsetting of Derivatives

The Corporation enters into International Swaps and Derivatives Association, Inc. (ISDA) master netting agreements or similar agreements with substantially all of the Corporation's derivative counterparties. Where legally enforceable, these master netting agreements give the Corporation, in the event of default by the counterparty, the right to liquidate securities held as collateral and to offset receivables and payables with the same counterparty. For purposes of the Consolidated Balance Sheet, the Corporation offsets derivative assets and liabilities and cash collateral held with the same counterparty where it has such a legally enforceable master netting agreement.

The following table presents derivative instruments included in derivative assets and liabilities on the Consolidated Balance

Sheet at December 31, 2022 and 2021 by primary risk (e.g., interest rate risk) and the platform, where applicable, on which these derivatives are transacted. Balances are presented on a gross basis, prior to the application of counterparty and cash collateral netting. Total gross derivative assets and liabilities are adjusted on an aggregate basis to take into consideration the effects of legally enforceable master netting agreements, which include reducing the balance for counterparty netting and cash collateral received or paid.

For more information on offsetting of securities financing agreements, see *Note 10 – Securities Financing Agreements, Short-term Borrowings, Collateral and Restricted Cash*.

Offsetting of Derivatives ⁽¹⁾

	Derivative Assets		Derivative Liabilities	
	December 31, 2022		December 31, 2021	
(Dollars in billions)				
Interest rate contracts				
Over-the-counter	\$ 138.4	\$ 132.3	\$ 171.3	\$ 166.3
Exchange-traded	0.4	0.1	0.2	—
Over-the-counter cleared	71.4	71.1	22.6	22.5
Foreign exchange contracts				
Over-the-counter	109.7	110.6	67.9	70.5
Over-the-counter cleared	1.3	1.2	1.1	1.1
Equity contracts				
Over-the-counter	21.5	22.6	29.2	32.9
Exchange-traded	33.0	33.8	38.3	38.4
Commodity contracts				
Over-the-counter	8.3	9.3	6.1	7.6
Exchange-traded	2.4	1.9	1.4	1.3
Over-the-counter cleared	0.3	0.3	0.1	0.1
Credit derivatives				
Over-the-counter	8.9	7.5	5.2	5.3
Over-the-counter cleared	—	—	1.8	1.8
Total gross derivative assets/liabilities, before netting				
Over-the-counter	286.8	282.3	279.7	282.6
Exchange-traded	35.8	35.8	39.9	39.7
Over-the-counter cleared	73.0	72.6	25.6	25.5
Less: Legally enforceable master netting agreements and cash collateral received/paid				
Over-the-counter	(243.8)	(248.2)	(250.3)	(254.6)
Exchange-traded	(33.5)	(33.5)	(37.8)	(37.8)
Over-the-counter cleared	(72.4)	(72.0)	(25.0)	(25.4)
Derivative assets/liabilities, after netting	45.9	37.0	32.1	30.0
Other gross derivative assets/liabilities ⁽²⁾	2.7	7.8	3.2	7.7
Total derivative assets/liabilities	48.6	44.8	35.3	37.7
Less: Financial instruments collateral ⁽³⁾	(18.5)	(7.4)	(11.8)	(10.6)
Total net derivative assets/liabilities	\$ 30.1	\$ 37.4	\$ 23.5	\$ 27.1

⁽¹⁾ Over-the-counter derivatives include bilateral transactions between the Corporation and a particular counterparty. Over-the-counter cleared derivatives include bilateral transactions between the Corporation and a counterparty where the transaction is cleared through a clearinghouse. Exchange-traded derivatives include listed options transacted on an exchange.

⁽²⁾ Consists of derivatives entered into under master netting agreements where the enforceability of these agreements is uncertain under bankruptcy laws in some countries or industries.

⁽³⁾ Amounts are limited to the derivative asset/liability balance and, accordingly, do not include excess collateral received/pledged. Financial instruments collateral includes securities collateral received or pledged and cash securities held and posted at third-party custodians that are not offset on the Consolidated Balance Sheet but shown as a reduction to derive net derivative assets and liabilities.

ALM and Risk Management Derivatives

The Corporation's ALM and risk management activities include the use of derivatives to mitigate risk to the Corporation including derivatives designated in qualifying hedge accounting relationships and derivatives used in other risk management activities. Interest rate, foreign exchange, equity, commodity and credit contracts are utilized in the Corporation's ALM and risk management activities.

The Corporation maintains an overall interest rate risk management strategy that incorporates the use of interest rate contracts, which are generally non-leveraged generic interest rate and basis swaps, options, futures and forwards, to minimize significant fluctuations in earnings caused by interest rate volatility. The Corporation's goal is to manage interest rate sensitivity and volatility so that movements in interest rates do not significantly adversely affect earnings or capital. As a result of interest rate fluctuations, hedged fixed-rate assets and liabilities appreciate or depreciate in fair value. Gains or losses on the derivative instruments that are linked to the hedged fixed-rate assets and liabilities are expected to substantially offset this unrealized appreciation or depreciation.

Market risk, including interest rate risk, can be substantial in the mortgage business. Market risk in the mortgage business is the risk that values of mortgage assets or revenues will be adversely affected by changes in market conditions such as interest rate movements. To mitigate the interest rate risk in mortgage banking production income, the Corporation utilizes

forward loan sale commitments and other derivative instruments, including purchased options, and certain debt securities. The Corporation also utilizes derivatives such as interest rate options, interest rate swaps, forward settlement contracts and eurodollar futures to hedge certain market risks of MSRs.

The Corporation uses foreign exchange contracts to manage the foreign exchange risk associated with certain foreign currency-denominated assets and liabilities, as well as the Corporation's investments in non-U.S. subsidiaries. Exposure to loss on these contracts will increase or decrease over their respective lives as currency exchange and interest rates fluctuate.

The Corporation purchases credit derivatives to manage credit risk related to certain funded and unfunded credit exposures. Credit derivatives include credit default swaps (CDS), total return swaps and swaptions. These derivatives are recorded on the Consolidated Balance Sheet at fair value with changes in fair value recorded in other income.

Derivatives Designated as Accounting Hedges

The Corporation uses various types of interest rate and foreign exchange derivative contracts to protect against changes in the fair value of its assets and liabilities due to fluctuations in interest rates and foreign exchange rates (fair value hedges). The Corporation also uses these types of contracts to protect against changes in the cash flows of its assets and liabilities,

and other forecasted transactions (cash flow hedges). The Corporation hedges its net investment in consolidated non-U.S. operations determined to have functional currencies other than the U.S. dollar using forward exchange contracts and cross-currency basis swaps, and by issuing foreign currency-

denominated debt (net investment hedges).

Fair Value Hedges

The table below summarizes information related to fair value hedges for 2022, 2021 and 2020.

Gains and Losses on Derivatives Designated as Fair Value Hedges

(Dollars in millions)	Derivative			Hedged Item		
	2022	2021	2020	2022	2021	2020
Interest rate risk on long-term debt ⁽¹⁾	\$ (26,654)	\$ (7,018)	\$ 7,091	\$ 26,825	\$ 6,838	\$ (7,220)
Interest rate and foreign currency risk on long-term debt ⁽²⁾	(120)	(90)	783	119	79	(783)
Interest rate risk on available-for-sale securities ⁽³⁾	21,991	5,203	(44)	(22,280)	(5,167)	49
Price risk on commodity inventory ⁽⁴⁾	674	—	—	(674)	—	—
Total	\$ (4,109)	\$ (1,905)	\$ 7,830	\$ 3,990	\$ 1,750	\$ (7,954)

⁽¹⁾ Amounts are recorded in interest expense in the Consolidated Statement of Income.

⁽²⁾ For 2022, 2021 and 2020, the derivative amount includes gains (losses) of \$(37) million, \$(73) million and \$701 million in interest expense, \$(81) million, \$0 and \$73 million in market making and similar activities, and \$(2) million, \$(17) million and \$9 million in accumulated OCI, respectively. Line item totals are in the Consolidated Statement of Income and on the Consolidated Balance Sheet.

⁽³⁾ Amounts are recorded in interest income in the Consolidated Statement of Income.

⁽⁴⁾ Amounts are recorded in market making and similar activities in the Consolidated Statement of Income.

The table below summarizes the carrying value of hedged assets and liabilities that are designated and qualifying in fair value hedging relationships along with the cumulative amount of fair value hedging adjustments included in the carrying value that have been recorded in the current hedging relationships. These fair value hedging adjustments are open basis adjustments that are not subject to amortization as long as the hedging relationship remains designated.

Designated Fair Value Hedged Assets and Liabilities

(Dollars in millions)	December 31, 2022		December 31, 2021	
	Carrying Value	Cumulative Fair Value Adjustments ⁽¹⁾	Carrying Value	Cumulative Fair Value Adjustments ⁽¹⁾
Long-term debt ⁽²⁾	\$ 187,402	\$ (21,372)	\$ 181,745	\$ 3,987
Available-for-sale debt securities ^(2, 3, 4)	167,518	(18,190)	209,038	(2,294)
Trading account assets ⁽⁵⁾	16,119	146	2,067	32

⁽¹⁾ Increase (decrease) to carrying value.

⁽²⁾ At December 31, 2022 and 2021, the cumulative fair value adjustments remaining on long-term debt and available-for-sale debt securities from discontinued hedging relationships resulted in an increase of \$137 million and \$1.5 billion in the related liability and a decrease in the related asset of \$4.9 billion and \$1.0 billion, which are being amortized over the remaining contractual life of the de-designated hedged items.

⁽³⁾ These amounts include the amortized cost of the prepayable financial assets used to designate hedging relationships in which the hedged item is the last layer expected to be remaining at the end of the hedging relationship (i.e. last-of-layer hedging relationship). At December 31, 2022 and 2021, the amortized cost of the closed portfolios used in these hedging relationships was \$21.4 billion and \$21.1 billion, of which \$9.2 billion and \$6.9 billion was designated in the last-of-layer hedging relationship. At December 31, 2022 and 2021, the cumulative adjustment associated with these hedging relationships was a decrease of \$451 million and \$172 million.

⁽⁴⁾ Carrying value represents amortized cost.

⁽⁵⁾ Represents hedging activities related to certain commodities inventory.

Cash Flow and Net Investment Hedges

The table below summarizes certain information related to cash flow hedges and net investment hedges for 2022, 2021 and 2020. Of the \$11.9 billion after-tax net loss (\$15.9 billion pretax) on derivatives in accumulated OCI at December 31, 2022, losses of \$4.4 billion after-tax (\$5.9 billion pretax) related to both open and terminated cash flow hedges are expected to be reclassified into earnings in the next 12 months. These net losses reclassified into earnings are expected

to primarily decrease net interest income related to the respective hedged items. For open cash flow hedges, the maximum length of time over which forecasted transactions are hedged is approximately seven years. For terminated cash flow hedges, the time period over which the forecasted transactions will be recognized in interest income is approximately five years, with the aggregated amount beyond this time period being insignificant.

Gains and Losses on Derivatives Designated as Cash Flow and Net Investment Hedges

(Dollars in millions, amounts pretax)	Gains (Losses) Recognized in Accumulated OCI on Derivatives			Gains (Losses) in Income Reclassified from Accumulated OCI		
	2022	2021	2020	2022	2021	2020
Cash flow hedges						
Interest rate risk on variable-rate portfolios ⁽¹⁾	\$ (13,492)	\$ (2,686)	\$ 763	\$ (338)	\$ 148	\$ (7)
Price risk on forecasted MBS purchases ⁽¹⁾	(129)	(249)	241	11	26	9
Price risk on certain compensation plans ⁽²⁾	(88)	93	85	29	55	12
Total	\$ (13,709)	\$ (2,842)	\$ 1,089	\$ (298)	\$ 229	\$ 14
Net investment hedges						
Foreign exchange risk ⁽³⁾	\$ 1,710	\$ 1,451	\$ (834)	\$ 3	\$ 23	\$ 4

⁽¹⁾ Amounts reclassified from accumulated OCI are recorded in interest income in the Consolidated Statement of Income.

⁽²⁾ Amounts reclassified from accumulated OCI are recorded in compensation and benefits expense in the Consolidated Statement of Income.

⁽³⁾ Amounts reclassified from accumulated OCI are recorded in other income in the Consolidated Statement of Income. Amounts excluded from effectiveness testing and recognized in market making and similar activities were losses of \$38 million, \$123 million and \$11 million in 2022, 2021 and 2020, respectively.

Other Risk Management Derivatives

Other risk management derivatives are used by the Corporation to reduce certain risk exposures by economically hedging various assets and liabilities. The table below presents gains (losses) on these derivatives for 2022, 2021 and 2020. These gains (losses) are largely offset by the income or expense recorded on the hedged item.

Gains and Losses on Other Risk Management Derivatives

(Dollars in millions)	2022	2021	2020
Interest rate risk on mortgage activities ^(1, 2)	\$ (326)	\$ (18)	\$ 611
Credit risk on loans ⁽²⁾	(37)	(25)	(68)
Interest rate and foreign currency risk on asset and liability management activities ⁽³⁾	4,713	1,757	(2,971)
Price risk on certain compensation plans ⁽⁴⁾	(1,073)	917	700

⁽¹⁾ Includes hedges of interest rate risk on MSRs and IRLCs to originate mortgage loans that will be held for sale.

⁽²⁾ Gains (losses) on these derivatives are recorded in other income.

⁽³⁾ Gains (losses) on these derivatives are recorded in market making and similar activities.

⁽⁴⁾ Gains (losses) on these derivatives are recorded in compensation and benefits expense.

Transfers of Financial Assets with Risk Retained through Derivatives

The Corporation enters into certain transactions involving the transfer of financial assets that are accounted for as sales where substantially all of the economic exposure to the transferred financial assets is retained through derivatives (e.g., interest rate and/or credit), but the Corporation does not retain control over the assets transferred. At both December 31, 2022 and 2021, the Corporation had transferred \$4.8 billion of non-U.S. government-guaranteed mortgage-backed securities to a third-party trust and retained economic exposure to the transferred assets through derivative contracts. In connection with these transfers, the Corporation received gross cash proceeds of \$4.9 billion and \$4.8 billion at the transfer dates. At December 31, 2022 and 2021, the fair value of the transferred securities was \$4.7 billion and \$5.0 billion.

Sales and Trading Revenue

The Corporation enters into trading derivatives to facilitate client transactions and to manage risk exposures arising from trading account assets and liabilities. It is the Corporation's policy to include these derivative instruments in its trading activities, which include derivatives and non-derivative cash instruments. The resulting risk from these derivatives is managed on a portfolio basis as part of the Corporation's *Global Markets* business segment. The related sales and trading revenue generated within *Global Markets* is recorded in various income statement line items, including market making and similar activities and net interest income as well as other revenue categories.

Sales and trading revenue includes changes in the fair value and realized gains and losses on the sales of trading and other assets, net interest income, and fees primarily from commissions on equity securities. Revenue is generated by the difference in the client price for an instrument and the price at which the trading desk can execute the trade in the dealer market. For equity securities, commissions related to purchases and sales are recorded in the "Other" column in the Sales and Trading Revenue table. Changes in the fair value of these securities are included in market making and similar activities. For debt securities, revenue, with the exception of interest associated with the debt securities, is typically included in market making and similar activities. Unlike commissions for equity securities, the initial revenue related to broker-dealer

services for debt securities is typically included in the pricing of the instrument rather than being charged through separate fee arrangements. Therefore, this revenue is recorded in market making and similar activities as part of the initial mark to fair value. For derivatives, the majority of revenue is included in market making and similar activities. In transactions where the Corporation acts as agent, which include exchange-traded futures and options, fees are recorded in other income.

The table below, which includes both derivatives and non-derivative cash instruments, identifies the amounts in the respective income statement line items attributable to the Corporation's sales and trading revenue in *Global Markets*, categorized by primary risk, for 2022, 2021 and 2020. This table includes debit valuation adjustment (DVA) and funding valuation adjustment (FVA) gains (losses). *Global Markets* results in *Note 23 – Business Segment Information* are presented on a fully taxable-equivalent (FTE) basis. The table below is not presented on an FTE basis.

Sales and Trading Revenue

(Dollars in millions)	Market making and similar activities	Net Interest Income	Other ⁽¹⁾	Total
Interest rate risk	\$ 1,919	\$ 1,619	\$ 392	\$ 3,930
Foreign exchange risk	1,981	46	(44)	1,983
Equity risk	6,077	(1,288)	1,757	6,546
Credit risk	592	2,228	177	2,997
Other risk ⁽²⁾	835	(171)	15	679
Total sales and trading revenue	\$ 11,404	\$ 2,434	\$ 2,297	\$ 16,135
2021				
Interest rate risk	\$ 523	\$ 1,794	\$ 217	\$ 2,534
Foreign exchange risk	1,505	(80)	14	1,439
Equity risk	4,581	(5)	1,834	6,410
Credit risk	1,390	1,684	556	3,630
Other risk ⁽²⁾	759	(128)	124	755
Total sales and trading revenue	\$ 8,758	\$ 3,265	\$ 2,745	\$ 14,768
2020				
Interest rate risk	\$ 2,236	\$ 2,279	\$ 229	\$ 4,744
Foreign exchange risk	1,486	(19)	2	1,469
Equity risk	3,656	(77)	1,801	5,380
Credit risk	783	1,758	331	2,872
Other risk ⁽²⁾	308	4	44	356
Total sales and trading revenue	\$ 8,469	\$ 3,945	\$ 2,407	\$ 14,821

⁽¹⁾ Represents amounts in investment and brokerage services and other income that are recorded in *Global Markets* and included in the definition of sales and trading revenue. Includes investment and brokerage services revenue of \$2.0 billion, \$1.9 billion and \$1.9 billion in 2022, 2021 and 2020, respectively.

⁽²⁾ Includes commodity risk.

Credit Derivatives

The Corporation enters into credit derivatives primarily to facilitate client transactions and to manage credit risk exposures. Credit derivatives derive value based on an underlying third-party referenced obligation or a portfolio of referenced obligations and generally require the Corporation, as the seller of credit protection, to make payments to a buyer upon the occurrence of a predefined credit event. Such credit events generally include bankruptcy of the referenced credit entity and failure to pay under the obligation, as well as acceleration of indebtedness and payment repudiation or moratorium. For credit derivatives based on a portfolio of referenced credits or credit indices, the Corporation may not be required to make payment until a specified amount of loss has

occurred and/or may only be required to make payment up to a specified amount.

Credit derivatives are classified as investment and non-investment grade based on the credit quality of the underlying referenced obligation. The Corporation considers ratings of BBB- or higher as investment grade. Non-investment grade includes non-rated credit derivative instruments. The Corporation

discloses internal categorizations of investment grade and non-investment grade consistent with how risk is managed for these instruments.

Credit derivative instruments where the Corporation is the seller of credit protection and their expiration at December 31, 2022 and 2021 are summarized in the table below.

Credit Derivative Instruments

	Less than	One to	Three to	Over Five	Total
	One Year	Three Years	Five Years	Years	
December 31, 2022					
Carrying Value					
(Dollars in millions)					
Credit default swaps:					
Investment grade	\$ 2	\$ 25	\$ 133	\$ 34	\$ 194
Non-investment grade	120	516	870	697	2,203
Total	122	541	1,003	731	2,397
Total return swaps/options:					
Investment grade	55	336	—	—	391
Non-investment grade	332	9	132	10	483
Total	387	345	132	10	874
Total credit derivatives	\$ 509	\$ 886	\$ 1,135	\$ 741	\$ 3,271
Credit-related notes:					
Investment grade	\$ —	\$ —	\$ 19	\$ 1,017	\$ 1,036
Non-investment grade	—	7	6	1,035	1,048
Total credit-related notes	\$ —	\$ 7	\$ 25	\$ 2,052	\$ 2,084
Maximum Payout/Notional					
Credit default swaps:					
Investment grade	\$ 34,670	\$ 66,170	\$ 93,237	\$ 18,677	\$ 212,754
Non-investment grade	15,229	29,629	30,891	6,662	82,411
Total	49,899	95,799	124,128	25,339	295,165
Total return swaps/options:					
Investment grade	38,722	10,407	—	—	49,129
Non-investment grade	32,764	500	2,054	897	36,215
Total	71,486	10,907	2,054	897	85,344
Total credit derivatives	\$ 121,385	\$ 106,706	\$ 126,182	\$ 26,236	\$ 380,509
December 31, 2021					
Carrying Value					
Credit default swaps:					
Investment grade	\$ —	\$ 5	\$ 79	\$ 49	\$ 133
Non-investment grade	34	250	453	769	1,506
Total	34	255	532	818	1,639
Total return swaps/options:					
Investment grade	35	388	—	—	423
Non-investment grade	105	—	16	—	121
Total	140	388	16	—	544
Total credit derivatives	\$ 174	\$ 643	\$ 548	\$ 818	\$ 2,183
Credit-related notes:					
Investment grade	\$ —	\$ —	\$ 36	\$ 412	\$ 448
Non-investment grade	5	—	9	1,334	1,348
Total credit-related notes	\$ 5	\$ —	\$ 45	\$ 1,746	\$ 1,796
Maximum Payout/Notional					
Credit default swaps:					
Investment grade	\$ 34,503	\$ 66,334	\$ 73,444	\$ 17,844	\$ 192,125
Non-investment grade	16,119	29,233	34,356	7,961	87,669
Total	50,622	95,567	107,800	25,805	279,794
Total return swaps/options:					
Investment grade	49,626	11,494	78	—	61,198
Non-investment grade	22,621	717	642	73	24,053
Total	72,247	12,211	720	73	85,251
Total credit derivatives	\$ 122,869	\$ 107,778	\$ 108,520	\$ 25,878	\$ 365,045

The notional amount represents the maximum amount payable by the Corporation for most credit derivatives. However, the Corporation does not monitor its exposure to credit derivatives based solely on the notional amount because this measure does not take into consideration the probability of occurrence. As such, the notional amount is not a reliable

indicator of the Corporation's exposure to these contracts. Instead, a risk framework is used to define risk tolerances and establish limits so that certain credit risk-related losses occur within acceptable, predefined limits.

Credit-related notes in the preceding table include investments in securities issued by CDO, collateralized loan

obligation (CLO) and credit-linked note vehicles. These instruments are primarily classified as trading securities. The carrying value of these instruments equals the Corporation's maximum exposure to loss. The Corporation is not obligated to make any payments to the entities under the terms of the securities owned.

Credit-related Contingent Features and Collateral

The Corporation executes the majority of its derivative contracts in the OTC market with large, international financial institutions, including broker-dealers and, to a lesser degree, with a variety of non-financial companies. A significant majority of the derivative transactions are executed on a daily margin basis. Therefore, events such as a credit rating downgrade (depending on the ultimate rating level) or a breach of credit covenants would typically require an increase in the amount of collateral required of the counterparty, where applicable, and/or allow the Corporation to take additional protective measures such as early termination of all trades. Further, as previously discussed on page 152, the Corporation enters into legally enforceable master netting agreements that reduce risk by permitting closeout and netting of transactions with the same counterparty upon the occurrence of certain events.

Certain of the Corporation's derivative contracts contain credit risk-related contingent features, primarily in the form of ISDA master netting agreements and credit support documentation that enhance the creditworthiness of these instruments compared to other obligations of the respective counterparty with whom the Corporation has transacted. These contingent features may be for the benefit of the Corporation as well as its counterparties with respect to changes in the Corporation's creditworthiness and the mark-to-market exposure under the derivative transactions. At December 31, 2022 and 2021, the Corporation held cash and securities collateral of \$101.3 billion and \$91.4 billion and posted cash and securities collateral of \$81.2 billion and \$79.3 billion in the normal course of business under derivative agreements, excluding cross-product margining agreements where clients are permitted to margin on a net basis for both derivative and secured financing arrangements.

In connection with certain OTC derivative contracts and other trading agreements, the Corporation can be required to provide additional collateral or to terminate transactions with certain counterparties in the event of a downgrade of the senior debt ratings of the Corporation or certain subsidiaries. The amount of additional collateral required depends on the contract and is usually a fixed incremental amount and/or the market value of the exposure.

At December 31, 2022, the amount of collateral, calculated based on the terms of the contracts, that the Corporation and certain subsidiaries could be required to post to counterparties but had not yet posted to counterparties was \$3.2 billion, including \$1.6 billion for Bank of America, National Association (BANA).

Some counterparties are currently able to unilaterally terminate certain contracts, or the Corporation or certain subsidiaries may be required to take other action such as find a suitable replacement or obtain a guarantee. At December 31, 2022 and 2021, the liability recorded for these derivative contracts was not significant.

The following table presents the amount of additional collateral that would have been contractually required by

derivative contracts and other trading agreements at December 31, 2022 if the rating agencies had downgraded their long-term senior debt ratings for the Corporation or certain subsidiaries by one incremental notch and by an additional second incremental notch. The table also presents derivative liabilities that would be subject to unilateral termination by counterparties upon downgrade of the Corporation's or certain subsidiaries' long-term senior debt ratings.

Additional Collateral Required to be Posted and Derivative Liabilities Subject to Unilateral Termination Upon Downgrade at December 31, 2022

(Dollars in millions)	One Incremental Notch		Second Incremental Notch	
Additional collateral required to be posted upon downgrade				
Bank of America Corporation	\$	230	\$	913
Bank of America, N.A. and subsidiaries ⁽¹⁾		66		668
Derivative liabilities subject to unilateral termination upon downgrade				
Derivative liabilities	\$	92	\$	1,073
Collateral posted		77		300

⁽¹⁾ Included in Bank of America Corporation collateral requirements in this table.

Valuation Adjustments on Derivatives

The Corporation records credit risk valuation adjustments on derivatives in order to properly reflect the credit quality of the counterparties and its own credit quality. The Corporation calculates valuation adjustments on derivatives based on a modeled expected exposure that incorporates current market risk factors. The exposure also takes into consideration credit mitigants such as enforceable master netting agreements and collateral. CDS spread data is used to estimate the default probabilities and severities that are applied to the exposures. Where no observable credit default data is available for counterparties, the Corporation uses proxies and other market data to estimate default probabilities and severity.

The table below presents credit valuation adjustment (CVA), DVA and FVA gains (losses) on derivatives (excluding the effect of any related hedge activities), which are recorded in market making and similar activities, for 2022, 2021 and 2020. CVA gains reduce the cumulative CVA thereby increasing the derivative assets balance. DVA gains increase the cumulative DVA thereby decreasing the derivative liabilities balance. CVA and DVA losses have the opposite impact. FVA gains related to derivative assets reduce the cumulative FVA thereby increasing the derivative assets balance. FVA gains related to derivative liabilities increase the cumulative FVA thereby decreasing the derivative liabilities balance. FVA losses have the opposite impact.

Valuation Adjustments Gains (Losses) on Derivatives ⁽¹⁾

(Dollars in millions)	2022		2021		2020	
Derivative assets (CVA)	\$	(80)	\$	208	\$	(118)
Derivative assets/liabilities (FVA)		125		(2)		(24)
Derivative liabilities (DVA)		194		3		24

⁽¹⁾ At December 31, 2022, 2021 and 2020, cumulative CVA reduced the derivative assets balance by \$518 million, \$438 million and \$646 million, cumulative FVA reduced the net derivative balance by \$54 million, \$179 million and \$177 million, and cumulative DVA reduced the derivative liabilities balance by \$506 million, \$312 million and \$309 million, respectively.

NOTE 4 Securities

The table below presents the amortized cost, gross unrealized gains and losses, and fair value of AFS debt securities, other debt securities carried at fair value and HTM debt securities at December 31, 2022 and 2021.

Debt Securities

	Amortized Cost	Gross		Fair Value	Amortized Cost	Gross		Fair Value
		Unrealized Gains	Unrealized Losses			Unrealized Gains	Unrealized Losses	
		December 31, 2022			December 31, 2021			
(Dollars in millions)								
Available-for-sale debt securities								
Mortgage-backed securities:								
Agency	\$ 25,204	\$ 5	\$ (1,767)	\$ 23,442	\$ 45,268	\$ 1,257	\$ (186)	\$ 46,339
Agency-collateralized mortgage obligations	2,452	—	(231)	2,221	3,331	74	(25)	3,380
Commercial	6,894	28	(515)	6,407	19,036	647	(79)	19,604
Non-agency residential ⁽¹⁾	461	15	(90)	386	591	25	(33)	583
Total mortgage-backed securities	35,011	48	(2,603)	32,456	68,226	2,003	(323)	69,906
U.S. Treasury and government agencies	160,773	18	(1,769)	159,022	197,853	1,610	(318)	199,145
Non-U.S. securities	13,455	4	(52)	13,407	11,933	—	—	11,933
Other taxable securities	4,728	1	(84)	4,645	2,725	39	(3)	2,761
Tax-exempt securities	11,518	19	(279)	11,258	15,155	317	(39)	15,433
Total available-for-sale debt securities	225,485	90	(4,787)	220,788	295,892	3,969	(683)	299,178
Other debt securities carried at fair value ⁽²⁾	8,986	376	(156)	9,206	8,873	105	(83)	8,895
Total debt securities carried at fair value	234,471	466	(4,943)	229,994	304,765	4,074	(766)	308,073
Held-to-maturity debt securities								
Agency mortgage-backed securities	503,233	—	(87,319)	415,914	553,721	3,855	(10,366)	547,210
U.S. Treasury and government agencies	121,597	—	(20,259)	101,338	111,859	254	(2,395)	109,718
Other taxable securities	8,033	—	(1,018)	7,015	9,011	147	(196)	8,962
Total held-to-maturity debt securities	632,863	—	(108,596)	524,267	674,591	4,256	(12,957)	665,890
Total debt securities ^(3,4)	\$ 867,334	\$ 466	\$ (113,539)	\$ 754,261	\$ 979,356	\$ 8,330	\$ (13,723)	\$ 973,963

⁽¹⁾ At December 31, 2022 and 2021, the underlying collateral type included approximately 17 percent and 21 percent prime and 83 percent and 79 percent subprime.

⁽²⁾ Primarily includes non-U.S. securities used to satisfy certain international regulatory requirements. Any changes in value are reported in market making and similar activities. For detail on the components, see Note 20 - Fair Value Measurements.

⁽³⁾ Includes securities pledged as collateral of \$104.5 billion and \$111.9 billion at December 31, 2022 and 2021.

⁽⁴⁾ The Corporation held debt securities from FNMA and FHLMC that each exceeded 10 percent of shareholders' equity, with an amortized cost of \$290.5 billion and \$176.7 billion, and a fair value of \$239.6 billion and \$144.6 billion at December 31, 2022, and an amortized cost of \$345.3 billion and \$205.3 billion, and a fair value of \$342.5 billion and \$202.4 billion at December 31, 2021.

At December 31, 2022, the accumulated net unrealized loss on AFS debt securities, excluding the amount related to debt securities previously transferred to held to maturity, included in accumulated OCI was \$3.5 billion, net of the related income tax benefit of \$1.2 billion. At December 31, 2022 and 2021, nonperforming AFS debt securities held by the Corporation were not significant.

At December 31, 2022 and 2021, the Corporation had \$191.1 billion and \$268.5 billion in AFS debt securities, which were primarily U.S. agency and U.S. Treasury securities that have a zero credit loss assumption. For more information on the zero credit loss assumption, see Note 1 - Summary of Significant Accounting Principles. For the remaining \$29.7 billion and \$30.7 billion in AFS debt securities at December 31, 2022 and 2021, the amount of ECL was not significant. At December 31, 2022 and 2021, the Corporation had \$524.3 billion and \$665.9 billion in HTM debt securities, which were substantially all U.S. agency and U.S. Treasury securities that have a zero credit loss assumption.

At December 31, 2022 and 2021, the Corporation held equity securities at an aggregate fair value of \$581 million

and \$513 million and other equity securities, as valued under the measurement alternative, at a carrying value of \$340 million and \$266 million, both of which are included in other assets. At December 31, 2022 and 2021, the Corporation also held money market investments at a fair value of \$868 million and \$707 million, which are included in time deposits placed and other short-term investments.

The gross realized gains and losses on sales of AFS debt securities for 2022, 2021 and 2020 are presented in the table below.

Gains and Losses on Sales of AFS Debt Securities

(Dollars in millions)	2022	2021	2020
Gross gains	\$ 1,251	\$ 49	\$ 423
Gross losses	(1,219)	(27)	(12)
Net gains on sales of AFS debt securities	\$ 32	\$ 22	\$ 411
Income tax expense attributable to realized net gains on sales of AFS debt securities	\$ 8	\$ 5	\$ 103

The table below presents the fair value and the associated gross unrealized losses on AFS debt securities and whether these securities have had gross unrealized losses for less than 12 months or for 12 months or longer at December 31, 2022 and 2021.

Total AFS Debt Securities in a Continuous Unrealized Loss Position

	Less than Twelve Months		Twelve Months or Longer		Total	
	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
(Dollars in millions)						
Continuously unrealized loss-positioned AFS debt securities						
Mortgage-backed securities:						
Agency	\$ 18,759	\$ (1,118)	\$ 4,437	\$ (649)	\$ 23,196	\$ (1,767)
Agency-collateralized mortgage obligations	1,165	(96)	1,022	(135)	2,187	(231)
Commercial	3,273	(150)	2,258	(365)	5,531	(515)
Non-agency residential	264	(65)	97	(25)	361	(90)
Total mortgage-backed securities	23,461	(1,429)	7,814	(1,174)	31,275	(2,603)
U.S. Treasury and government agencies	36,730	(308)	118,636	(1,461)	155,366	(1,769)
Non-U.S. securities	9,399	(34)	756	(18)	10,155	(52)
Other taxable securities	2,036	(16)	1,580	(68)	3,616	(84)
Tax-exempt securities	607	(28)	2,849	(251)	3,456	(279)
Total AFS debt securities in a continuous unrealized loss position	\$ 72,233	\$ (1,815)	\$ 131,635	\$ (2,972)	\$ 203,868	\$ (4,787)
December 31, 2021						
Continuously unrealized loss-positioned AFS debt securities						
Mortgage-backed securities:						
Agency	\$ 11,733	\$ (166)	\$ 815	\$ (20)	\$ 12,548	\$ (186)
Agency-collateralized mortgage obligations	1,427	(22)	122	(3)	1,549	(25)
Commercial	3,451	(41)	776	(38)	4,227	(79)
Non-agency residential	241	(13)	174	(20)	415	(33)
Total mortgage-backed securities	16,852	(242)	1,887	(81)	18,739	(323)
U.S. Treasury and government agencies	103,307	(272)	4,850	(46)	108,157	(318)
Other taxable securities	—	—	82	(3)	82	(3)
Tax-exempt securities	502	(16)	109	(23)	611	(39)
Total AFS debt securities in a continuous unrealized loss position	\$ 120,661	\$ (530)	\$ 6,928	\$ (153)	\$ 127,589	\$ (683)

The remaining contractual maturity distribution and yields of the Corporation's debt securities carried at fair value and HTM debt securities at December 31, 2022 are summarized in the table below. Actual duration and yields may differ as prepayments on the loans underlying the MBS or other ABS are passed through to the Corporation.

Maturities of Debt Securities Carried at Fair Value and Held-to-maturity Debt Securities

(Dollars in millions)	Due in One Year or Less		Due after One Year through Five Years		Due after Five Years through Ten Years		Due after Ten Years		Total	
	Amount	Yield ⁽¹⁾	Amount	Yield ⁽¹⁾	Amount	Yield ⁽¹⁾	Amount	Yield ⁽¹⁾	Amount	Yield ⁽¹⁾
Amortized cost of debt securities carried at fair value										
Mortgage-backed securities:										
Agency	\$ —	—%	\$ 3	5.67%	\$ 56	4.39%	\$ 25,145	3.37%	\$ 25,204	3.37%
Agency-collateralized mortgage obligations	—	—	10	2.60	—	—	2,442	2.89	2,452	2.89
Commercial	22	2.09	670	3.07	4,591	2.03	1,624	2.31	6,907	2.20
Non-agency residential	—	—	—	—	—	—	825	9.54	825	9.54
Total mortgage-backed securities	22	2.09	683	3.08	4,647	2.06	30,036	3.44	35,388	3.25
U.S. Treasury and government agencies	3,306	1.59	79,618	1.68	78,378	1.64	32	3.38	161,334	1.66
Non-U.S. securities	17,499	2.41	3,002	4.58	723	3.93	279	6.87	21,503	2.82
Other taxable securities	2,034	4.77	2,102	4.85	455	3.46	137	3.35	4,728	4.64
Tax-exempt securities	890	3.36	4,765	3.55	2,022	3.73	3,841	3.88	11,518	3.68
Total amortized cost of debt securities carried at fair value	\$ 23,751	2.53	\$ 90,170	1.96	\$ 86,225	1.74	\$ 34,325	3.52	\$ 234,471	2.16
Amortized cost of HTM debt securities										
Agency mortgage-backed securities	\$ —	—%	\$ —	—%	\$ 14	2.64%	\$ 503,219	2.13%	\$ 503,233	2.13%
U.S. Treasury and government agencies	—	—	4,544	1.80	117,053	1.37	—	—	121,597	1.39
Other taxable securities	38	9.06	1,251	2.23	313	3.00	6,431	2.45	8,033	2.47
Total amortized cost of HTM debt securities	\$ 38	9.06	\$ 5,795	1.89	\$ 117,380	1.37	\$ 509,650	2.13	\$ 632,863	1.99
Debt securities carried at fair value										
Mortgage-backed securities:										
Agency	\$ —		\$ 3		\$ 56		\$ 23,383		\$ 23,442	
Agency-collateralized mortgage obligations	—		10		—		2,211		2,221	
Commercial	22		650		4,342		1,404		6,418	
Non-agency residential	—		2		—		751		753	
Total mortgage-backed securities	22		665		4,398		27,749		32,834	
U.S. Treasury and government agencies	3,312		79,013		77,228		30		159,583	
Non-U.S. securities	17,709		2,960		723		279		21,671	
Other taxable securities	2,028		2,085		413		122		4,648	
Tax-exempt securities	887		4,729		1,997		3,645		11,258	
Total debt securities carried at fair value	\$ 23,958		\$ 89,452		\$ 84,759		\$ 31,825		\$ 229,994	
Fair value of HTM debt securities										
Agency mortgage-backed securities	\$ —		\$ —		\$ 13		\$ 415,901		\$ 415,914	
U.S. Treasury and government agencies	—		4,164		97,174		—		101,338	
Other taxable securities	38		1,170		295		5,512		7,015	
Total fair value of HTM debt securities	\$ 38		\$ 5,334		\$ 97,482		\$ 421,413		\$ 524,267	

⁽¹⁾ The weighted-average yield is computed based on a constant effective interest rate over the contractual life of each security. The average yield considers the contractual coupon and the amortization of premiums and accretion of discounts, excluding the effect of related hedging derivatives.

NOTE 5 Outstanding Loans and Leases and Allowance for Credit Losses

The following tables present total outstanding loans and leases and an aging analysis for the Consumer Real Estate, Credit Card and Other Consumer, and Commercial portfolio segments, by class of financing receivables, at December 31, 2022 and 2021.

	30-59 Days Past Due ⁽¹⁾	60-89 Days Past Due ⁽¹⁾	90 Days or More Past Due ⁽¹⁾	Total Past Due 30 Days or More	Total Current or Less Than 30 Days Past Due ⁽¹⁾	Loans Accounted for Under the Fair Value Option	Total Outstandings
December 31, 2022							
(Dollars in millions)							
Consumer real estate							
Residential mortgage	\$ 1,077	\$ 245	\$ 945	\$ 2,267	\$ 227,403		\$ 229,670
Home equity	88	32	211	331	26,232		26,563
Credit card and other consumer							
Credit card	466	322	717	1,505	91,916		93,421
Direct/Indirect consumer ⁽²⁾	204	59	45	308	105,928		106,236
Other consumer	—	—	—	—	156		156
Total consumer	1,835	658	1,918	4,411	451,635		456,046
Consumer loans accounted for under the fair value option ⁽³⁾						\$ 339	339
Total consumer loans and leases	1,835	658	1,918	4,411	451,635	339	456,385
Commercial							
U.S. commercial	827	288	330	1,445	357,036		358,481
Non-U.S. commercial	317	59	144	520	123,959		124,479
Commercial real estate ⁽⁴⁾	409	81	77	567	69,199		69,766
Commercial lease financing	49	9	11	69	13,575		13,644
U.S. small business commercial ⁽⁵⁾	107	63	356	526	17,034		17,560
Total commercial	1,709	500	918	3,127	580,803		583,930
Commercial loans accounted for under the fair value option ⁽³⁾						5,432	5,432
Total commercial loans and leases	1,709	500	918	3,127	580,803	5,432	589,362
Total loans and leases ⁽⁶⁾	\$ 3,544	\$ 1,158	\$ 2,836	\$ 7,538	\$1,032,438	\$ 5,771	\$1,045,747
Percentage of outstandings	0.34 %	0.11 %	0.27 %	0.72 %	98.73 %	0.55 %	100.00 %

⁽¹⁾ Consumer real estate loans 30-59 days past due includes fully-insured loans of \$184 million and nonperforming loans of \$155 million. Consumer real estate loans 60-89 days past due includes fully-insured loans of \$75 million and nonperforming loans of \$88 million. Consumer real estate loans 90 days or more past due includes fully-insured loans of \$368 million and nonperforming loans of \$788 million. Consumer real estate loans current or less than 30 days past due includes \$1.6 billion, and direct/indirect consumer includes \$27 million of nonperforming loans.

⁽²⁾ Total outstandings primarily includes auto and specialty lending loans and leases of \$51.8 billion, U.S. securities-based lending loans of \$50.4 billion and non-U.S. consumer loans of \$3.0 billion.

⁽³⁾ Consumer loans accounted for under the fair value option includes residential mortgage loans of \$71 million and home equity loans of \$268 million. Commercial loans accounted for under the fair value option includes U.S. commercial loans of \$2.9 billion and non-U.S. commercial loans of \$2.5 billion. For more information, see Note 20 – Fair Value Measurements and Note 21 – Fair Value Option.

⁽⁴⁾ Total outstandings includes U.S. commercial real estate loans of \$64.9 billion and non-U.S. commercial real estate loans of \$4.8 billion.

⁽⁵⁾ Includes Paycheck Protection Program loans.

⁽⁶⁾ Total outstandings includes loans and leases pledged as collateral of \$18.5 billion. The Corporation also pledged \$163.6 billion of loans with no related outstanding borrowings to secure potential borrowing capacity with the Federal Reserve Bank and Federal Home Loan Bank.

	30-59 Days Past Due ⁽¹⁾	60-89 Days Past Due ⁽¹⁾	90 Days or More Past Due ⁽¹⁾	Total Past Due 30 Days or More	Total Current or Less Than 30 Days Past Due ⁽¹⁾	Loans Accounted for Under the Fair Value Option	Total Outstandings
December 31, 2021							
(Dollars in millions)							
Consumer real estate							
Residential mortgage	\$ 1,005	\$ 297	\$ 1,571	\$ 2,873	\$ 219,090		\$ 221,963
Home equity	123	69	369	561	27,374		27,935
Credit card and other consumer							
Credit card	298	212	487	997	80,441		81,438
Direct/Indirect consumer ⁽²⁾	147	52	18	217	103,343		103,560
Other consumer	—	—	—	—	190		190
Total consumer	1,573	630	2,445	4,648	430,438		435,086
Consumer loans accounted for under the fair value option ⁽³⁾						\$ 618	618
Total consumer loans and leases	1,573	630	2,445	4,648	430,438	618	435,704
Commercial							
U.S. commercial	815	308	396	1,519	324,417		325,936
Non-U.S. commercial	148	20	83	251	113,015		113,266
Commercial real estate ⁽⁴⁾	115	34	285	434	62,575		63,009
Commercial lease financing	104	28	13	145	14,680		14,825
U.S. small business commercial ⁽⁵⁾	129	259	89	477	18,706		19,183
Total commercial	1,311	649	866	2,826	533,393		536,219
Commercial loans accounted for under the fair value option ⁽³⁾						7,201	7,201
Total commercial loans and leases	1,311	649	866	2,826	533,393	7,201	543,420
Total loans and leases ⁽⁶⁾	\$ 2,884	\$ 1,279	\$ 3,311	\$ 7,474	\$ 963,831	\$ 7,819	\$ 979,124
Percentage of outstandings	0.29 %	0.13 %	0.34 %	0.76 %	98.44 %	0.80 %	100.00 %

⁽¹⁾ Consumer real estate loans 30-59 days past due includes fully-insured loans of \$164 million and nonperforming loans of \$118 million. Consumer real estate loans 60-89 days past due includes fully-insured loans of \$89 million and nonperforming loans of \$100 million. Consumer real estate loans 90 days or more past due includes fully-insured loans of \$633 million and nonperforming loans of \$1.3 billion. Consumer real estate loans current or less than 30 days past due includes \$1.4 billion, and direct/indirect consumer includes \$55 million of nonperforming loans.

⁽²⁾ Total outstandings primarily includes auto and specialty lending loans and leases of \$48.5 billion, U.S. securities-based lending loans of \$51.1 billion and non-U.S. consumer loans of \$3.0 billion.

⁽³⁾ Consumer loans accounted for under the fair value option includes residential mortgage loans of \$279 million and home equity loans of \$339 million. Commercial loans accounted for under the fair value option includes U.S. commercial loans of \$4.6 billion and non-U.S. commercial loans of \$2.6 billion. For more information, see Note 20 – Fair Value Measurements and Note 21 – Fair Value Option.

⁽⁴⁾ Total outstandings includes U.S. commercial real estate loans of \$58.2 billion and non-U.S. commercial real estate loans of \$4.8 billion.

⁽⁵⁾ Includes Paycheck Protection Program loans.

⁽⁶⁾ Total outstandings includes loans and leases pledged as collateral of \$13.0 billion. The Corporation also pledged \$146.6 billion of loans with no related outstanding borrowings to secure potential borrowing capacity with the Federal Reserve Bank and Federal Home Loan Bank.

The Corporation has entered into long-term credit protection agreements with FNMA and FHLMC on loans totaling \$9.5 billion and \$10.5 billion at December 31, 2022 and 2021, providing full credit protection on residential mortgage loans that become severely delinquent. All of these loans are individually insured, and therefore the Corporation does not record an allowance for credit losses related to these loans.

Nonperforming Loans and Leases

Commercial nonperforming loans decreased to \$1.1 billion at December 31, 2022 from \$1.6 billion at December 31, 2021, as paydowns and returns to performing status more than offset new downgrades to nonaccrual status. Consumer nonperforming loans decreased to \$2.8 billion at December 31, 2022 from

\$3.0 billion at December 31, 2021 primarily due to decreases from consumer real estate loan sales, partially offset by increases from loans whose prior-period deferrals expired and were modified in TDRs during the first quarter of 2022.

The following table presents the Corporation's nonperforming loans and leases, including nonperforming TDRs, and loans accruing past due 90 days or more at December 31, 2022 and 2021. Nonperforming LHFS are excluded from nonperforming loans and leases as they are recorded at either fair value or the lower of cost or fair value. For more information on the criteria for classification as nonperforming, see Note 1 – Summary of Significant Accounting Principles.

Credit Quality

	Nonperforming Loans and Leases		Accruing Past Due 90 Days or More	
	December 31			
	2022	2021	2022	2021
(Dollars in millions)				
Residential mortgage ⁽¹⁾	\$ 2,167	\$ 2,284	\$ 368	\$ 634
With no related allowance ⁽²⁾	1,973	1,950	—	—
Home equity ⁽¹⁾	510	630	—	—
With no related allowance ⁽²⁾	393	414	—	—
Credit Card	n/a	n/a	717	487
Direct/indirect consumer	77	75	2	11
Total consumer	2,754	2,989	1,087	1,132
U.S. commercial	553	825	190	171
Non-U.S. commercial	212	268	25	19
Commercial real estate	271	382	46	40
Commercial lease financing	4	80	8	8
U.S. small business commercial	14	23	355	87
Total commercial	1,054	1,578	624	325
Total nonperforming loans	\$ 3,808	\$ 4,567	\$ 1,711	\$ 1,457
Percentage of outstanding loans and leases	0.37 %	0.47 %	0.16 %	0.15 %

⁽¹⁾ Residential mortgage loans accruing past due 90 days or more are fully-insured loans. At December 31, 2022 and 2021 residential mortgage included \$260 million and \$444 million of loans on which interest had been curtailed by the FHA, and therefore were no longer accruing interest, although principal was still insured, and \$108 million and \$190 million of loans on which interest was still accruing.

⁽²⁾ Primarily relates to loans for which the estimated fair value of the underlying collateral less any costs to sell is greater than the amortized cost of the loans as of the reporting date.
n/a = not applicable

Credit Quality Indicators

The Corporation monitors credit quality within its Consumer Real Estate, Credit Card and Other Consumer, and Commercial portfolio segments based on primary credit quality indicators. For more information on the portfolio segments, see *Note 1 – Summary of Significant Accounting Principles*. Within the Consumer Real Estate portfolio segment, the primary credit quality indicators are refreshed LTV and refreshed Fair Isaac Corporation (FICO) score. Refreshed LTV measures the carrying value of the loan as a percentage of the value of the property securing the loan, refreshed quarterly. Home equity loans are evaluated using CLTV, which measures the carrying value of the Corporation's loan and available line of credit combined with any outstanding senior liens against the property as a percentage of the value of the property securing the loan, refreshed quarterly. FICO score measures the creditworthiness of the borrower based on the financial obligations of the borrower and the borrower's credit history. FICO scores are typically refreshed quarterly or more frequently. Certain borrowers (e.g., borrowers that have had debts discharged in a bankruptcy proceeding) may not have their FICO scores updated. FICO scores are also a

primary credit quality indicator for the Credit Card and Other Consumer portfolio segment and the business card portfolio within U.S. small business commercial. Within the Commercial portfolio segment, loans are evaluated using the internal classifications of pass rated or reservable criticized as the primary credit quality indicators. The term reservable criticized refers to those commercial loans that are internally classified or listed by the Corporation as Special Mention, Substandard or Doubtful, which are asset quality categories defined by regulatory authorities. These assets have an elevated level of risk and may have a high probability of default or total loss. Pass rated refers to all loans not considered reservable criticized. In addition to these primary credit quality indicators, the Corporation uses other credit quality indicators for certain types of loans.

The following tables present certain credit quality indicators and gross charge-offs for the Corporation's Consumer Real Estate, Credit Card and Other Consumer, and Commercial portfolio segments by year of origination, except for revolving loans and revolving loans that were modified into term loans, which are shown on an aggregate basis at December 31, 2022.

Residential Mortgage – Credit Quality Indicators By Vintage

Term Loans by Origination Year

(Dollars in millions)	Total as of December 31, 2022	Term Loans by Origination Year					
		2022	2021	2020	2019	2018	Prior
Residential Mortgage							
Refreshed LTV							
Less than or equal to 90 percent	\$ 215,713	\$ 39,625	\$ 81,437	\$ 37,228	\$ 18,980	\$ 5,734	\$ 32,709
Greater than 90 percent but less than or equal to 100 percent	1,615	950	530	93	15	8	19
Greater than 100 percent	648	374	169	43	15	8	39
Fully-insured loans	11,694	580	3,667	3,102	949	156	3,240
Total Residential Mortgage	\$ 229,670	\$ 41,529	\$ 85,803	\$ 40,466	\$ 19,959	\$ 5,906	\$ 36,007
Residential Mortgage							
Refreshed FICO score							
Less than 620	\$ 2,156	\$ 377	\$ 518	\$ 373	\$ 124	\$ 84	\$ 680
Greater than or equal to 620 and less than 680	4,978	1,011	1,382	840	329	233	1,183
Greater than or equal to 680 and less than 740	25,444	5,411	8,290	4,369	2,187	830	4,357
Greater than or equal to 740	185,398	34,150	71,946	31,782	16,370	4,603	26,547
Fully-insured loans	11,694	580	3,667	3,102	949	156	3,240
Total Residential Mortgage	\$ 229,670	\$ 41,529	\$ 85,803	\$ 40,466	\$ 19,959	\$ 5,906	\$ 36,007
Gross charge-offs	\$ 161	\$ —	\$ 6	\$ 5	\$ 6	\$ 1	\$ 143

Home Equity - Credit Quality Indicators

(Dollars in millions)	Total	Home Equity Loans and Reverse Mortgages ⁽¹⁾		Revolving Loans		Revolving Loans Converted to Term Loans	
		December 31, 2022					
Home Equity							
Refreshed LTV							
Less than or equal to 90 percent	\$ 26,395	\$ 1,304	\$ 19,960	\$ 5,131			
Greater than 90 percent but less than or equal to 100 percent	62	20	24	18			
Greater than 100 percent	106	37	35	34			
Total Home Equity	\$ 26,563	\$ 1,361	\$ 20,019	\$ 5,183			
Home Equity							
Refreshed FICO score							
Less than 620	\$ 683	\$ 166	\$ 189	\$ 328			
Greater than or equal to 620 and less than 680	1,190	152	507	531			
Greater than or equal to 680 and less than 740	4,321	312	2,747	1,262			
Greater than or equal to 740	20,369	731	16,576	3,062			
Total Home Equity	\$ 26,563	\$ 1,361	\$ 20,019	\$ 5,183			
Gross charge-offs	\$ 45	\$ 5	\$ 24	\$ 16			

⁽¹⁾ Includes reverse mortgages of \$937 million and home equity loans of \$424 million, which are no longer originated.

Credit Card and Direct/Indirect Consumer – Credit Quality Indicators By Vintage

(Dollars in millions)	Direct/Indirect									Credit Card		
	Term Loans by Origination Year									Revolving Loans		
	Total Direct/ Indirect as of December 31, 2022	Revolving Loans	2022	2021	2020	2019	2018	Prior	Total Credit Card as of December 31, 2022	Revolving Loans	Revolving Loans Converted to Term Loans ⁽¹⁾	
Refreshed FICO score												
Less than 620	\$ 847	\$ 12	\$ 237	\$ 301	\$ 113	\$ 84	\$ 43	\$ 57	\$ 4,056	\$ 3,866	\$ 190	
Greater than or equal to 620 and less than 680	2,521	12	1,108	816	269	150	69	97	10,994	10,805	189	
Greater than or equal to 680 and less than 740	8,895	52	4,091	2,730	992	520	214	296	32,186	32,017	169	
Greater than or equal to 740	39,679	83	16,663	11,392	5,630	2,992	1,236	1,683	46,185	46,142	43	
Other internal credit metrics ^(2,3)	54,294	53,404	259	305	70	57	40	159	—	—	—	
Total credit card and other consumer	\$ 106,236	\$ 53,563	\$ 22,358	\$ 15,544	\$ 7,074	\$ 3,803	\$ 1,602	\$ 2,292	\$ 93,421	\$ 92,830	\$ 591	
Gross charge-offs	\$ 232	\$ 7	\$ 31	\$ 79	\$ 34	\$ 27	\$ 14	\$ 40	\$ 1,985	\$ 1,909	\$ 76	

⁽¹⁾ Represents TDRs that were modified into term loans.

⁽²⁾ Other internal credit metrics may include delinquency status, geography or other factors.

⁽³⁾ Direct/indirect consumer includes \$53.4 billion of securities-based lending, which is typically supported by highly liquid collateral with market value greater than or equal to the outstanding loan balance and therefore has minimal credit risk at December 31, 2022.

Commercial – Credit Quality Indicators By Vintage ⁽¹⁾

(Dollars in millions)	Total as of December 31, 2022	Term Loans							Revolving Loans
		Amortized Cost Basis by Origination Year							
		2022	2021	2020	2019	2018	Prior		
U.S. Commercial									
Risk ratings									
Pass rated	\$ 348,447	\$ 61,200	\$ 39,717	\$ 18,609	\$ 16,566	\$ 8,749	\$ 30,282	\$ 173,324	
Reservable criticized	10,034	278	794	697	884	1,202	856	5,323	
Total U.S. Commercial	\$ 358,481	\$ 61,478	\$ 40,511	\$ 19,306	\$ 17,450	\$ 9,951	\$ 31,138	\$ 178,647	
Gross charge-offs	\$ 151	\$ 2	\$ 24	\$ 24	\$ 9	\$ 6	\$ 13	\$ 73	
Non-U.S. Commercial									
Risk ratings									
Pass rated	\$ 121,890	\$ 24,839	\$ 19,098	\$ 5,183	\$ 3,882	\$ 2,423	\$ 4,697	\$ 61,768	
Reservable criticized	2,589	45	395	331	325	98	475	920	
Total Non-U.S. Commercial	\$ 124,479	\$ 24,884	\$ 19,493	\$ 5,514	\$ 4,207	\$ 2,521	\$ 5,172	\$ 62,688	
Gross charge-offs	\$ 41	\$ —	\$ 3	\$ 1	\$ —	\$ 37	\$ —	\$ —	
Commercial Real Estate									
Risk ratings									
Pass rated	\$ 64,619	\$ 15,290	\$ 13,089	\$ 5,756	\$ 9,013	\$ 4,384	\$ 8,606	\$ 8,481	
Reservable criticized	5,147	11	837	545	1,501	1,151	1,017	85	
Total Commercial Real Estate	\$ 69,766	\$ 15,301	\$ 13,926	\$ 6,301	\$ 10,514	\$ 5,535	\$ 9,623	\$ 8,566	
Gross charge-offs	\$ 75	\$ —	\$ —	\$ 6	\$ —	\$ 26	\$ 43	\$ —	
Commercial Lease Financing									
Risk ratings									
Pass rated	\$ 13,404	\$ 3,255	\$ 2,757	\$ 1,955	\$ 1,578	\$ 1,301	\$ 2,558	\$ —	
Reservable criticized	240	9	35	12	71	50	63	—	
Total Commercial Lease Financing	\$ 13,644	\$ 3,264	\$ 2,792	\$ 1,967	\$ 1,649	\$ 1,351	\$ 2,621	\$ —	
Gross charge-offs	\$ 8	\$ —	\$ 4	\$ —	\$ 4	\$ —	\$ —	\$ —	
U.S. Small Business Commercial ⁽²⁾									
Risk ratings									
Pass rated	\$ 8,726	\$ 1,825	\$ 1,953	\$ 1,408	\$ 864	\$ 624	\$ 1,925	\$ 127	
Reservable criticized	329	11	35	48	76	51	105	3	
Total U.S. Small Business Commercial	\$ 9,055	\$ 1,836	\$ 1,988	\$ 1,456	\$ 940	\$ 675	\$ 2,030	\$ 130	
Gross charge-offs	\$ 31	\$ —	\$ 1	\$ 11	\$ 4	\$ 1	\$ 6	\$ 8	
Total	\$ 575,425	\$ 106,763	\$ 78,710	\$ 34,544	\$ 34,760	\$ 20,033	\$ 50,584	\$ 250,031	
Total gross charge-offs	\$ 306	\$ 2	\$ 32	\$ 42	\$ 17	\$ 70	\$ 62	\$ 81	

⁽¹⁾ Excludes \$5.4 billion of loans accounted for under the fair value option at December 31, 2022.

⁽²⁾ Excludes U.S. Small Business Card loans of \$8.5 billion. Refreshed FICO scores for this portfolio are \$297 million for less than 620; \$859 million for greater than or equal to 620 and less than 680; \$2.4 billion for greater than or equal to 680 and less than 740; and \$5.0 billion greater than or equal to 740. Excludes U.S. Small Business Card loans gross charge-offs of \$172 million.

The following tables present certain credit quality indicators for the Corporation's Consumer Real Estate, Credit Card and Other Consumer, and Commercial portfolio segments by year of origination, except for revolving loans and revolving loans that were modified into term loans, which are shown on an aggregate basis at December 31, 2021.

Residential Mortgage – Credit Quality Indicators By Vintage

(Dollars in millions)	Total as of December 31, 2021	Term Loans by Origination Year						Prior
		2021	2020	2019	2018	2017		
Residential Mortgage								
Refreshed LTV								
Less than or equal to 90 percent	\$ 206,562	\$ 87,051	\$ 43,597	\$ 23,205	\$ 7,392	\$ 10,956	\$ 34,361	
Greater than 90 percent but less than or equal to 100 percent	1,938	1,401	331	81	17	14	94	
Greater than 100 percent	759	520	112	29	11	12	75	
Fully-insured loans	12,704	3,845	3,486	1,150	216	235	3,772	
Total Residential Mortgage	\$ 221,963	\$ 92,817	\$ 47,526	\$ 24,465	\$ 7,636	\$ 11,217	\$ 38,302	
Residential Mortgage								
Refreshed FICO score								
Less than 620	\$ 2,451	\$ 636	\$ 442	\$ 140	\$ 120	\$ 104	\$ 1,009	
Greater than or equal to 620 and less than 680	5,199	1,511	1,123	477	294	307	1,487	
Greater than or equal to 680 and less than 740	24,532	8,822	5,454	2,785	1,057	1,434	4,980	
Greater than or equal to 740	177,077	78,003	37,021	19,913	5,949	9,137	27,054	
Fully-insured loans	12,704	3,845	3,486	1,150	216	235	3,772	
Total Residential Mortgage	\$ 221,963	\$ 92,817	\$ 47,526	\$ 24,465	\$ 7,636	\$ 11,217	\$ 38,302	

Home Equity - Credit Quality Indicators

(Dollars in millions)	Total	Home Equity Loans and Reverse Mortgages ⁽¹⁾		Revolving Loans		Revolving Loans Converted to Term Loans		
		December 31, 2021						
Home Equity								
Refreshed LTV								
Less than or equal to 90 percent	\$ 27,594	\$ 1,773	\$ 19,095	\$ 6,726				
Greater than 90 percent but less than or equal to 100 percent	130	55	34	41				
Greater than 100 percent	211	85	54	72				
Total Home Equity	\$ 27,935	\$ 1,913	\$ 19,183	\$ 6,839				
Home Equity								
Refreshed FICO score								
Less than 620	\$ 893	\$ 244	\$ 209	\$ 440				
Greater than or equal to 620 and less than 680	1,434	222	495	717				
Greater than or equal to 680 and less than 740	4,625	468	2,493	1,664				
Greater than or equal to 740	20,983	979	15,986	4,018				
Total Home Equity	\$ 27,935	\$ 1,913	\$ 19,183	\$ 6,839				

⁽¹⁾ Includes reverse mortgages of \$1.3 billion and home equity loans of \$582 million, which are no longer originated.

Credit Card and Direct/Indirect Consumer – Credit Quality Indicators By Vintage

(Dollars in millions)	Direct/Indirect											
	Total Direct/ Indirect as of December 31, 2021	Revolving Loans	Term Loans by Origination Year							Credit Card		
			2021	2020	2019	2018	2017	Prior	Total Credit Card as of December 31, 2021	Revolving Loans	Revolving Loans Converted to Term Loans ⁽¹⁾	
Refreshed FICO score												
Less than 620	\$ 685	\$ 13	\$ 179	\$ 115	\$ 129	\$ 79	\$ 101	\$ 69	\$ 3,017	\$ 2,857	\$ 160	
Greater than or equal to 620 and less than 680	2,313	14	1,170	414	313	148	134	120	9,264	9,064	200	
Greater than or equal to 680 and less than 740	8,530	60	4,552	1,659	1,126	466	314	353	28,347	28,155	192	
Greater than or equal to 740	37,164	94	15,876	8,642	6,465	2,679	1,573	1,835	40,810	40,762	48	
Other internal credit metrics ^(2, 3)	54,868	54,173	283	53	77	75	63	144	—	—	—	
Total credit card and other consumer	\$ 103,560	\$ 54,354	\$ 22,060	\$ 10,883	\$ 8,110	\$ 3,447	\$ 2,185	\$ 2,521	\$ 81,438	\$ 80,838	\$ 600	

⁽¹⁾ Represents TDRs that were modified into term loans.

⁽²⁾ Other internal credit metrics may include delinquency status, geography or other factors.

⁽³⁾ Direct/indirect consumer includes \$54.2 billion of securities-based lending, which is typically supported by highly liquid collateral with market value greater than or equal to the outstanding loan balance and therefore has minimal credit risk at December 31, 2021.

Commercial – Credit Quality Indicators By Vintage ⁽¹⁾

(Dollars in millions)	Term Loans								
	Total as of December 31, 2021	Amortized Cost Basis by Origination Year							Revolving Loans
		2021	2020	2019	2018	2017	Prior		
U.S. Commercial									
Risk ratings									
Pass rated	\$ 315,618	\$ 55,862	\$ 25,012	\$ 23,373	\$ 11,439	\$ 10,426	\$ 23,877	\$ 165,629	
Reservable criticized	10,318	598	687	1,308	1,615	514	1,072	4,524	
Total U.S. Commercial	\$ 325,936	\$ 56,460	\$ 25,699	\$ 24,681	\$ 13,054	\$ 10,940	\$ 24,949	\$ 170,153	
Non-U.S. Commercial									
Risk ratings									
Pass rated	\$ 110,787	\$ 25,749	\$ 8,703	\$ 7,133	\$ 4,521	\$ 3,016	\$ 3,062	\$ 58,603	
Reservable criticized	2,479	223	324	487	275	257	216	697	
Total Non-U.S. Commercial	\$ 113,266	\$ 25,972	\$ 9,027	\$ 7,620	\$ 4,796	\$ 3,273	\$ 3,278	\$ 59,300	
Commercial Real Estate									
Risk ratings									
Pass rated	\$ 55,511	\$ 14,402	\$ 7,244	\$ 11,237	\$ 5,710	\$ 3,326	\$ 6,831	\$ 6,761	
Reservable criticized	7,498	277	990	2,237	1,710	596	1,464	224	
Total Commercial Real Estate	\$ 63,009	\$ 14,679	\$ 8,234	\$ 13,474	\$ 7,420	\$ 3,922	\$ 8,295	\$ 6,985	
Commercial Lease Financing									
Risk ratings									
Pass rated	\$ 14,438	\$ 3,280	\$ 2,485	\$ 2,427	\$ 2,030	\$ 1,741	\$ 2,475	\$ —	
Reservable criticized	387	25	18	91	67	48	138	—	
Total Commercial Lease Financing	\$ 14,825	\$ 3,305	\$ 2,503	\$ 2,518	\$ 2,097	\$ 1,789	\$ 2,613	\$ —	
U.S. Small Business Commercial ⁽²⁾									
Risk ratings									
Pass rated	\$ 11,618	\$ 4,257	\$ 2,922	\$ 1,059	\$ 763	\$ 623	\$ 1,853	\$ 141	
Reservable criticized	433	12	29	91	87	64	147	3	
Total U.S. Small Business Commercial	\$ 12,051	\$ 4,269	\$ 2,951	\$ 1,150	\$ 850	\$ 687	\$ 2,000	\$ 144	
Total	\$ 529,087	\$ 104,685	\$ 48,414	\$ 49,443	\$ 28,217	\$ 20,611	\$ 41,135	\$ 236,582	

⁽¹⁾ Excludes \$7.2 billion of loans accounted for under the fair value option at December 31, 2021.

⁽²⁾ Excludes U.S. Small Business Card loans of \$7.1 billion. Refreshed FICO scores for this portfolio are \$192 million for less than 620; \$618 million for greater than or equal to 620 and less than 680; \$1.9 billion for greater than or equal to 680 and less than 740; and \$4.4 billion greater than or equal to 740.

Consumer Real Estate – TDRs Entering Payment Default that were Modified During the Preceding 12 Months

(Dollars in millions)	2022	2021	2020
Modifications under government programs	\$ —	\$ 4	\$ 16
Modifications under proprietary programs	189	128	51
Loans discharged in Chapter 7 bankruptcy ⁽¹⁾	2	9	19
Trial modifications ⁽²⁾	25	19	54
Total modifications	\$ 216	\$ 160	\$ 140

⁽¹⁾ Includes loans discharged in Chapter 7 bankruptcy with no change in repayment terms that are classified as TDRs.

⁽²⁾ Includes trial modification offers to which the customer did not respond.

Credit Card and Other Consumer

The Corporation seeks to assist customers who are experiencing financial difficulty by modifying loans while ensuring compliance with federal and local laws and guidelines. Credit card and other consumer loan modifications generally involve reducing the interest rate on the account, placing the customer on a fixed payment plan not exceeding 60 months and canceling the customer's available line of credit, all of which are considered TDRs. The Corporation makes loan modifications directly with borrowers for debt held only by the Corporation (internal programs). Additionally, the Corporation makes loan modifications for borrowers working with third-party renegotiation

agencies that provide solutions to customers' entire unsecured debt structures (external programs). The Corporation classifies other secured consumer loans that have been discharged in Chapter 7 bankruptcy as TDRs, which are written down to collateral value and placed on nonaccrual status no later than the time of discharge.

The table below provides information on the Corporation's Credit Card and Other Consumer TDR portfolio including the December 31, 2022, 2021 and 2020 unpaid principal balance, carrying value, and average pre- and post-modification interest rates of loans that were modified in TDRs during 2022, 2021 and 2020.

Credit Card and Other Consumer – TDRs Entered into During 2022, 2021 and 2020

(Dollars in millions)	Unpaid Principal Balance	Carrying Value ⁽¹⁾	Pre-Modification Interest Rate	Post-Modification Interest Rate
December 31, 2022				
Credit card	\$ 284	\$ 293	22.34 %	3.89 %
Direct/Indirect consumer	6	5	5.51	5.50
Total	\$ 290	\$ 298	22.06	3.92
December 31, 2021				
Credit card	\$ 237	\$ 248	18.45 %	4.09 %
Direct/Indirect consumer	23	16	5.88	5.88
Total	\$ 260	\$ 264	17.68	4.20
December 31, 2020				
Credit card	\$ 269	\$ 277	18.16 %	5.63 %
Direct/Indirect consumer	52	37	5.83	5.83
Total	\$ 321	\$ 314	16.70	5.65

⁽¹⁾ Includes accrued interest and fees.

The table below presents the December 31, 2022, 2021 and 2020 carrying value for Credit Card and Other Consumer loans that were modified in a TDR during 2022, 2021 and 2020 by program type.

Credit Card and Other Consumer – TDRs by Program Type at December 31 ⁽¹⁾

(Dollars in millions)	2022	2021	2020
Internal programs	\$ 251	\$ 214	\$ 225
External programs	44	44	73
Other	3	6	16
Total	\$ 298	\$ 264	\$ 314

⁽¹⁾ Includes accrued interest and fees.

Credit card and other consumer loans are deemed to be in payment default during the quarter in which a borrower misses the second of two consecutive payments. Payment defaults are one of the factors considered when projecting future cash flows in the calculation of the allowance for loan and lease losses for credit card and other consumer. Based on historical experience, the Corporation estimates that 15 percent of new credit card TDRs and 15 percent of new direct/indirect consumer TDRs may be in payment default within 12 months after modification.

Commercial Loans

Modifications of loans to commercial borrowers that are experiencing financial difficulty are designed to reduce the Corporation's loss exposure while providing the borrower with an opportunity to work through financial difficulties, often to avoid foreclosure or bankruptcy. Each modification is unique and reflects the individual circumstances of the borrower. Modifications that result in a TDR may include extensions of maturity at a concessionary (below market) rate of interest, payment forbearances or other actions designed to benefit the borrower while mitigating the Corporation's risk exposure.

Reductions in interest rates are rare. Instead, the interest rates are typically increased, although the increased rate may not represent a market rate of interest. Infrequently, concessions may also include principal forgiveness in connection with foreclosure, short sale or other settlement agreements leading to termination or sale of the loan.

At the time of restructuring, the loans are remeasured to reflect the impact, if any, on projected cash flows resulting from the modified terms. If a portion of the loan is deemed to be uncollectible, a charge-off may be recorded at the time of restructuring. Alternatively, a charge-off may have already been recorded in a previous period such that no charge-off is required at the time of modification.

During 2022, the carrying value of the Corporation's commercial loans that were modified as TDRs was \$1.9 billion compared to \$1.3 billion and \$1.2 billion for 2021 and 2020. At December 31, 2022, 2021 and 2020, the Corporation had commitments to lend \$358 million, \$283 million and \$402 million to commercial borrowers whose loans were classified as TDRs. The balance of commercial TDRs in payment default was \$105 million, \$262 million and \$218 million at December 31, 2022, 2021 and 2020.

Loans Held-for-sale

The Corporation had LHFS of \$6.9 billion and \$15.6 billion at December 31, 2022 and 2021. Cash and non-cash proceeds from sales and paydowns of loans originally classified as LHFS were \$32.0 billion, \$43.6 billion and \$20.1 billion for 2022, 2021 and 2020, respectively. Cash used for originations and purchases of LHFS totaled \$24.9 billion, \$37.3 billion and \$19.7 billion for 2022, 2021 and 2020, respectively. Also included were non-cash net transfers into LHFS of \$1.9 billion during 2022, primarily driven by the transfer of a \$1.6 billion affinity card loan portfolio to held for sale that was sold in October 2022, and \$808 million during 2021.

Accrued Interest Receivable

Accrued interest receivable for loans and leases and loans held-for-sale at December 31, 2022 and 2021 was \$3.8 billion and \$2.2 billion and is reported in customer and other receivables on the Consolidated Balance Sheet.

Outstanding credit card loan balances include unpaid principal, interest and fees. Credit card loans are not classified as nonperforming but are charged off no later than the end of the month in which the account becomes 180 days past due, within 60 days after receipt of notification of death or bankruptcy, or upon confirmation of fraud. During 2022 and 2021, the Corporation reversed \$332 million and \$446 million of interest and fee income against the income statement line item in which it was originally recorded upon charge-off of the principal balance of the loan.

For the outstanding residential mortgage, home equity, direct/indirect consumer and commercial loan balances classified as nonperforming during 2022 and 2021, interest and fee income reversed at the time the loans were classified as nonperforming was not significant. For more information on the Corporation's nonperforming loan policies, see *Note 1 - Summary of Significant Accounting Principles*.

Allowance for Credit Losses

The allowance for credit losses is estimated using quantitative and qualitative methods that consider a variety of factors, such as historical loss experience, the current credit quality of the portfolio and an economic outlook over the life of the loan. Qualitative reserves cover losses that are expected but, in the Corporation's assessment, may not be adequately reflected in

the quantitative methods or the economic assumptions. The Corporation incorporates forward-looking information through the use of several macroeconomic scenarios in determining the weighted economic outlook over the forecasted life of the assets. These scenarios include key macroeconomic variables such as gross domestic product, unemployment rate, real estate prices and corporate bond spreads. The scenarios that are chosen each quarter and the weighting given to each scenario depend on a variety of factors including recent economic events, leading economic indicators, internal and third-party economist views, and industry trends. For more information on the Corporation's credit loss accounting policies including the allowance for credit losses, see *Note 1 - Summary of Significant Accounting Principles*.

The December 31, 2022 estimate for allowance for credit losses was based on various economic scenarios, including a baseline scenario derived from consensus estimates, an adverse scenario reflecting an extended moderate recession, a downside scenario reflecting persistent inflation and interest rates above the baseline scenario, a tail risk scenario similar to the severely adverse scenario used in stress testing and an upside scenario that considers the potential for improvement above the baseline scenario. The overall economic outlook is weighted 95 percent towards a recessionary environment in 2023, with continued inflationary pressures leading to lower GDP and higher unemployment rate expectations as compared to the prior year. The weighted economic outlook assumes that the U.S. average unemployment rate will be above five and a half percent by the fourth quarter of 2023 and will slowly decline to five percent by the fourth quarter of 2024. Additionally, in this economic outlook, U.S. gross domestic product is forecasted to contract at 0.4 percent and grow at 1.2 percent year-over-year in the fourth quarters of 2023 and 2024. For comparison, as of December 31, 2021, the weighted economic outlook for the U.S. average unemployment rate was forecasted to be just above five percent by the fourth quarter of 2022 and slowly decline to just under five percent by the fourth quarter of 2023 and U.S. gross domestic product was forecasted at 2.1 percent and 1.9 percent year-over-year in the fourth quarters of 2022 and 2023.

The allowance for credit losses at December 31, 2022 was \$14.2 billion, an increase of \$379 million compared to December 31, 2021. The increase in the allowance for credit losses was primarily driven by loan growth and a dampened macroeconomic outlook, partially offset by a reserve release for reduced pandemic uncertainties. The change in the allowance for credit losses was comprised of a net increase of \$295 million in the allowance for loan and lease losses and an increase of \$84 million in the reserve for unfunded lending commitments. The increase in the allowance for credit losses was attributed to increases in the credit card and other consumer portfolios of \$341 million, and commercial portfolio of \$177 million, partially offset by a decrease in the consumer real estate portfolio of \$139 million. The provision for credit losses increased \$7.1 billion to an expense of \$2.5 billion in 2022 compared to a benefit of \$4.6 billion in 2021 and an expense of \$11.3 billion in 2020. The increase in the provision for credit losses in 2022 was primarily driven by loan growth and a dampened macroeconomic outlook, partially offset by reduced pandemic uncertainties. The benefit in 2021 was primarily due to an improved macroeconomic outlook and credit quality.

Outstanding loans and leases excluding loans accounted for under the fair value option increased \$68.7 billion in 2022 primarily driven by commercial loans, which increased \$47.7 billion, driven by broad-based growth, and consumer loans which

increased \$21.0 billion, primarily driven by credit card and residential mortgage.

The changes in the allowance for credit losses, including net charge-offs and provision for loan and lease losses, are detailed in the table below.

	Consumer		Credit Card and		Commercial	Total		
	Real Estate		Other Consumer					
(Dollars in millions)								
2022								
Allowance for loan and lease losses, January 1	\$	557	\$	6,476	\$	5,354	\$	12,387
Loans and leases charged off		(206)		(2,755)		(478)		(3,439)
Recoveries of loans and leases previously charged off		224		882		161		1,267
Net charge-offs		18		(1,873)		(317)		(2,172)
Provision for loan and lease losses		(164)		2,215		409		2,460
Other		9		(1)		(1)		7
Allowance for loan and lease losses, December 31		420		6,817		5,445		12,682
Reserve for unfunded lending commitments, January 1		96		—		1,360		1,456
Provision for unfunded lending commitments		(3)		—		86		83
Other		1		—		—		1
Reserve for unfunded lending commitments, December 31		94		—		1,446		1,540
Allowance for credit losses, December 31	\$	514	\$	6,817	\$	6,891	\$	14,222
2021								
Allowance for loan and lease losses, January 1	\$	858	\$	9,213	\$	8,731	\$	18,802
Loans and leases charged off		(78)		(3,000)		(719)		(3,797)
Recoveries of loans and leases previously charged off		225		1,006		323		1,554
Net charge-offs		147		(1,994)		(396)		(2,243)
Provision for loan and lease losses		(449)		(744)		(2,980)		(4,173)
Other		1		1		(1)		1
Allowance for loan and lease losses, December 31		557		6,476		5,354		12,387
Reserve for unfunded lending commitments, January 1		137		—		1,741		1,878
Provision for unfunded lending commitments		(41)		—		(380)		(421)
Other		—		—		(1)		(1)
Reserve for unfunded lending commitments, December 31		96		—		1,360		1,456
Allowance for credit losses, December 31	\$	653	\$	6,476	\$	6,714	\$	13,843
2020								
Allowance for loan and lease losses, January 1	\$	440	\$	7,430	\$	4,488	\$	12,358
Loans and leases charged off		(98)		(3,646)		(1,675)		(5,419)
Recoveries of loans and leases previously charged off		201		891		206		1,298
Net charge-offs		103		(2,755)		(1,469)		(4,121)
Provision for loan and lease losses		307		4,538		5,720		10,565
Other		8		—		(8)		—
Allowance for loan and lease losses, December 31		858		9,213		8,731		18,802
Reserve for unfunded lending commitments, January 1		119		—		1,004		1,123
Provision for unfunded lending commitments		18		—		737		755
Reserve for unfunded lending commitments, December 31		137		—		1,741		1,878
Allowance for credit losses, December 31	\$	995	\$	9,213	\$	10,472	\$	20,680

NOTE 6 Securitizations and Other Variable Interest Entities

The Corporation utilizes VIEs in the ordinary course of business to support its own and its customers' financing and investing needs. The Corporation routinely securitizes loans and debt securities using VIEs as a source of funding for the Corporation and as a means of transferring the economic risk of the loans or debt securities to third parties. The assets are transferred into a trust or other securitization vehicle such that the assets are legally isolated from the creditors of the Corporation and are not available to satisfy its obligations. These assets can only be used to settle obligations of the trust or other securitization vehicle. The Corporation also administers, structures or invests in other VIEs including CDOs, investment vehicles and other entities. For more information on the Corporation's use of VIEs, see *Note 1 – Summary of Significant Accounting Principles*.

The tables in this Note present the assets and liabilities of consolidated and unconsolidated VIEs at December 31, 2022 and 2021 in situations where the Corporation has continuing involvement with transferred assets or if the Corporation otherwise has a variable interest in the VIE. The tables also

present the Corporation's maximum loss exposure at December 31, 2022 and 2021 resulting from its involvement with consolidated VIEs and unconsolidated VIEs in which the Corporation holds a variable interest. The Corporation's maximum loss exposure is based on the unlikely event that all of the assets in the VIEs become worthless and incorporates not only potential losses associated with assets recorded on the Consolidated Balance Sheet but also potential losses associated with off-balance sheet commitments, such as unfunded liquidity commitments and other contractual arrangements. The Corporation's maximum loss exposure does not include losses previously recognized through write-downs of assets.

The Corporation invests in ABS issued by third-party VIEs with which it has no other form of involvement and enters into certain commercial lending arrangements that may also incorporate the use of VIEs, for example to hold collateral. These securities and loans are included in *Note 4 – Securities* or *Note 5 – Outstanding Loans and Leases and Allowance for Credit Losses*. In addition, the Corporation has used VIEs in connection with its funding activities.

The Corporation did not provide financial support to consolidated or unconsolidated VIEs during 2022, 2021 and 2020 that it was not previously contractually required to provide, nor does it intend to do so.

The Corporation had liquidity commitments, including written put options and collateral value guarantees, with certain unconsolidated VIEs of \$978 million and \$968 million at December 31, 2022 and 2021.

First-lien Mortgage Securitizations

As part of its mortgage banking activities, the Corporation securitizes a portion of the first-lien residential mortgage loans it originates or purchases from third parties, generally in the form of residential mortgage-backed securities (RMBS) guaranteed by government-sponsored enterprises, FNMA and FHLMC (collectively the GSEs), or the Government National Mortgage Association (GNMA) primarily in the case of FHA-

insured and U.S. Department of Veterans Affairs (VA)-guaranteed mortgage loans. Securitization usually occurs in conjunction with or shortly after origination or purchase, and the Corporation may also securitize loans held in its residential mortgage portfolio. In addition, the Corporation may, from time to time, securitize commercial mortgages it originates or purchases from other entities. The Corporation typically services the loans it securitizes. Further, the Corporation may retain beneficial interests in the securitization trusts including senior and subordinate securities and equity tranches issued by the trusts. Except as described in *Note 12 – Commitments and Contingencies*, the Corporation does not provide guarantees or recourse to the securitization trusts other than standard representations and warranties.

The table below summarizes select information related to first-lien mortgage securitizations for 2022, 2021 and 2020.

First-lien Mortgage Securitizations

	Residential Mortgage - Agency			Commercial Mortgage		
	2022	2021	2020	2022	2021	2020
(Dollars in millions)						
Proceeds from loan sales ⁽¹⁾	\$ 8,084	\$ 6,664	\$ 15,823	\$ 5,853	\$ 10,874	\$ 5,084
Gains on securitizations ⁽²⁾	8	9	728	46	156	61
Repurchases from securitization trusts ⁽³⁾	53	756	436	—	—	—

⁽¹⁾ The Corporation transfers residential mortgage loans to securitizations sponsored primarily by the GSEs or GNMA in the normal course of business and primarily receives residential mortgage-backed securities in exchange. Substantially all of these securities are classified as Level 2 within the fair value hierarchy and are typically sold shortly after receipt.

⁽²⁾ A majority of the first-lien residential mortgage loans securitized are initially classified as LHFS and accounted for under the fair value option. Gains recognized on these LHFS prior to securitization, which totaled \$41 million, \$121 million and \$160 million net of hedges, during 2022, 2021 and 2020, respectively, are not included in the table above.

⁽³⁾ The Corporation may have the option to repurchase delinquent loans out of securitization trusts, which reduces the amount of servicing advances it is required to make. The Corporation may also repurchase loans from securitization trusts to perform modifications. Repurchased loans include FHA-insured mortgages collateralizing GNMA securities.

The Corporation recognizes consumer MSR from the sale or securitization of consumer real estate loans. The unpaid principal balance of loans serviced for investors, including residential mortgage and home equity loans, totaled \$100.1 billion and \$115.4 billion at December 31, 2022 and 2021. Servicing fee and ancillary fee income on serviced loans was \$274 million, \$392 million and \$474 million during 2022, 2021 and 2020, respectively. Servicing advances on serviced loans, including loans serviced for others and loans held for investment, were \$1.6 billion and \$2.0 billion at December 31, 2022 and 2021. For more information on MSRs, see *Note 20 – Fair Value Measurements*.

During 2022, the Corporation deconsolidated agency residential mortgage securitization trusts with total assets of \$784 million, with no significant deconsolidations in 2021.

During 2020, the Corporation completed the sale of \$9.3 billion of consumer real estate loans through GNMA loan securitizations. As part of the securitizations, the Corporation retained \$8.4 billion of MBS, which are classified as debt securities carried at fair value on the Consolidated Balance Sheet. Total gains on loan sales of \$704 million were recorded in other income in the Consolidated Statement of Income.

The following table summarizes select information related to first-lien mortgage securitization trusts in which the Corporation held a variable interest at December 31, 2022 and 2021.

First-lien Mortgage VIEs

	Residential Mortgage									
	Agency		Non-agency				Alt-A		Commercial Mortgage	
			Prime		Subprime					
	December 31									
	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021
(Dollars in millions)										
Unconsolidated VIEs										
Maximum loss exposure ⁽¹⁾	\$ 9,112	\$ 11,600	\$ 91	\$ 121	\$ 735	\$ 908	\$ 28	\$ 14	\$ 1,594	\$ 1,445
On-balance sheet assets										
Senior securities:										
Trading account assets	\$ 232	\$ 175	\$ 3	\$ 8	\$ 25	\$ 44	\$ 26	\$ 12	\$ 91	\$ 21
Debt securities carried at fair value	3,027	5,009	—	—	410	537	—	—	—	—
Held-to-maturity securities	5,853	6,416	—	—	—	—	—	—	1,268	1,157
All other assets	—	—	3	3	25	29	2	2	101	93
Total retained positions	\$ 9,112	\$ 11,600	\$ 6	\$ 11	\$ 460	\$ 610	\$ 28	\$ 14	\$ 1,460	\$ 1,271
Principal balance outstanding ⁽²⁾	\$ 81,644	\$ 93,142	\$ 3,973	\$ 4,710	\$ 5,034	\$ 6,179	\$ 11,568	\$ 13,627	\$ 85,101	\$ 85,540
Consolidated VIEs										
Maximum loss exposure ⁽¹⁾	\$ 1,735	\$ 1,644	\$ —	\$ 49	\$ 78	\$ —	\$ —	\$ —	\$ —	\$ —
On-balance sheet assets										
Trading account assets	\$ 1,735	\$ 1,644	\$ —	\$ —	\$ 78	\$ —	\$ —	\$ —	\$ —	\$ —
Loans and leases, net	—	—	—	58	—	—	—	—	—	—
Total assets	\$ 1,735	\$ 1,644	\$ —	\$ 58	\$ 78	\$ —	\$ —	\$ —	\$ —	\$ —
Total liabilities	\$ —	\$ —	\$ —	\$ 9	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —

⁽¹⁾ Maximum loss exposure includes obligations under loss-sharing reinsurance and other arrangements for non-agency residential mortgage and commercial mortgage securitizations, but excludes the reserve for representations and warranties obligations and corporate guarantees and also excludes servicing advances and other servicing rights and obligations. For more information, see Note 12 – Commitments and Contingencies and Note 20 – Fair Value Measurements.

⁽²⁾ Principal balance outstanding includes loans where the Corporation was the transferor to securitization VIEs with which it has continuing involvement, which may include servicing the loans.

Other Asset-backed Securitizations

The table below summarizes select information related to home equity, credit card and other asset-backed VIEs in which the Corporation held a variable interest at December 31, 2022 and 2021.

Home Equity Loan, Credit Card and Other Asset-backed VIEs

	Home Equity ⁽¹⁾		Credit Card ⁽²⁾		Resecuritization Trusts		Municipal Bond Trusts	
	December 31							
	2022	2021	2022	2021	2022	2021	2022	2021
(Dollars in millions)								
Unconsolidated VIEs								
Maximum loss exposure	\$ 119	\$ 152	\$ —	\$ —	\$ 4,243	\$ 6,089	\$ 2,537	\$ 4,094
On-balance sheet assets								
Securities ⁽³⁾ :								
Trading account assets	\$ —	\$ —	\$ —	\$ —	\$ 456	\$ 1,030	\$ —	\$ —
Debt securities carried at fair value	1	1	—	—	1,259	1,903	—	—
Held-to-maturity securities	—	—	—	—	2,528	3,156	—	—
Total retained positions	\$ 1	\$ 1	\$ —	\$ —	\$ 4,243	\$ 6,089	\$ —	\$ —
Total assets of VIEs	\$ 326	\$ 430	\$ —	\$ —	\$ 12,255	\$ 18,633	\$ 3,016	\$ 4,655
Consolidated VIEs								
Maximum loss exposure	\$ 32	\$ 45	\$ 9,555	\$ 10,279	\$ 551	\$ 680	\$ —	\$ 210
On-balance sheet assets								
Trading account assets	\$ —	\$ —	\$ —	\$ —	\$ 650	\$ 686	\$ —	\$ 122
Loans and leases	97	140	14,555	14,434	—	—	—	—
Allowance for loan and lease losses	12	14	(808)	(970)	—	—	—	—
All other assets	2	3	68	70	—	—	—	88
Total assets	\$ 111	\$ 157	\$ 13,815	\$ 13,534	\$ 650	\$ 686	\$ —	\$ 210
On-balance sheet liabilities								
Short-term borrowings	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —	\$ 196
Long-term debt	79	113	4,247	3,248	99	6	—	—
All other liabilities	—	—	13	7	—	—	—	—
Total liabilities	\$ 79	\$ 113	\$ 4,260	\$ 3,255	\$ 99	\$ 6	\$ —	\$ 196

⁽¹⁾ For unconsolidated home equity loan VIEs, the maximum loss exposure includes outstanding trust certificates issued by trusts in rapid amortization, net of recorded reserves. For both consolidated and unconsolidated home equity loan VIEs, the maximum loss exposure excludes the reserve for representations and warranties obligations and corporate guarantees. For more information, see Note 12 – Commitments and Contingencies.

⁽²⁾ At December 31, 2022 and 2021, loans and leases in the consolidated credit card trust included \$3.3 billion and \$4.3 billion of seller's interest.

⁽³⁾ The retained senior securities were valued using quoted market prices or observable market inputs (Level 2 of the fair value hierarchy).

Home Equity Loans

The Corporation retains interests, primarily senior securities, in home equity securitization trusts to which it transferred home equity loans. In addition, the Corporation may be obligated to provide subordinate funding to the trusts during a rapid amortization event. This obligation is included in the maximum loss exposure in the preceding table. The charges that will ultimately be recorded as a result of the rapid amortization events depend on the undrawn portion of the home equity lines of credit, performance of the loans, the amount of subsequent draws and the timing of related cash flows.

Credit Card Securitizations

The Corporation securitizes originated and purchased credit card loans. The Corporation's continuing involvement with the securitization trust includes servicing the receivables, retaining an undivided interest (seller's interest) in the receivables, and holding certain retained interests, including subordinate interests in accrued interest and fees on the securitized receivables and cash reserve accounts.

During 2022, 2021 and 2020, the Corporation issued new senior debt securities to third-party investors from the credit card securitization trust totaling \$2.3 billion, \$1.0 billion, and \$1.0 billion, respectively.

At December 31, 2022 and 2021, the Corporation held subordinate securities issued by the credit card securitization trust with a notional principal amount of \$6.7 billion and \$6.5 billion. These securities serve as a form of credit enhancement to the senior debt securities and have a stated interest rate of zero percent. During 2022, 2021 and 2020, the credit card securitization trust issued \$363 million, \$161 million and \$161 million, respectively, of these subordinate securities.

Resecuritization Trusts

The Corporation transfers securities, typically MBS, into resecuritization VIEs generally at the request of customers seeking securities with specific characteristics. Generally, there are no significant ongoing activities performed in a resecuritization trust, and no single investor has the unilateral ability to liquidate the trust.

The Corporation resecuritized \$21.8 billion, \$28.9 billion and \$39.0 billion of securities during 2022, 2021 and 2020, respectively. Securities transferred into resecuritization VIEs were measured at fair value with changes in fair value recorded in market making and similar activities prior to the resecuritization and, accordingly, no gain or loss on sale was recorded. Securities received from the resecuritization VIEs were recognized at their fair value of \$2.4 billion, \$2.2 billion and \$6.1 billion during 2022, 2021 and 2020, respectively. In 2022 and 2021, substantially all of the securities were classified as trading account assets. All of the securities received as resecuritization proceeds during 2020 were classified as trading account assets. Of the securities received as resecuritization proceeds during 2020, \$2.4 billion, \$2.1 billion and \$1.7 billion were classified as trading account assets, debt securities carried at fair value and HTM securities, respectively. Substantially all of the trading account securities carried at fair value were categorized as Level 2 within the fair value hierarchy.

Municipal Bond Trusts

The Corporation administers municipal bond trusts that hold highly-rated, long-term, fixed-rate municipal bonds. The trusts obtain financing by issuing floating-rate trust certificates that reprice on a weekly or other short-term basis to third-party investors.

The Corporation's liquidity commitments to unconsolidated municipal bond trusts, including those for which the Corporation was transferor, totaled \$2.5 billion and \$4.1 billion at December 31, 2022 and 2021. The weighted-average remaining life of bonds held in the trusts at December 31, 2022 was 8.7 years. There were no significant write-downs or downgrades of assets or issuers during 2022, 2021 and 2020.

Other Variable Interest Entities

The table below summarizes select information related to other VIEs in which the Corporation held a variable interest at December 31, 2022 and 2021.

Other VIEs

(Dollars in millions)	Consolidated			Unconsolidated			Total					
	December 31, 2022			December 31, 2021								
Maximum loss exposure	\$	2,286	\$	31,405	\$	33,691	\$	4,819	\$	27,790	\$	32,609
On-balance sheet assets												
Trading account assets	\$	353	\$	638	\$	991	\$	2,552	\$	626	\$	3,178
Debt securities carried at fair value		—		5		5		—		7		7
Loans and leases		2,086		90		2,176		2,503		47		2,550
Allowance for loan and lease losses		(1)		(12)		(13)		(2)		(12)		(14)
All other assets		46		30,221		30,267		28		26,628		26,656
Total	\$	2,484	\$	30,942	\$	33,426	\$	5,081	\$	27,296	\$	32,377
On-balance sheet liabilities												
Short-term borrowings	\$	42	\$	—	\$	42	\$	51	\$	—	\$	51
Long-term debt		156		—		156		211		—		211
All other liabilities		—		7,318		7,318		—		6,548		6,548
Total	\$	198	\$	7,318	\$	7,516	\$	262	\$	6,548	\$	6,810
Total assets of VIEs	\$	2,484	\$	101,271	\$	103,755	\$	5,081	\$	92,249	\$	97,330

Customer VIEs

Customer VIEs include credit-linked, equity-linked and commodity-linked note VIEs, repackaging VIEs and asset acquisition VIEs, which are typically created on behalf of customers who wish to obtain market or credit exposure to a specific company, index, commodity or financial instrument.

The Corporation's maximum loss exposure to consolidated and unconsolidated customer VIEs totaled \$914 million and \$2.9 billion at December 31, 2022 and 2021, including the notional amount of derivatives to which the Corporation is a counterparty, net of losses previously recorded, and the Corporation's investment, if any, in securities issued by the VIEs.

Collateralized Debt Obligation VIEs

The Corporation receives fees for structuring CDO VIEs, which hold diversified pools of fixed-income securities, typically corporate debt or ABS, which the CDO VIEs fund by issuing multiple tranches of debt and equity securities. CDOs are generally managed by third-party portfolio managers. The Corporation typically transfers assets to these CDOs, holds securities issued by the CDOs and may be a derivative counterparty to the CDOs. The Corporation's maximum loss exposure to consolidated and unconsolidated CDOs totaled \$197 million and \$235 million at December 31, 2022 and 2021.

Investment VIEs

The Corporation sponsors, invests in or provides financing, which may be in connection with the sale of assets, to a variety of investment VIEs that hold loans, real estate, debt securities or other financial instruments and are designed to provide the desired investment profile to investors or the Corporation. At December 31, 2022 and 2021, the Corporation's consolidated investment VIEs had total assets of \$854 million and \$1.0 billion. The Corporation also held investments in unconsolidated VIEs with total assets of \$12.2 billion and \$7.1 billion at December 31, 2022 and 2021. The Corporation's maximum loss exposure associated with both consolidated and unconsolidated investment VIEs totaled \$2.4 billion and \$2.0 billion at December 31, 2022 and 2021 comprised primarily of on-balance sheet assets less non-recourse liabilities.

Leveraged Lease Trusts

The Corporation's net investment in consolidated leveraged lease trusts totaled \$1.2 billion and \$1.5 billion at December 31, 2022 and 2021. The trusts hold long-lived equipment such as rail cars, power generation and distribution equipment, and commercial aircraft. The Corporation structures the trusts and holds a significant residual interest. The net investment represents the Corporation's maximum loss exposure to the trusts in the unlikely event that the leveraged lease investments become worthless. Debt issued by the leveraged lease trusts is non-recourse to the Corporation.

Tax Credit VIEs

The Corporation holds investments in unconsolidated limited partnerships and similar entities that construct, own and operate affordable housing, wind and solar projects. An unrelated third party is typically the general partner or managing member and has control over the significant activities of the VIE. As an investor, tax credits associated with the investments in these entities are allocated to the Corporation, as provided by the U.S. Internal Revenue Code and related regulations, and are recognized as income tax benefits in the Corporation's Consolidated Statement of Income in the year they are earned,

which varies based on the type of investments. Tax credits from environmental, social and governance (ESG) investments in affordable housing are recognized ratably over a term of up to 10 years, and tax credits from wind and solar energy investments are recognized either at inception for transactions electing Investment Tax Credits (ITCs) or as energy is produced for transactions electing Production Tax Credits (PTCs), which is generally up to a 10-year time period. The volume and types of investments held by the Corporation will influence the amount of tax credits recognized each period. The maximum loss exposure included in the Other VIEs table was \$28.8 billion and \$25.7 billion at December 31, 2022 and 2021. In addition to that amount, the Corporation had unfunded capital contributions for renewable energy investments of \$1.9 billion and \$1.0 billion at December 31, 2022 and 2021. The capital contributions are contingent on various conditions precedent to funding over the next two years. The Corporation's risk of loss is generally mitigated by policies requiring that the project qualify for the expected tax credits prior to making its investment.

The Corporation's investments in affordable housing partnerships, which are reported in other assets on the Consolidated Balance Sheet, totaled \$14.1 billion and \$12.6 billion, including unfunded commitments to provide capital contributions of \$6.6 billion and \$5.8 billion, at December 31, 2022 and 2021. The unfunded commitments are expected to be paid over the next five years. During 2022, 2021 and 2020, the Corporation recognized tax credits and other tax benefits of \$1.5 billion, \$1.3 billion and \$1.2 billion and reported pretax losses in other income of \$1.2 billion, \$1.1 billion and \$1.0 billion. These tax credits are recognized as part of the Corporation's annual effective tax rate used to determine tax expense in a given quarter. The Corporation may be asked to invest additional amounts to support a troubled affordable housing project. Such additional investments have not been and are not expected to be significant.

NOTE 7 Goodwill and Intangible Assets

Goodwill

The table below presents goodwill balances by business segment at December 31, 2022 and 2021. The reporting units utilized for goodwill impairment testing are the operating segments or one level below.

	December 31	
	2022	2021
(Dollars in millions)		
Consumer Banking	\$ 30,137	\$ 30,137
Global Wealth & Investment Management	9,677	9,677
Global Banking	24,026	24,026
Global Markets	5,182	5,182
Total goodwill	\$ 69,022	\$ 69,022

During 2022, the Corporation completed its annual goodwill impairment test as of June 30, 2022 using qualitative assessments for all applicable reporting units. Based on the results of the annual goodwill impairment test, the Corporation determined there was no impairment. For more information on the use of qualitative assessments, see *Note 1 - Summary of Significant Accounting Principles*.

Intangible Assets

At December 31, 2022 and 2021, the net carrying value of intangible assets was \$2.1 billion and \$2.2 billion. At both December 31, 2022 and 2021, intangible assets included \$1.6

billion of intangible assets associated with trade names, substantially all of which had an indefinite life and, accordingly, are not being amortized. Amortization of intangibles expense was \$78 million, \$76 million and \$95 million for 2022, 2021 and 2020.

NOTE 8 Leases

The Corporation enters into both lessor and lessee arrangements. For more information on lease accounting, see Note 1 – Summary of Significant Accounting Principles and on lease financing receivables, see Note 5 – Outstanding Loans and Leases and Allowance for Credit Losses.

Lessor Arrangements

The Corporation's lessor arrangements primarily consist of operating, sales-type and direct financing leases for equipment. Lease agreements may include options to renew and for the lessee to purchase the leased equipment at the end of the lease term.

The table below presents the net investment in sales-type and direct financing leases at December 31, 2022 and 2021.

Net Investment ⁽¹⁾

	December 31	
	2022	2021
(Dollars in millions)		
Lease receivables	\$ 15,123	\$ 16,806
Unguaranteed residuals	2,143	2,078
Total net investment in sales-type and direct financing leases	\$ 17,266	\$ 18,884

⁽¹⁾ In certain cases, the Corporation obtains third-party residual value insurance to reduce its residual asset risk. The carrying value of residual assets with third-party residual value insurance for at least a portion of the asset value was \$6.5 billion and \$7.1 billion at December 31, 2022 and 2021.

The table below presents lease income for 2022, 2021 and 2020.

Lease Income

	December 31		
	2022	2021	2020
(Dollars in millions)			
Sales-type and direct financing leases	\$ 589	\$ 613	\$ 707
Operating leases	941	930	931
Total lease income	\$ 1,530	\$ 1,543	\$ 1,638

Lessee Arrangements

The Corporation's lessee arrangements predominantly consist of operating leases for premises and equipment; the Corporation's financing leases are not significant.

Lease terms may contain renewal and extension options and early termination features. Generally, these options do not impact the lease term because the Corporation is not reasonably certain that it will exercise the options.

The following table provides information on the right-of-use assets, lease liabilities and weighted-average discount rates and lease terms at December 31, 2022 and 2021.

Supplemental Information for Lessee Arrangements

	December 31		
	2022	2021	
(Dollars in millions)			
Right-of-use asset	\$ 9,755	\$ 10,233	
Lease liabilities	10,359	10,858	
Weighted-average discount rate used to calculate present value of future minimum lease payments	3.25 %	2.91 %	
Weighted-average lease term (in years)	8.6	9.0	
Right-of-use assets obtained in exchange for new operating lease liabilities ⁽¹⁾	\$ 824	\$ 1,713	
	2022	2021	2020
Operating cash flows from operating leases ⁽²⁾	\$ 1,986	\$ 1,964	\$ 2,039
Lease Cost and Supplemental Information:			
Operating lease cost	\$ 2,008	\$ 2,025	\$ 2,149
Variable lease cost ⁽³⁾	464	462	474
Total lease cost ⁽⁴⁾	\$ 2,472	\$ 2,487	\$ 2,623

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

⁽²⁾ Represents cash paid for amounts included in the measurements of lease liabilities.

⁽³⁾ Primarily consists of payments for common area maintenance and property taxes.

⁽⁴⁾ Amounts are recorded in occupancy and equipment expense in the Consolidated Statement of Income.

Maturity Analysis

The maturities of lessor and lessee arrangements outstanding at December 31, 2022 are presented in the table below based on undiscounted cash flows.

Maturities of Lessor and Lessee Arrangements

	Lessor		Lessee ⁽¹⁾
	Operating Leases	Sales-type and Direct Financing Leases ⁽²⁾	Operating Leases
(Dollars in millions)	December 31, 2022		
2023	\$ 819	\$ 4,932	\$ 1,998
2024	682	4,399	1,850
2025	509	2,539	1,567
2026	368	1,993	1,354
2027	289	990	1,131
Thereafter	664	1,635	4,189
Total undiscounted cash flows	\$ 3,331	16,488	12,089
Less: Net present value adjustment		1,365	1,730
Total ⁽³⁾	\$ 3,331	\$ 15,123	\$ 10,359

⁽¹⁾ Excludes \$278 million in commitments under lessee arrangements that have not yet commenced with lease terms that will begin in 2023.

⁽²⁾ Includes \$10.2 billion in commercial lease financing receivables and \$4.9 billion in direct/indirect consumer lease financing receivables.

⁽³⁾ Represents lease receivables for lessor arrangements and lease liabilities for lessee arrangements.

NOTE 9 Deposits

The scheduled contractual maturities for total time deposits at December 31, 2022 are presented in the table below.

Contractual Maturities of Total Time Deposits

(Dollars in millions)	U.S.	Non-U.S.	Total
Due in 2023	\$ 36,114	\$ 7,393	\$ 43,507
Due in 2024	3,576	67	3,643
Due in 2025	643	6	649
Due in 2026	149	23	172
Due in 2027	116	1,472	1,588
Thereafter	238	8	246
Total time deposits	\$ 40,836	\$ 8,969	\$ 49,805

At December 31, 2022 and 2021, the Corporation had aggregate U.S. time deposits of \$12.8 billion and \$9.4 billion and non-U.S. time deposits of \$9.0 billion and \$10.6 billion in denominations that met or exceeded insurance limits.

NOTE 10 Securities Financing Agreements, Short-term Borrowings, Collateral and Restricted Cash

The Corporation enters into securities financing agreements which include securities borrowed or purchased under agreements to resell and securities loaned or sold under agreements to repurchase. These financing agreements (also referred to as “matched-book transactions”) are to accommodate customers, obtain securities to cover short positions and finance inventory positions. The Corporation elects to account for certain securities financing agreements under the fair value option. For more information on the fair value option, see Note 21 – Fair Value Option.

Offsetting of Securities Financing Agreements

Substantially all of the Corporation’s securities financing activities are transacted under legally enforceable master

repurchase agreements or legally enforceable master securities lending agreements that give the Corporation, in the event of default by the counterparty, the right to liquidate securities held and to offset receivables and payables with the same counterparty. The Corporation offsets securities financing transactions with the same counterparty on the Consolidated Balance Sheet where it has such a legally enforceable master netting agreement and the transactions have the same maturity date.

The Securities Financing Agreements table presents securities financing agreements included on the Consolidated Balance Sheet in federal funds sold and securities borrowed or purchased under agreements to resell, and in federal funds purchased and securities loaned or sold under agreements to repurchase at December 31, 2022 and 2021. Balances are presented on a gross basis, prior to the application of counterparty netting. Gross assets and liabilities are adjusted on an aggregate basis to take into consideration the effects of legally enforceable master netting agreements. For more information on the offsetting of derivatives, see Note 3 – Derivatives.

Securities Financing Agreements

(Dollars in millions)	Gross Assets/ Liabilities ⁽¹⁾	Amounts Offset	Net Balance Sheet Amount	Financial Instruments ⁽²⁾	Net Assets/ Liabilities
	December 31, 2022				
Securities borrowed or purchased under agreements to resell ⁽³⁾	\$ 597,847	\$ (330,273)	\$ 267,574	\$ (240,120)	\$ 27,454
Securities loaned or sold under agreements to repurchase	\$ 525,908	\$ (330,273)	\$ 195,635	\$ (183,265)	\$ 12,370
Other ⁽⁴⁾	8,427	—	8,427	(8,427)	—
Total	\$ 534,335	\$ (330,273)	\$ 204,062	\$ (191,692)	\$ 12,370
	December 31, 2021				
Securities borrowed or purchased under agreements to resell ⁽³⁾	\$ 527,054	\$ (276,334)	\$ 250,720	\$ (229,525)	\$ 21,195
Securities loaned or sold under agreements to repurchase	\$ 468,663	\$ (276,334)	\$ 192,329	\$ (181,860)	\$ 10,469
Other ⁽⁴⁾	11,391	—	11,391	(11,391)	—
Total	\$ 480,054	\$ (276,334)	\$ 203,720	\$ (193,251)	\$ 10,469

⁽¹⁾ Includes activity where uncertainty exists as to the enforceability of certain master netting agreements under bankruptcy laws in some countries or industries.

⁽²⁾ Includes securities collateral received or pledged under repurchase or securities lending agreements where there is a legally enforceable master netting agreement. These amounts are not offset on the Consolidated Balance Sheet, but are shown as a reduction to derive a net asset or liability. Securities collateral received or pledged where the legal enforceability of the master netting agreements is uncertain is excluded from the table.

⁽³⁾ Excludes repurchase activity of \$8.7 billion and \$20.1 billion reported in loans and leases on the Consolidated Balance Sheet at December 31, 2022 and 2021.

⁽⁴⁾ Balance is reported in accrued expenses and other liabilities on the Consolidated Balance Sheet and relates to transactions where the Corporation acts as the lender in a securities lending agreement and receives securities that can be pledged as collateral or sold. In these transactions, the Corporation recognizes an asset at fair value, representing the securities received, and a liability, representing the obligation to return those securities.

Repurchase Agreements and Securities Loaned Transactions Accounted for as Secured Borrowings

The following tables present securities sold under agreements to repurchase and securities loaned by remaining contractual term to maturity and class of collateral pledged. Included in “Other” are transactions where the Corporation acts as the

lender in a securities lending agreement and receives securities that can be pledged as collateral or sold. Certain agreements contain a right to substitute collateral and/or terminate the agreement prior to maturity at the option of the Corporation or the counterparty. Such agreements are included in the table below based on the remaining contractual term to maturity.

Remaining Contractual Maturity

	Overnight and Continuous		30 Days or Less		After 30 Days Through 90 Days		Greater than 90 Days ⁽¹⁾		Total	
	December 31, 2022									
(Dollars in millions)										
Securities sold under agreements to repurchase	\$	200,087	\$	181,632	\$	41,666	\$	30,107	\$	453,492
Securities loaned		66,909		288		1,139		4,080		72,416
Other		8,427		—		—		—		8,427
Total	\$	275,423	\$	181,920	\$	42,805	\$	34,187	\$	534,335
December 31, 2021										
Securities sold under agreements to repurchase	\$	148,023	\$	194,964	\$	36,939	\$	36,501	\$	416,427
Securities loaned		46,231		466		1,428		4,111		52,236
Other		11,391		—		—		—		11,391
Total	\$	205,645	\$	195,430	\$	38,367	\$	40,612	\$	480,054

⁽¹⁾ No agreements have maturities greater than four years.

Class of Collateral Pledged

	Securities Sold Under Agreements to Repurchase		Securities Loaned		Other		Total	
	December 31, 2022							
(Dollars in millions)								
U.S. government and agency securities	\$	193,005	\$	18	\$	—	\$	193,023
Corporate securities, trading loans and other		14,345		2,896		317		17,558
Equity securities		10,249		69,432		8,110		87,791
Non-U.S. sovereign debt		232,171		70		—		232,241
Mortgage trading loans and ABS		3,722		—		—		3,722
Total	\$	453,492	\$	72,416	\$	8,427	\$	534,335
December 31, 2021								
U.S. government and agency securities	\$	201,546	\$	27	\$	—	\$	201,573
Corporate securities, trading loans and other		12,838		3,440		1,148		17,426
Equity securities		19,907		48,650		10,192		78,749
Non-U.S. sovereign debt		178,019		119		51		178,189
Mortgage trading loans and ABS		4,117		—		—		4,117
Total	\$	416,427	\$	52,236	\$	11,391	\$	480,054

Under repurchase agreements, the Corporation is required to post collateral with a market value equal to or in excess of the principal amount borrowed. For securities loaned transactions, the Corporation receives collateral in the form of cash, letters of credit or other securities. To determine whether the market value of the underlying collateral remains sufficient, collateral is generally valued daily, and the Corporation may be required to deposit additional collateral or may receive or return collateral pledged when appropriate. Repurchase agreements and securities loaned transactions are generally either overnight, continuous (i.e., no stated term) or short-term. The Corporation manages liquidity risks related to these agreements by sourcing funding from a diverse group of counterparties, providing a range of securities collateral and pursuing longer durations, when appropriate.

Short-term Bank Notes

Bank of America, N.A. maintains a global program to offer up to a maximum of \$75.0 billion outstanding at any one time, of bank notes with fixed or floating rates and maturities of at least seven days from the date of issue. Short-term bank notes outstanding under this program totaled \$6.2 billion and \$1.8 billion at December 31, 2022 and 2021. These short-term bank notes, along with Federal Home Loan Bank advances, U.S.

Treasury tax and loan notes, and term federal funds purchased, are included in short-term borrowings on the Consolidated Balance Sheet.

Collateral

The Corporation accepts securities and loans as collateral that it is permitted by contract or practice to sell or repledge. At December 31, 2022 and 2021, the fair value of this collateral was \$827.6 billion and \$854.8 billion, of which \$764.1 billion and \$782.7 billion were sold or repledged. The primary source of this collateral is securities borrowed or purchased under agreements to resell.

The Corporation also pledges company-owned securities and loans as collateral in transactions that include repurchase agreements, securities loaned, public and trust deposits, U.S. Treasury tax and loan notes, and short-term borrowings. This collateral, which in some cases can be sold or repledged by the counterparties to the transactions, is parenthetically disclosed on the Consolidated Balance Sheet.

In certain cases, the Corporation has transferred assets to consolidated VIEs where those restricted assets serve as collateral for the interests issued by the VIEs. These assets are included on the Consolidated Balance Sheet in Assets of Consolidated VIEs.

In addition, the Corporation obtains collateral in connection with its derivative contracts. Required collateral levels vary depending on the credit risk rating and the type of counterparty. Generally, the Corporation accepts collateral in the form of cash, U.S. Treasury securities and other marketable securities. Based on provisions contained in master netting agreements, the Corporation nets cash collateral received against derivative assets. The Corporation also pledges collateral on its own derivative positions which can be applied against derivative

liabilities. For more information on the collateral of derivatives, see Note 3 – *Derivatives*.

Restricted Cash

At December 31, 2022 and 2021, the Corporation held restricted cash included within cash and cash equivalents on the Consolidated Balance Sheet of \$7.6 billion and \$5.9 billion, predominantly related to cash segregated in compliance with securities regulations and cash held on deposit with central banks to meet reserve requirements.

NOTE 11 Long-term Debt

Long-term debt consists of borrowings having an original maturity of one year or more. The table below presents the balance of long-term debt at December 31, 2022 and 2021, and the related contractual rates and maturity dates as of December 31, 2022.

(Dollars in millions)	Weighted-average Rate	Interest Rates	Maturity Dates	December 31	
				2022	2021
Notes issued by Bank of America Corporation ⁽¹⁾					
Senior notes:					
Fixed	3.03 %	0.25 - 8.05 %	2023 - 2052	\$ 188,429	\$ 194,191
Floating	4.2	0.74 - 9.16	2023 - 2044	17,469	18,753
Senior structured notes				11,608	15,086
Subordinated notes:					
Fixed	4.88	2.94 - 8.57	2024 - 2045	21,098	22,311
Floating	3.45	2.48 - 5.53	2026 - 2037	4,544	2,371
Junior subordinated notes:					
Fixed	6.71	6.45 - 8.05	2027 - 2066	743	741
Floating	5.56	5.56	2056	1	1
Total notes issued by Bank of America Corporation				243,892	253,454
Notes issued by Bank of America, N.A.					
Senior notes:					
Fixed				—	501
Floating	5.05	5.05	2024	2,600	3,173
Subordinated notes	6.00	6.00	2036	1,485	1,780
Advances from Federal Home Loan Banks:					
Fixed	4.49	0.01 - 7.42	2023 - 2034	681	290
Securitizations and other BANA VIEs ⁽²⁾					
				4,300	3,338
Other					
				908	680
Total notes issued by Bank of America, N.A.				9,974	9,762
Other debt					
Structured liabilities ⁽³⁾				21,835	16,599
Nonbank VIEs ⁽²⁾				281	249
Other					
				—	53
Total notes issued by nonbank and other entities				22,116	16,901
Total long-term debt				\$ 275,982	\$ 280,117

⁽¹⁾ Includes total loss-absorbing capacity compliant debt.

⁽²⁾ Represents liabilities of consolidated VIEs included in total long-term debt on the Consolidated Balance Sheet. Long-term debt of VIEs is collateralized by the assets of the VIEs. At December 31, 2022, amount includes debt predominantly from credit card securitization and other VIEs of \$4.2 billion and \$156 million. For more information, see Note 6 – *Securitizations and Other Variable Interest Entities*.

⁽³⁾ Includes debt outstanding of \$8.0 billion and \$5.4 billion at December 31, 2022 and 2021 that was issued by BofA Finance LLC, a consolidated finance subsidiary of Bank of America Corporation, the parent company, and is fully and unconditionally guaranteed by the parent company.

During 2022, the Corporation issued \$66.0 billion of long-term debt consisting of \$44.2 billion of notes issued by Bank of America Corporation, \$10.0 billion of notes issued by Bank of America, N.A. and \$11.8 billion of other debt. During 2021, the Corporation issued \$76.7 billion of long-term debt consisting of \$56.2 billion of notes issued by Bank of America Corporation, \$8.0 billion of notes issued by Bank of America, N.A. and \$12.5 billion of other debt.

During 2022, the Corporation had total long-term debt maturities and redemptions in the aggregate of \$33.3 billion consisting of \$19.8 billion for Bank of America Corporation, \$9.9 billion for Bank of America, N.A. and \$3.6 billion of other debt. During 2021, the Corporation had total long-term debt maturities and redemptions in the aggregate of \$46.4 billion consisting of \$24.4 billion for Bank of America Corporation, \$10.4 billion for Bank of America, N.A. and \$11.6 billion of other debt.

Bank of America Corporation and Bank of America, N.A. maintain various U.S. and non-U.S. debt programs to offer both senior and subordinated notes. The notes may be denominated in U.S. dollars or foreign currencies. At December 31, 2022 and 2021, the amount of foreign currency-denominated debt translated into U.S. dollars included in total long-term debt was \$46.7 billion and \$53.1 billion. Foreign currency contracts may be used to convert certain foreign currency-denominated debt into U.S. dollars.

The weighted-average effective interest rates for total long-term debt (excluding senior structured notes), total fixed-rate debt and total floating-rate debt were 3.27 percent, 3.23 percent and 4.14 percent, respectively, at December 31, 2022, and 2.83 percent, 3.08 percent and 0.75 percent, respectively, at December 31, 2021. The Corporation's ALM activities maintain an overall interest rate risk management strategy that incorporates the use of interest rate contracts to manage fluctuations in earnings caused by interest rate volatility. The

Corporation's goal is to manage interest rate sensitivity so that movements in interest rates do not have a significantly adverse effect on earnings and capital. The weighted-average rates are the contractual interest rates on the debt and do not reflect the impacts of derivative transactions.

The table below shows the carrying value for aggregate annual contractual maturities of long-term debt as of December 31, 2022. Included in the table are certain structured notes issued by the Corporation that contain provisions whereby the borrowings are redeemable at the option of the holder (put

options) at specified dates prior to maturity. Other structured notes have coupon or repayment terms linked to the performance of debt or equity securities, indices, currencies or commodities, and the maturity may be accelerated based on the value of a referenced index or security. In both cases, the Corporation or a subsidiary may be required to settle the obligation for cash or other securities prior to the contractual maturity date. These borrowings are reflected in the table as maturing at their contractual maturity date.

Long-term Debt by Maturity

(Dollars in millions)	2023	2024	2025	2026	2027	Thereafter	Total
Bank of America Corporation							
Senior notes	\$ 8,029	\$ 22,570	\$ 24,730	\$ 23,972	\$ 16,055	\$ 110,542	\$ 205,898
Senior structured notes	767	456	558	946	641	8,240	11,608
Subordinated notes	—	3,205	5,132	4,908	2,155	10,242	25,642
Junior subordinated notes	—	—	—	—	188	556	744
Total Bank of America Corporation	8,796	26,231	30,420	29,826	19,039	129,580	243,892
Bank of America, N.A.							
Senior notes	—	2,600	—	—	—	—	2,600
Subordinated notes	—	—	—	—	—	1,485	1,485
Advances from Federal Home Loan Banks	600	—	15	9	4	53	681
Securitizations and other Bank VIEs ⁽¹⁾	1,000	1,000	2,248	—	—	52	4,300
Other	642	89	71	45	63	(2)	908
Total Bank of America, N.A.	2,242	3,689	2,334	54	67	1,588	9,974
Other debt							
Structured Liabilities	5,253	2,426	2,482	1,474	2,001	8,199	21,835
Nonbank VIEs ⁽¹⁾	—	—	—	—	—	281	281
Other	—	—	—	—	—	—	—
Total other debt	5,253	2,426	2,482	1,474	2,001	8,480	22,116
Total long-term debt	\$ 16,291	\$ 32,346	\$ 35,236	\$ 31,354	\$ 21,107	\$ 139,648	\$ 275,982

⁽¹⁾ Represents liabilities of consolidated VIEs included in total long-term debt on the Consolidated Balance Sheet.

NOTE 12 Commitments and Contingencies

In the normal course of business, the Corporation enters into a number of off-balance sheet commitments. These commitments expose the Corporation to varying degrees of credit and market risk and are subject to the same credit and market risk limitation reviews as those instruments recorded on the Consolidated Balance Sheet.

Credit Extension Commitments

The Corporation enters into commitments to extend credit such as loan commitments, SBLCs and commercial letters of credit to meet the financing needs of its customers. The following table includes the notional amount of unfunded legally binding lending commitments net of amounts distributed (i.e., syndicated or participated) to other financial institutions. The distributed amounts were \$10.4 billion and \$10.7 billion at December 31, 2022 and 2021. The carrying value of the Corporation's credit extension commitments at December 31, 2022 and 2021, excluding commitments accounted for under

the fair value option, was \$1.6 billion and \$1.5 billion, which predominantly related to the reserve for unfunded lending commitments. The carrying value of these commitments is classified in accrued expenses and other liabilities on the Consolidated Balance Sheet.

Legally binding commitments to extend credit generally have specified rates and maturities. Certain of these commitments have adverse change clauses that help to protect the Corporation against deterioration in the borrower's ability to pay.

The following table includes the notional amount of commitments of \$3.0 billion and \$4.8 billion at December 31, 2022 and 2021 that are accounted for under the fair value option. However, the table excludes the cumulative net fair value for these commitments of \$110 million and \$97 million at December 31, 2022 and 2021, which is classified in accrued expenses and other liabilities. For more information regarding the Corporation's loan commitments accounted for under the fair value option, see Note 21 - Fair Value Option.

Credit Extension Commitments

	Expire in One		Expire After One		Expire After Three		Expire After		Total	
	Year or Less		Year Through Three Years		Years Through Five Years		Five Years			
(Dollars in millions)	December 31, 2022									
Notional amount of credit extension commitments										
Loan commitments ⁽¹⁾	\$	113,962	\$	162,890	\$	221,374	\$	13,667	\$	511,893
Home equity lines of credit		1,479		7,230		11,578		22,154		42,441
Standby letters of credit and financial guarantees ⁽²⁾		22,565		9,237		2,787		628		35,217
Letters of credit		853		46		52		49		1,000
Other commitments ⁽³⁾		5		93		71		1,103		1,272
Legally binding commitments		138,864		179,496		235,862		37,601		591,823
Credit card lines ⁽⁴⁾		419,144		—		—		—		419,144
Total credit extension commitments	\$	558,008	\$	179,496	\$	235,862	\$	37,601	\$	1,010,967
	December 31, 2021									
Notional amount of credit extension commitments										
Loan commitments ⁽¹⁾	\$	102,464	\$	190,687	\$	174,978	\$	26,635	\$	494,764
Home equity lines of credit		890		5,097		10,268		24,276		40,531
Standby letters of credit and financial guarantees ⁽²⁾		22,359		10,742		2,017		422		35,540
Letters of credit		1,145		124		56		98		1,423
Other commitments ⁽³⁾		18		59		81		1,233		1,391
Legally binding commitments		126,876		206,709		187,400		52,664		573,649
Credit card lines ⁽⁴⁾		406,169		—		—		—		406,169
Total credit extension commitments	\$	533,045	\$	206,709	\$	187,400	\$	52,664	\$	979,818

⁽¹⁾ At December 31, 2022 and 2021, \$2.6 billion and \$4.6 billion of these loan commitments were held in the form of a security.

⁽²⁾ The notional amounts of SBLCs and financial guarantees classified as investment grade and non-investment grade based on the credit quality of the underlying reference name within the instrument were \$25.1 billion and \$9.5 billion at December 31, 2022, and \$26.3 billion and \$8.7 billion at December 31, 2021. Amounts in the table include consumer SBLCs of \$575 million and \$512 million at December 31, 2022 and 2021.

⁽³⁾ Primarily includes second-loss positions on lease-end residual value guarantees.

⁽⁴⁾ Includes business card unused lines of credit.

Other Commitments

At December 31, 2022 and 2021, the Corporation had commitments to purchase loans (e.g., residential mortgage and commercial real estate) of \$636 million and \$181 million, which upon settlement will be included in trading account assets, loans or LHFS, and commitments to purchase commercial loans of \$294 million and \$518 million, which upon settlement will be included in trading account assets.

At December 31, 2022 and 2021, the Corporation had commitments to purchase commodities, primarily liquefied natural gas, of \$0 and \$949 million, which upon settlement will be included in trading account assets.

At both December 31, 2022 and 2021, the Corporation had commitments to enter into resale and forward-dated resale and securities borrowing agreements of \$92.0 billion, and commitments to enter into forward-dated repurchase and securities lending agreements of \$57.8 billion and \$32.6 billion as of both period ends. These commitments generally expire within the next 12 months.

At December 31, 2022 and 2021, the Corporation had a commitment to originate or purchase up to \$3.7 billion and \$4.0 billion on a rolling 12-month basis, of auto loans and leases from a strategic partner. This commitment extends through November 2026 and can be terminated with 12 months prior notice.

At December 31, 2022 and 2021, the Corporation had unfunded equity investment commitments of \$571 million and \$395 million.

Other Guarantees

Bank-owned Life Insurance Book Value Protection

The Corporation sells products that offer book value protection to insurance carriers who offer group life insurance policies to corporations, primarily banks. At December 31, 2022 and 2021, the notional amount of these guarantees totaled \$4.3

billion and \$6.3 billion. At December 31, 2022 and 2021, the Corporation's maximum exposure related to these guarantees totaled \$632 million and \$928 million, with estimated maturity dates between 2033 and 2039.

Indemnifications

In the ordinary course of business, the Corporation enters into various agreements that contain indemnifications, such as tax indemnifications, whereupon payment may become due if certain external events occur, such as a change in tax law. The indemnification clauses are often standard contractual terms and were entered into in the normal course of business based on an assessment that the risk of loss would be remote. These agreements typically contain an early termination clause that permits the Corporation to exit the agreement upon these events. The maximum potential future payment under indemnification agreements is difficult to assess for several reasons, including the occurrence of an external event, the inability to predict future changes in tax and other laws, the difficulty in determining how such laws would apply to parties in contracts, the absence of exposure limits contained in standard contract language and the timing of any early termination clauses. Historically, any payments made under these guarantees have been de minimis. The Corporation has assessed the probability of making such payments in the future as remote.

Merchant Services

The Corporation in its role as merchant acquirer or as a sponsor of other merchant acquirers may be held liable for any reversed charges that cannot be collected from the merchants, due to, among other things, merchant fraud or insolvency. If charges are properly reversed after a purchase and cannot be collected from either the merchants or merchant acquirers, the Corporation may be held liable for these reversed charges. The ability to reverse a charge is primarily governed by the applicable

payment network rules and regulations, which include, but are not limited to, the type of charge, type of payment used and time limits. The total amount of transactions subject to reversal under payment network rules and regulations processed for the preceding six-month period, which was approximately \$501 billion, is an estimate of the Corporation's maximum potential exposure as of December 31, 2022. The Corporation's risk in this area primarily relates to circumstances where a cardholder has purchased goods or services for future delivery. The Corporation mitigates this risk by requiring cash deposits, guarantees, letters of credit or other types of collateral from certain merchants. The Corporation's reserves for contingent losses and the losses incurred related to the merchant processing activity were not significant.

Exchange and Clearing House Member Guarantees

The Corporation is a member of various securities and derivative exchanges and clearinghouses, both in the U.S. and other countries. As a member, the Corporation may be required to pay a pro-rata share of the losses incurred by some of these organizations as a result of another member default and under other loss scenarios. The Corporation's potential obligations may be limited to its membership interests in such exchanges and clearinghouses, to the amount (or multiple) of the Corporation's contribution to the guarantee fund or, in limited instances, to the full pro-rata share of the residual losses after applying the guarantee fund. The Corporation's maximum potential exposure under these membership agreements is difficult to estimate; however, the Corporation has assessed the probability of making any such payments as remote.

Prime Brokerage and Securities Clearing Services

In connection with its prime brokerage and clearing businesses, the Corporation performs securities clearance and settlement services with other brokerage firms and clearinghouses on behalf of its clients. Under these arrangements, the Corporation stands ready to meet the obligations of its clients with respect to securities transactions. The Corporation's obligations in this respect are secured by the assets in the clients' accounts and the accounts of their customers as well as by any proceeds received from the transactions cleared and settled by the Corporation on behalf of clients or their customers. The Corporation's maximum potential exposure under these arrangements is difficult to estimate; however, the potential for the Corporation to incur material losses pursuant to these arrangements is remote.

Fixed Income Clearing Corporation Sponsored Member Repo Program

The Corporation acts as a sponsoring member in a repo program whereby the Corporation clears certain eligible resale and repurchase agreements through the Government Securities Division of the Fixed Income Clearing Corporation on behalf of clients that are sponsored members in accordance with the Fixed Income Clearing Corporation's rules. As part of this program, the Corporation guarantees the payment and performance of its sponsored members to the Fixed Income Clearing Corporation. The Corporation's guarantee obligation is secured by a security interest in cash or high-quality securities collateral placed by clients with the clearinghouse and therefore, the potential for the Corporation to incur significant losses under this arrangement is remote. The Corporation's maximum potential exposure, without taking into consideration the related collateral, was \$59.6 billion and \$42.0 billion at December 31, 2022 and 2021.

Other Guarantees

In the normal course of business, the Corporation periodically guarantees the obligations of its affiliates in a variety of transactions including ISDA-related transactions and non-ISDA related transactions such as commodities trading, repurchase agreements, prime brokerage agreements and other transactions.

Guarantees of Certain Long-term Debt

The Corporation, as the parent company, fully and unconditionally guarantees the securities issued by BofA Finance LLC, a consolidated finance subsidiary of the Corporation, and effectively provides for the full and unconditional guarantee of trust securities issued by certain statutory trust companies that are 100 percent owned finance subsidiaries of the Corporation.

Representations and Warranties Obligations and Corporate Guarantees

The Corporation securitizes first-lien residential mortgage loans generally in the form of RMBS guaranteed by the GSEs or by GNMA in the case of FHA-insured, VA-guaranteed and Rural Housing Service-guaranteed mortgage loans, and sells pools of first-lien residential mortgage loans in the form of whole loans. In addition, in prior years, legacy companies and certain subsidiaries sold pools of first-lien residential mortgage loans and home equity loans as private-label securitizations or in the form of whole loans. In connection with these transactions, the Corporation or certain of its subsidiaries or legacy companies make and have made various representations and warranties. Breaches of these representations and warranties have resulted in and may continue to result in the requirement to repurchase mortgage loans or to otherwise make whole or provide indemnification or other remedies to sponsors, investors, securitization trusts, guarantors, insurers or other parties (collectively, repurchases).

Unresolved Repurchase Claims

Unresolved representations and warranties repurchase claims represent the notional amount of repurchase claims made by counterparties, typically the outstanding principal balance or the unpaid principal balance at the time of default. In the case of first-lien mortgages, the claim amount is often significantly greater than the expected loss amount due to the benefit of collateral and, in some cases, mortgage insurance or mortgage guarantee payments.

The notional amount of unresolved repurchase claims at December 31, 2022 and 2021 was \$5.5 billion and \$8.4 billion. These balances included \$2.2 billion and \$2.8 billion at December 31, 2022 and 2021 of claims related to loans in specific private-label securitization groups or tranches where the Corporation owns substantially all of the outstanding securities or will otherwise realize the benefit of any repurchase claims paid.

During 2022, the Corporation received \$82 million in new repurchase claims that were not time-barred. During 2022, \$3.0 billion in claims were resolved.

Reserve and Related Provision

The reserve for representations and warranties obligations and corporate guarantees was \$612 million and \$1.2 billion at December 31, 2022 and 2021 and is included in accrued expenses and other liabilities on the Consolidated Balance Sheet, and the related provision is included in other income in the Consolidated Statement of Income. The representations and warranties reserve represents the Corporation's best estimate

of probable incurred losses, is based on its experience in previous negotiations, and is subject to judgment, a variety of assumptions, and known or unknown uncertainties. Future representations and warranties losses may occur in excess of the amounts recorded for these exposures; however, the Corporation does not expect such amounts to be material to the Corporation's financial condition and liquidity. See Litigation and Regulatory Matters below for the Corporation's combined range of possible loss in excess of the reserve for representations and warranties and the accrued liability for litigation.

Litigation and Regulatory Matters

In the ordinary course of business, the Corporation and its subsidiaries are routinely defendants in or parties to many pending and threatened legal, regulatory and governmental actions and proceedings. In view of the inherent difficulty of predicting the outcome of such matters, particularly where the claimants seek very large or indeterminate damages or where the matters present novel legal theories or involve a large number of parties, the Corporation generally cannot predict the eventual outcome of the pending matters, timing of the ultimate resolution of these matters, or eventual loss, fines or penalties related to each pending matter.

As a matter develops, the Corporation, in conjunction with any outside counsel handling the matter, evaluates whether such matter presents a loss contingency that is probable and estimable, and, for the matters below, whether a loss in excess of any accrued liability is reasonably possible in future periods. Once the loss contingency is deemed to be both probable and estimable, the Corporation will establish an accrued liability and record a corresponding amount of expense. The Corporation continues to monitor the matter for further developments that could affect the amount of the accrued liability that has been previously established. Excluding expenses of internal and external legal service providers, litigation and regulatory investigation-related expense of \$1.2 billion and \$164 million was recognized in 2022 and 2021.

For any matter disclosed in this Note for which a loss in future periods is reasonably possible and estimable (whether in excess of an accrued liability or where there is no accrued liability) and for representations and warranties exposures, the Corporation's estimated range of possible loss is \$0 to \$0.8 billion in excess of the accrued liability, if any, as of December 31, 2022.

The accrued liability and estimated range of possible loss are based upon currently available information and subject to significant judgment, a variety of assumptions and known and unknown uncertainties. The matters underlying the accrued liability and estimated range of possible loss are unpredictable and may change from time to time, and actual losses may vary significantly from the current estimate and accrual. The estimated range of possible loss does not represent the Corporation's maximum loss exposure.

Information is provided below regarding the nature of the litigation and, where specified, associated claimed damages. Based on current knowledge, and taking into account accrued liabilities, management does not believe that loss contingencies arising from pending matters, including the matters described below, will have a material adverse effect on the consolidated financial condition or liquidity of the Corporation. However, in light of the significant judgment, variety of assumptions and uncertainties involved in those matters, some of which are beyond the Corporation's control, and the very large or indeterminate damages sought in some of those matters, an adverse outcome in one or more of those matters could be

material to the Corporation's business or results of operations for any particular reporting period, or cause significant reputational harm.

Deposit Insurance Assessment

On January 9, 2017, the Federal Deposit Insurance Corporation (FDIC) filed suit against BANA in the U.S. District Court for the District of Columbia ("District Court") alleging failure to pay a December 15, 2016 invoice for additional deposit insurance assessments and interest in the amount of \$542 million for the quarters ending June 30, 2013 through December 31, 2014.

On April 7, 2017, the FDIC amended its complaint to add a claim for additional deposit insurance and interest in the amount of \$583 million for the quarters ending March 31, 2012 through March 31, 2013. The FDIC asserts these claims based on BANA's alleged underreporting of counterparty exposures that resulted in underpayment of assessments for those quarters, and its Enforcement Section is also conducting a parallel investigation related to the same alleged reporting error. BANA disagrees with the FDIC's interpretation of the regulations as they existed during the relevant time period and is defending itself against the FDIC's claims. Pending final resolution, BANA has pledged security satisfactory to the FDIC related to the disputed additional assessment amounts. On March 27, 2018, the District Court denied BANA's partial motion to dismiss certain of the FDIC's claims. On January 24, 2023, the magistrate judge assigned to the matter by the District Court judge held oral argument on the parties' motions for summary judgment and took the motions under advisement.

LIBOR

The Corporation, BANA and certain Merrill Lynch entities have been named as defendants along with most of the other LIBOR panel banks in a number of individual and putative class actions by persons alleging they sustained losses on U.S. dollar LIBOR-based financial instruments as a result of collusion or manipulation by defendants regarding the setting of U.S. dollar LIBOR. Plaintiffs assert a variety of claims, including antitrust, Commodity Exchange Act, Racketeer Influenced and Corrupt Organizations (RICO), Securities Exchange Act of 1934, common law fraud and breach of contract claims, and seek compensatory, treble and punitive damages, and injunctive relief. All but one of the cases naming the Corporation and its affiliates relating to U.S. dollar LIBOR are pending in the U.S. District Court for the Southern District of New York ("District Court"). The District Court has dismissed all RICO claims, and dismissed all manipulation claims against Bank of America entities based on alleged trader conduct. The District Court has also substantially limited the scope of antitrust, Commodity Exchange Act and various other claims, including by dismissing in their entirety certain individual and putative class plaintiffs' antitrust claims for lack of standing. On December 30, 2021, the U.S. Court of Appeals for the Second Circuit affirmed the dismissal of these antitrust claims for lack of standing. Certain individual and putative class actions remain pending against the Corporation, BANA and certain Merrill Lynch entities. On February 28, 2018, the District Court granted certification of a class of persons that purchased OTC swaps and notes that referenced U.S. dollar LIBOR from one of the U.S. dollar LIBOR panel banks, limited to claims under Section 1 of the Sherman Act.

NOTE 13 Shareholders' Equity

Common Stock

Declared Quarterly Cash Dividends on Common Stock ⁽¹⁾

Declaration Date	Record Date	Payment Date	Dividend Per Share
February 1, 2023	March 3, 2023	March 31, 2023	\$ 0.22
October 19, 2022	December 2, 2022	December 30, 2022	0.22
July 20, 2022	September 2, 2022	September 30, 2022	0.22
April 27, 2022	June 3, 2022	June 24, 2022	0.21
February 2, 2022	March 4, 2022	March 25, 2022	0.21

⁽¹⁾ In 2022, and through February 22, 2023.

The cash dividends paid per share of common stock were \$0.86 \$0.78 and \$0.72 for 2022, 2021 and 2020, respectively.

The table below summarizes common stock repurchases during 2022, 2021 and 2020.

Common Stock Repurchase Summary

(in millions)	2022	2021	2020
Total share repurchases, including CCAR capital plan repurchases	126	615	227
Purchase price of shares repurchased and retired ⁽¹⁾	\$ 5,073	\$ 25,126	\$ 7,025

⁽¹⁾ Consists of repurchases pursuant to the Corporation's CCAR capital plans.

During 2022, in connection with employee stock plans, the Corporation issued 73 million shares of its common stock and, to satisfy tax withholding obligations, repurchased 28 million shares of its common stock. At December 31, 2022, the Corporation had reserved 491 million unissued shares of common stock for future issuances under employee stock plans, convertible notes and preferred stock.

Preferred Stock

The cash dividends declared on preferred stock were \$1.6 billion in 2022 and \$1.4 billion in both 2021 and 2020.

On January 25, 2022, the Corporation issued 70,000 shares of 4.375% Fixed-Rate Reset Non-Cumulative Preferred Stock, Series RR for \$1.8 billion, with quarterly dividends commencing in April 2022. The Series RR preferred stock has a liquidation preference of \$25,000 per share and is subject to certain restrictions in the event the Corporation fails to declare and pay full dividends.

On January 31, 2022 the Corporation issued 28,000 shares of 4.750% Non-Cumulative Preferred Stock, Series SS for \$700 million, with quarterly dividends commencing in May 2022. The Series SS preferred stock has a liquidation preference of \$25,000 per share and is subject to certain restrictions in the event the Corporation fails to declare and pay full dividends.

On April 22, 2022, the Corporation issued 80,000 shares of 6.125% Fixed-Rate Reset Non-Cumulative Preferred Stock, Series TT for \$2.0 billion, with quarterly dividends commencing in July 2022. The Series TT preferred stock has a liquidation preference of \$25,000 per share and is subject to certain restrictions in the event the Corporation fails to declare and pay full dividends.

Through a cash tender offer announced and completed in the fourth quarter of 2022, the Corporation partially repurchased Series E, Series FF, Series HH, Series JJ, Series KK, Series LL, Series MM, Series NN, Series PP, Series QQ, Series RR, Series SS, Series 1 and Series 5 preferred stock with a total carrying value of \$737 million for \$654 million in cash, with \$83 million recognized in additional paid-in capital as a preferred stock benefit.

All series of preferred stock in the Preferred Stock Summary table have a par value of \$0.01 per share, are not subject to the operation of a sinking fund, have no participation rights, and with the exception of the Series L Preferred Stock, are not convertible. The holders of the Series B Preferred Stock and Series 1 through 5 Preferred Stock have general voting rights and vote together with the common stock. The holders of the other series included in the table have no general voting rights. All outstanding series of preferred stock of the Corporation have preference over the Corporation's common stock with respect to the payment of dividends and distribution of the Corporation's assets in the event of a liquidation or dissolution. With the exception of the Series B, F and G Preferred Stock, if any dividend payable on these series is in arrears for three or more semi-annual or six or more quarterly dividend periods, as applicable (whether consecutive or not), the holders of these series and any other class or series of preferred stock ranking equally as to payment of dividends and upon which equivalent voting rights have been conferred and are exercisable (voting as a single class) will be entitled to vote for the election of two additional directors. These voting rights terminate when the Corporation has paid in full dividends on these series for at least two semi-annual or four quarterly dividend periods, as applicable, following the dividend arrearage.

The 7.25% Non-Cumulative Perpetual Convertible Preferred Stock, Series L (Series L Preferred Stock) does not have early redemption/call rights. Each share of the Series L Preferred Stock may be converted at any time, at the option of the holder, into 20 shares of the Corporation's common stock plus cash in lieu of fractional shares. The Corporation may cause some or all of the Series L Preferred Stock, at its option, at any time or from time to time, to be converted into shares of common stock at the then-applicable conversion rate if, for 20 trading days during any period of 30 consecutive trading days, the closing price of common stock exceeds 130 percent of the then-applicable conversion price of the Series L Preferred Stock. If a conversion of Series L Preferred Stock occurs at the option of the holder, subsequent to a dividend record date but prior to the dividend payment date, the Corporation will still pay any accrued dividends payable.

The table below presents a summary of perpetual preferred stock outstanding at December 31, 2022.

Preferred Stock Summary

(Dollars in millions, except as noted)

Series	Description	Initial Issuance Date	Total Shares Outstanding	Liquidation Preference per Share (in dollars)	Carrying Value	Per Annum Dividend Rate	Dividend per Share (in dollars) ⁽¹⁾	Annual Dividend	Redemption Period ⁽²⁾	
Series B	7.000% Cumulative Redeemable	June 1997	7,076	\$ 100	\$ 1	7.00 %	\$ 7	\$ —	n/a	
Series E ⁽³⁾	Floating Rate Non-Cumulative	November 2006	12,317	25,000	308	3-mo. LIBOR + 35 bps ⁽⁴⁾	1.01	13	On or after November 15, 2011	
Series F	Floating Rate Non-Cumulative	March 2012	1,409	100,000	141	3-mo. LIBOR + 40 bps ⁽⁴⁾	4,055.56	6	On or after March 15, 2012	
Series G	Adjustable Rate Non-Cumulative	March 2012	4,925	100,000	492	3-mo. LIBOR + 40 bps ⁽⁴⁾	4,055.56	20	On or after March 15, 2012	
Series L	7.25% Non-Cumulative Perpetual Convertible	January 2008	3,080,182	1,000	3,080	7.25 %	72.50	223	n/a	
Series U ⁽⁵⁾	Fixed-to-Floating Rate Non-Cumulative	May 2013	40,000	25,000	1,000	5.2% to, but excluding, 6/1/23; 3-mo. LIBOR +313.5 bps thereafter	52.00	52	On or after June 1, 2023	
Series X ⁽⁵⁾	Fixed-to-Floating Rate Non-Cumulative	September 2014	80,000	25,000	2,000	6.250% to, but excluding, 9/5/24; 3-mo. LIBOR +370.5 bps thereafter	62.50	125	On or after September 5, 2024	
Series Z ⁽⁵⁾	Fixed-to-Floating Rate Non-Cumulative	October 2014	56,000	25,000	1,400	6.500% to, but excluding, 10/23/24; 3-mo. LIBOR +417.4 bps thereafter	65.00	91	On or after October 23, 2024	
Series AA ⁽⁵⁾	Fixed-to-Floating Rate Non-Cumulative	March 2015	76,000	25,000	1,900	6.100% to, but excluding, 3/17/25; 3-mo. LIBOR +389.8 bps thereafter	61.00	116	On or after March 17, 2025	
Series DD ⁽⁵⁾	Fixed-to-Floating Rate Non-Cumulative	March 2016	40,000	25,000	1,000	6.300% to, but excluding, 3/10/26; 3-mo. LIBOR +455.3 bps thereafter	63.00	63	On or after March 10, 2026	
Series FF ⁽⁵⁾	Fixed-to-Floating Rate Non-Cumulative	March 2018	90,834	25,000	2,271	5.875% to, but excluding, 3/15/28; 3-mo. LIBOR +293.1 bps thereafter	58.75	139	On or after March 15, 2028	
Series GG ⁽³⁾	6.000% Non-Cumulative	May 2018	54,000	25,000	1,350	6.000 %	1.50	81	On or after May 16, 2023	
Series HH ⁽³⁾	5.875% Non-Cumulative	July 2018	34,049	25,000	851	5.875 %	1.47	50	On or after July 24, 2023	
Series JJ ⁽⁵⁾	Fixed-to-Floating Rate Non-Cumulative	June 2019	34,171	25,000	854	5.125% to, but excluding, 6/20/24; 3-mo. LIBOR +329.2 bps thereafter	51.25	51	On or after June 20, 2024	
Series KK ⁽³⁾	5.375% Non-Cumulative	June 2019	55,273	25,000	1,382	5.375 %	1.34	75	On or after June 25, 2024	
Series LL ⁽³⁾	5.000% Non-Cumulative	September 2019	52,045	25,000	1,301	5.000 %	1.25	66	On or after September 17, 2024	
Series MM ⁽⁵⁾	Fixed-to-Floating Rate Non-Cumulative	January 2020	30,753	25,000	769	4.300 %	43.00	46	On or after January 28, 2025	
Series NN ⁽³⁾	4.375% Non-Cumulative	October 2020	42,993	25,000	1,075	4.375 %	1.09	48	On or after November 3, 2025	
Series PP ⁽³⁾	4.125% Non-Cumulative	January 2021	36,500	25,000	912	4.125 %	1.03	38	On or after February 2, 2026	
Series QQ ⁽³⁾	4.250% Non-Cumulative	October 2021	51,879	25,000	1,297	4.250 %	1.12	58	On or after November 17, 2026	
Series RR ⁽⁶⁾	4.375% Fixed-Rate Reset Non-Cumulative	January 2022	66,738	25,000	1,668	4.375% to, but excluding, 1/27/27; 5-yr U.S. Treasury Rate +276 bps thereafter	43.99	77	On or after January 27, 2027	
Series SS ⁽³⁾	4.750% Non-Cumulative	January 2022	27,463	25,000	687	4.750 %	0.95	27	On or after February 17, 2027	
Series TT ⁽⁶⁾	6.125% Fixed-Rate Reset Non-Cumulative	April 2022	80,000	25,000	2,000	6.125% to, but excluding, 4/27/27; 5-yr U.S. Treasury Rate +323.1 bps thereafter	46.79	94	On or after April 27, 2027	
Series 1 ⁽⁷⁾	Floating Rate Non-Cumulative	November 2004	3,186	30,000	96	3-mo. LIBOR + 75 bps ⁽⁸⁾	0.80	3	On or after November 28, 2009	
Series 2 ⁽⁷⁾	Floating Rate Non-Cumulative	March 2005	9,967	30,000	299	3-mo. LIBOR + 65 bps ⁽⁸⁾	0.80	10	On or after November 28, 2009	
Series 4 ⁽⁷⁾	Floating Rate Non-Cumulative	November 2005	7,010	30,000	210	3-mo. LIBOR + 75 bps ⁽⁴⁾	1.01	9	On or after November 28, 2010	
Series 5 ⁽⁷⁾	Floating Rate Non-Cumulative	March 2007	13,331	30,000	400	3-mo. LIBOR + 50 bps ⁽⁴⁾	1.01	17	On or after May 21, 2012	
Issuance costs and certain adjustments						(347)				
Total			4,088,101		\$ 28,397					

⁽¹⁾ For all series of preferred stock other than Series B, Series F, Series G and Series L, "Dividend per Share" means the amount of dividends per depositary share of such series.

⁽²⁾ The Corporation may redeem series of preferred stock on or after the redemption date, in whole or in part, at its option, at the liquidation preference plus declared and unpaid dividends. Series B and Series L Preferred Stock do not have early redemption/call rights.

⁽³⁾ Ownership is held in the form of depositary shares, each representing a 1/1,000th interest in a share of preferred stock, paying a quarterly cash dividend, if and when declared.

⁽⁴⁾ Subject to 4.00% minimum rate per annum.

⁽⁵⁾ Ownership is held in the form of depositary shares, each representing a 1/25th interest in a share of preferred stock, paying a semi-annual cash dividend, if and when declared, until the first redemption date at which time, it adjusts to a quarterly cash dividend, if and when declared, thereafter.

⁽⁶⁾ Ownership is held in the form of depositary shares, each representing a 1/25th interest in a share of preferred stock, paying a quarterly cash dividend, if and when declared.

⁽⁷⁾ Ownership is held in the form of depositary shares, each representing a 1/1,200th interest in a share of preferred stock, paying a quarterly cash dividend, if and when declared.

⁽⁸⁾ Subject to 3.00% minimum rate per annum.

n/a = not applicable

NOTE 14 Accumulated Other Comprehensive Income (Loss)

The table below presents the changes in accumulated OCI after-tax for 2022, 2021 and 2020.

(Dollars in millions)	Debt Securities	Debit Valuation Adjustments	Derivatives	Employee Benefit Plans	Foreign Currency	Total
Balance, December 31, 2019	\$ 323	\$ (1,494)	\$ (400)	\$ (4,168)	\$ (894)	\$ (6,633)
Net change	4,799	(498)	826	(98)	(52)	4,977
Balance, December 31, 2020	\$ 5,122	\$ (1,992)	\$ 426	\$ (4,266)	\$ (946)	\$ (1,656)
Net change	(2,077)	356	(2,306)	624	(45)	(3,448)
Balance, December 31, 2021	\$ 3,045	\$ (1,636)	\$ (1,880)	\$ (3,642)	\$ (991)	\$ (5,104)
Net change	(6,028)	755	(10,055)	(667)	(57)	(16,052)
Balance, December 31, 2022	\$ (2,983)	\$ (881)	\$ (11,935)	\$ (4,309)	\$ (1,048)	\$ (21,156)

The table below presents the net change in fair value recorded in accumulated OCI, net realized gains and losses reclassified into earnings and other changes for each component of OCI pre- and after-tax for 2022, 2021 and 2020.

(Dollars in millions)	Pretax	Tax effect	After-tax	Pretax	Tax effect	After-tax	Pretax	Tax effect	After-tax
	2022			2021			2020		
Debt securities:									
Net increase (decrease) in fair value	\$ (7,995)	\$ 1,991	\$ (6,004)	\$ (2,749)	\$ 689	\$ (2,060)	\$ 6,819	\$ (1,712)	\$ 5,107
Net realized (gains) losses reclassified into earnings ⁽¹⁾	(32)	8	(24)	(22)	5	(17)	(411)	103	(308)
Net change	(8,027)	1,999	(6,028)	(2,771)	694	(2,077)	6,408	(1,609)	4,799
Debit valuation adjustments:									
Net increase (decrease) in fair value	980	(237)	743	449	(103)	346	(669)	156	(513)
Net realized (gains) losses reclassified into earnings ⁽¹⁾	16	(4)	12	13	(3)	10	19	(4)	15
Net change	996	(241)	755	462	(106)	356	(650)	152	(498)
Derivatives:									
Net increase (decrease) in fair value	(13,711)	3,430	(10,281)	(2,849)	703	(2,146)	1,098	(268)	830
Reclassifications into earnings:									
Net interest income	332	(84)	248	(166)	48	(118)	6	(1)	5
Compensation and benefits expense	(29)	7	(22)	(55)	13	(42)	(12)	3	(9)
Net realized (gains) losses reclassified into earnings	303	(77)	226	(221)	61	(160)	(6)	2	(4)
Net change	(13,408)	3,353	(10,055)	(3,070)	764	(2,306)	1,092	(266)	826
Employee benefit plans:									
Net increase (decrease) in fair value	(1,103)	276	(827)	463	(72)	391	(381)	80	(301)
Net actuarial losses and other reclassified into earnings ⁽²⁾	198	(49)	149	295	(67)	228	261	(63)	198
Settlements, curtailments and other	11	—	11	5	—	5	5	—	5
Net change	(894)	227	(667)	763	(139)	624	(115)	17	(98)
Foreign currency:									
Net increase (decrease) in fair value	332	(390)	(58)	296	(341)	(45)	(251)	199	(52)
Net realized (gains) losses reclassified into earnings ⁽¹⁾	—	1	1	(5)	5	—	(1)	1	—
Net change	332	(389)	(57)	291	(336)	(45)	(252)	200	(52)
Total other comprehensive income (loss)	\$(21,001)	\$ 4,949	\$(16,052)	\$ (4,325)	\$ 877	\$(3,448)	\$ 6,483	\$(1,506)	\$ 4,977

⁽¹⁾ Reclassifications of pretax debt securities, DVA and foreign currency (gains) losses are recorded in other income in the Consolidated Statement of Income.

⁽²⁾ Reclassifications of pretax employee benefit plan costs are recorded in other general operating expense in the Consolidated Statement of Income.

NOTE 15 Earnings Per Common Share

The calculation of EPS and diluted EPS for 2022, 2021 and 2020 is presented below. For more information on the calculation of EPS, see Note 1 – Summary of Significant Accounting Principles.

(In millions, except per share information)	2022	2021	2020
Earnings per common share			
Net income	\$ 27,528	\$ 31,978	\$ 17,894
Preferred stock dividends and other	(1,513)	(1,421)	(1,421)
Net income applicable to common shareholders	\$ 26,015	\$ 30,557	\$ 16,473
Average common shares issued and outstanding	8,113.7	8,493.3	8,753.2
Earnings per common share	\$ 3.21	\$ 3.60	\$ 1.88
Diluted earnings per common share			
Net income applicable to common shareholders	\$ 26,015	\$ 30,557	\$ 16,473
Average common shares issued and outstanding	8,113.7	8,493.3	8,753.2
Dilutive potential common shares ⁽¹⁾	53.8	65.1	43.7
Total diluted average common shares issued and outstanding	8,167.5	8,558.4	8,796.9
Diluted earnings per common share	\$ 3.19	\$ 3.57	\$ 1.87

⁽¹⁾ Includes incremental dilutive shares from preferred stock, restricted stock units, restricted stock and warrants.

For 2022, 2021 and 2020, 62 average dilutive potential common shares associated with the Series L preferred stock were not included in the diluted share count because the result would have been antidilutive under the “if-converted” method.

NOTE 16 Regulatory Requirements and Restrictions

The Federal Reserve, Office of the Comptroller of the Currency (OCC) and FDIC (collectively, U.S. banking regulators) jointly establish regulatory capital adequacy rules, including Basel 3, for U.S. banking organizations. As a financial holding company, the Corporation is subject to capital adequacy rules issued by the Federal Reserve. The Corporation’s banking entity affiliates are subject to capital adequacy rules issued by the OCC.

The Corporation and its primary banking entity affiliate, BANA, are Advanced approaches institutions under Basel 3. As Advanced approaches institutions, the Corporation and its

banking entity affiliates are required to report regulatory risk-based capital ratios and risk-weighted assets under both the Standardized and Advanced approaches. The approach that yields the lower ratio is used to assess capital adequacy, including under the Prompt Corrective Action (PCA) framework.

The Corporation is required to maintain a minimum supplementary leverage ratio (SLR) of 3.0 percent plus a leverage buffer of 2.0 percent in order to avoid certain restrictions on capital distributions and discretionary bonus payments. The Corporation’s insured depository institution subsidiaries are required to maintain a minimum 6.0 percent SLR to be considered well capitalized under the PCA framework.

The table below presents capital ratios and related information in accordance with Basel 3 Standardized and Advanced approaches as measured at December 31, 2022 and 2021 for the Corporation and BANA.

Regulatory Capital under Basel 3

	Bank of America Corporation			Bank of America, N.A.		
	Standardized Approach ⁽¹⁾	Advanced Approaches ⁽¹⁾	Regulatory Minimum ⁽²⁾	Standardized Approach ⁽¹⁾	Advanced Approaches ⁽¹⁾	Regulatory Minimum ⁽³⁾
December 31, 2022						
(Dollars in millions, except as noted)						
Risk-based capital metrics:						
Common equity tier 1 capital	\$ 180,060	\$ 180,060		\$ 181,089	\$ 181,089	
Tier 1 capital	208,446	208,446		181,089	181,089	
Total capital ⁽⁴⁾	238,773	230,916		194,254	186,648	
Risk-weighted assets (in billions)	1,605	1,411		1,386	1,087	
Common equity tier 1 capital ratio	11.2 %	12.8 %	10.4 %	13.1 %	16.7 %	7.0 %
Tier 1 capital ratio	13.0	14.8	11.9	13.1	16.7	8.5
Total capital ratio	14.9	16.4	13.9	14.0	17.2	10.5
Leverage-based metrics:						
Adjusted quarterly average assets (in billions) ⁽⁵⁾	\$ 2,997	\$ 2,997		\$ 2,358	\$ 2,358	
Tier 1 leverage ratio	7.0 %	7.0 %	4.0	7.7 %	7.7 %	5.0
Supplementary leverage exposure (in billions)		\$ 3,523			\$ 2,785	
Supplementary leverage ratio		5.9 %	5.0		6.5 %	6.0
December 31, 2021						
Risk-based capital metrics:						
Common equity tier 1 capital	\$ 171,759	\$ 171,759		\$ 182,526	\$ 182,526	
Tier 1 capital	196,465	196,465		182,526	182,526	
Total capital ⁽⁴⁾	227,592	220,616		194,773	188,091	
Risk-weighted assets (in billions)	1,618	1,399		1,352	1,048	
Common equity tier 1 capital ratio	10.6 %	12.3 %	9.5 %	13.5 %	17.4 %	7.0 %
Tier 1 capital ratio	12.1	14.0	11.0	13.5	17.4	8.5
Total capital ratio	14.1	15.8	13.0	14.4	17.9	10.5
Leverage-based metrics:						
Adjusted quarterly average assets (in billions) ⁽⁵⁾	\$ 3,087	\$ 3,087		\$ 2,414	\$ 2,414	
Tier 1 leverage ratio	6.4 %	6.4 %	4.0	7.6 %	7.6 %	5.0
Supplementary leverage exposure (in billions)		\$ 3,604			\$ 2,824	
Supplementary leverage ratio		5.5 %	5.0		6.5 %	6.0

⁽¹⁾ As of December 31, 2022 and 2021, capital ratios are calculated using the regulatory capital rule that allows a five-year transition period related to the adoption of the current expected credit losses accounting standard on January 1, 2020.

⁽²⁾ The capital conservation buffer and global systemically important bank (G-SIB) surcharge were 2.5 percent at both December 31, 2022 and 2021. The Corporation’s stress capital buffer applied in place of the capital conservation buffer under the Standardized approach was 3.4 percent at December 31, 2022 and 2.5 percent at December 31, 2021. The countercyclical capital buffer for both periods was zero. The CET1 capital regulatory minimum is the sum of the CET1 capital ratio minimum of 4.5 percent, the Corporation’s G-SIB surcharge of 2.5 percent and the Corporation’s capital conservation buffer of 2.5 percent or the SCB, as applicable, of 3.4 percent at December 31, 2022 and 2.5 percent at December 31, 2021. The SLR regulatory minimum includes a leverage buffer of 2.0 percent.

⁽³⁾ Risk-based capital regulatory minimums at December 31, 2022 and 2021 are the minimum ratios under Basel 3, including a capital conservation buffer of 2.5 percent. The regulatory minimums for the leverage ratios as of both period ends are the percent required to be considered well capitalized under the PCA framework.

⁽⁴⁾ Total capital under the Advanced approaches differs from the Standardized approach due to differences in the amount permitted in Tier 2 capital related to the qualifying allowance for credit losses.

⁽⁵⁾ Reflects total average assets adjusted for certain Tier 1 capital deductions.

The capital adequacy rules issued by the U.S. banking regulators require institutions to meet the established minimums outlined in the table above. Failure to meet the minimum requirements can lead to certain mandatory and discretionary actions by regulators that could have a material adverse impact on the Corporation's financial position. At December 31, 2022 and 2021, the Corporation and its banking entity affiliates were well capitalized.

Other Regulatory Matters

At December 31, 2022 and 2021, the Corporation had cash and cash equivalents in the amount of \$5.6 billion and \$4.0 billion, and securities with a fair value of \$16.6 billion and \$10.6 billion that were segregated in compliance with securities regulations. Cash and cash equivalents segregated in compliance with securities regulations are a component of restricted cash. For more information, see *Note 10 - Securities Financing Agreements, Short-term Borrowings, Collateral and Restricted Cash*. In addition, at December 31, 2022 and 2021, the Corporation had cash deposited with clearing organizations of \$20.7 billion and \$28.6 billion primarily recorded in other assets on the Consolidated Balance Sheet.

Bank Subsidiary Distributions

The primary sources of funds for cash distributions by the Corporation to its shareholders are capital distributions received from its bank subsidiaries, BANA and Bank of America California, N.A. In 2022, the Corporation received dividends of \$22.0 billion from BANA and \$250 million from Bank of America California, N.A.

The amount of dividends that a subsidiary bank may declare in a calendar year without OCC approval is the subsidiary bank's net profits for that year combined with its retained net profits for the preceding two years. Retained net profits, as defined by the OCC, consist of net income less dividends declared during the period. In 2023, BANA can declare and pay dividends of approximately \$16.1 billion to the Corporation plus an additional amount equal to its retained net profits for 2023 up to the date of any such dividend declaration. Bank of America California, N.A. can pay dividends of \$173 million in 2023 plus an additional amount equal to its retained net profits for 2023 up to the date of any such dividend declaration.

NOTE 17 Employee Benefit Plans

Pension and Postretirement Plans

The Corporation sponsors a qualified noncontributory trusteed pension plan (Qualified Pension Plan), a number of noncontributory nonqualified pension plans and postretirement health and life plans that cover eligible employees. Non-U.S.

pension plans sponsored by the Corporation vary based on the country and local practices.

The Qualified Pension Plan has a balance guarantee feature for account balances with participant-selected investments, applied at the time a benefit payment is made from the plan that effectively provides principal protection for participant balances transferred and certain compensation credits. The Corporation is responsible for funding any shortfall on the guarantee feature.

Benefits earned under the Qualified Pension Plan have been frozen. Thereafter, the cash balance accounts continue to earn investment credits or interest credits in accordance with the terms of the plan document.

The Corporation has an annuity contract that guarantees the payment of benefits vested under a terminated U.S. pension plan (Other Pension Plan). The Corporation, under a supplemental agreement, may be responsible for or benefit from actual experience and investment performance of the annuity assets. The Corporation made no contribution under this agreement in 2022 or 2021. Contributions may be required in the future under this agreement.

The Corporation's noncontributory, nonqualified pension plans are unfunded and provide supplemental defined pension benefits to certain eligible employees.

In addition to retirement pension benefits, certain benefits-eligible employees may become eligible to continue participation as retirees in health care and/or life insurance plans sponsored by the Corporation. These plans are referred to as the Postretirement Health and Life Plans.

The Pension and Postretirement Plans table summarizes the changes in the fair value of plan assets, changes in the projected benefit obligation (PBO), the funded status of both the accumulated benefit obligation (ABO) and the PBO, and the weighted-average assumptions used to determine benefit obligations for the pension plans and postretirement plans at December 31, 2022 and 2021. The estimate of the Corporation's PBO associated with these plans considers various actuarial assumptions, including assumptions for mortality rates and discount rates. The discount rate assumptions are derived from a cash flow matching technique that utilizes rates that are based on Aa-rated corporate bonds with cash flows that match estimated benefit payments of each of the plans. The increases in the weighted-average discount rates in 2022 resulted in a decrease to the PBO of \$5.3 billion at December 31, 2022. The increases in the weighted-average discount rates in 2021 resulted in a decrease to the PBO of approximately \$895 million at December 31, 2021. Significant gains and losses related to changes in the PBO for 2022 and 2021 primarily resulted from changes in the discount rate.

Pension and Postretirement Plans ⁽¹⁾

(Dollars in millions)	Qualified Pension Plan		Non-U.S. Pension Plans		Nonqualified and Other Pension Plans		Postretirement Health and Life Plans	
	2022	2021	2022	2021	2022	2021	2022	2021
Fair value, January 1	\$ 22,078	\$ 21,776	\$ 3,031	\$ 3,078	\$ 2,585	\$ 2,789	\$ 117	\$ 143
Actual return on plan assets	(3,896)	1,215	(898)	62	(332)	(55)	2	—
Company contributions (withdrawals)	—	—	30	24	(135)	87	45	38
Plan participant contributions	—	—	1	1	—	—	104	107
Settlements and curtailments	—	—	(51)	(11)	(6)	—	—	—
Benefits paid	(924)	(913)	(62)	(84)	(226)	(236)	(161)	(171)
Federal subsidy on benefits paid	n/a	n/a	n/a	n/a	n/a	n/a	—	—
Foreign currency exchange rate changes	n/a	n/a	(323)	(39)	n/a	n/a	n/a	n/a
Fair value, December 31	\$ 17,258	\$ 22,078	\$ 1,728	\$ 3,031	\$ 1,886	\$ 2,585	\$ 107	\$ 117
Change in projected benefit obligation								
Projected benefit obligation, January 1	\$ 15,676	\$ 16,427	\$ 3,116	\$ 3,340	\$ 2,753	\$ 3,005	\$ 928	\$ 1,007
Service cost	—	—	29	28	—	—	4	5
Interest cost	438	414	53	45	74	67	25	24
Plan participant contributions	—	—	1	1	—	—	104	107
Plan amendments	—	—	3	—	—	—	—	—
Settlements and curtailments	—	—	(51)	(11)	(6)	—	—	—
Actuarial loss (gain)	(3,610)	(252)	(1,054)	(152)	(486)	(83)	(198)	(44)
Benefits paid	(924)	(913)	(62)	(84)	(226)	(236)	(161)	(171)
Federal subsidy on benefits paid	n/a	n/a	n/a	n/a	n/a	n/a	—	—
Foreign currency exchange rate changes	n/a	n/a	(283)	(51)	n/a	n/a	(2)	—
Projected benefit obligation, December 31	\$ 11,580	\$ 15,676	\$ 1,752	\$ 3,116	\$ 2,109	\$ 2,753	\$ 700	\$ 928
Amounts recognized on Consolidated Balance Sheet								
Other assets	\$ 5,678	\$ 6,402	\$ 370	\$ 550	\$ 495	\$ 777	\$ —	\$ —
Accrued expenses and other liabilities	—	—	(394)	(635)	(718)	(945)	(593)	(811)
Net amount recognized, December 31	\$ 5,678	\$ 6,402	\$ (24)	\$ (85)	\$ (223)	\$ (168)	\$ (593)	\$ (811)
Funded status, December 31								
Accumulated benefit obligation	\$ 11,580	\$ 15,676	\$ 1,694	\$ 3,031	\$ 2,109	\$ 2,753	n/a	n/a
Overfunded (unfunded) status of ABO	5,678	6,402	34	—	(223)	(168)	n/a	n/a
Provision for future salaries	—	—	58	85	—	—	n/a	n/a
Projected benefit obligation	11,580	15,676	1,752	3,116	2,109	2,753	\$ 700	\$ 928
Weighted-average assumptions, December 31								
Discount rate	5.54 %	2.86 %	4.59 %	1.85 %	5.58 %	2.80 %	5.56 %	2.85 %
Rate of compensation increase	n/a	n/a	4.25	4.46	4.00	4.00	n/a	n/a
Interest-crediting rate	5.36 %	4.83 %	2.03	1.90	4.69	4.22	n/a	n/a

⁽¹⁾ The measurement date for all of the above plans was December 31 of each year reported.
n/a = not applicable

The Corporation's estimate of its contributions to be made to the Non-U.S. Pension Plans, Nonqualified and Other Pension Plans, and Postretirement Health and Life Plans in 2023 is \$26 million, \$89 million and \$22 million, respectively. The Corporation does not expect to make a contribution to the Qualified Pension Plan in 2023. It is the policy of the Corporation to fund no less than the minimum funding amount

required by the Employee Retirement Income Security Act of 1974 (ERISA).

Pension Plans with ABO and PBO in excess of plan assets as of December 31, 2022 and 2021 are presented in the table below. For these plans, funding strategies vary due to legal requirements and local practices.

Plans with ABO and PBO in Excess of Plan Assets

(Dollars in millions)	Non-U.S. Pension Plans		Nonqualified and Other Pension Plans	
	2022	2021	2022	2021
PBO	\$ 458	\$ 841	\$ 719	\$ 945
ABO	416	780	719	945
Fair value of plan assets	71	207	1	1

Components of Net Periodic Benefit Cost

(Dollars in millions)	Qualified Pension Plan			Non-U.S. Pension Plans		
	2022	2021	2020	2022	2021	2020
Components of net periodic benefit cost (income)						
Service cost	\$ —	\$ —	\$ —	\$ 29	\$ 28	\$ 20
Interest cost	438	414	500	53	45	49
Expected return on plan assets	(1,204)	(1,173)	(1,154)	(59)	(70)	(66)
Amortization of actuarial loss (gain) and prior service cost	140	193	173	14	19	9
Other	—	—	—	10	5	8
Net periodic benefit cost (income)	\$ (626)	\$ (566)	\$ (481)	\$ 47	\$ 27	\$ 20
Weighted-average assumptions used to determine net cost for years ended December 31						
Discount rate	2.86 %	2.57 %	3.32 %	1.85 %	1.35 %	1.81 %
Expected return on plan assets	5.75	5.75	6.00	2.17	2.30	2.57
Rate of compensation increase	n/a	n/a	n/a	4.46	4.11	4.10

(Dollars in millions)	Nonqualified and Other Pension Plans			Postretirement Health and Life Plans		
	2022	2021	2020	2022	2021	2020
Components of net periodic benefit cost (income)						
Service cost	\$ —	\$ —	\$ 1	\$ 4	\$ 5	\$ 5
Interest cost	74	67	90	25	24	32
Expected return on plan assets	(59)	(49)	(71)	(2)	(3)	(4)
Amortization of actuarial loss (gain) and prior service cost	54	63	50	(9)	20	29
Other	1	—	—	—	—	(2)
Net periodic benefit cost (income)	\$ 70	\$ 81	\$ 70	\$ 18	\$ 46	\$ 60
Weighted-average assumptions used to determine net cost for years ended December 31						
Discount rate	2.80 %	2.33 %	3.20 %	2.85 %	2.48 %	3.27 %
Expected return on plan assets	2.38	1.88	2.77	2.00	2.00	2.00
Rate of compensation increase	4.00	4.00	4.00	n/a	n/a	n/a

n/a = not applicable

The asset valuation method used to calculate the expected return on plan assets component of net periodic benefit cost for the Qualified Pension Plan recognizes 60 percent of the prior year's market gains or losses at the next measurement date with the remaining 40 percent spread equally over the subsequent four years.

Gains and losses for all benefit plans except postretirement health care are recognized in accordance with the standard amortization provisions of the applicable accounting guidance. Net periodic postretirement health and life expense was determined using the "projected unit credit" actuarial method. For the Postretirement Health and Life Plans, 50 percent of the unrecognized gain or loss at the beginning of the year (or at subsequent remeasurement) is recognized on a level basis during the year.

Assumed health care cost trend rates affect the postretirement benefit obligation and benefit cost reported for the Postretirement Health and Life Plans. The assumed health care cost trend rate used to measure the expected cost of benefits covered by the Postretirement Health and Life Plans is 6.50 percent for 2023, reducing in steps to 5.00 percent in 2028 and later years.

The Corporation's net periodic benefit cost (income) recognized for the plans is sensitive to the discount rate and expected return on plan assets. For the Qualified Pension Plan, Non-U.S. Pension Plans, Nonqualified and Other Pension Plans, and Postretirement Health and Life Plans, a 25 bp decline in discount rates and expected return on assets would not have had a significant impact on the net periodic benefit cost for 2022.

Pretax Amounts included in Accumulated OCI and OCI

(Dollars in millions)	Qualified Pension Plan		Non-U.S. Pension Plans		Nonqualified and Other Pension Plans		Postretirement Health and Life Plans		Total	
	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021
Net actuarial loss (gain)	\$ 4,775	\$ 3,425	\$ 312	\$ 456	\$ 796	\$ 945	\$ (187)	\$ 4	\$ 5,696	\$ 4,830
Prior service cost (credits)	—	—	43	17	—	—	(1)	(3)	42	14
Amounts recognized in accumulated OCI	\$ 4,775	\$ 3,425	\$ 355	\$ 473	\$ 796	\$ 945	\$ (188)	\$ 1	\$ 5,738	\$ 4,844
Current year actuarial loss (gain)	\$ 1,490	\$ (294)	\$ (107)	\$ (154)	\$ (95)	\$ 21	\$ (198)	\$ (41)	\$ 1,090	\$ (468)
Amortization of actuarial gain (loss) and prior service cost	(140)	(193)	(14)	(19)	(54)	(63)	9	(20)	(199)	(295)
Current year prior service cost (credit)	—	—	3	—	—	—	—	—	3	—
Amounts recognized in OCI	\$ 1,350	\$ (487)	\$ (118)	\$ (173)	\$ (149)	\$ (42)	\$ (189)	\$ (61)	\$ 894	\$ (763)

Plan Assets

The Qualified Pension Plan has been established as a retirement vehicle for participants, and trusts have been established to secure benefits promised under the Qualified Pension Plan. The Corporation's policy is to invest the trust assets in a prudent manner for the exclusive purpose of providing benefits to participants and defraying reasonable expenses of administration. The Corporation's investment strategy is designed to provide a total return that, over the long term, increases the ratio of assets to liabilities. The strategy attempts to maximize the investment return on assets at a level of risk deemed appropriate by the Corporation while complying with ERISA and any applicable regulations and laws. The investment strategy utilizes asset allocation as a principal determinant for establishing the risk/return profile of the assets. Asset allocation ranges are established, periodically reviewed and adjusted as funding levels and liability characteristics change. Active and passive investment managers are employed to help enhance the risk/return profile of the assets. An additional aspect of the investment strategy used to minimize risk (part of the asset allocation plan) includes matching the exposure of participant-selected investment measures.

The assets of the Non-U.S. Pension Plans are primarily attributable to a U.K. pension plan. This U.K. pension plan's assets are invested prudently so that the benefits promised to members are provided with consideration given to the nature and the duration of the plans' liabilities. The selected asset

allocation strategy is designed to achieve a higher return than the lowest risk strategy.

The expected rate of return on plan assets assumption was developed through analysis of historical market returns, historical asset class volatility and correlations, current market conditions, anticipated future asset allocations, the funds' past experience and expectations on potential future market returns. The expected return on plan assets assumption is determined using the calculated market-related value for the Qualified Pension Plan and the Other Pension Plan and the fair value for the Non-U.S. Pension Plans and Postretirement Health and Life Plans. The expected return on plan assets assumption represents a long-term average view of the performance of the assets in the Qualified Pension Plan, the Non-U.S. Pension Plans, the Other Pension Plan, and Postretirement Health and Life Plans, a return that may or may not be achieved during any one calendar year. The Other Pension Plan is invested solely in an annuity contract, which is primarily invested in fixed-income securities structured such that asset maturities match the duration of the plan's obligations.

The target allocations for 2023 by asset category for the Qualified Pension Plan, Non-U.S. Pension Plans, and Nonqualified and Other Pension Plans are presented in the table below. Equity securities for the Qualified Pension Plan include common stock of the Corporation in the amounts of \$296 million (1.72 percent of total plan assets) and \$398 million (1.80 percent of total plan assets) at December 31, 2022 and 2021.

2023 Target Allocation

Asset Category	Percentage		
	Qualified Pension Plan	Non-U.S. Pension Plans	Nonqualified and Other Pension Plans
Equity securities	15 - 50%	0 - 20%	0 - 5%
Debt securities	45 - 80%	40 - 75%	95 - 100%
Real estate	0 - 10%	0 - 15%	0 - 5%
Other	0 - 5%	10 - 40%	0 - 5%

Fair Value Measurements

For more information on fair value measurements, including descriptions of Level 1, 2 and 3 of the fair value hierarchy and the valuation methods employed by the Corporation, see *Note 1 - Summary of Significant Accounting Principles* and *Note 20 - Fair Value Measurements*. Combined plan investment assets measured at fair value by level and in total at December 31, 2022 and 2021 are summarized in the Fair Value Measurements table.

Defined Contribution Plans

The Corporation maintains qualified and non-qualified defined contribution retirement plans. The Corporation recorded expense of \$1.2 billion in 2022, 2021 and 2020 related to the qualified defined contribution plans. At December 31, 2022 and 2021, 179 million and 173 million shares of the Corporation's common stock were held by these plans. Payments to the plans for dividends on common stock were \$153 million, \$139 million and \$138 million in 2022, 2021 and 2020, respectively.

Certain non-U.S. employees are covered under defined contribution pension plans that are separately administered in accordance with local laws.

NOTE 18 Stock-based Compensation Plans

The Corporation administers a number of equity compensation plans, with awards being granted predominantly from the Bank of America Corporation Equity Plan (BACEP). Under this plan, 715 million shares of the Corporation's common stock are authorized to be used for grants of awards.

During 2022 and 2021, the Corporation granted 102 million and 99 million RSU awards to certain employees under the BACEP. These RSUs were authorized to settle predominantly in shares of common stock of the Corporation. Certain RSUs will be settled in cash or contain settlement provisions that subject these awards to variable accounting whereby compensation expense is adjusted to fair value based on changes in the share price of the Corporation's common stock up to the settlement date. The RSUs granted in 2022 will generally vest over four years. Of the RSUs granted in 2021, 81 million will generally vest over four years and 18 million will vest over three years. The four-year awards vest primarily in one-fourth increments on each of the first four anniversaries of the grant date while the three-year awards vest primarily in one-third increments on each of the first three anniversaries of the grant date, provided that the employee remains continuously employed with the Corporation during that time, and will be expensed ratably over the vesting period, net of estimated forfeitures, for non-retirement eligible employees based on the grant-date fair value of the shares. Of the RSUs granted in 2022 and 2021 that vest over four years, 39 million and 27 million do not include retirement eligibility. For all other RSUs granted to employees who are retirement eligible, they are deemed authorized as of the beginning of the year preceding the grant date when the incentive award plans are generally approved. As a result, the estimated value is expensed ratably over the year preceding the grant date. The compensation cost for the stock-based plans was \$2.9 billion, \$3.0 billion and \$2.1 billion, and the related income tax benefit was \$697 million, \$723 million and \$505 million for 2022, 2021 and 2020, respectively. At December 31, 2022, there was an estimated \$3.6 billion of total unrecognized compensation cost related to certain share-based compensation awards that is expected to be recognized over a period of up to four years, with a weighted-average period of 2.7 years.

Restricted Stock and Restricted Stock Units

The total fair value of restricted stock and restricted stock units vested in 2022, 2021 and 2020 was \$3.4 billion, \$2.3 billion and \$2.3 billion, respectively. The table below presents the status at December 31, 2022 of the share-settled restricted stock and restricted stock units and changes during 2022.

Stock-settled Restricted Stock and Restricted Stock Units

	Shares/Units	Weighted-average Grant Date Fair Value
Outstanding at January 1, 2022	185,050,842	\$ 31.54
Granted	100,108,395	46.10
Vested	(73,288,792)	30.85
Canceled	(9,310,647)	39.80
Outstanding at December 31, 2022	202,559,798	38.60

NOTE 19 Income Taxes

The components of income tax expense for 2022, 2021 and 2020 are presented in the table below.

Income Tax Expense

(Dollars in millions)	2022	2021	2020
Current income tax expense			
U.S. federal	\$ 1,157	\$ 1,076	\$ 1,092
U.S. state and local	389	775	1,076
Non-U.S.	1,156	985	670
Total current expense	2,702	2,836	2,838
Deferred income tax expense			
U.S. federal	110	962	(799)
U.S. state and local	254	491	(233)
Non-U.S.	375	(2,291)	(705)
Total deferred expense	739	(838)	(1,737)
Total income tax expense	\$ 3,441	\$ 1,998	\$ 1,101

Total income tax expense does not reflect the tax effects of items that are included in OCI each period. For more information, see Note 14 - Accumulated Other Comprehensive Income (Loss). Other tax effects included in OCI each period resulted in a benefit of \$4.9 billion and \$877 million in 2022 and 2021 and an expense of \$1.5 billion in 2020.

Income tax expense for 2022, 2021 and 2020 varied from the amount computed by applying the statutory income tax rate to income before income taxes. The Corporation's federal statutory tax rate was 21 percent for 2022, 2021 and 2020. A reconciliation of the expected U.S. federal income tax expense, calculated by applying the federal statutory tax rate, to the Corporation's actual income tax expense, and the effective tax rates for 2022, 2021 and 2020 are presented in the following table.

Reconciliation of Income Tax Expense

	Amount	Percent	Amount	Percent	Amount	Percent
	2022		2021		2020	
(Dollars in millions)						
Expected U.S. federal income tax expense	\$ 6,504	21.0 %	\$ 7,135	21.0 %	\$ 3,989	21.0 %
Increase (decrease) in taxes resulting from:						
State tax expense, net of federal benefit	756	2.4	1,087	3.2	728	3.8
Affordable housing/energy/other credits	(3,698)	(11.9)	(3,795)	(11.2)	(2,869)	(15.1)
Tax-exempt income, including dividends	(273)	(0.9)	(352)	(1.0)	(346)	(1.8)
Changes in prior-period UTBs, including interest	(273)	(0.9)	(155)	(0.5)	(41)	(0.2)
Rate differential on non-U.S. earnings	368	1.2	45	0.1	218	1.1
Nondeductible expenses	352	1.1	206	0.6	324	1.7
Tax law changes	186	0.6	(2,050)	(6.0)	(699)	(3.7)
Other	(481)	(1.5)	(123)	(0.3)	(203)	(1.0)
Total income tax expense	\$ 3,441	11.1 %	\$ 1,998	5.9 %	\$ 1,101	5.8 %

Tax Law changes reflect the impact of the 2022, 2021 and 2020 U.K. enacted corporate income tax rate changes, which resulted in a negative tax adjustment of approximately \$186 million in 2022 and positive income tax adjustments of approximately \$2.0 billion and \$700 million in 2021 and 2020, with corresponding adjustments of U.K. net deferred tax assets. The U.K. net deferred tax assets are primarily net operating losses (NOLs), incurred by the Corporation's U.K. broker-dealer entity in historical periods, which do not expire under U.K. tax law and are assessed regularly for impairment. If further U.K. tax law changes are enacted, a corresponding income tax adjustment will be made based on the amount of available net deferred tax assets and applicable tax rate changes.

Tax credits originate from ESG investments in affordable housing and renewable energy partnerships and similar entities. Significant increases in the tax credits recognized over the last three annual periods have been primarily driven by the Corporation's continued growth in the volume of investments in wind and solar energy production facilities, consistent with the Corporation's commitment to support the transition to a lower carbon economy. For additional information, see Note 6 - *Securitizations and Other Variable Interest Entities*.

The reconciliation of the beginning unrecognized tax benefits (UTB) balance to the ending balance is presented in the table below.

Reconciliation of the Change in Unrecognized Tax Benefits

(Dollars in millions)	2022	2021	2020
Balance, January 1	\$ 1,322	\$ 1,340	\$ 1,175
Increases related to positions taken during the current year	121	208	238
Increases related to positions taken during prior years ⁽¹⁾	167	265	99
Decreases related to positions taken during prior years ⁽¹⁾	(289)	(413)	(172)
Settlements	(99)	(23)	—
Expiration of statute of limitations	(166)	(55)	—
Balance, December 31	\$ 1,056	\$ 1,322	\$ 1,340

⁽¹⁾ The sum of the positions taken during prior years differs from the \$(273) million, \$(155) million and \$(41) million in the Reconciliation of Income Tax Expense table due to temporary items, state items and jurisdictional offsets, as well as the inclusion of interest in the Reconciliation of Income Tax Expense table.

At December 31, 2022, 2021 and 2020, the balance of the Corporation's UTBs which would, if recognized, affect the Corporation's effective tax rate was \$709 million, \$959 million and \$976 million, respectively. Included in the UTB balance are some items the recognition of which would not affect the effective tax rate, such as the tax effect of certain temporary differences, the portion of gross state UTBs that would be offset by the tax benefit of the associated federal deduction and the portion of gross non-U.S. UTBs that would be offset by tax reductions in other jurisdictions.

It is reasonably possible that the UTB balance may decrease by as much as \$375 million during the next 12 months, since resolved items will be removed from the balance whether their resolution results in payment or recognition.

The Corporation recognized an interest benefit of \$50 million in 2022 and interest expense of \$32 million and \$9 million in 2021 and 2020. At December 31, 2022 and 2021, the Corporation's accrual for interest and penalties that related to income taxes, net of taxes and remittances, was \$107 million and \$167 million.

The Corporation files income tax returns in more than 100 state and non-U.S. jurisdictions each year. The IRS and other tax authorities in countries and states in which the Corporation has significant business operations examine tax returns periodically (continuously in some jurisdictions). The table below summarizes the status of examinations by major jurisdiction for the Corporation and various subsidiaries at December 31, 2022.

Tax Examination Status

	Years under Examination ⁽¹⁾	Status at December 31 2022
United States	2017-2021	Field Examination
California	2012-2014	Appeals
California	2015-2017	Field Examination
California	2018-2020	To begin in 2023
New York	2019-2021	To begin in 2023
United Kingdom ⁽²⁾	2019-2020	Field Examination

⁽¹⁾ All tax years subsequent to the years shown remain subject to examination.

⁽²⁾ Field examination for tax year 2021 to begin in 2023.

Significant components of the Corporation's net deferred tax assets and liabilities at December 31, 2022 and 2021 are presented in the following table.

Deferred Tax Assets and Liabilities

(Dollars in millions)	December 31	
	2022	2021
Deferred tax assets		
Net operating loss carryforwards	\$ 9,029	\$ 9,360
Security, loan and debt valuations	4,788	2,746
Allowance for credit losses	3,503	3,097
Lease liability	2,443	2,508
Employee compensation and retirement benefits	1,625	1,392
Accrued expenses	1,143	1,626
Available-for-sale securities	960	—
Credit carryforwards	769	705
Other	1,371	1,160
Gross deferred tax assets	25,631	22,594
Valuation allowance	(2,133)	(1,988)
Total deferred tax assets, net of valuation allowance	23,498	20,606
Deferred tax liabilities		
Equipment lease financing	2,432	3,083
Right-of-use asset	2,303	2,358
ESG-related tax credit investments	1,759	1,387
Fixed Assets	1,200	2,082
Available-for-sale securities	—	1,016
Other	2,459	1,527
Gross deferred tax liabilities	10,153	11,453
Net deferred tax assets	\$ 13,345	\$ 9,153

The table below summarizes the deferred tax assets and related valuation allowances recognized for the net operating loss (NOL) and tax credit carryforwards at December 31, 2022.

Net Operating Loss and Tax Credit Carryforward Deferred Tax Assets

(Dollars in millions)	Deferred Tax Asset	Valuation Allowance	Net Deferred Tax Asset	First Year Expiring
Net operating losses - U.K. ⁽¹⁾	\$ 7,661	\$ —	\$ 7,661	None
Net operating losses - other non-U.S.	331	(147)	184	Various
Net operating losses - U.S. states ⁽²⁾	1,036	(627)	409	Various
Foreign tax credits	769	(769)	—	After 2028

⁽¹⁾ Represents U.K. broker-dealer net operating losses that may be carried forward indefinitely.
⁽²⁾ The net operating losses and related valuation allowances for U.S. states before considering the benefit of federal deductions were \$1.3 billion and \$794 million.

Management concluded that no valuation allowance was necessary to reduce the deferred tax assets related to the U.K. NOL carryforwards and U.S. federal and certain state NOL carryforwards since estimated future taxable income will be sufficient to utilize these assets prior to their expiration. The majority of the Corporation's U.K. net deferred tax assets, which consist primarily of NOLs, are expected to be realized by certain subsidiaries over an extended number of years. Management's conclusion is supported by financial results, profit forecasts for the relevant entities and the indefinite period to carry forward NOLs. However, a material change in those estimates could lead management to reassess such valuation allowance conclusions.

At December 31, 2022, U.S. federal income taxes had not been provided on approximately \$5.0 billion of temporary differences associated with investments in non-U.S. subsidiaries that are essentially permanent in duration. If the Corporation were to record the associated deferred tax liability, the amount would be approximately \$1.0 billion.

NOTE 20 Fair Value Measurements

Under applicable accounting standards, fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. The Corporation determines the fair values of its financial instruments under applicable accounting standards that require an entity to maximize the use of observable inputs and minimize the use of unobservable inputs. The Corporation categorizes its financial instruments into three levels based on the established fair value hierarchy and conducts a review of fair value hierarchy classifications on a quarterly basis. Transfers into or out of fair value hierarchy classifications are made if the significant inputs used in the financial models measuring the fair values of the assets and liabilities become unobservable or observable in the current marketplace. For more information regarding the fair value hierarchy and how the Corporation measures fair value, see *Note 1 - Summary of Significant Accounting Principles*. The Corporation accounts for certain financial instruments under the fair value option. For more information, see *Note 21 - Fair Value Option*.

Valuation Techniques

The following sections outline the valuation methodologies for the Corporation's assets and liabilities. While the Corporation believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different estimate of fair value at the reporting date.

During 2022, there were no significant changes to valuation approaches or techniques that had, or are expected to have, a material impact on the Corporation's consolidated financial position or results of operations.

Trading Account Assets and Liabilities and Debt Securities

The fair values of trading account assets and liabilities are primarily based on actively traded markets where prices are based on either direct market quotes or observed transactions. The fair values of debt securities are generally based on quoted market prices or market prices for similar assets. Liquidity is a significant factor in the determination of the fair values of trading account assets and liabilities and debt securities. Market price quotes may not be readily available for some positions such as positions within a market sector where trading activity has slowed significantly or ceased. Some of these instruments are valued using a discounted cash flow model, which estimates the fair value of the securities using internal credit risk, and interest rate and prepayment risk models that incorporate management's best estimate of current key assumptions such as default rates, loss severity and prepayment rates. Principal and interest cash flows are discounted using an observable discount rate for similar instruments with adjustments that management believes a market participant would consider in determining fair value for the specific security. Other instruments are valued using a net asset value approach which considers the value of the underlying securities. Underlying assets are valued using external pricing services, where available, or matrix pricing based on the vintages and ratings. Situations of illiquidity generally are triggered by the market's perception of credit uncertainty regarding a single company or a specific market sector. In these instances, fair value is determined based on limited available market information and other factors,

principally from reviewing the issuer's financial statements and changes in credit ratings made by one or more rating agencies.

Derivative Assets and Liabilities

The fair values of derivative assets and liabilities traded in the OTC market are determined using quantitative models that utilize multiple market inputs including interest rates, prices and indices to generate continuous yield or pricing curves and volatility factors to value the position. The majority of market inputs are actively quoted and can be validated through external sources, including brokers, market transactions and third-party pricing services. When third-party pricing services are used, the methods and assumptions are reviewed by the Corporation. Estimation risk is greater for derivative asset and liability positions that are either option-based or have longer maturity dates where observable market inputs are less readily available, or are unobservable, in which case, quantitative-based extrapolations of rate, price or index scenarios are used in determining fair values. The fair values of derivative assets and liabilities include adjustments for market liquidity, counterparty credit quality and other instrument-specific factors, where appropriate. In addition, the Corporation incorporates within its fair value measurements of OTC derivatives a valuation adjustment to reflect the credit risk associated with the net position. Positions are netted by counterparty, and fair value for net long exposures is adjusted for counterparty credit risk while the fair value for net short exposures is adjusted for the Corporation's own credit risk. The Corporation also incorporates FVA within its fair value measurements to include funding costs on uncollateralized derivatives and derivatives where the Corporation is not permitted to use the collateral it receives. An estimate of severity of loss is also used in the determination of fair value, primarily based on market data.

Loans and Loan Commitments

The fair values of loans and loan commitments are based on market prices, where available, or discounted cash flow analyses using market-based credit spreads of comparable debt instruments or credit derivatives of the specific borrower or comparable borrowers. Results of discounted cash flow analyses may be adjusted, as appropriate, to reflect other market conditions or the perceived credit risk of the borrower.

Mortgage Servicing Rights

The fair values of MSR are primarily determined using an option-adjusted spread valuation approach, which factors in prepayment risk to determine the fair value of MSR. This approach consists of projecting servicing cash flows under multiple interest rate scenarios and discounting these cash flows using risk-adjusted discount rates.

Loans Held-for-sale

The fair values of LHFS are based on quoted market prices, where available, or are determined by discounting estimated cash flows using interest rates approximating the Corporation's current origination rates for similar loans adjusted to reflect the inherent credit risk. The borrower-specific credit risk is embedded within the quoted market prices or is implied by considering loan performance when selecting comparables.

Short-term Borrowings and Long-term Debt

The Corporation issues structured liabilities that have coupons or repayment terms linked to the performance of debt or equity securities, interest rates, indices, currencies or commodities. The fair values of these structured liabilities are estimated using quantitative models for the combined derivative and debt portions of the notes. These models incorporate observable and, in some instances, unobservable inputs including security prices, interest rate yield curves, option volatility, currency, commodity or equity rates and correlations among these inputs. The Corporation also considers the impact of its own credit spread in determining the discount rate used to value these liabilities. The credit spread is determined by reference to observable spreads in the secondary bond market.

Securities Financing Agreements

The fair values of certain reverse repurchase agreements, repurchase agreements and securities borrowed transactions are determined using quantitative models, including discounted cash flow models that require the use of multiple market inputs including interest rates and spreads to generate continuous yield or pricing curves, and volatility factors. The majority of market inputs are actively quoted and can be validated through external sources, including brokers, market transactions and third-party pricing services.

Deposits

The fair values of deposits are determined using quantitative models, including discounted cash flow models that require the use of multiple market inputs including interest rates and spreads to generate continuous yield or pricing curves, and volatility factors. The majority of market inputs are actively quoted and can be validated through external sources, including brokers, market transactions and third-party pricing services. The Corporation considers the impact of its own credit spread in the valuation of these liabilities. The credit risk is determined by reference to observable credit spreads in the secondary cash market.

Asset-backed Secured Financings

The fair values of asset-backed secured financings are based on external broker bids, where available, or are determined by discounting estimated cash flows using interest rates approximating the Corporation's current origination rates for similar loans adjusted to reflect the inherent credit risk.

Recurring Fair Value

Assets and liabilities carried at fair value on a recurring basis at December 31, 2022 and 2021, including financial instruments that the Corporation accounts for under the fair value option, are summarized in the following tables.

(Dollars in millions)	December 31, 2022				
	Fair Value Measurements			Netting Adjustments ⁽¹⁾	Assets/Liabilities at Fair Value
	Level 1	Level 2	Level 3		
Assets					
Time deposits placed and other short-term investments	\$ 868	\$ —	\$ —	\$ —	\$ 868
Federal funds sold and securities borrowed or purchased under agreements to resell	—	146,999	—	—	146,999
Trading account assets:					
U.S. Treasury and government agencies	58,894	212	—	—	59,106
Corporate securities, trading loans and other	—	46,897	2,384	—	49,281
Equity securities	77,868	35,065	145	—	113,078
Non-U.S. sovereign debt	7,392	26,306	518	—	34,216
Mortgage trading loans, MBS and ABS:					
U.S. government-sponsored agency guaranteed	—	28,563	34	—	28,597
Mortgage trading loans, ABS and other MBS	—	10,312	1,518	—	11,830
Total trading account assets ⁽²⁾	144,154	147,355	4,599	—	296,108
Derivative assets	14,775	380,380	3,213	(349,726)	48,642
AFS debt securities:					
U.S. Treasury and government agencies	158,102	920	—	—	159,022
Mortgage-backed securities:					
Agency	—	23,442	—	—	23,442
Agency-collateralized mortgage obligations	—	2,221	—	—	2,221
Non-agency residential	—	128	258	—	386
Commercial	—	6,407	—	—	6,407
Non-U.S. securities	—	13,212	195	—	13,407
Other taxable securities	—	4,645	—	—	4,645
Tax-exempt securities	—	11,207	51	—	11,258
Total AFS debt securities	158,102	62,182	504	—	220,788
Other debt securities carried at fair value:					
U.S. Treasury and government agencies	561	—	—	—	561
Non-agency residential MBS	—	248	119	—	367
Non-U.S. and other securities	3,027	5,251	—	—	8,278
Total other debt securities carried at fair value	3,588	5,499	119	—	9,206
Loans and leases	—	5,518	253	—	5,771
Loans held-for-sale	—	883	232	—	1,115
Other assets ⁽³⁾	6,898	897	1,799	—	9,594
Total assets ⁽⁴⁾	\$ 328,385	\$ 749,713	\$ 10,719	\$ (349,726)	\$ 739,091
Liabilities					
Interest-bearing deposits in U.S. offices	\$ —	\$ 311	\$ —	\$ —	\$ 311
Federal funds purchased and securities loaned or sold under agreements to repurchase	—	151,708	—	—	151,708
Trading account liabilities:					
U.S. Treasury and government agencies	13,906	181	—	—	14,087
Equity securities	36,937	4,825	—	—	41,762
Non-U.S. sovereign debt	9,636	8,228	—	—	17,864
Corporate securities and other	—	6,628	58	—	6,686
Total trading account liabilities	60,479	19,862	58	—	80,399
Derivative liabilities	15,431	376,979	6,106	(353,700)	44,816
Short-term borrowings	—	818	14	—	832
Accrued expenses and other liabilities	7,458	2,262	32	—	9,752
Long-term debt	—	32,208	862	—	33,070
Total liabilities ⁽⁴⁾	\$ 83,368	\$ 584,148	\$ 7,072	\$ (353,700)	\$ 320,888

⁽¹⁾ Amounts represent the impact of legally enforceable master netting agreements and also cash collateral held or placed with the same counterparties.

⁽²⁾ Includes securities with a fair value of \$16.6 billion that were segregated in compliance with securities regulations or deposited with clearing organizations. This amount is included in the parenthetical disclosure on the Consolidated Balance Sheet. Trading account assets also includes certain commodities inventory of \$40 million that is accounted for at the lower of cost or net realizable value, which is the current selling price less any costs to sell.

⁽³⁾ Includes MSRs of \$1.0 billion, which are classified as Level 3 assets.

⁽⁴⁾ Total recurring Level 3 assets were 0.35 percent of total consolidated assets, and total recurring Level 3 liabilities were 0.25 percent of total consolidated liabilities.

December 31, 2021

(Dollars in millions)	Fair Value Measurements			Netting Adjustments ⁽¹⁾	Assets/Liabilities at Fair Value
	Level 1	Level 2	Level 3		
Assets					
Time deposits placed and other short-term investments	\$ 707	\$ —	\$ —	\$ —	\$ 707
Federal funds sold and securities borrowed or purchased under agreements to resell	—	150,665	—	—	150,665
Trading account assets:					
U.S. Treasury and government agencies	44,599	803	—	—	45,402
Corporate securities, trading loans and other	—	31,601	2,110	—	33,711
Equity securities	61,425	38,383	190	—	99,998
Non-U.S. sovereign debt	3,822	25,612	396	—	29,830
Mortgage trading loans, MBS and ABS:					
U.S. government-sponsored agency guaranteed	—	25,645	109	—	25,754
Mortgage trading loans, ABS and other MBS	—	10,967	1,418	—	12,385
Total trading account assets ⁽²⁾	109,846	133,011	4,223	—	247,080
Derivative assets	34,748	310,581	3,133	(313,118)	35,344
AFS debt securities:					
U.S. Treasury and government agencies	198,071	1,074	—	—	199,145
Mortgage-backed securities:					
Agency	—	46,339	—	—	46,339
Agency-collateralized mortgage obligations	—	3,380	—	—	3,380
Non-agency residential	—	267	316	—	583
Commercial	—	19,604	—	—	19,604
Non-U.S. securities	—	11,933	—	—	11,933
Other taxable securities	—	2,690	71	—	2,761
Tax-exempt securities	—	15,381	52	—	15,433
Total AFS debt securities	198,071	100,668	439	—	299,178
Other debt securities carried at fair value:					
U.S. Treasury and government agencies	575	—	—	—	575
Non-agency residential MBS	—	343	242	—	585
Non-U.S. and other securities	2,580	5,155	—	—	7,735
Total other debt securities carried at fair value	3,155	5,498	242	—	8,895
Loans and leases	—	7,071	748	—	7,819
Loans held-for-sale	—	4,138	317	—	4,455
Other assets ⁽³⁾	7,657	2,915	1,572	—	12,144
Total assets ⁽⁴⁾	\$ 354,184	\$ 714,547	\$ 10,674	\$ (313,118)	\$ 766,287
Liabilities					
Interest-bearing deposits in U.S. offices	\$ —	\$ 408	\$ —	\$ —	\$ 408
Federal funds purchased and securities loaned or sold under agreements to repurchase	—	139,641	—	—	139,641
Trading account liabilities:					
U.S. Treasury and government agencies	19,826	313	—	—	20,139
Equity securities	41,744	6,491	—	—	48,235
Non-U.S. sovereign debt	10,400	13,781	—	—	24,181
Corporate securities and other	—	8,124	11	—	8,135
Total trading account liabilities	71,970	28,709	11	—	100,690
Derivative liabilities	35,282	314,380	5,795	(317,782)	37,675
Short-term borrowings	—	4,279	—	—	4,279
Accrued expenses and other liabilities	8,359	3,130	—	—	11,489
Long-term debt	—	28,633	1,075	—	29,708
Total liabilities ⁽⁴⁾	\$ 115,611	\$ 519,180	\$ 6,881	\$ (317,782)	\$ 323,890

⁽¹⁾ Amounts represent the impact of legally enforceable master netting agreements and also cash collateral held or placed with the same counterparties.

⁽²⁾ Includes securities with a fair value of \$10.6 billion that were segregated in compliance with securities regulations or deposited with clearing organizations. This amount is included in the parenthetical disclosure on the Consolidated Balance Sheet. Trading account assets also includes certain commodities inventory of \$752 million that is accounted for at the lower of cost or net realizable value, which is the current selling price less any costs to sell.

⁽³⁾ Includes MSRs of \$818 million, which are classified as Level 3 assets.

⁽⁴⁾ Total recurring Level 3 assets were 0.34 percent of total consolidated assets, and total recurring Level 3 liabilities were 0.24 percent of total consolidated liabilities.

The following tables present a reconciliation of all assets and liabilities measured at fair value on a recurring basis using significant unobservable inputs (Level 3) during 2022, 2021 and 2020, including net realized and unrealized gains (losses) included in earnings and accumulated OCI. Transfers into Level 3 occur primarily due to decreased price observability, and

transfers out of Level 3 occur primarily due to increased price observability. Transfers occur on a regular basis for long-term debt instruments due to changes in the impact of unobservable inputs on the value of the embedded derivative in relation to the instrument as a whole.

Level 3 – Fair Value Measurements ⁽¹⁾

	Balance January 1	Total Realized/ Unrealized Gains (Losses) in Net Income ⁽²⁾	Gains (Losses) in OCI ⁽³⁾	Gross				Gross Transfers into Level 3	Gross Transfers out of Level 3	Balance December 31	Change in Unrealized Gains (Losses) in Net Income Related to Financial Instruments Still Held ⁽²⁾
				Purchases	Sales	Issuances	Settlements				
Year Ended December 31, 2022											
Trading account assets:											
Corporate securities, trading loans and other	2,110	(52)	(2)	1,069	(384)	—	(606)	1,023	(774)	2,384	(78)
Equity securities	190	(3)	—	45	(25)	—	(4)	38	(96)	145	(6)
Non-U.S. sovereign debt	396	59	16	54	(4)	—	(68)	75	(10)	518	56
Mortgage trading loans, MBS and ABS	1,527	(254)	—	729	(665)	—	(112)	536	(209)	1,552	(152)
Total trading account assets	4,223	(250)	14	1,897	(1,078)	—	(790)	1,672	(1,089)	4,599	(180)
Net derivative assets (liabilities) ⁽⁴⁾	(2,662)	551	—	319	(830)	—	294	(180)	(385)	(2,893)	259
AFS debt securities:											
Non-agency residential MBS	316	—	(35)	—	(8)	—	(75)	73	(13)	258	—
Non-U.S. and other taxable securities	71	10	(10)	126	—	—	(22)	311	(291)	195	1
Tax-exempt securities	52	—	1	—	—	—	(3)	1	—	51	—
Total AFS debt securities	439	10	(44)	126	(8)	—	(100)	385	(304)	504	1
Other debt securities carried at fair value – Non-agency residential MBS											
Loans and leases ^(5,6)	748	(45)	—	—	(154)	82	(129)	—	(249)	253	(21)
Loans held-for-sale ^(5,6)	317	9	4	171	(6)	—	(271)	8	—	232	19
Other assets ^(6,7)	1,572	305	(21)	39	(35)	208	(271)	5	(3)	1,799	213
Trading account liabilities – Corporate securities and other											
Short-term borrowings ⁽⁵⁾	(11)	5	—	(4)	—	—	(2)	(46)	—	(58)	1
Accrued expenses and other liabilities ⁽⁵⁾	—	3	—	—	(17)	—	—	(3)	3	(14)	2
Long-term debt ⁽⁵⁾	—	(23)	—	(9)	—	—	—	—	—	(32)	(7)
	(1,075)	(197)	82	—	14	(1)	57	(24)	282	(862)	(200)
Year Ended December 31, 2021											
Trading account assets:											
Corporate securities, trading loans and other	\$ 1,359	\$ (17)	\$ —	\$ 765	\$ (437)	\$ —	\$ (327)	\$ 1,218	\$ (451)	\$ 2,110	\$ (79)
Equity securities	227	(18)	—	103	(68)	—	—	112	(166)	190	(44)
Non-U.S. sovereign debt	354	31	(20)	18	—	—	(13)	26	—	396	34
Mortgage trading loans, MBS and ABS	1,440	(58)	—	518	(721)	7	(167)	771	(263)	1,527	(91)
Total trading account assets	3,380	(62)	(20)	1,404	(1,226)	7	(507)	2,127	(880)	4,223	(180)
Net derivative assets (liabilities) ⁽⁴⁾	(3,468)	927	—	521	(653)	—	293	(74)	(208)	(2,662)	800
AFS debt securities:											
Non-agency residential MBS	378	(11)	(111)	—	(98)	—	(45)	304	(101)	316	8
Non-U.S. and other taxable securities	89	(4)	(7)	8	(10)	—	(4)	—	(1)	71	—
Tax-exempt securities	176	20	—	—	—	—	(2)	—	(142)	52	(19)
Total AFS debt securities	643	5	(118)	8	(108)	—	(51)	304	(244)	439	(11)
Other debt securities carried at fair value – Non-agency residential MBS											
Loans and leases ^(5,6)	267	1	—	—	(45)	—	(37)	101	(45)	242	10
Loans held-for-sale ^(5,6)	717	62	(6)	59	(13)	70	(180)	46	(13)	748	65
Other assets ^(6,7)	236	13	(6)	132	(1)	—	(79)	26	(4)	317	18
	1,970	7	3	26	(202)	144	(383)	9	(2)	1,572	3
Trading account liabilities – Corporate securities and other											
Long-term debt ⁽⁵⁾	(16)	6	—	—	—	(1)	—	—	—	(11)	—
	(1,164)	(92)	13	(6)	15	(12)	98	(65)	138	(1,075)	(113)

⁽¹⁾ Assets (liabilities). For assets, increase (decrease) to Level 3 and for liabilities, (increase) decrease to Level 3.

⁽²⁾ Includes gains (losses) reported in earnings in the following income statement line items: Trading account assets/liabilities - predominantly market making and similar activities; Net derivative assets (liabilities) - market making and similar activities and other income; AFS debt securities - other income; Other debt securities carried at fair value - other income; Loans and leases - market making and similar activities and other income; Loans held-for-sale - other income; Other assets - market making and similar activities and other income related to MSRs; Short-term borrowings - market making and similar activities; Accrued expenses and other liabilities - market making and similar activities and other income; Long-term debt - market making and similar activities.

⁽³⁾ Includes unrealized gains (losses) in OCI on AFS debt securities, foreign currency translation adjustments and the impact of changes in the Corporation's credit spreads on long-term debt accounted for under the fair value option. Amounts include net unrealized gains (losses) of \$28 million and \$(19) million related to financial instruments still held at December 31, 2022 and 2021.

⁽⁴⁾ Net derivative assets (liabilities) include derivative assets of \$3.2 billion and \$3.1 billion and derivative liabilities of \$6.1 billion and \$5.8 billion at December 31, 2022 and 2021.

⁽⁵⁾ Amounts represent instruments that are accounted for under the fair value option.

⁽⁶⁾ Issuances represent loan originations and MSRs recognized following securitizations or whole-loan sales.

⁽⁷⁾ Settlements primarily represent the net change in fair value of the MSR asset due to the recognition of modeled cash flows and the passage of time.

Level 3 – Fair Value Measurements ⁽¹⁾

(Dollars in millions)	Balance January 1	Total Realized/ Unrealized Gains (Losses) in Net Income ⁽²⁾	Gains (Losses) in OCI ⁽³⁾	Gross				Gross Transfers into Level 3	Gross Transfers out of Level 3	Balance December 31	Change in Unrealized Gains (Losses) in Net Income Related to Financial Instruments Still Held ⁽²⁾
				Purchases	Sales	Issuances	Settlements				
Year Ended December 31, 2020											
Trading account assets:											
Corporate securities, trading loans and other	\$ 1,507	\$ (138)	\$ (1)	\$ 430	\$ (242)	\$ 10	\$ (282)	\$ 639	\$ (564)	\$ 1,359	\$ (102)
Equity securities	239	(43)	—	78	(53)	—	(3)	58	(49)	227	(31)
Non-U.S. sovereign debt	482	45	(46)	76	(61)	—	(39)	150	(253)	354	47
Mortgage trading loans, MBS and ABS	1,553	(120)	(3)	577	(746)	11	(96)	757	(493)	1,440	(92)
Total trading account assets	3,781	(256)	(50)	1,161	(1,102)	21	(420)	1,604	(1,359)	3,380	(178)
Net derivative assets (liabilities) ⁽⁴⁾	(2,538)	(235)	—	120	(646)	—	(112)	(235)	178	(3,468)	(953)
AFS debt securities:											
Non-agency residential MBS	424	(2)	3	23	(54)	—	(44)	158	(130)	378	(2)
Non-U.S. and other taxable securities	67	1	—	9	(5)	—	(1)	18	—	89	1
Tax-exempt securities	108	(21)	3	—	—	—	(169)	265	(10)	176	(20)
Total AFS debt securities	599	(22)	6	32	(59)	—	(214)	441	(140)	643	(21)
Other debt securities carried at fair value - Non-agency residential MBS											
	299	26	—	—	(180)	—	(24)	190	(44)	267	3
Loans and leases ^(5,6)	693	(4)	—	145	(76)	22	(161)	98	—	717	9
Loans held-for-sale ^(5,6)	375	26	(28)	—	(489)	691	(119)	93	(313)	236	(5)
Other assets ^(6,7)	2,360	(288)	3	178	(4)	224	(506)	5	(2)	1,970	(374)
Trading account liabilities – Equity securities	(2)	1	—	—	—	—	—	—	1	—	—
Trading account liabilities – Corporate securities and other	(15)	8	—	(7)	(3)	—	1	—	—	(16)	—
Long-term debt ⁽⁵⁾	(1,149)	(46)	2	(104)	—	(47)	218	(52)	14	(1,164)	(5)

⁽¹⁾ Assets (liabilities). For assets, increase (decrease) to Level 3 and for liabilities, (increase) decrease to Level 3.

⁽²⁾ Includes gains/losses reported in earnings in the following income statement line items: Trading account assets/liabilities - predominantly market making and similar activities; Net derivative assets (liabilities) - market making and similar activities and other income; AFS debt securities - other income; Other debt securities carried at fair value - other income; Loans and leases - market making and similar activities and other income; Loans held-for-sale - other income; Other assets - market making and similar activities and other income related to MSRs; Long-term debt - market making and similar activities.

⁽³⁾ Includes unrealized losses in OCI on AFS debt securities, foreign currency translation adjustments and the impact of changes in the Corporation's credit spreads on long-term debt accounted for under the fair value option. Amounts include net unrealized losses of \$41 million related to financial instruments still held at December 31, 2020.

⁽⁴⁾ Net derivative assets (liabilities) include derivative assets of \$2.8 billion and derivative liabilities of \$6.2 billion.

⁽⁵⁾ Amounts represent instruments that are accounted for under the fair value option.

⁽⁶⁾ Issuances represent loan originations and MSRs recognized following securitizations or whole-loan sales.

⁽⁷⁾ Settlements primarily represent the net change in fair value of the MSR asset due to the recognition of modeled cash flows and the passage of time.

The following tables present information about significant unobservable inputs related to the Corporation's material categories of Level 3 financial assets and liabilities at December 31, 2022 and 2021.

Quantitative Information about Level 3 Fair Value Measurements at December 31, 2022

(Dollars in millions)

Financial Instrument	Fair Value	Valuation Technique	Inputs		
			Significant Unobservable Inputs	Ranges of Inputs	Weighted Average ⁽¹⁾
Loans and Securities⁽²⁾					
Instruments backed by residential real estate assets	\$ 852				
Trading account assets – Mortgage trading loans, MBS and ABS	338	Discounted cash flow, Market comparables	Yield	0% to 25%	10%
Loans and leases	137		Prepayment speed	0% to 29% CPR	12% CPR
AFS debt securities – Non-agency residential	258		Default rate	0% to 3% CDR	1% CDR
Other debt securities carried at fair value – Non-agency residential	119		Price	\$0 to \$111	\$26
			Loss severity	0% to 100%	24%
Instruments backed by commercial real estate assets	\$ 362				
Trading account assets – Corporate securities, trading loans and other	292	Discounted cash flow	Yield	0% to 25%	10%
Trading account assets – Mortgage trading loans, MBS and ABS	66		Price	\$0 to \$100	\$75
Loans held-for-sale	4				
Commercial loans, debt securities and other	\$ 4,348				
Trading account assets – Corporate securities, trading loans and other	2,092	Discounted cash flow, Market comparables	Yield	5% to 43%	15%
Trading account assets – Non-U.S. sovereign debt	518		Prepayment speed	10% to 20%	15%
Trading account assets – Mortgage trading loans, MBS and ABS	1,148		Default rate	3% to 4%	4%
AFS debt securities – Tax-exempt securities	51		Loss severity	35% to 40%	38%
AFS debt securities – Non-U.S. and other taxable securities	195		Price	\$0 to \$157	\$75
Loans and leases	116				
Loans held-for-sale	228				
Other assets, primarily auction rate securities	\$ 779	Discounted cash flow, Market comparables	Price	\$10 to \$97	\$94
			Discount rate	11%	n/a
MSRs	\$ 1,020	Discounted cash flow	Weighted-average life, fixed rate ⁽⁵⁾	0 to 14 years	6 years
			Weighted-average life, variable rate ⁽⁵⁾	0 to 12 years	4 years
			Option-adjusted spread, fixed rate	7% to 14%	9%
			Option-adjusted spread, variable rate	9% to 15%	12%
Structured liabilities					
Long-term debt	\$ (862)	Discounted cash flow, Market comparables, Industry standard derivative pricing ⁽³⁾	Yield	22% to 43%	23%
			Equity correlation	0% to 95%	69%
			Price	\$0 to \$119	\$90
			Natural gas forward price	\$3/MMBtu to \$13/MMBtu	\$9 /MMBtu
Net derivative assets (liabilities)					
Credit derivatives	\$ (44)	Discounted cash flow, Stochastic recovery correlation model	Credit spreads	3 to 63 bps	22 bps
			Upfront points	0 to 100 points	83 points
			Prepayment speed	15% CPR	n/a
			Default rate	2% CDR	n/a
			Credit correlation	18% to 53%	44%
			Price	\$0 to \$151	\$63
Equity derivatives	\$ (1,534)	Industry standard derivative pricing ⁽³⁾	Equity correlation	0% to 100%	73%
			Long-dated equity volatilities	4% to 101%	44%
Commodity derivatives	\$ (291)	Discounted cash flow, Industry standard derivative pricing ⁽³⁾	Natural gas forward price	\$3/MMBtu to \$13/MMBtu	\$8 /MMBtu
			Power forward price	\$9 to \$123	\$43
Interest rate derivatives	\$ (1,024)	Industry standard derivative pricing ⁽⁴⁾	Correlation (IR/IR)	(35)% to 89%	67%
			Correlation (FX/IR)	11% to 58%	43%
			Long-dated inflation rates	0% to 39%	1%
			Long-dated inflation volatilities	0% to 5%	2%
			Interest rate volatilities	0% to 2%	1%
Total net derivative assets (liabilities)	\$ (2,893)				

⁽¹⁾ For loans and securities, structured liabilities and net derivative assets (liabilities), the weighted average is calculated based upon the absolute fair value of the instruments.

⁽²⁾ The categories are aggregated based upon product type which differs from financial statement classification. The following is a reconciliation to the line items in the table on page 197: Trading account assets – Corporate securities, trading loans and other of \$2.4 billion, Trading account assets – Non-U.S. sovereign debt of \$518 million, Trading account assets – Mortgage trading loans, MBS and ABS of \$1.6 billion, AFS debt securities of \$504 million, Other debt securities carried at fair value - Non-agency residential of \$119 million, Other assets, including MSRs, of \$1.8 billion, Loans and leases of \$253 million and LHFS of \$232 million.

⁽³⁾ Includes models such as Monte Carlo simulation and Black-Scholes.

⁽⁴⁾ Includes models such as Monte Carlo simulation, Black-Scholes and other methods that model the joint dynamics of interest, inflation and foreign exchange rates.

⁽⁵⁾ The weighted-average life is a product of changes in market rates of interest, prepayment rates and other model and cash flow assumptions.

CPR = Constant Prepayment Rate

CDR = Constant Default Rate

MMBtu = Million British thermal units

IR = Interest Rate

FX = Foreign Exchange

n/a = not applicable

Quantitative Information about Level 3 Fair Value Measurements at December 31, 2021

(Dollars in millions)

Financial Instrument	Fair Value	Valuation Technique	Inputs		
			Significant Unobservable Inputs	Ranges of Inputs	Weighted Average ⁽¹⁾
Loans and Securities⁽²⁾					
Instruments backed by residential real estate assets	\$ 1,269		Yield	0% to 25%	6%
Trading account assets – Mortgage trading loans, MBS and ABS	338	Discounted cash flow, Market comparables	Prepayment speed	1% to 40% CPR	19% CPR
Loans and leases	373		Default rate	0% to 3% CDR	1% CDR
AFS debt securities - Non-agency residential	316		Price	\$0 to \$168	\$92
Other debt securities carried at fair value - Non-agency residential	242		Loss severity	0% to 43%	13%
Instruments backed by commercial real estate assets	\$ 298			Yield	0% to 25%
Trading account assets – Corporate securities, trading loans and other	138	Discounted cash flow	Price	\$0 to \$101	\$57
Trading account assets – Mortgage trading loans, MBS and ABS	77				
AFS debt securities – Non-U.S. and other taxable securities	71				
Loans held-for-sale	12				
Commercial loans, debt securities and other	\$ 4,212		Yield	0% to 19%	10%
Trading account assets – Corporate securities, trading loans and other	1,972	Discounted cash flow, Market comparables	Prepayment speed	10% to 20%	16%
Trading account assets – Non-U.S. sovereign debt	396		Default rate	3% to 4%	4%
Trading account assets – Mortgage trading loans, MBS and ABS	1,112		Loss severity	35% to 40%	37%
AFS debt securities – Tax-exempt securities	52		Price	\$0 to \$189	\$73
Loans and leases	375		Long-dated equity volatilities	45%	n/a
Loans held-for-sale	305				
Other assets, primarily auction rate securities	\$ 754		Discounted cash flow, Market comparables	Price	\$10 to \$96
			Discount rate	9%	n/a
MSRs	\$ 818	Discounted cash flow	Weighted-average life, fixed rate ⁽⁵⁾	0 to 14 years	4 years
			Weighted-average life, variable rate ⁽⁵⁾	0 to 10 years	3 years
			Option-adjusted spread, fixed rate	7% to 14%	9%
			Option-adjusted spread, variable rate	9% to 15%	12%
Structured liabilities					
Long-term debt	\$ (1,075)	Discounted cash flow, Market comparables, Industry standard derivative pricing ⁽³⁾	Yield	0% to 19%	18%
			Equity correlation	3% to 100%	80%
			Long-dated equity volatilities	5% to 78%	36%
			Price	\$0 to \$125	\$82
			Natural gas forward price	\$2/MMBtu to \$8/MMBtu	\$4/MMBtu
Net derivative assets (liabilities)					
Credit derivatives	\$ (104)	Discounted cash flow, Stochastic recovery correlation model	Credit spreads	7 to 155 bps	61 bps
			Upfront points	16 to 100 points	68 points
			Prepayment speed	15% CPR	n/a
			Default rate	2% CDR	n/a
			Credit correlation	20% to 60%	55%
			Price	\$0 to \$120	\$53
Equity derivatives	\$ (1,710)	Industry standard derivative pricing ⁽³⁾	Equity correlation	3% to 100%	80%
			Long-dated equity volatilities	5% to 78%	36%
Commodity derivatives	\$ (976)	Discounted cash flow, Industry standard derivative pricing ⁽³⁾	Natural gas forward price	\$2/MMBtu to \$8/MMBtu	\$4/MMBtu
			Correlation	65% to 85%	76%
			Power forward price	\$11 to \$103	\$32
			Volatilities	41% to 69%	63%
Interest rate derivatives	\$ 128	Industry standard derivative pricing ⁽⁴⁾	Correlation (IR/IR)	(1)% to 90%	54%
			Correlation (FX/IR)	(1)% to 58%	44%
			Long-dated inflation rates	(10)% to 11%	3%
			Long-dated inflation volatilities	0% to 2%	2%
			Interest rates volatilities	0% to 2%	1%
Total net derivative assets (liabilities)	\$ (2,662)				

⁽¹⁾ For loans and securities, structured liabilities and net derivative assets (liabilities), the weighted average is calculated based upon the absolute fair value of the instruments.

⁽²⁾ The categories are aggregated based upon product type which differs from financial statement classification. The following is a reconciliation to the line items in the table on page 198: Trading account assets – Corporate securities, trading loans and other of \$2.1 billion, Trading account assets – Non-U.S. sovereign debt of \$396 million, Trading account assets – Mortgage trading loans, MBS and ABS of \$1.5 billion, AFS debt securities of \$439 million, Other debt securities carried at fair value - Non-agency residential of \$242 million, Other assets, including MSRs, of \$1.6 billion, Loans and leases of \$748 million and LHFS of \$317 million.

⁽³⁾ Includes models such as Monte Carlo simulation and Black-Scholes.

⁽⁴⁾ Includes models such as Monte Carlo simulation, Black-Scholes and other methods that model the joint dynamics of interest, inflation and foreign exchange rates.

⁽⁵⁾ The weighted-average life is a product of changes in market rates of interest, prepayment rates and other model and cash flow assumptions.

CPR = Constant Prepayment Rate

CDR = Constant Default Rate

MMBtu = Million British thermal units

IR = Interest Rate

FX = Foreign Exchange

n/a = not applicable

In the previous tables, instruments backed by residential and commercial real estate assets include RMBS, commercial MBS, whole loans and mortgage CDOs. Commercial loans, debt securities and other include corporate CLOs and CDOs, commercial loans and bonds, and securities backed by non-real estate assets. Structured liabilities primarily include equity-linked notes that are accounted for under the fair value option.

The Corporation uses multiple market approaches in valuing certain of its Level 3 financial instruments. For example, market comparables and discounted cash flows are used together. For a given product, such as corporate debt securities, market comparables may be used to estimate some of the unobservable inputs, and then these inputs are incorporated into a discounted cash flow model. Therefore, the balances disclosed encompass both of these techniques.

The levels of aggregation and diversity within the products disclosed in the tables result in certain ranges of inputs being wide and unevenly distributed across asset and liability categories.

Uncertainty of Fair Value Measurements from Unobservable Inputs

Loans and Securities

A significant increase in market yields, default rates, loss severities or duration would have resulted in a significantly lower fair value for long positions. Short positions would have been impacted in a directionally opposite way. The impact of changes in prepayment speeds would have resulted in differing impacts depending on the seniority of the instrument and, in the case of CLOs, whether prepayments can be reinvested. A significant increase in price would have resulted in a significantly higher fair value for long positions, and short positions would have been impacted in a directionally opposite way.

Structured Liabilities and Derivatives

For credit derivatives, a significant increase in market yield, upfront points (i.e., a single upfront payment made by a

protection buyer at inception), credit spreads, default rates or loss severities would have resulted in a significantly lower fair value for protection sellers and higher fair value for protection buyers. The impact of changes in prepayment speeds would have resulted in differing impacts depending on the seniority of the instrument.

Structured credit derivatives are impacted by credit correlation. Default correlation is a parameter that describes the degree of dependence among credit default rates within a credit portfolio that underlies a credit derivative instrument. The sensitivity of this input on the fair value varies depending on the level of subordination of the tranche. For senior tranches that are net purchases of protection, a significant increase in default correlation would have resulted in a significantly higher fair value. Net short protection positions would have been impacted in a directionally opposite way.

For equity derivatives, commodity derivatives, interest rate derivatives and structured liabilities, a significant change in long-dated rates and volatilities and correlation inputs (i.e., the degree of correlation between an equity security and an index, between two different commodities, between two different interest rates, or between interest rates and foreign exchange rates) would have resulted in a significant impact to the fair value; however, the magnitude and direction of the impact depend on whether the Corporation is long or short the exposure. For structured liabilities, a significant increase in yield or decrease in price would have resulted in a significantly lower fair value.

Nonrecurring Fair Value

The Corporation holds certain assets that are measured at fair value only in certain situations (e.g., the impairment of an asset), and these measurements are referred to herein as nonrecurring. The amounts below represent assets still held as of the reporting date for which a nonrecurring fair value adjustment was recorded during 2022, 2021, and 2020.

Assets Measured at Fair Value on a Nonrecurring Basis

	December 31, 2022		December 31, 2021	
	Level 2	Level 3	Level 2	Level 3
(Dollars in millions)				
Assets				
Loans held-for-sale	\$ 1,979	\$ 3,079	\$ 634	\$ 24
Loans and leases ⁽¹⁾	—	166	—	213
Foreclosed properties ^(2, 3)	—	7	—	5
Other assets	88	165	256	2,046
Gains (Losses)				
	2022	2021	2020	
Loans held-for-sale	\$ (387)	\$ (44)	\$ (79)	
Loans and leases ⁽¹⁾	(48)	(60)	(73)	
Foreclosed properties	(6)	(2)	(6)	
Other assets	(91)	(492)	(98)	

⁽¹⁾ Includes \$15 million, \$24 million and \$30 million of losses on loans that were written down to a collateral value of zero during 2022, 2021 and 2020, respectively.

⁽²⁾ Amounts are included in other assets on the Consolidated Balance Sheet and represent the carrying value of foreclosed properties that were written down subsequent to their initial classification as foreclosed properties. Losses on foreclosed properties include losses recorded during the first 90 days after transfer of a loan to foreclosed properties.

⁽³⁾ Excludes \$60 million and \$52 million of properties acquired upon foreclosure of certain government-guaranteed loans (principally FHA-insured loans) at December 31, 2022 and 2021.

The table below presents information about significant unobservable inputs utilized in the Corporation's nonrecurring Level 3 fair value measurements at December 31, 2022 and 2021.

Quantitative Information about Nonrecurring Level 3 Fair Value Measurements

Financial Instrument	Fair Value	Valuation Technique	Inputs		
			Significant Unobservable Inputs	Ranges of Inputs	Weighted Average ⁽¹⁾
Year Ended December 31, 2022					
(Dollars in millions)					
Loans held-for-sale	\$ 3,079	Pricing model	Implied yield	9% to 24%	n/a
Loans and leases ⁽²⁾	166	Market comparables	OREO discount	10% to 66%	26%
			Costs to sell	8% to 24%	9%
Other assets ⁽³⁾	165	Discounted cash flow	Discount rate	7%	n/a
Year Ended December 31, 2021					
Loans and leases ⁽²⁾	\$ 213	Market comparables	OREO discount	13% to 59%	24%
			Costs to sell	8% to 26%	9%
Other assets ⁽⁴⁾	1,875	Discounted cash flow	Discount rate	7%	n/a
	166	Market comparables	Estimated appraisal value	n/a	n/a

⁽¹⁾ The weighted average is calculated based upon the fair value of the loans.

⁽²⁾ Represents residential mortgages where the loan has been written down to the fair value of the underlying collateral.

⁽³⁾ Represents the fair value of certain impaired renewable energy investments.

⁽⁴⁾ Represents the fair value of certain impaired renewable energy investments and impaired assets related to the Corporation's real estate rationalization.

n/a = not applicable

NOTE 21 Fair Value Option

Loans and Loan Commitments

The Corporation elects to account for certain loans and loan commitments that exceed the Corporation's single-name credit risk concentration guidelines under the fair value option. Lending commitments are actively managed and, as appropriate, credit risk for these lending relationships may be mitigated through the use of credit derivatives, with the Corporation's public side credit view and market perspectives determining the size and timing of the hedging activity. These credit derivatives do not meet the requirements for designation as accounting hedges and are carried at fair value. The fair value option allows the Corporation to carry these loans and loan commitments at fair value, which is more consistent with management's view of the underlying economics and the manner in which they are managed. In addition, the fair value option allows the Corporation to reduce the accounting volatility that would otherwise result from the asymmetry created by accounting for the financial instruments at historical cost and the credit derivatives at fair value.

Loans Held-for-sale

The Corporation elects to account for residential mortgage LHFS, commercial mortgage LHFS and certain other LHFS under the fair value option. These loans are actively managed and monitored and, as appropriate, certain market risks of the loans may be mitigated through the use of derivatives. The Corporation has elected not to designate the derivatives as qualifying accounting hedges, and therefore, they are carried at

fair value. The changes in fair value of the loans are largely offset by changes in the fair value of the derivatives. The fair value option allows the Corporation to reduce the accounting volatility that would otherwise result from the asymmetry created by accounting for the financial instruments at the lower of cost or fair value and the derivatives at fair value. The Corporation has not elected to account for certain other LHFS under the fair value option primarily because these loans are floating-rate loans that are not hedged using derivative instruments.

Loans Reported as Trading Account Assets

The Corporation elects to account for certain loans that are held for the purpose of trading and are risk-managed on a fair value basis under the fair value option.

Other Assets

The Corporation elects to account for certain long-term fixed-rate margin loans that are hedged with derivatives under the fair value option. Election of the fair value option allows the Corporation to reduce the accounting volatility that would otherwise result from the asymmetry created by accounting for the financial instruments at historical cost and the derivatives at fair value.

Securities Financing Agreements

The Corporation elects to account for certain securities financing agreements, including resale and repurchase agreements, under the fair value option. These elections include certain agreements collateralized by the U.S. government and its agencies, which are generally short-dated and have minimal interest rate risk.

Long-term Deposits

The Corporation elects to account for certain long-term fixed-rate and rate-linked deposits that are hedged with derivatives that do not qualify for hedge accounting. Election of the fair value option allows the Corporation to reduce the accounting volatility that would otherwise result from the asymmetry created by accounting for the financial instruments at historical cost and the derivatives at fair value. The Corporation has not elected to carry other long-term deposits at fair value because they are not hedged using derivatives.

Short-term Borrowings

The Corporation elects to account for certain short-term borrowings, primarily short-term structured liabilities, under the fair value option because this debt is risk-managed on a fair value basis.

The Corporation also elects to account for certain asset-backed secured financings, which are also classified in short-term borrowings, under the fair value option. Election of the fair value option allows the Corporation to reduce the accounting

volatility that would otherwise result from the asymmetry created by accounting for the asset-backed secured financings at historical cost and the corresponding mortgage LHFS securing these financings at fair value.

Long-term Debt

The Corporation elects to account for certain long-term debt, primarily structured liabilities, under the fair value option. This long-term debt is either risk-managed on a fair value basis or the related hedges do not qualify for hedge accounting.

Fair Value Option Elections

The following tables provide information about the fair value carrying amount and the contractual principal outstanding of assets and liabilities accounted for under the fair value option at December 31, 2022 and 2021, and information about where changes in the fair value of assets and liabilities accounted for under the fair value option are included in the Consolidated Statement of Income for 2022, 2021 and 2020.

Fair Value Option Elections

	December 31, 2022			December 31, 2021		
	Fair Value Carrying Amount	Contractual Principal Outstanding	Fair Value Carrying Amount Less Unpaid Principal	Fair Value Carrying Amount	Contractual Principal Outstanding	Fair Value Carrying Amount Less Unpaid Principal
(Dollars in millions)						
Federal funds sold and securities borrowed or purchased under agreements to resell	\$ 146,999	\$ 147,158	\$ (159)	\$ 150,665	\$ 150,677	\$ (12)
Loans reported as trading account assets ⁽¹⁾	10,143	17,682	(7,539)	10,864	18,895	(8,031)
Trading inventory – other	20,770	n/a	n/a	21,986	n/a	n/a
Consumer and commercial loans	5,771	5,897	(126)	7,819	7,888	(69)
Loans held-for-sale ⁽¹⁾	1,115	1,873	(758)	4,455	5,343	(888)
Other assets	620	n/a	n/a	544	n/a	n/a
Long-term deposits	311	381	(70)	408	401	7
Federal funds purchased and securities loaned or sold under agreements to repurchase	151,708	151,885	(177)	139,641	139,682	(41)
Short-term borrowings	832	833	(1)	4,279	4,127	152
Unfunded loan commitments	110	n/a	n/a	97	n/a	n/a
Accrued expenses and other liabilities	1,217	1,161	56	—	—	—
Long-term debt	33,070	36,830	(3,760)	29,708	30,903	(1,195)

⁽¹⁾ A significant portion of the loans reported as trading account assets and LHFS are distressed loans that were purchased at a deep discount to par, and the remainder are loans with a fair value near contractual principal outstanding.

n/a = not applicable

Fair Value of Financial Instruments

The carrying values and fair values by fair value hierarchy of certain financial instruments where only a portion of the ending balance was carried at fair value at December 31, 2022 and 2021 are presented in the table below.

Fair Value of Financial Instruments

	Carrying Value	Fair Value		
		Level 2	Level 3	Total
(Dollars in millions)				
December 31, 2022				
Financial assets				
Loans	\$ 1,014,593	\$ 50,194	\$ 935,282	\$ 985,476
Loans held-for-sale	6,871	3,417	3,455	6,872
Financial liabilities				
Deposits ⁽¹⁾	1,930,341	1,930,165	—	1,930,165
Long-term debt	275,982	271,993	1,136	273,129
Commercial unfunded lending commitments ⁽²⁾	1,650	77	6,596	6,673
December 31, 2021				
Financial assets				
Loans	\$ 946,142	\$ 53,544	\$ 919,980	\$ 973,524
Loans held-for-sale	15,635	15,016	627	15,643
Financial liabilities				
Deposits ⁽¹⁾	2,064,446	2,064,438	—	2,064,438
Long-term debt	280,117	286,802	1,288	288,090
Commercial unfunded lending commitments ⁽²⁾	1,554	97	6,384	6,481

⁽¹⁾ Includes demand deposits of \$918.9 billion and \$1.0 trillion with no stated maturities at December 31, 2022 and 2021.

⁽²⁾ The carrying value of commercial unfunded lending commitments is included in accrued expenses and other liabilities on the Consolidated Balance Sheet. The Corporation does not estimate the fair value of consumer unfunded lending commitments because, in many instances, the Corporation can reduce or cancel these commitments by providing notice to the borrower. For more information on commitments, see Note 12 - Commitments and Contingencies.

NOTE 23 Business Segment Information

The Corporation reports its results of operations through the following four business segments: *Consumer Banking*, *Global Wealth & Investment Management*, *Global Banking* and *Global Markets*, with the remaining operations recorded in *All Other*.

Consumer Banking

Consumer Banking offers a diversified range of credit, banking and investment products and services to consumers and small businesses. *Consumer Banking* product offerings include traditional savings accounts, money market savings accounts, CDs and IRAs, checking accounts, and investment accounts and products, as well as credit and debit cards, residential mortgages and home equity loans, and direct and indirect loans to consumers and small businesses in the U.S. *Consumer Banking* includes the impact of servicing residential mortgages and home equity loans.

Global Wealth & Investment Management

GWIM provides a high-touch client experience through a network of financial advisors focused on clients with over \$250,000 in total investable assets, including tailored solutions to meet clients' needs through a full set of investment management, brokerage, banking and retirement products. *GWIM* also provides comprehensive wealth management solutions targeted to high net worth and ultra high net worth clients, as well as customized solutions to meet clients' wealth structuring, investment management, trust and banking needs, including specialty asset management services.

Global Banking

Global Banking provides a wide range of lending-related products and services, integrated working capital management and treasury solutions, and underwriting and advisory services through the Corporation's network of offices and client relationship teams. *Global Banking* also provides investment banking products to clients. The economics of certain investment banking and underwriting activities are shared primarily between *Global Banking* and *Global Markets* under an internal revenue-sharing arrangement. *Global Banking* clients generally include middle-market companies, commercial real estate firms, not-for-profit companies, large global corporations, financial institutions, leasing clients, and mid-sized U.S.-based businesses requiring customized and integrated financial advice and solutions.

Global Markets

Global Markets offers sales and trading services and research services to institutional clients across fixed-income, credit, currency, commodity and equity businesses. *Global Markets* provides market-making, financing, securities clearing, settlement and custody services globally to institutional investor clients in support of their investing and trading activities. *Global Markets* product coverage includes securities and derivative products in both the primary and secondary markets. *Global Markets* also works with commercial and corporate clients to provide risk management products. As a result of market-making activities, *Global Markets* may be required to manage risk in a broad range of financial products. In addition, the economics of certain investment banking and underwriting activities are shared primarily between *Global Markets* and *Global Banking* under an internal revenue-sharing arrangement.

All Other

All Other primarily consists of ALM activities, liquidating businesses and certain expenses not otherwise allocated to a business segment. ALM activities encompass interest rate and foreign currency risk management activities for which substantially all of the results are allocated to the business segments.

Basis of Presentation

The management accounting and reporting process derives segment and business results by utilizing allocation methodologies for revenue and expense. The net income derived for the businesses is dependent upon revenue and cost allocations using an activity-based costing model, funds transfer pricing, and other methodologies and assumptions management believes are appropriate to reflect the results of the business.

Total revenue, net of interest expense, includes net interest income on an FTE basis and noninterest income. The adjustment of net interest income to an FTE basis results in a corresponding increase in income tax expense. The segment results also reflect certain revenue and expense methodologies that are utilized to determine net income. The net interest income of the businesses includes the results of a funds transfer pricing process that matches assets and liabilities with similar interest rate sensitivity and maturity characteristics. In segments where the total of liabilities and equity exceeds assets, which are generally deposit-taking segments, the Corporation allocates assets to match liabilities. Net interest income of the business segments also includes an allocation of net interest income generated by certain of the Corporation's ALM activities.

The Corporation's ALM activities include an overall interest rate risk management strategy that incorporates the use of

various derivatives and cash instruments to manage fluctuations in earnings and capital that are caused by interest rate volatility. The Corporation's goal is to manage interest rate sensitivity so that movements in interest rates do not significantly adversely affect earnings and capital. The results of a majority of the Corporation's ALM activities are allocated to the business segments and fluctuate based on the performance of the ALM activities. ALM activities include external product pricing decisions including deposit pricing strategies, the effects of the Corporation's internal funds transfer pricing process and the net effects of other ALM activities.

Certain expenses not directly attributable to a specific business segment are allocated to the segments. The costs of certain centralized or shared functions are allocated based on methodologies that reflect utilization.

Effective October 1, 2021, a business activity previously

included in the *Global Markets* segment is being reported as a liquidating business in *All Other*, consistent with a realignment in performance reporting to senior management. While this activity was not material to *Global Markets'* results of operations and historical results have not been restated, this activity's noninterest expense of \$309 million and \$473 million for the three months ended September 30, 2021 and June 30, 2021 was elevated and would have been excluded from *Global Markets'* results of operations for those periods under the new basis of presentation.

The table below presents net income (loss) and the components thereto (with net interest income on an FTE basis for the business segments, *All Other* and the total Corporation) for 2022, 2021 and 2020, and total assets at December 31, 2022, 2021 and 2020 for each business segment, as well as *All Other*.

Results of Business Segments and All Other

At and for the year ended December 31

(Dollars in millions)

	Total Corporation ⁽¹⁾			Consumer Banking		
	2022	2021	2020	2022	2021	2020
Net interest income	\$ 52,900	\$ 43,361	\$ 43,859	\$ 30,045	\$ 24,929	\$ 24,698
Noninterest income	42,488	46,179	42,168	8,590	9,076	8,564
Total revenue, net of interest expense	95,388	89,540	86,027	38,635	34,005	33,262
Provision for credit losses	2,543	(4,594)	11,320	1,980	(1,035)	5,765
Noninterest expense	61,438	59,731	55,213	20,077	19,290	18,882
Income before income taxes	31,407	34,403	19,494	16,578	15,750	8,615
Income tax expense	3,879	2,425	1,600	4,062	3,859	2,111
Net income	\$ 27,528	\$ 31,978	\$ 17,894	\$ 12,516	\$ 11,891	\$ 6,504
Year-end total assets	\$ 3,051,375	\$ 3,169,495		\$ 1,126,453	\$ 1,131,142	

	Global Wealth & Investment Management			Global Banking		
	2022	2021	2020	2022	2021	2020
Net interest income	\$ 7,466	\$ 5,664	\$ 5,468	\$ 12,184	\$ 8,511	\$ 9,013
Noninterest income	14,282	15,084	13,116	10,045	12,364	9,974
Total revenue, net of interest expense	21,748	20,748	18,584	22,229	20,875	18,987
Provision for credit losses	66	(241)	357	641	(3,201)	4,897
Noninterest expense	15,490	15,258	14,160	10,966	10,632	9,342
Income before income taxes	6,192	5,731	4,067	10,622	13,444	4,748
Income tax expense	1,517	1,404	996	2,815	3,630	1,282
Net income	\$ 4,675	\$ 4,327	\$ 3,071	\$ 7,807	\$ 9,814	\$ 3,466
Year-end total assets	\$ 368,893	\$ 438,275		\$ 588,466	\$ 638,131	

	Global Markets			All Other		
	2022	2021	2020	2022	2021	2020
Net interest income	\$ 3,088	\$ 4,011	\$ 4,646	\$ 117	\$ 246	\$ 34
Noninterest income	15,050	15,244	14,119	(5,479)	(5,589)	(3,605)
Total revenue, net of interest expense	18,138	19,255	18,765	(5,362)	(5,343)	(3,571)
Provision for credit losses	28	65	251	(172)	(182)	50
Noninterest expense	12,420	13,032	11,417	2,485	1,519	1,412
Income (loss) before income taxes	5,690	6,158	7,097	(7,675)	(6,680)	(5,033)
Income tax expense (benefit)	1,508	1,601	1,845	(6,023)	(8,069)	(4,634)
Net income (loss)	\$ 4,182	\$ 4,557	\$ 5,252	\$ (1,652)	\$ 1,389	\$ (399)
Year-end total assets	\$ 812,489	\$ 747,794		\$ 155,074	\$ 214,153	

⁽¹⁾ There were no material intersegment revenues.

Business Segment Reconciliations

(Dollars in millions)	2022	2021	2020
Segments' total revenue, net of interest expense	\$ 100,750	\$ 94,883	\$ 89,598
Adjustments ⁽¹⁾ :			
Asset and liability management activities	(164)	(4)	375
Liquidating businesses, eliminations and other	(5,198)	(5,339)	(3,946)
FTE basis adjustment	(438)	(427)	(499)
Consolidated revenue, net of interest expense	\$ 94,950	\$ 89,113	\$ 85,528
Segments' total net income	29,180	30,589	18,293
Adjustments, net-of-tax ⁽¹⁾ :			
Asset and liability management activities	(122)	11	279
Liquidating businesses, eliminations and other	(1,530)	1,378	(678)
Consolidated net income	\$ 27,528	\$ 31,978	\$ 17,894

	December 31	
	2022	2021
Segments' total assets	\$ 2,896,301	\$ 2,955,342
Adjustments ⁽¹⁾ :		
Asset and liability management activities, including securities portfolio	1,133,375	1,363,626
Elimination of segment asset allocations to match liabilities	(1,041,793)	(1,216,891)
Other	63,492	67,418
Consolidated total assets	\$ 3,051,375	\$ 3,169,495

⁽¹⁾ Adjustments include consolidated income, expense and asset amounts not specifically allocated to individual business segments.

NOTE 24 Parent Company Information

The following tables present the Parent Company-only financial information.

Condensed Statement of Income

(Dollars in millions)	2022	2021	2020
Income			
Dividends from subsidiaries:			
Bank holding companies and related subsidiaries	\$ 22,250	\$ 15,621	\$ 10,352
Interest from subsidiaries	12,420	8,362	8,825
Other income (loss)	(201)	(114)	(138)
Total income	34,469	23,869	19,039
Expense			
Interest on borrowed funds from subsidiaries	236	54	136
Other interest expense	7,041	3,383	4,119
Noninterest expense	1,322	1,531	1,651
Total expense	8,599	4,968	5,906
Income before income taxes and equity in undistributed earnings of subsidiaries	25,870	18,901	13,133
Income tax expense	683	886	649
Income before equity in undistributed earnings of subsidiaries	25,187	18,015	12,484
Equity in undistributed earnings (losses) of subsidiaries:			
Bank holding companies and related subsidiaries	2,333	14,078	5,372
Nonbank companies and related subsidiaries	8	(115)	38
Total equity in undistributed earnings (losses) of subsidiaries	2,341	13,963	5,410
Net income	\$ 27,528	\$ 31,978	\$ 17,894

Condensed Balance Sheet

	December 31	
	2022	2021
(Dollars in millions)		
Assets		
Cash held at bank subsidiaries	\$ 9,609	\$ 5,011
Securities	617	671
Receivables from subsidiaries:		
Bank holding companies and related subsidiaries	222,584	217,447
Banks and related subsidiaries	220	347
Nonbank companies and related subsidiaries	978	368
Investments in subsidiaries:		
Bank holding companies and related subsidiaries	301,207	316,497
Nonbank companies and related subsidiaries	3,770	3,645
Other assets	7,156	8,602
Total assets	\$ 546,141	\$ 552,588
Liabilities and shareholders' equity		
Accrued expenses and other liabilities	\$ 14,193	\$ 17,394
Payables to subsidiaries:		
Banks and related subsidiaries	260	107
Bank holding companies and related subsidiaries	21	3
Nonbank companies and related subsidiaries	14,578	11,564
Long-term debt	243,892	253,454
Total liabilities	272,944	282,522
Shareholders' equity	273,197	270,066
Total liabilities and shareholders' equity	\$ 546,141	\$ 552,588

Condensed Statement of Cash Flows

	2022	2021	2020
(Dollars in millions)			
Operating activities			
Net income	\$ 27,528	\$ 31,978	\$ 17,894
Reconciliation of net income (loss) to net cash provided by (used in) operating activities:			
Equity in undistributed (earnings) losses of subsidiaries	(2,341)	(13,963)	(5,410)
Other operating activities, net	(31,777)	(7,144)	14,303
Net cash provided by (used in) operating activities	(6,590)	10,871	26,787
Investing activities			
Net sales (purchases) of securities	25	(14)	(4)
Net payments to subsidiaries	(6,044)	(10,796)	(33,111)
Other investing activities, net	(34)	(26)	(7)
Net cash used in investing activities	(6,053)	(10,836)	(33,122)
Financing activities			
Net increase (decrease) in other advances	2,853	503	(422)
Proceeds from issuance of long-term debt	44,123	56,106	43,766
Retirement of long-term debt	(19,858)	(24,544)	(23,168)
Proceeds from issuance of preferred stock and warrants	4,426	2,170	2,181
Redemption of preferred stock	(654)	(1,971)	(1,072)
Common stock repurchased	(5,073)	(25,126)	(7,025)
Cash dividends paid	(8,576)	(8,055)	(7,727)
Net cash provided by (used in) financing activities	17,241	(917)	6,533
Net increase (decrease) in cash held at bank subsidiaries	4,598	(882)	198
Cash held at bank subsidiaries at January 1	5,011	5,893	5,695
Cash held at bank subsidiaries at December 31	\$ 9,609	\$ 5,011	\$ 5,893

NOTE 25 Performance by Geographical Area

The Corporation's operations are highly integrated with operations in both U.S. and non-U.S. markets. The non-U.S. business activities are largely conducted in Europe, the Middle East and Africa and in Asia. The Corporation identifies its geographic performance based on the business unit structure used to manage the capital or expense deployed in the region

as applicable. This requires certain judgments related to the allocation of revenue so that revenue can be appropriately matched with the related capital or expense deployed in the region. Certain asset, liability, income and expense amounts have been allocated to arrive at total assets, total revenue, net of interest expense, income before income taxes and net income by geographic area as presented below.

(Dollars in millions)		Total Assets at Year End ⁽¹⁾	Total Revenue, Net of Interest Expense ⁽²⁾	Income Before Income Taxes	Net Income
U.S. ⁽³⁾	2022	\$ 2,631,815	\$ 82,890	\$ 28,135	\$ 25,607
	2021	2,789,862	78,012	31,392	27,781
	2020		75,576	18,247	16,692
Asia	2022	127,399	4,597	1,144	865
	2021	117,085	4,439	988	733
	2020		4,232	1,051	788
Europe, Middle East and Africa	2022	262,856	6,044	1,121	689
	2021	233,356	5,423	1,097	3,134
	2020		4,491	(596)	264
Latin America and the Caribbean	2022	29,305	1,419	569	367
	2021	29,192	1,239	499	330
	2020		1,229	293	150
Total Non-U.S.	2022	419,560	12,060	2,834	1,921
	2021	379,633	11,101	2,584	4,197
	2020		9,952	748	1,202
Total Consolidated	2022	\$ 3,051,375	\$ 94,950	\$ 30,969	\$ 27,528
	2021	3,169,495	89,113	33,976	31,978
	2020		85,528	18,995	17,894

⁽¹⁾ Total assets include long-lived assets, which are primarily located in the U.S.

⁽²⁾ There were no material intercompany revenues between geographic regions for any of the periods presented.

⁽³⁾ Substantially reflects the U.S.

Glossary

Alt-A Mortgage – A type of U.S. mortgage that is considered riskier than A-paper, or “prime,” and less risky than “subprime,” the riskiest category. Typically, Alt-A mortgages are characterized by borrowers with less than full documentation, lower credit scores and higher LTVs.

Assets Under Management (AUM) – The total market value of assets under the investment advisory and/or discretion of *GWIM* which generate asset management fees based on a percentage of the assets’ market values. AUM reflects assets that are generally managed for institutional, high net worth and retail clients, and are distributed through various investment products including mutual funds, other commingled vehicles and separate accounts.

Banking Book – All on- and off-balance sheet financial instruments of the Corporation except for those positions that are held for trading purposes.

Brokerage and Other Assets – Non-discretionary client assets which are held in brokerage accounts or held for safekeeping.

Committed Credit Exposure – Any funded portion of a facility plus the unfunded portion of a facility on which the lender is legally bound to advance funds during a specified period under prescribed conditions.

Credit Derivatives – Contractual agreements that provide protection against a specified credit event on one or more referenced obligations.

Credit Valuation Adjustment (CVA) – A portfolio adjustment required to properly reflect the counterparty credit risk exposure as part of the fair value of derivative instruments.

Debit Valuation Adjustment (DVA) – A portfolio adjustment required to properly reflect the Corporation’s own credit risk exposure as part of the fair value of derivative instruments and/or structured liabilities.

Funding Valuation Adjustment (FVA) – A portfolio adjustment required to include funding costs on uncollateralized derivatives and derivatives where the Corporation is not permitted to use the collateral it receives.

Interest Rate Lock Commitment (IRLC) – Commitment with a loan applicant in which the loan terms are guaranteed for a designated period of time subject to credit approval.

Letter of Credit – A document issued on behalf of a customer to a third party promising to pay the third party upon presentation of specified documents. A letter of credit effectively substitutes the issuer’s credit for that of the customer.

Loan-to-value (LTV) – A commonly used credit quality metric. LTV is calculated as the outstanding carrying value of the loan divided by the estimated value of the property securing the loan.

Macro Products – Include currencies, interest rates and commodities products.

Margin Receivable – An extension of credit secured by eligible securities in certain brokerage accounts.

Matched Book – Repurchase and resale agreements or securities borrowed and loaned transactions where the overall asset and liability position is similar in size and/or maturity. Generally, these are entered into to accommodate customers where the Corporation earns the interest rate spread.

Mortgage Servicing Rights (MSR) – The right to service a mortgage loan when the underlying loan is sold or securitized. Servicing includes collections for principal, interest and escrow payments from borrowers and accounting for and remitting principal and interest payments to investors.

Nonperforming Loans and Leases – Includes loans and leases that have been placed on nonaccrual status, including nonaccruing loans whose contractual terms have been restructured in a manner that grants a concession to a borrower experiencing financial difficulties.

Prompt Corrective Action (PCA) – A framework established by the U.S. banking regulators requiring banks to maintain certain levels of regulatory capital ratios, comprised of five categories of capitalization: “well capitalized,” “adequately capitalized,” “undercapitalized,” “significantly undercapitalized” and “critically undercapitalized.” Insured depository institutions that fail to meet certain of these capital levels are subject to increasingly strict limits on their activities, including their ability to make capital distributions, pay management compensation, grow assets and take other actions.

Subprime Loans – Although a standard industry definition for subprime loans (including subprime mortgage loans) does not exist, the Corporation defines subprime loans as specific product offerings for higher risk borrowers.

Troubled Debt Restructurings (TDRs) – Loans whose contractual terms have been restructured in a manner that grants a concession to a borrower experiencing financial difficulties. Certain consumer loans for which a binding offer to restructure has been extended are also classified as TDRs.

Value-at-Risk (VaR) – VaR is a model that simulates the value of a portfolio under a range of hypothetical scenarios in order to generate a distribution of potential gains and losses. VaR represents the loss the portfolio is expected to experience with a given confidence level based on historical data. A VaR model is an effective tool in estimating ranges of potential gains and losses on our trading portfolios.

Key Metrics

Active Digital Banking Users – Mobile and/or online active users over the past 90 days.

Active Mobile Banking Users – Mobile active users over the past 90 days.

Book Value – Ending common shareholders' equity divided by ending common shares outstanding.

Common Equity Ratio - Ending common shareholders' equity divided by ending total assets.

Deposit Spread – Annualized net interest income divided by average deposits.

Dividend Payout Ratio – Common dividends declared divided by net income applicable to common shareholders.

Efficiency Ratio – Noninterest expense divided by total revenue, net of interest expense.

Gross Interest Yield – Effective annual percentage rate divided by average loans.

Net Interest Yield – Net interest income divided by average total interest-earning assets.

Operating Margin – Income before income taxes divided by total revenue, net of interest expense.

Return on Average Allocated Capital – Adjusted net income divided by allocated capital.

Return on Average Assets – Net income divided by total average assets.

Return on Average Common Shareholders' Equity – Net income applicable to common shareholders divided by average common shareholders' equity.

Return on Average Shareholders' Equity – Net income divided by average shareholders' equity.

Risk-adjusted Margin – Difference between total revenue, net of interest expense, and net credit losses divided by average loans.

Acronyms

ABS	Asset-backed securities	GNMA	Government National Mortgage Association
AFS	Available-for-sale	GRM	Global Risk Management
AI	Artificial intelligence	GSE	Government-sponsored enterprise
ALM	Asset and liability management	G-SIB	Global systemically important bank
ARR	Alternative reference rates	GWIM	Global Wealth & Investment Management
AUM	Assets under management	HELOC	Home equity line of credit
AVM	Automated valuation model	HQLA	High Quality Liquid Assets
BANA	Bank of America, National Association	HTM	Held-to-maturity
BHC	Bank holding company	IBOR	Interbank Offered Rates
BofAS	BofA Securities, Inc.	ICAAP	Internal Capital Adequacy Assessment Process
BofASE	BofA Securities Europe SA	IRLC	Interest rate lock commitment
bps	Basis points	ISDA	International Swaps and Derivatives Association, Inc.
CAE	Chief Audit Executive	LCR	Liquidity Coverage Ratio
CCAR	Comprehensive Capital Analysis and Review	LHFS	Loans held-for-sale
CDO	Collateralized debt obligation	LIBOR	London Interbank Offered Rate
CDS	Credit default swap	LTV	Loan-to-value
CECL	Current expected credit losses	MBS	Mortgage-backed securities
CET1	Common equity tier 1	MD&A	Management's Discussion and Analysis of Financial Condition and Results of Operations
CFPB	Consumer Financial Protection Bureau	MLI	Merrill Lynch International
CFTC	Commodity Futures Trading Commission	MLPCC	Merrill Lynch Professional Clearing Corp
CLO	Collateralized loan obligation	MLPF&S	Merrill Lynch, Pierce, Fenner & Smith Incorporated
CLTV	Combined loan-to-value	MRC	Management Risk Committee
CRO	Chief Risk Officer	MSA	Metropolitan Statistical Area
CVA	Credit valuation adjustment	MSR	Mortgage servicing right
DIF	Deposit Insurance Fund	NOL	Net operating loss
DVA	Debit valuation adjustment	NSFR	Net Stable Funding Ratio
ECL	Expected credit losses	OCC	Office of the Comptroller of the Currency
EPS	Earnings per common share	OCI	Other comprehensive income
ERC	Enterprise Risk Committee	OREO	Other real estate owned
ESG	Environmental, social and governance	OTC	Over-the-counter
EU	European Union	PCA	Prompt Corrective Action
FCA	Financial Conduct Authority	PPP	Paycheck Protection Program
FDIC	Federal Deposit Insurance Corporation	RMBS	Residential mortgage-backed securities
FDICIA	Federal Deposit Insurance Corporation Improvement Act of 1991	RSU	Restricted stock unit
FHA	Federal Housing Administration	RWA	Risk-weighted assets
FHLB	Federal Home Loan Bank	SBA	Small Business Administration
FHLMC	Freddie Mac	SBLC	Standby letter of credit
FICC	Fixed income, currencies and commodities	SCB	Stress capital buffer
FICO	Fair Isaac Corporation (credit score)	SEC	Securities and Exchange Commission
FLUs	Front line units	SLR	Supplementary leverage ratio
FNMA	Fannie Mae	TDR	Troubled debt restructurings
FTE	Fully taxable-equivalent	TLAC	Total loss-absorbing capacity
FVA	Funding valuation adjustment	UDAAP	Unfair, deceptive, or abusive acts or practices
GAAP	Accounting principles generally accepted in the United States of America	VA	U.S. Department of Veterans Affairs
GDPR	General Data Protection Regulation	VaR	Value-at-Risk
GLS	Global Liquidity Sources	VIE	Variable interest entity